



**UNIVERSAL
ENGINEERING SCIENCES**

**GEOTECHNICAL EXPLORATION
PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS
FROM US41 TO WEST OF I-75 (GILLETTE DRIVE)
PARRISH, MANATEE COUNTY, FL**

**UES PROJECT NO. 1130.1800187.0000
UES REPORT NO.: 13620**

Prepared for:

Cardno
380 Park Place Boulevard, Suite 300
Clearwater, FL 333759

Prepared By:

Universal Engineering Sciences, Inc.
1748 Independence Boulevard, Suite B-1
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November 19, 2018

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November 19, 2018

Cardno
380 Park Place Boulevard, Suite 300
Clearwater, FL 333759

Attn: Mr. Hamid R. Faraji, PE

Reference: **GEOTECHNICAL EXPLORATION**
Proposed Moccasin Wallow Road Improvements
From US41 to West of I-75 (Gillette Drive)
Parrish, Manatee County, FL
UES Project No. 1130.1800187.0000
UES Report No.: 13620

Dear Mr. Faraji:

Universal Engineering Sciences, Inc. (UES) has completed the subsurface exploration for the above referenced project. The scope of our exploration was planned in conjunction with and authorized by you.

In this report, we present the findings and results of our field and laboratory explorations for the existing roadway and an engineering evaluation of the subsurface conditions.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

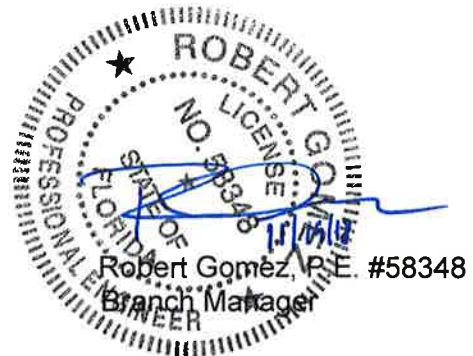
Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization Number 549



Yudelsy Alvarez
Project Engineer

RG/YA



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ENGINEERING REPORT
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1.0 INTRODUCTION

1.1 GENERAL

In this report, we present the results of the proposed roadway improvements located in Parrish, Florida. We have divided this report into the following sections.

- 1.0 Introduction** - Defines what we did
- 2.0 Exploration Procedures** - Describes how we did it
- 3.0 Findings** - Describes what we encountered
- 4.0 Recommendations** - Describes what we encourage you to do
- 5.0 Limitations** - Describes the restrictions inherent in this report
- Appendices** - Presents support materials referenced in this report

1.2 PROJECT DESCRIPTION

The project under consideration involves the widening of the existing 2-lane Moccasin Wallow Road (97 Street E.) to 6-lane divided from US-41 to west of I-75 (Gillette Drive) located in Parrish, Florida. We understand that the project length is approximately 1.9 miles, and the improvements will also include the signalization of four (4) intersections, and two (2) stormwater management wet ponds. An aerial plan showing the project location was provided to us.

Our recommendations are based upon the above considerations. If any of this information is incorrect or if you anticipate any changes inform Universal Engineering Sciences so that we may review our recommendations.

1.3 PURPOSE AND SCOPE

The purposes of this exploration were:

- To explore the general subsurface conditions along the proposed structures.
- To interpret and review the subsurface conditions with respect to the proposed construction, and provide soil classification.
- To provide soil design parameters for the proposed pipeline and water main construction.

This study was generally conducted according to the guidelines set forth in the Florida Department of Transportation Soil and Foundation Manual.

Recommendations concerning other soil related considerations were beyond the scope of our exploration. This report presents an evaluation of site conditions on the basis of traditional



geotechnical procedures for site characterization. Our work did not address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.

2.0 EXPLORATION PROCEDURES

2.1 FIELD EXPLORATION

The subsurface conditions were explored by drilling and sampling eleven (11) Standard Penetration Test (SPT) borings adjacent to the existing roadway to a depth of 10 feet below grade. Due to accessibility site constrains, UES was only able to performed eleven SPT borings.

We performed the Standard Penetration Test using our truck mounted drill rig utilizing mud rotary procedures according to the procedures of ASTM D-1586, with continuous sampling performed above a depth of 10 feet, to detect slight variations in the soil profile at shallow depths, and then at five-foot intervals thereafter. The basic procedure for the Standard Penetration Test is as follows: A standard split-barrel sampler is driven into the soil by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler 1-foot, after seating 6 inches, is designated the penetration resistance, or N-value; this value is an index to soil strength and consistency.

In addition, we performed one hundred and sixty seven (167) hand auger borings along both sides of the existing roadway to a depth of 5 feet below grade. These borings were performed by manually twisting and advancing a 3 inch diameter stainless steel "bucket" auger into the ground in approximate 6 inch increments. As each soil type was revealed, representative samples were placed in "air-tight" jars.

Five (5) bulk samples of the subgrade material were sampled for performing LBR test. The LBR test, which were performed according to the procedures of Florida Test Method FM 5-515, are used to determine the bearing value of soils when they are compacted in the laboratory at moisture contents varying from the dry to wet side of optimum. The LBR test results indicate a LBR values ranging from 27 to 94 of the subgrade material from the testing locations. Typical subgrade material for permanent design requires an LBR value of 40 minimum. The results of the laboratory testing program completed are enclosed in Appendix A.

The boring locations were located by our drill crew based on the site plan and existing site conditions. The test boring locations are shown on the attached Boring Location Plan in Appendix A.

2.2 LABORATORY INVESTIGATION

The soil samples recovered from the soil test borings were returned to our laboratory and then an engineer visually examined and reviewed the field descriptions. We selected representative soil samples for laboratory testing consisting of fourteen (14) wash 200 determinations and moisture content tests.



We performed these tests to aid in classifying the soils and to help evaluate the general engineering characteristics of the site soils. See Appendix A: Boring Logs and Description of Testing Procedures for further data and explanations. Jar samples of the soils will be held in our laboratory for your inspection for sixty days unless we are notified otherwise.

3.0 FINDINGS

3.1 SURFACE CONDITIONS

A Universal Engineering Sciences representative performed a visual site inspection of the property to gain a "hands-on" familiarity with the project area. The overall existing roadways are relatively level and generally elevated above surrounding grade and consist of ditches along the roadside for drainage.

3.2 SOIL SURVEY INFORMATION

The "Soil Survey of Sarasota County, Florida", published by the published by the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS), was reviewed for general near-surface soil information prior to development within the general project vicinity. The USDA, SCS primary soil mapping groups within the proposed project area, and some characteristics and properties are summarized below. The location of these groups can be observed on the SCS Soil Survey Map provided in the Appendix A.

Bradenton (Soil Group No. 5): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 13 inches, fine sandy loam from 13 to 47 inches, and **unweathered bedrock** from 47 to 51 inches below grade. Based on the soil survey, the water table is from 0 to 12 inches below grade.

Canova, Anclote, and Okeelanta (Soil Group No. 7): Under natural conditions, this soil group consists of **muck** from the surface to a depth of about 8 inches, fine sand from 8 to 24 inches, and sandy clay loam from 24 to 68 inches below grade. Based on the soil survey, the water table is at the ground surface.

Cassia (soil Group No. 11): This soil group consists of fine sand from the surface to a depth of about 80 inches below grade. Based on the soil survey, the water table is from 18 to 42 inches below grade, under natural conditions.

Chobby (Soil Group No. 13): Under natural conditions, this soil group consists of loamy fine sand from the surface to a depth of about 8 inches, sandy clay loam from 8 to 51 inches, and loamy fine sand from 51 to 80 inches below grade. Based on the soil survey, the water table is from 0 to 6 inches below grade.

Chobby (Soil Group No. 14): Under natural conditions, this soil group consists of sandy clay loam from the surface to a depth of about 35 inches, sandy loam from 35 to 40 inches, and loamy sand from 40 to 80 inches below grade. Based on the soil survey, the water table is from 0 to 12 inches below grade.

Delray (Soil Group No. 16): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 55 inches, and sandy clay loam from 55 inches to 80



inches below grade. Based on the soil survey, the water table is from the ground surface to 18 inches below grade.

Delray-Eaugallie (Soil Group No. 17): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 55 inches, and sandy clay loam from 55 inches to 80 inches below grade. Based on the soil survey, the water table is from the ground surface to 6 inches below grade.

EauGallie (Soil Group No. 20): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 42 inches, sandy clay loam from 42 to 50 inches, and fine sand from 50 to 65 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

Felda (Soil Group No. 22): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 35 inches, fine sandy loam from 35 to 43 inches, and extremely paragravelly fine sand from 43 to 80 inches below grade. Based on the soil survey, the water table is from the ground surface to 12 inches below grade.

Floridana-Immokalee-Okeelanta (Soil Group No. 26): Under natural conditions, this soil group consists of fine sand and **muck** from the surface to a depth of about 20 inches, fine sand from 20 inches to 36 inches; sandy clay loam from 36 to 63 inches, and fine sand from 63 to 80 inches below grade. Based on the soil survey, the water table is at the ground surface.

Gator muck (Soil Group No. 27): Under natural conditions, this soil group consists of **muck** from the surface to a depth of about 18 inches, sandy clay loam from 18 inches to 36 inches; fine sandy loam from 36 to 55 inches, and fine sand from 55 to 80 inches below grade. Based on the soil survey, the water table is from 0 to 6 inches below grade.

Palmetto (soil Group No. 38): Under natural conditions, this soil group consists of sand from the surface to a depth of 45 inches, sandy clay loam from 45 to 64 inches, and loamy sand from 64 to 68 inches below grade. Based on the soil survey, the water table is at the ground surface.

Tavares (soil Group No. 45): This soil group consists of fine sand from the surface to a depth of about 80 inches below grade. Based on the soil survey, the water table is from 42 to 72 inches below grade, under natural conditions.

Wabasso (Soil Group No. 48): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 37 inches, sandy clay loam from 37 to 65 inches, and fine sand from 65 to 80 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

3.3 SUBSURFACE CONDITIONS

The boring locations and detailed subsurface conditions are illustrated in Appendix A: Boring Location Plan and Boring Logs. The classifications and descriptions shown on the logs are generally based upon visual characterizations of the recovered soil samples. Also, see Appendix A: Soils Classification Chart, for further explanation of the symbols and placement of data on the Boring Logs. The following table summarizes the soil conditions encountered.



TABLE 2 General Soil Profile		
Typical depth (ft)		Soil Descriptions
From	To	
HA-1 through HA-80, HA-82 through HA-94, HA-96, HA-129 through HA-141, HA-143 through HA-167		
0	5*	Fine sand, and fine sand with silt [SP, SP-SM]
HA-81, HA-95, HA-97 through HA-124, HA-142		
0	1	Fine sand, fine sand with silt and clay [SP, SP-SM, SP-SC]
1	5*	Fine with silt and clay, and clayey sand [SP-SM, SP-SC, SC]
HA-125 through HA-128		
0	5*	Fine sand with clay, and clayey sand [SP-SC, SC]
SPT Borings (B-1 through B-11)		
0	2	Loose to medium dense fine sand, fine sand with silt and clay, and clayey sand [SP, SP-SC, SP-SC, SC]
2	8	Medium dense to dense fine sand, fine sand with silt and clay, and clayey sand with shell [SP, SP-SC, SP-SC, SC]
8	10*	Loose to dense fine sand, fine sand with clay, clayey sand, silty sand with shell, and hard sandy clay [SP, SP-SC, SC, SM, CL]
* Termination Depth of Deepest Boring		
[] Bracketed Text Indicates: Unified Soil Classification		

Variations in the depth, thickness and consistency of the aforementioned soil strata occurred at the individual test boring locations. We encountered groundwater at depths ranging from 2 to more than 5 feet below existing grade at the time of our investigation. The variations in the measured water levels are attributed to the variation in the ground surface elevation at this site as well as the soil type encountered.

Notable Features:

- The presence of shallow clayey soils encountered in some of the soil borings. These soils may be moisture sensitive and difficult to compact if encountered during construction.
- We did not encounter muck material in the soil borings performed; however, the soils may vary across the site and the Manatee County Soil Survey indicated muck from the ground surface to 20 inches below grade. This material; if encountered will need to be removed and replaced with engineering sandy fill for pavement areas.



- We did not encounter shallow rock in the soil borings performed; however, sands with rock fragments were encountered in a few soil borings in the upper 5 feet. Dense sands were encountered in the SPT borings below a depth of 6 feet with N-values ranging from 30 to 48 blows per foot. The Manatee County Soil Survey also indicated **unweathered bedrock** from 47 to 51 inches below grade (Soil Group No. 5). This soil and rock material may vary across the site in depth and consistency, and may be difficult to excavate.

4.0 RECOMMENDATIONS

The following recommendations are based upon a review of the attached soil tests data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. If the locations or grading plans change from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

Additionally, if subsurface conditions are encountered during construction, which were not encountered in the borings and cores, report those conditions immediately to us for observation and recommendations.

In this section of the report, we present our detailed recommendations for:

- **Groundwater Control**
- **Roadway Embankment**
- **Pavement Evaluation**
- **Drainage Structure and Utility Considerations**

4.1 GROUNDWATER CONTROL

The groundwater table will fluctuate seasonally depending upon local rainfall. The normal seasonal high groundwater level typically occurs in the August-September period at the end of the rainy season. The seasonal high groundwater level is affected by a number of factors, such as drainage characteristics of the soils; land surface elevation, relief points (i.e. drainage ditches, lakes, rivers, swampy areas) and distance to relief points.

Several other factors influence the determination of the seasonal high water table (SHWT). When soils are subjected to alternating cycles of saturation and drying, discoloration or staining that is not part of the dominant soil color occurs. This is called mottling, and manifests itself in various shades of gray, brown, red or yellow. There are numerous processes that lead to this discoloration, including mineral accretions, oxidation, and bacteria growth within the soil. The presence of this discoloration indicates that groundwater has, at some point in time, reached that elevation and remained there long enough to cause any or all of these processes to occur. The SHWT elevation is assumed to be the highest point at which mottling is observed regardless of whether water is present at the time of observation. This estimate is independent of the actual location of the groundwater table.



Based upon our visual inspection of the recovered soil samples and existing site conditions, our best estimate is that the seasonal high groundwater level could be 2 to 3 feet below existing grade. Water could be temporarily ponded in the ditches and other low lying areas of the overall site especially during periods of heavy rainfall. The shallow clayey soil may cause temporary perched water at or near the ground surface.

It should be noted that the estimated seasonal high water levels do not provide any assurance that groundwater levels will not exceed these estimated levels during any given year in the future. Should the impediments to surface water drainage be present, or should rainfall intensity and duration, or total rainfall quantities, exceed the normally anticipated rainfall quantities, groundwater levels may exceed our seasonal high estimates.

We recommend sufficient quantities of fill will be placed in the pavement areas to mitigate the effect of groundwater on shallow excavations, such as foundations. Further, we recommend the bottom of the base course used in pavement construction be maintained at least 18 inches above the seasonal high water levels.

Temporary dewatering may be required during site preparation, especially if construction proceeds during the wet season or periods of heavy rainfall. Temporary dewatering may also be required for deeper excavations, such as utility trenches, the backfilling of the drainfield area and other excavations. We recommend that the contract documents provide for determining the groundwater level just prior to construction and for any dewatering measures which might be required. We recommend that the groundwater table be maintained at least 24 inches below all earthwork and compaction surfaces.

4.2 ROADWAY EMBANKMENT

We offer the following recommendations for site preparation and embankment construction for the widening areas, if required.

4.2.1 Site Preparation

The following procedures should be followed to properly prepare the alignment area for roadway embankment construction.

1. If required, perform remedial dewatering prior to any earthwork operations.
2. Strip the proposed construction limits of all vegetation, roots, topsoil, existing improvements, debris and other deleterious materials within the limits of the pavement, shoulder, sidewalk, and other structural areas.
3. Proof-roll the subgrade with a heavily loaded, rubber-tired vehicle under the observation of a Universal Engineering Sciences' geotechnical engineer or his representative. Proof-rolling will help locate any zones of especially loose or soft soils not encountered in the soil test borings. Then undercut, or otherwise treat these zones as recommended by the engineer.
4. Proof-compact the subgrade from the surface by a vibratory roller until you obtain a minimum density of 100 percent of the standard Proctor maximum dry density (ASTHO T-99) to a depth of 1 foot below the existing site grade.



5. Test the subgrade for compaction at a frequency of not less than one test every 500 feet for each lane, shoulder, bike path, sidewalk, curb or other structural area per foot of depth of improvement.

4.2.2 Embankment Materials and Construction

We recommend the construction of the roadway and associated embankments proceed according to F.D.O.T. index 120 (FDOT Standard Specification for Road and Bridge Construction 2010). The fill material utilized should consist of clean sand with less than 5 percent soil fines. Fill materials with soil fines between 5 and 12 percent may be used when above the water table, so long as strict moisture control is applied (within 2% of optimum moisture). The fill material should be placed in uniform 6 inch loose lifts and compacted to 100 percent of the standard Proctor maximum dry density (AASHTO T-99). Field density tests should be performed on each layer of fill material at a frequency of one test for every 500 linear feet of construction for each lane or associated area.

The surficial soils at the site would generally be suitable for use in embankment construction. However, fill from off-site borrow sources will generally be required above existing grades along the majority of the intersection. The soil placed within the stabilized subgrade layer must meet an LBR of 40 or will need to be stabilized after placement to achieve the minimum LBR value.

4.3 DRAINAGE STRUCTURE AND UTILITY CONSIDERATIONS

We assume that proposed drainage utility improvements at the site may have invert elevations several feet below existing grades. The soils encountered at the boring locations should be suitable for support of the planned utility improvements. The fine sand and fine sand with silt and clay soils are suitable for reuse as backfill. The clayey sands are not recommended to be used as fill material since these soils may be moisture sensitive and difficult to compact if encountered during construction. The fine sand with silt and clay type soils, when excavated from below the water table, may require spreading and drying prior to reuse to achieve a moisture content sufficient to obtain the recommended degree of compaction. Further, any clayey sand type soils will require extensive aeration and drying prior to reuse.

4.3.1 Trench Excavation and Backfill Recommendations

The following are our recommendations for construction of the proposed utility improvements.

1. If deemed necessary by the contractor, install a dewatering system capable of maintaining a groundwater level at least 2 feet below bottom of pipe level.
2. After excavation to design invert elevations, the in-situ bedding soils should be compacted to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557) to a depth of 12 inches below the bedding level. Compaction in confined areas can probably be achieved using jumping jacks or light weight walk-behind vibratory sleds and/or rollers.
3. After constructing the utility lines, backfill with suitable sand fill placed in 6 to 8 inch loose lifts. Each lift should be compacted to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557). Beneath pavement areas, the



top 36 inches of backfill should be compacted to at least 98 percent. Additionally, when/where applicable local jurisdictional compaction requirements should be followed when stricter than the recommendations herein.

4. If difficult compaction operations are encountered beneath the utilities due to excessive fines and/or wet conditions, saturated soils could be over-excavated and replaced with FDOT No. 57 stone.
5. Excavation work will be required to meet OSHA Excavation Standard Subpart P regulations, Type C Soils. Either a trench box, braced sheet pile structure or an excavation with temporary side slopes cut back at 1.5 horizontal to 1.0 vertical can be implemented. The side slope of 1.5 horizontal to 1.0 vertical is contingent upon the dewatering system adequately controlling slope seepage. Sheet piling should be designed according to OSHA sheeting and bracing requirements. We recommend a Florida registered Professional Engineer design any required sheeting/bracing system.
6. Within Right-of-Way driveways connecting to FDOT or county roads, the local county authority criteria and requirements for trench backfill and compaction should govern the testing procedures.

5.0 FILL REQUIREMENTS

In general, the typical criteria for determining the acceptability of a material for use as structural fill is based on the percent "fines" in the soil matrix (e.g. material passing the No. 200 sieve). We recommend that the proposed fill is tested from the source prior to delivery and site placement.

The fill should consist of clean sands which have less than 5% soil fines (Unified Soil Classification: SP, SW). These soils are the most desirable for use as engineering fill because they drain freely when excavated from beneath the groundwater table and are not as susceptible to moisture related instability.

If soils with 5% to 12% soil fines (Unified Soil Classification: SP-SM, SP-SC) are used, they will require some extra care during placement and compaction. The moisture content of these soils should not be higher than 2% above optimum during placement and compaction in order to reduce the potential for moisture related instability.

6.0 CONSTRUCTION RELATED SERVICES

We recommend the owner retain Universal Engineering Sciences to perform construction materials tests and observations on this project. Field tests and observations include verification of foundation and pavement subgrades by monitoring proof-rolling operations and performing quality assurance tests on the placement of compacted structural fill and pavement courses.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.



6.0 LIMITATIONS

This report has been prepared in order to aid the engineer in the design of the proposed roadway improvements. The scope of services provided was limited to the specific project and locations described herein. The description of the project's design parameters represents our understanding of significant aspects relevant to soil and foundation characteristics.

The recommendations submitted in this report are based upon the data obtained from the limited number of cores performed at the locations indicated on the Core Locations Plan and from other information as referenced. This report does not reflect any variations which may occur between the core locations or unexplored areas of the site.

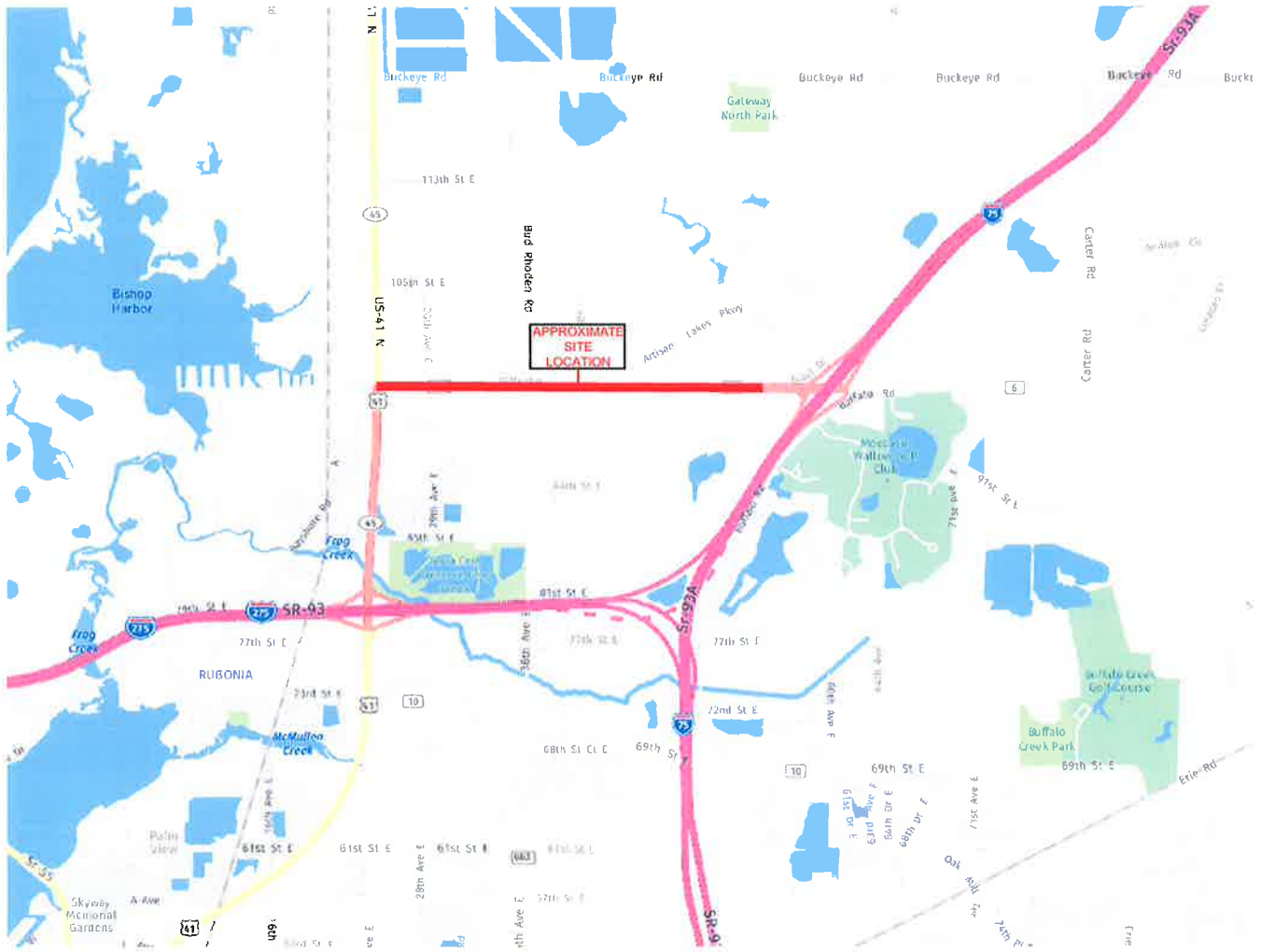
Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report please review the document attached within Appendix B "Important Information About Your Geotechnical Engineering Report" prepared by ASFE, an association of firms practicing in the geosciences.



APPENDIX A



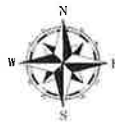
**PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS
MOCCASIN WALLOW ROAD FROM US 41 TO WEST OF I 75
PARRISH, MANATEE COUNTY, FLORIDA**

SITE LOCATION PLAN



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DRAWN BY: RLD	DATE: JULY 2018	CHECKED BY: R.G.	DATE: JULY 2018
SCALE: NOT TO SCALE	PROJECT NO: 1130.1800187.0000	REPORT NO: 13620	APPENDIX:

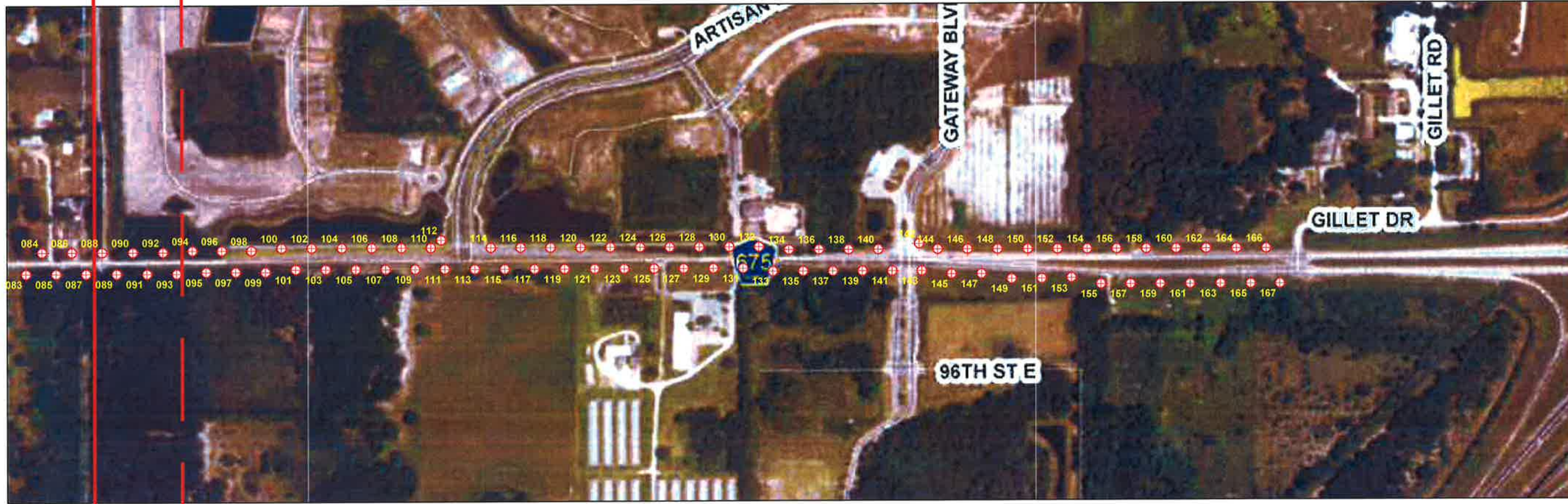
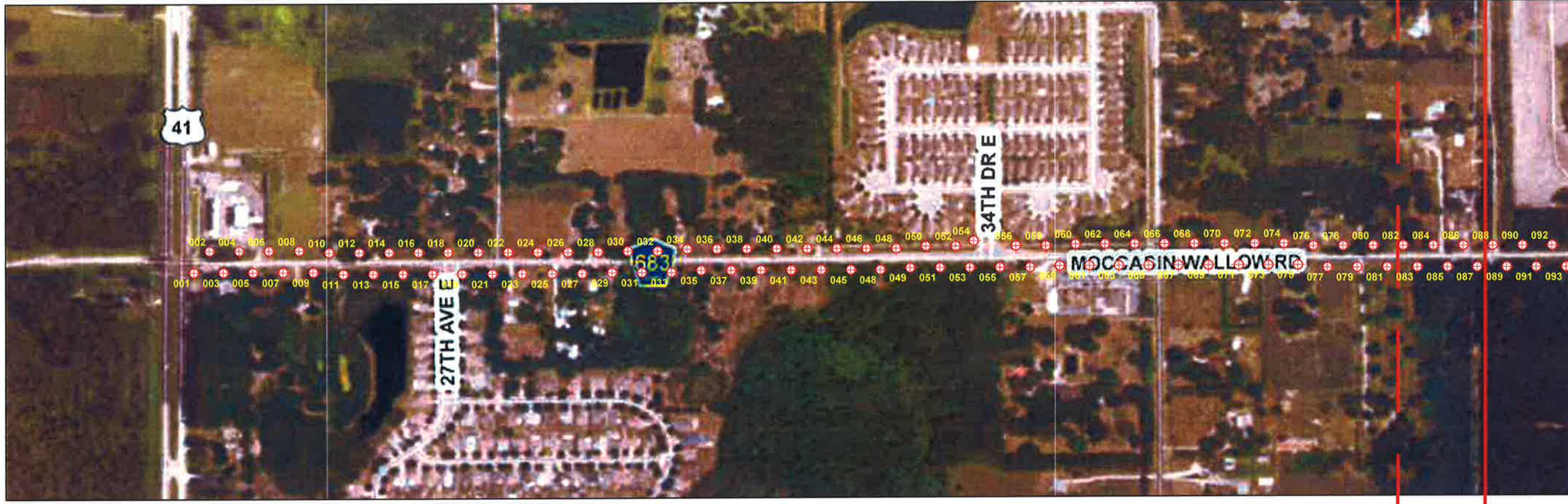


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**PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS
MOCCASIN WALLOW ROAD FROM US 41 TO WEST OF I 75
PARRISH, MANATEE COUNTY, FLORIDA**

SCS SOIL SURVEY MAP

DRAWN BY: RLD	DATE: SEPTEMBER 2018	CHECKED BY: R.G.	DATE: SEPTEMBER 2018
SCALE: NOT TO SCALE	PROJECT NO: 1130.1800187.0000	REPORT NO: 13620	APPENDIX:



FOR: CARDNO

PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS
 MOCCASIN WALLOW ROAD FROM US 41 TO WEST OF I 75
 PARRISH, MANATEE COUNTY, FLORIDA
 HAND AUGER BORING LOCATION PLAN



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DRAWN BY: R.D.	DATE: SEPTEMBER 2018
CHECKED BY: Robert G.	DATE: SEPTEMBER 2018
REPORT NO: 13620	SCALE: NOT TO SCALE
PROJECT NO: 1130.1800187.0000	



LEGEND	
APPROXIMATE LOCATION	
	SPT BORING
	DRI TEST

FOR: CARDNO

PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS
 MOCCASIN WALLOW ROAD FROM US 41 TO WEST OF I 75
 PARRISH, MANATEE COUNTY, FLORIDA

SPT AND LBR BORING LOCATION PLAN

DRAWN BY: R.D. DATE: SEPTEMBER 2018

CHECKED BY: Robert G. DATE: SEPTEMBER 2018

REPORT NO: 13620 SCALE: NOT TO SCALE

PROJECT NO: 1130.1800187.0000



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Consultants In: Geotechnical Engineering
Environmental Sciences • Construction Material Testing

LIMEROCK BEARING RATIO

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Client: Cardno
Project: Moccasin Wallow Rd. Improvements
Project No.: 1130.1800069.0000

Report Date: 9/25/2018
Report No.: 4766
Technician: D. Childress

TEST DATA

SAMPLE

Description: Light and Dark Gray Sand Trace Silt and Roots Source: Subgrade
Location: LBR 1 Passing #4: 100%

Date Sampled: 09/14/18

COMPACTION

Method: FM 5-515 Date: 09/25/18

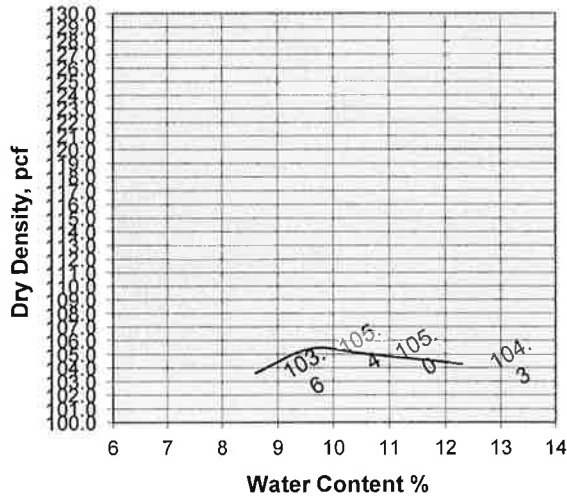
TESTING

Surcharge: 15 lbs Soak time: n/a Date: 09/25/18

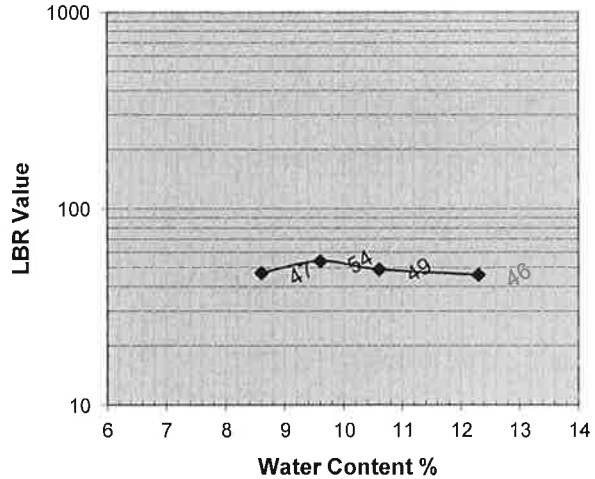
REPORT DATA

Max. Dry Density:	105	%Passing	Maximum LBR: 54
Optimum Water %:	10	#200 Sieve	
		2.6%	

Modified Proctor Data



LBR Logarithmic Data





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Consultants In: Geotechnical Engineering
Environmental Sciences • Construction Material Testing

LIMEROCK BEARING RATIO

1748 Independence Blvd., Suite B-1 • Sarasota, FL 34234 • (941) 358-7410

Client: Cardno
Project: Moccasin Wallow Rd. Improvements
Project No.: 1130.1800069.0000

Report Date: 9/25/2018
Report No.: 4765
Technician: D. Childress

TEST DATA

SAMPLE

Description: Light Brown Sand Trace Silt
Location: LBR 2

Source: Subgrade
Passing #4: 100%

Date Sampled: 09/14/18

COMPACTION

Method: FM 5-515

Date: 09/25/18

TESTING

Surcharge: 15 lbs Soak time: n/a

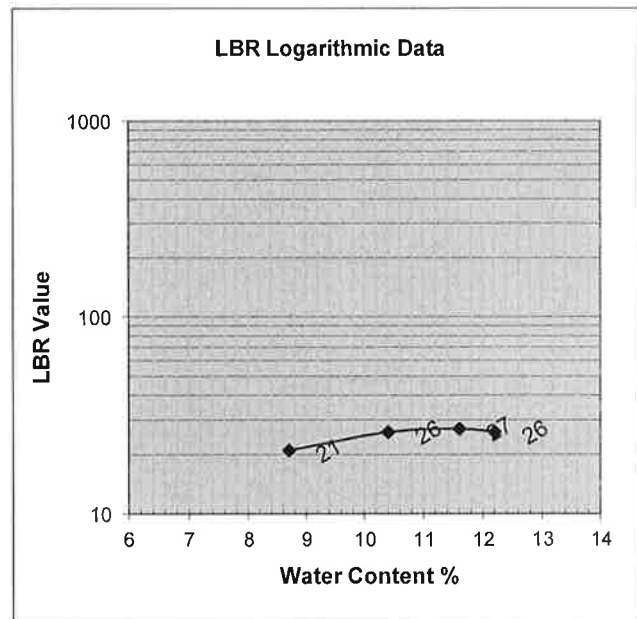
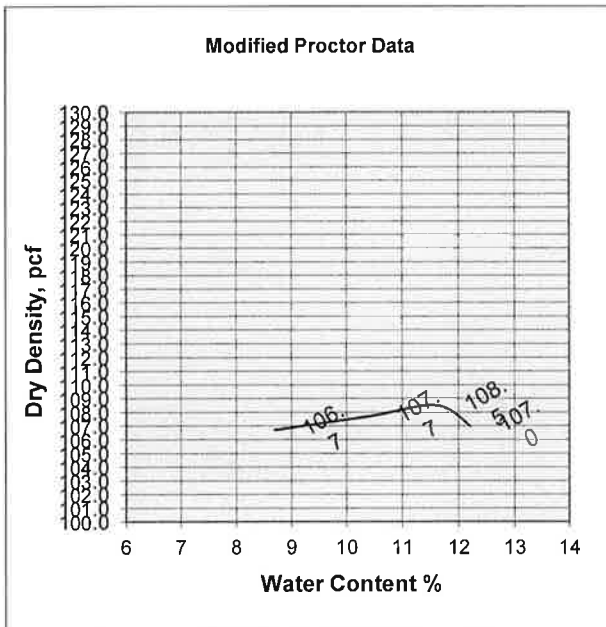
Date: 09/25/18

REPORT DATA

Max. Dry Density:
Optimum Water %:

109	%Passing
12	#200 Sieve
	2.6%

Maximum LBR: 27





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LIMEROCK BEARING RATIO

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Client: Cardno
Project: Moccasin Wallow Rd. Improvements
Project No.: 1130.1800069.0000

Report Date: 9/21/2018
Report No.: 4764
Technician: 20-Sep

TEST DATA

SAMPLE

Description: Brown Sand Trace Shell and Root
Location: LBR 3

Source: Subgrade
Passing #4: 86%

Date Sampled: 09/14/18

COMPACTION

Method: FM 5-515

Date: 09/20/18

TESTING

Surcharge: 15 lbs Soak time: n/a

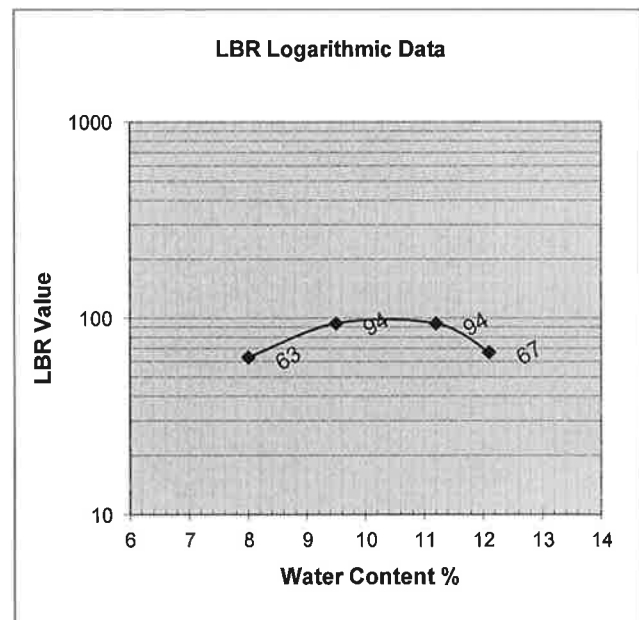
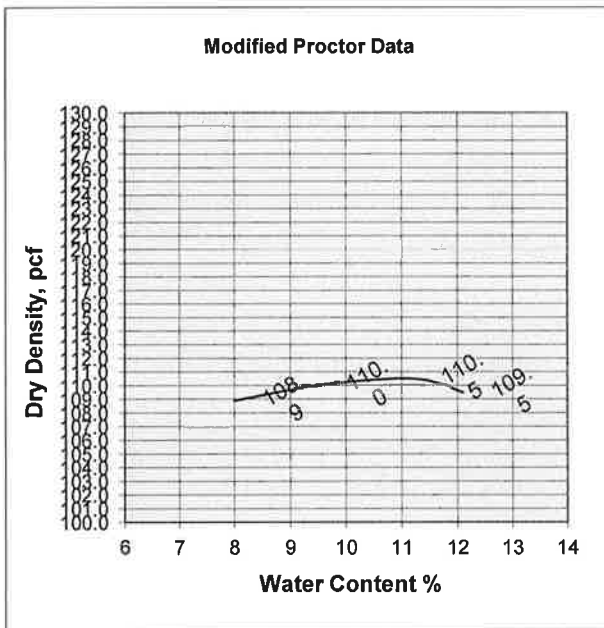
Date: 09/20/18

REPORT DATA

Max. Dry Density:
Optimum Water %:

111	%Passing
11	#200 Sieve
	4.6%

Maximum LBR: 94





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LIMEROCK BEARING RATIO

1748 Independence Blvd., Suite B-1 • Sarasota, FL 34234 • (941) 358-7410

Client: Cardno
Project: Moccasin Wallow Rd. Improvements
Project No.: 1130.1800187.0000

Report Date: 9/20/2018
Report No.: 4763
Technician: D. Childress

TEST DATA

SAMPLE

Description: Light and Dark Gray Sand Trace mixed rock fragmen
Location: LBR 4
Source: Subgrade
Passing #4: 78%

Date Sampled: 09/14/18

COMPACTION

Method: FM 5-515

Date: 09/20/18

TESTING

Surcharge: 15 lbs **Soak time:** n/a

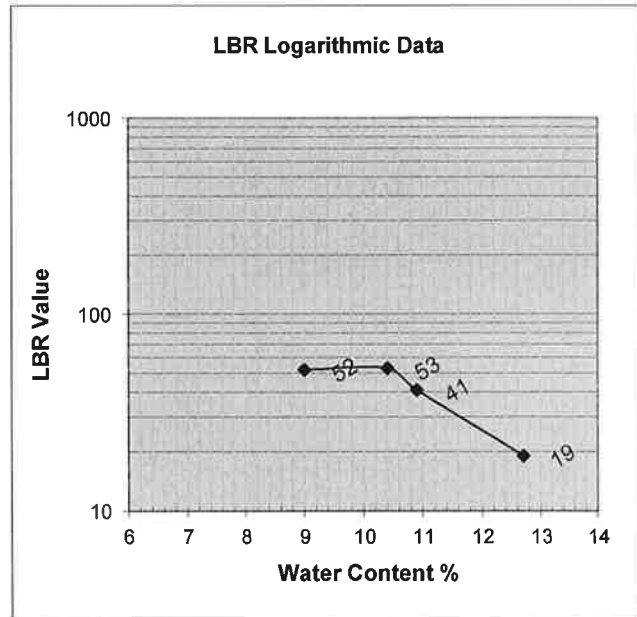
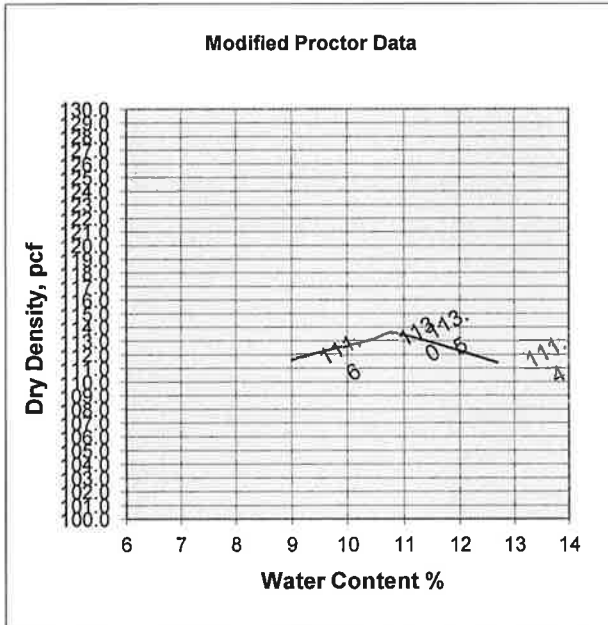
Date: 09/20/18

REPORT DATA

Max. Dry Density:
Optimum Water %:

114	%Passing
11	#200 Sieve
	9.6%

Maximum LBR: 53





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Consultants In: Geotechnical Engineering
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LIMEROCK BEARING RATIO

1748 Independence Blvd., Suite B-1 • Sarasota, FL 34234 • (941) 358-7410

Client: Cardno
Project: Moccasin Wallow Rd. Improvements
Project No.: 1130.1800069.0000

Report Date: 9/20/2018
Report No.: 4762
Technician: D. Childress

TEST DATA

SAMPLE

Description: Gray Sand Trace Roots and some shell
Location: LBR 5

Source: Subgrade
Passing #4: 98%

Date Sampled: 09/14/18

COMPACTION

Method: FM 5-515

Date: 09/20/18

TESTING

Surcharge: 15 lbs **Soak time:** n/a

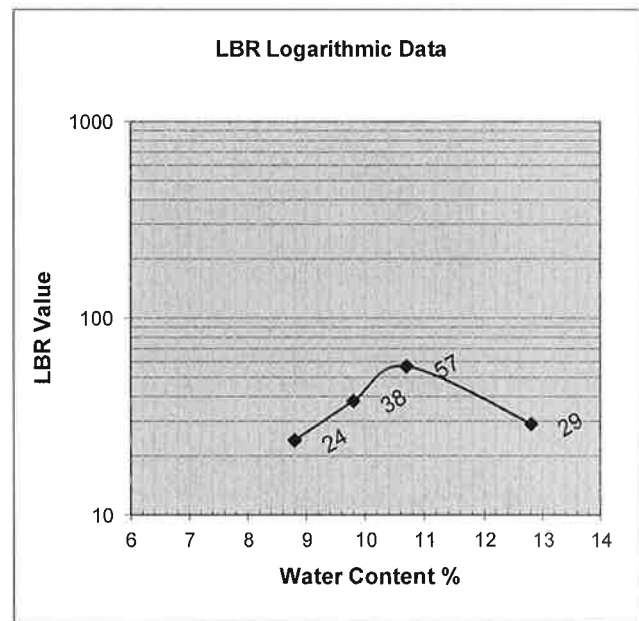
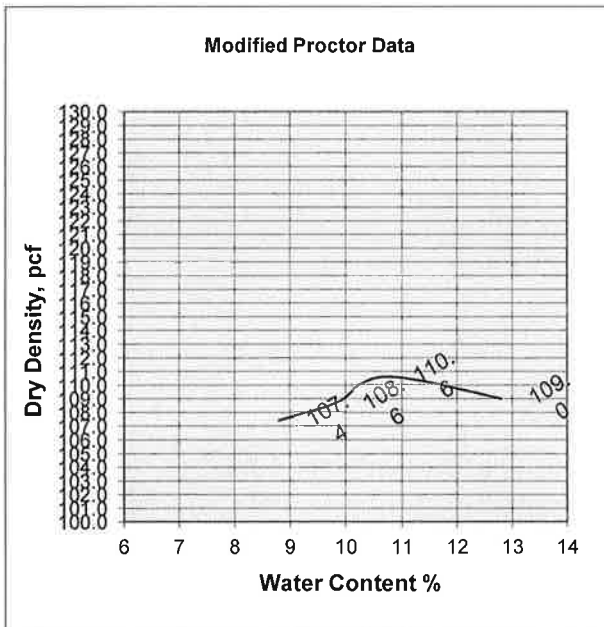
Date: 09/20/18

REPORT DATA

Max. Dry Density:
Optimum Water %:

111	%Passing
11	#200 Sieve
	7.7%

Maximum LBR: 57





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PROJECT: Proposed Moccasin Wallow Road Improvements
 Mocasin Wallow From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **B-01** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/28/18
 WATER TABLE (ft): 2.3 DATE FINISHED: 9/28/18
 DATE OF READING: 9/28/2018 DRILLED BY: TS / BG
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Medium dense gray clayey sand with shell (SC)						
		4-6-5-5	11	▼								
		6-6-7-6	13			Medium dense yellowish brown fine sand with clay and shell (SP-SC)						
5		7-8-8-8	16									
		9-12-14-20	26			Medium dense to dense light brown fine sand with silt and shell (SP-SM)						
10		13-16-18-22	34			Boring terminated at 10 feet below grade						

BORING_LOG_GINT_2018_BORING.GPJ_UNIENGSC.GDT_11/19/18



UNIVERSAL ENGINEERING SCIENCES BORING LOG

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PROJECT: Proposed Moccasin Wallow Road Improvements
Mocasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-02** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/28/18
WATER TABLE (ft): 2.6 DATE FINISHED: 9/28/18
DATE OF READING: 9/28/2018 DRILLED BY: TS / BG
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Loose to medium dense brown clayey sand (SC)						
		3-3-4-4	7	▼								
		4-5-6-6	11			Medium dense brown fine sand with clay and shell (SP-SC)						
5		6-6-8-9	14			Medium dense brown fine sand with silt and shell (SP-SM)						
		6-10-12-17	22			Dense tan shelly silty sand (SM)						
10		13-16-23-24	39			Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



UNIVERSAL ENGINEERING SCIENCES BORING LOG

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PROJECT: Proposed Moccasin Wallow Road Improvements
Mocasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-03**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.2
DATE OF READING: 9/28/2018
EST. W.S.W.T. (ft):

DATE STARTED: 9/28/18
DATE FINISHED: 9/28/18
DRILLED BY: TS / BG
TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Loose gray clayey sand with shell (SC)						
		3-3-4-3	7	▼		Medium dense light brown fine sand (SP)						
		7-9-8-10	17			Medium dense yellowish brown fine sand with clay and shell (SP-SC)						
5		11-11-13-9	24			Dense to loose light brown fine sand with silt and shell (SP-SM)						
		13-17-20-19	37									
10		8-5-5-3	10			Boring terminated at 10 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Mocasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-04**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.2
DATE OF READING: 9/28/2018
EST. W.S.W.T. (ft):
DATE STARTED: 9/28/18
DATE FINISHED: 9/28/18
DRILLED BY: TS / BG
TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Loose brown clayey sand (SC)						
		4-4-5-4	9			Medium dense yellowish brown clayey sand (SC)	21.1	14.1				
				▼								
		9-10-10-8	20			Medium dense brown fine sand with silt and shell (SP-SM)						
5												
		8-11-15-22	26			Medium dense brown fine sand with silt and shell (SP-SM)						
		11-6-5-5	11			Loose tan shelly silty sand (SM)						
10		7-3-4-4	7			Boring terminated at 10 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **B-05** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/28/18
 WATER TABLE (ft): 2.3 DATE FINISHED: 9/28/18
 DATE OF READING: 9/28/2018 DRILLED BY: TS / BG
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Diagonal Hatching]	Loose brown fine sand with clay (SP-SC)						
5-4-6-7		10		▼	[Vertical Lines]	Medium dense brown fine sand with silt (SP-SM)						
7-12-12-11		24			[Vertical Lines]	Medium dense to dense brown fine sand with trace silt (SP)						
10-13-16-17		29			[Vertical Lines]							
15-15-17-13		32			[Vertical Lines]							
11-9-10-12		19			[Circular Patterns]	Medium dense tan silty sand with shell and cemented fragments (SM)						
10						Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Mocasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-06**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2'6"
DATE OF READING: 9/28/2018
EST. W.S.W.T. (ft):

DATE STARTED: 9/28/18
DATE FINISHED: 9/28/18
DRILLED BY: TS / BG
TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Loose dark gray fine sand with trace silt and shell (SP)						
		4-4-5-7	9			Medium dense brown fine sand with silt (SP-SM)	3.5	17.3				
		8-11-10-10	21			Dense light brown fine sand with trace silt (SP)						
5		9-14-18-22	32									
		16-20-17-16	31			Dense tan shelly silty sand (SM)						
10		13-18-19-19	37			Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-07** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/26/18
WATER TABLE (ft): 2.5 DATE FINISHED: 9/26/18
DATE OF READING: 9/26/2018 DRILLED BY: TS / BG
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Medium dense dark brown fine sand with silt and rock fragments (SP-SM)						
		3-5-8-9	13	▼		Dense light brown fine sand with trace silt (SP)						
		12-18-18-20	36			Medium dense orange fine sand with silt (SP-SM)						
5		20-15-10-7	25			Medium dense light yellowish brown fine sand with trace silt (SP)	6.7	17.7				
		6-9-13-18	22			Dense light brown fine sand (SP)						
10		15-20-22-32	42			Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



UNIVERSAL ENGINEERING SCIENCES BORING LOG

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-08**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/26/18
WATER TABLE (ft): 2.5 DATE FINISHED: 9/26/18
DATE OF READING: 9/26/2018 DRILLED BY: TS / BG
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					▨	Loose grayish brown fine sand with clay (SC)						
		3-4-4-6	8	▼	▨	Medium dense dark brown fine sand with silt (SP-SM)						
		10-9-9-9	18		▨	Dense to medium dense yellowish brown fine sand with trace silt (SP)						
5					▨							
		13-18-15-12	33		▨							
		10-11-14-19	25		▨	Dense yellowish brown fine sand with trace silt (SP)						
10		18-17-21-27	38		▨	Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Mocasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-09**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/26/18
WATER TABLE (ft): 2.5 DATE FINISHED: 9/26/18
DATE OF READING: 9/26/2018 DRILLED BY: TS / BG
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Medium dense grayish brown fine sand with clay (SP-SC)						
5-5-7-6		12				Medium dense dark brown fine sand with silt (SP-SM)						
11-14-12-11		26				Medium dense orange fine sand with silt (SP-SM)						
13-15-14-17		29				Medium dense yellowish brown fine sand (SP)						
9-7-16-27		23				Dense brown fine sand with clay (SP-SC)						
17-19-22-28		41				Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-10**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 9/26/18
WATER TABLE (ft): 2.5 DATE FINISHED: 9/26/18
DATE OF READING: 9/26/2018 DRILLED BY: TS / BG
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Loose grayish brown fine sand with trace silt (SP)						
6-5-5-9		10		▼		Medium dense grayish brown fine sand with clay (SP-SC)						
10-15-14-15		29				Medium dense light gray fine sand (SP)						
5												
12-14-15-11		29				Medium dense light gray clayey sand (SC)						
13-8-7-8		15				Hard dark gray sandy clay (CL)						
10		15-20-28-32	48			Boring terminated at 10 feet below grade						

BORING LOG: GINT 2018 BORING.GPJ UNIENSC.GDT 11/19/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **B-11**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.5
DATE STARTED: 9/26/18
DATE FINISHED: 9/26/18
DATE OF READING: 9/26/2018
DRILLED BY: TS / BG
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Medium dense gray fine sand with silt (SP-SM)						
5-5-7-13		12				Dense light gray fine sand with clay and rock fragments (SP-SC)						
12-19-16-18		35				Medium dense gray clayey sand (SC)						
8-8-12-13		20										
9-7-10-14		17				Dense grayish brown clayey sand (SC)	35.5	25.2				
19-22-18-22		40				Boring terminated at 10 feet below grade						

BORING LOG GINT 2018 BORING.GPJ UNIENGSC.GDT 11/19/18



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-001** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
WATER TABLE (ft): 5.0 DATE FINISHED: 8/10/18
DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Fine Sand with Silt]	Dark gray fine sand with silt (SP-SM)						
					[Symbol: Fine Sand with Shell]	Dark gray fine sand with silt and trace shell (SP-SM)						
					[Symbol: Fine Sand]	Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT NO.:	1130.1800187.0000
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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-002** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 4.6 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt and rock fragments (SP)						
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-003** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 2.0 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with trace silt (SP)						
				▼		Brown fine sand (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-004** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18
DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-005** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-006** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Dotted pattern]	Dark gray fine sand with silt (SP-SM)						
					[Symbol: Dotted pattern]	Dark brown fine sand with silt (SP-SM)						
				▼	[Symbol: Dotted pattern]	Light brown fine sand (SP)						
					[Symbol: Dotted pattern]	Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-007** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
				▼		Gray fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-008** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▼		Gray fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-009**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.0
DATE OF READING: 8/10/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/10/18
DATE FINISHED: 8/10/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand (SP)						
						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-010** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)	5.3	10.7				
				▼		Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-011** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G. S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Fine Sand with Silt]	Dark brown fine sand with silt (SP-SM)						
5				▼	[Symbol: Fine Sand]	Light brown fine sand (SP)						
Boring terminated at 5 feet below grade												



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BORING DESIGNATION: **HA-012** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/10/18
DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-013** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					▬	Dark brown fine sand with silt (SP-SM)						
					▬	Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-014** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/10/18
 WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18
 DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-015** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18
DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-016**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 5.0
DATE STARTED: 8/13/18
DATE FINISHED: 8/13/18
DATE OF READING: 8/13/2018
DRILLED BY: LR / TM
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: HA-017 **SHEET:** 1 of 1
SECTION: **TOWNSHIP:** **RANGE:**

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): **DATE STARTED:** 8/13/18
WATER TABLE (ft): 5.0 **DATE FINISHED:** 8/13/18
DATE OF READING: 8/13/2018 **DRILLED BY:** LR / TM
EST. W.S.W.T. (ft): **TYPE OF SAMPLING:** ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Fine Sand with Silt]	Dark brown fine sand with silt (SP-SM)						
					[Symbol: Fine Sand]	Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-018** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G. S. ELEVATION (ft): DATE STARTED: 8/13/18
 WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18
 DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Fine Sand with Silt]	Dark brown fine sand with silt (SP-SM)						
5				▼	[Symbol: Fine Sand]	Light brown fine sand (SP)						
						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-019** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
 WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18
 DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
 EST. W.S., W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-020** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18
DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Vertical lines]	Dark brown fine sand with silt (SP-SM)						
					[Symbol: Dotted pattern]	Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-021** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
 WATER TABLE (ft): 4.5 DATE FINISHED: 8/13/18
 DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Vertical line with irregular wavy pattern]				[Vertical line with fine dots]	Dark brown fine sand with silt (SP-SM)						
					[Vertical line with fine dots]	Brown fine sand with trace silt (SP)						
						[Vertical line with fine dots]	Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-022** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
 WATER TABLE (ft): 4.5 DATE FINISHED: 8/13/18
 DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-023** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
 WATER TABLE (ft): 4.3 DATE FINISHED: 8/13/18
 DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-024** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/13/18
 DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-025**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.0
DATE OF READING: 8/13/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/13/18
DATE FINISHED: 8/13/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-026** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/13/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/13/18
DATE OF READING: 8/13/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Dotted pattern]	Yellowish brown fine sand with silt (SP-SM)						
					[Symbol: Horizontal lines]	Brown fine sand with silt (SP-SM)						
					[Symbol: Dotted pattern]	Light brown fine sand (SP)						
5				▼	[Symbol: Dotted pattern]	Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-027** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-028**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18
DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade	2.0	20.5				



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BORING DESIGNATION: **HA-029** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
WATER TABLE (ft): 4.3 DATE FINISHED: 8/14/18
DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-030** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/14/18
DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-031**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.5
DATE OF READING: 8/14/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/14/18
DATE FINISHED: 8/14/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-032** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18
DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-033** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.3 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-034** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.2 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Dotted pattern]	Yellowish brown fine sand with silt (SP-SM)						
					[Symbol: Dotted pattern]	Brown fine sand with silt (SP-SM)	2.1	8.3				
					[Symbol: Dotted pattern]	Light brown fine sand (SP)						
5				▼	[Symbol: Dotted pattern]	Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-035** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-036** **SHEET:** **1 of 1**
SECTION: **TOWNSHIP:** **RANGE:**

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): **DATE STARTED:** 8/14/18
WATER TABLE (ft): 4.0 **DATE FINISHED:** 8/14/18
DATE OF READING: 8/14/2018 **DRILLED BY:** LR / TM
EST. W.S.W.T. (ft): **TYPE OF SAMPLING:** ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-037** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Vertical line with irregular shape]				[Vertical line with dots]	Yellowish brown fine sand with silt (SP-SM)						
					[Vertical line with dots]	Light yellow brown fine sand with trace silt (SM)						
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-038** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
5				▼		Brown fine sand with trace silt (SP)						
						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-039** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
WATER TABLE (ft): 2.5 DATE FINISHED: 8/14/18
DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-040** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/14/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18
 DATE OF READING: 8/14/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-041** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): 5.0 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-042** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): 5.0 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-043** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): 5.0 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-044** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/16/18
DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Symbol: Dark brown fine sand with silt (SP-SM)]				[Symbol: Dark brown fine sand with silt (SP-SM)]	Dark brown fine sand with silt (SP-SM)						
						[Symbol: Yellowish brown fine sand with silt (SP-SM)]	Yellowish brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-045** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	SAMPLER				SP	Dark brown fine sand with silt (SP-SM)						
					SP	Yellowish brown fine sand with trace silt (SP)						
					SP	Brown fine sand with trace silt (SP)						
5					SAMPLER	Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-046**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE OF READING: 8/16/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/16/18
DATE FINISHED: 8/16/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-047** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
WATER TABLE (ft): >5 DATE FINISHED: 8/16/18
DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
5						Brown fine sand with trace silt (SP)						
						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-048**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE OF READING: 8/16/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/16/18
DATE FINISHED: 8/16/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-049** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-050** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
WATER TABLE (ft): >5 DATE FINISHED: 8/16/18
DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-051** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Symbol: Fine Sand with Silt]					Yellowish brown fine sand with silt (SP-SM)						
						Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-052** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/16/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/16/18
 DATE OF READING: 8/16/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade	3.1	13.8				



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BORING DESIGNATION: **HA-053** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Roadway

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-054** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-055**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE OF READING: 8/20/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/20/18
DATE FINISHED: 8/20/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-056** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-057** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
 DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (Sp-SM)						
							Tan fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-058** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Tan fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-059**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE OF READING: 8/20/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/20/18
DATE FINISHED: 8/20/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-060** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						

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Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-061** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Brown fine sand with silt (SP-SM)							
							Yellowish brown fine sand with silt (SP SM)						
							Tan fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade							



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BORING DESIGNATION: **HA-062** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
			Yellowish brown fine sand with silt (SP-GM)									
			Light brown fine sand with trace silt (SP)									
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-063**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE STARTED: 8/20/18
DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018
DRILLED BY: LR / TM
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Grayish brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-064** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
 DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Grayish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-065**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt and shell (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-066** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
 DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt and shell (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-067** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/20/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/20/18
 DATE OF READING: 8/20/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-068** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-069** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Symbol: Fine sand with silt]					Brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-070** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-071** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Symbol: Fine sand with silt]					Brown fine sand with silt (SP-SM)						
5						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-072** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with silt (SP-SM)	4.7	8.7				
						Brown fine sand with silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-073** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with silt (SP-SM)						
							Brown fine sand with silt (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-074** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Symbol: Dotted pattern]					Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with silt (Sp-SM)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-075** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)						
						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-076** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)						
						Gray fine sand with silt (SP-SM)	4.0	27.0				
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-077** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Symbol: Dark gray fine sand with trace silt (SP)]					Dark gray fine sand with trace silt (SP)	6.6	19.8				
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-078** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-079** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-080** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/21/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/21/18
 DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-081** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Gray fine sand with trace silt (SP)							
						Light brown fine sand (SP)							
							Brown fine sand with trace silt (SP)						
							Gray clayey sand (SC)						
5						Boring terminated at 5 feet below grade	16.6	18.6					



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BORING DESIGNATION: **HA-082** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Brown fine sand with silt (SP-SM)							
						Gray fine sand with silt (SP-SM)							
							Light brown fine sand (SP)						
							Brown fine sand with silt (SP)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-083** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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BORING DESIGNATION: **HA-084** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-085** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-086** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and shell (SP-SM)						
						Gray fine sand (SP)						
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-087**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE OF READING: 8/22/2018
EST. W.S.W.T. (ft):
DATE STARTED: 8/22/18
DATE FINISHED: 8/22/18
DRILLED BY: LR / TM
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and shell (SP-SM)						
						Gray fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-088** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
							Gray fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-089** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark gray fine sand with silt and rock fragments (SP-SM)						
						Light gray fine sand (SP)						
5						Boring terminated at 5 feet below grade	2.8	16.7				



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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-090** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-091** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): 4.7 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol]	Grayish brown fine sand with silt and shell (SP-SM)						
					[Symbol]	Dark gray fine sand with silt (SP-SM)						
					[Symbol]	Dark brown fine sand with silt (SP-SM)						
					[Symbol]	Light brown fine sand (SP)						
5				▼	[Symbol]	Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-092** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): 4.5 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Grayish brown fine sand with silt and shell (SP-SM)							
						Dark gray fine sand with silt (SP-SM)							
							Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade							

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-093** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): 5.0 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5				▼		Boring terminated at 5 feet below grade						



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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-094** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
WATER TABLE (ft): 4.9 DATE FINISHED: 8/22/18
DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0	[Vertical line with irregular texture]				[Vertical line with horizontal dashes]	Dark gray fine sand with silt (SP-SM)						
					[Vertical line with dots]	Gray fine sand with trace silt (SP)						
						[Vertical line with dots]	Dark brown fine sand with trace silt (SP)		4.7	23.6		
5					[Vertical line with dots]	Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-095** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/22/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/22/18
 DATE OF READING: 8/22/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt and shell (SP-SM)						
						Gray clayey sand (SC)						
						Gray fine sand with silt (SP-SM)	26.9	21.3				
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-096** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): 4.9 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5				▼		Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-097** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SC)						
						Gray clayey sand (SC)						
							Light gray fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-098** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Light gray fine sand with clay (SC)	10.9	11.8				
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-099** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Roadway

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Gray fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-100** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Gray fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-101** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Light gray sandy clay (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-102**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): >5
DATE STARTED: 8/23/18
DATE FINISHED: 8/23/18
DATE OF READING: 8/23/2018
DRILLED BY: LR / TM
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
							Light gray sandy clay (SC)					
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-103** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and shell (SP-SM)						
						Gray fine sand with silt (SP-SM)						
							Light brown fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-104** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and shell (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						Light brown fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						

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BORING DESIGNATION: **HA-105** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						Grayish brown fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-106** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMP LE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYM BOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark gray fine sand with silt and roots (SP-SM)							
						Gray fine sand with silt (SP-SM)							
							Grayish brown fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade							



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 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-107** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						Brayish brown fine sand with clay (SP-SC)						
						Light brown fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-108** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light gray fine sand with clay (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-109** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark gray fine sand with silt (SP-SM)	8.9	10.7					
						Gray fine sand with clay (SP-SC)							
									Light brown fine sand with silt (SP-SM)				
									Gray fine sand with clay (SP-SC)				
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-110** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/23/18
 WATER TABLE (ft): >5 DATE FINISHED: 8/23/18
 DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
			Gray fine sand with clay (SP-SC)									
			Light brown fine sand with silt (SP-SM)									
			Gray fine sand with clay (SP-SC)									
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-111** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-112** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 4.3 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Dark brown fine sand with silt (SP-SM)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-113**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-114**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.0
DATE STARTED: 8/24/18
DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018
DRILLED BY: LR / TM
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-115** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 3.5 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5				▼		Boring terminated at 5 feet below grade						



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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-116** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/24/18
 DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0												
5							Boring terminated at 5 feet below grade					



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PROJECT: Proposed Moccasin Wallow Road Improvements
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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-117** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMP LE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYM BOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Gray fine sand with clay (SP-SC)							
						Gray clayey sand (SC)							
					▼		Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade							



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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-118** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Roadway

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
				▼		Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-119** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and shell (SP-SM)						
				▼		Gray fine sand with silt, shell and rock fragments (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-120** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
 WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18
 DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol]	Gray fine sand with clay (SP-SC)						
				▼	[Symbol]	White clayey sand (SC)						
5					[Symbol]	Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-121** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Dotted pattern]	Gray fine sand with clay (SP-SC)						
				▼	[Symbol: Diagonal lines]	White clayey sand (SC)						
5						Boring terminated at 5 feet below grade	25.3	15.9				



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PROJECT: Proposed Moccasin Wallow Road Improvements
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 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-122** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
 WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18
 DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					▨	Gray fine sand with clay (SP-SC)						
				▼	▨	White clayey sand (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-123** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light brown fine sand with clay (SP-SC)						
						White clayey sand (SC)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-124** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 2.5 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light brown fine sand with clay (SP-SC)						
				▼		White clayey sand (SC)	27.2	15.5				
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-125**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.5
DATE STARTED: 8/24/18
DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018
DRILLED BY: LR / TM
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0				▼	[Diagonal Hatching]	Yellow clayey sand (SC)						
					[Dotted]	Yellow fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-126** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
 WATER TABLE (ft): 4.2 DATE FINISHED: 8/24/18
 DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					▨	Yellow clayey sand (SC)						
					▨	Yellow fine sand with clay (SP-SC)						
5				▼	▨	Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-127** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 3.8 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with clay (SP-SC)						
						Yellowish brown fine sand with clay (SP-SC)						
							Yellow fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-128** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
 WATER TABLE (ft): 3.9 DATE FINISHED: 8/24/18
 DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Diagonal lines]	Brown fine sand with clay (SP-SC)						
					[Symbol: Diagonal lines]	Yellow fine sand with clay (SP-SC)						
				▼	[Symbol: Dotted]	Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA GPJ UNIENGSC.GDT 9/27/18



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REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-129** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/24/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/24/18
DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-130** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 3.9 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT NO.:	1130.1800187.0000
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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-131** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-132** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
						Brown fines sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	1130.1800187.0000
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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-133** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
				▼		Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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PROJECT NO.:	1130.1800187.0000
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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-134** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Fine Sand with Silt]	Dark gray fine sand with silt (SP-SM)						
				▼	[Symbol: Fine Sand]	Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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PROJECT NO.:	1130.1800187.0000
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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-135** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT NO.:	1130.1800187.0000
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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-136** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-137** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-138** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
				▼								
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-139**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.8
DATE STARTED: 8/27/18
DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018
DRILLED BY: LR / TM
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-140** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 4.5 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA GPJ UNIENGSC.GDT 9/27/18



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-141** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-142** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown clayey sand (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-143** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-144** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
WATER TABLE (ft): 1.5 DATE FINISHED: 8/27/18
DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-145** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/27/18
 WATER TABLE (ft): 2.0 DATE FINISHED: 8/27/18
 DATE OF READING: 8/27/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0				▼		Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-146** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
 WATER TABLE (ft): 2.0 DATE FINISHED: 8/28/18
 DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-147** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 2.0 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLER	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▼								
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-148**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 2.5 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Brown fine sand with silt (SP-SM)							
						▼	Brown fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-149**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 2.3 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-150** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 3.0 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.:	1130.1800187.0000
REPORT NO.:	13620
PAGE:	151

PROJECT: Proposed Moccasin Wallow Road Improvements
 Moccasin Wallow Road From US 41 to West of I 75
 Parrish, Manatee County, FL

BORING DESIGNATION: **HA-151** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
 LOCATION: See Boring Location Plan
 REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
 WATER TABLE (ft): 3.2 DATE FINISHED: 8/28/18
 DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
 EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
				▼		Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-152** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 3.6 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
				▼		Gray fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-153** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 3.8 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Gray fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-154** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-155** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.3 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
						▼	Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-156** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					[Symbol: Gray fine sand with silt]	Gray fine sand with silt (SP-SM)						
					[Symbol: Dark brown fine sand with silt]	Dark brown fine sand with silt (SP-SM)						
				▼	[Symbol: Light brown fine sand]	Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						

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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-157**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-158**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Gray fine sand with silt (SP-SM)							
						Dark brown fine sand with silt (SP-SM)							
							Light gray fine sand (SP)						
							Brown fine sand (SP)						
5						Boring terminated at 5 feet below grade							

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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-159**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand (SP)						
						Gray fine sand with trace silt (SP)						
							Brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-160**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/28/18
WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18
DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-161** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Gray fine sand with trace silt (SP)							
							Brown fine sand with trace silt (SP)						
					▼		Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-162** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
				▼		Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-163** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-164** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-165** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						

BORING LOG GINT 2018 HA.GPJ UNIENGSC.GDT 9/27/18



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-166** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.3 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-167** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan
REMARKS: Roadway

G.S. ELEVATION (ft): DATE STARTED: 8/29/18
WATER TABLE (ft): 4.2 DATE FINISHED: 8/29/18
DATE OF READING: 8/29/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



SOIL CLASSIFICATION CHART

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

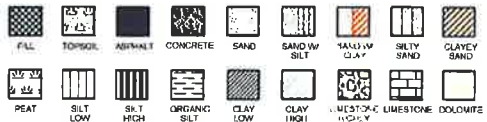
FINE-GRAINED SOILS (major portions passing on No. 200 sieve) includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests

Descriptive Terms	Unconfined Compressive	
	Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

- Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.
- Surface elevations are based on topographic maps and estimated locations.
- Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

SOIL SYMBOLS



OTHER SYMBOLS

- Measured Water Table Level
- Estimated Seasonal High Water Table

Major Divisions	Group Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material		
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for GW Atterberg limits below "A" line or P I less than 4 Atterberg limits above "A" line or P I greater than 7	mm < 0.074	Silt or clay Sand	
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines				
		GM	Silty gravels, gravel-sand-silt mixtures				
		GC	Clayey gravels, gravel-sand-silt mixtures				
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for SW Atterberg limits below "A" line or P I less than 4 Atterberg limits above "A" line or P I greater than 7	mm 0.074 to 0.42 0.42 to 2.00 2.00 to 4.75	Fine Medium Coarse
			SP	Poorly-graded sands, gravelly sands, little or no fines			
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures			
			SC	Clayey sands, sand-clay mixtures			
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silt and Clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity		mm 4.76 to 19.1 19.1 to 76.2 76.2 to 304.8 304.8 to 914.4	Gravel Fine Coarse Cobble Boulders	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays				
		OL	Organic silts and organic silty clays of low plasticity				
	Silt and Clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts				
		CH	Inorganic clays of high plasticity, fat clays				
		OH	Organic clays of medium to high plasticity, organic silts				
Highly Organic Soils	Pt	Peat and other highly organic soils					

* When the percent passing a No. 200 sieve is between 5% and 12%, a dual symbol is used to denote the soil. For example, SP-SC, poorly-graded sand with clay content between 5% and 12%.

APPENDIX B

Important Information about This

Geotechnical-Engineering Report

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

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

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

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer about Change

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

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

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

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

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

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

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

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study - e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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



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CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until construction begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other explorations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

Universal Engineering Sciences, Inc.
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

- 1.1 *Universal Engineering Sciences, Inc.*, ("UES"), has the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of *Universal Engineering Sciences, Inc.*'s agents, employees, professional staff, and subcontractors.
- 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.
- 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.
- 1.4 Universal will not be responsible for scheduling our services and will not be responsible for tests or inspections that are not performed due to a failure to schedule our services on the project or any resulting damages.
- 1.5 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

- 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.
- 2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.
- 2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.
- 2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

- 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.
- 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

- 4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.
- 4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.
- 4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

- 5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.
- 5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.
- 5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

- 6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.
- 6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.
- 6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.
- 6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the express written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

- 7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site.
- 7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.
- 7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.
- 7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.
- 7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

- 8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

- 9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

- 10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.
- 10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:
- the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and
 - The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

- 11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.
- 11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

- 12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

- 13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.
- 13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

- 14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.
- 14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.



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- Tifton
- West Palm Beach

November 5, 2019

Cardno
380 Park Place Boulevard, Suite 300
Clearwater, FL 333759

Attn: Mr. Hamid R. Faraji, PE

Reference: **Estimated SHGWT**
Proposed A-1 & B-3 Pond Excavations
Proposed Moccasin Wallow Road Improvements
From US41 to West of I-75 (Gillette Drive)
Parrish, Manatee County, FL
UES Project No. 1130.1800187.0000
UES Report No. 14443

Dear Mr. Faraji:

Universal Engineering Sciences, Inc. (UES) has completed the subsurface exploration for the above referenced project. The scope of our exploration was planned in conjunction with and authorized by you.

PROJECT INFORMATION

The purpose of our exploration was to provide estimated seasonal high groundwater levels and fill suitability for the proposed A-1 and B-3 ponds for the Moccasin Wallow Road improvements. An aerial plan showing the proposed stormwater management ponds was provided to us.

Our recommendations are based upon the above considerations. If any of this information is incorrect or if you anticipate any changes, inform Universal Engineering Sciences so that we may review our recommendations.

Recommendations concerning other soil related considerations were beyond the scope of our exploration. This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. Our work did not address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.

FIELD EXPLORATION

The subsurface conditions were explored by drilling and sampling two (2) Standard Penetration Test (SPT) borings within the proposed A-1 pond and four (4) SPT borings within the proposed B-3 ponds. These borings were advanced to a depth of 20 feet below existing grades.

We performed the Standard Penetration Test using our truck mounted drill rig utilizing mud rotary procedures according to the procedures of ASTM D-1586, with continuous sampling performed above a depth of 10 feet, to detect slight variations in the soil profile at shallow depths, and then at five-foot intervals thereafter. The basic procedure for the Standard Penetration Test is as follows: A standard split-barrel sampler is driven into the soil by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler 1-foot, after seating 6 inches, is designated the penetration resistance, or N-value; this value is an index to soil strength and consistency.

The test boring locations are shown on the attached Boring Location Plans in the Appendix as B-1 through B-6.

SOIL SURVEY-PUBLISHED INFORMATION

The "Soil Survey of Manatee County, Florida", published by the published by the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS), was reviewed for general near-surface soil information prior to development within the general project vicinity. The USDA, SCS primary soil mapping units within the proposed project area, and some characteristics and properties are summarized below:

Pond A-1 Area

Delray (Soil Group No. 16): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 55 inches, and sandy clay loam from 55 inches to 80 inches below grade. Based on the soil survey, the water table is from the ground surface to 18 inches below grade.

Eau Gallie (Soil Group No. 20): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 42 inches, sandy clay loam from 42 to 50 inches, and fine sand from 50 to 65 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

Pond B-3 Area

Bradenton (Soil Group No. 5): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 13 inches, fine sandy loam from 13 to 47 inches, and **unweathered bedrock** from 47 to 51 inches below grade. Based on the soil survey, the water table is from 0 to 12 inches below grade.

Eau Gallie (Soil Group No. 20): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 42 inches, sandy clay loam from 42 to 50 inches, and fine sand from 50 to 65 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.



Felda (Soil Group No. 22): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 35 inches, fine sandy loam from 35 to 43 inches, and extremely paragravelly fine sand from 43 to 80 inches below grade. Based on the soil survey, the water table is from the ground surface to 12 inches below grade.

Floridana (Soil Group No. 25): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 32 inches, sandy loam from 32 to 65 inches, and fine sand from 65 to 80 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

Gator muck (Soil Group No. 27): Under natural conditions, this soil group consists of **muck** from the surface to a depth of about 18 inches, sandy clay loam from 18 inches to 36 inches; fine sandy loam from 36 to 55 inches, and fine sand from 55 to 80 inches below grade. Based on the soil survey, the water table is from 0 to 6 inches below grade.

Wabasso (Soil Group No. 48): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 37 inches, sandy clay loam from 37 to 65 inches, and fine sand from 65 to 80 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

SUBSURFACE CONDITIONS

The boring location and detailed subsurface conditions are illustrated in the Appendix: Boring Location Plan and Boring Log. The classifications and descriptions shown on the log are generally based upon visual characterizations of the recovered soil samples. Also, see the Appendix: Soils Classification Chart, for further explanation of the symbols and placement of data on the Boring Log. The following table summarizes the soil conditions encountered.



TABLE 1 General Soil Profile		
Typical depth (ft)		Soil Descriptions
From	To	
Pond A-1 (B-1 & B-2)		
0	2	Loose fine sand with roots [SP]
2	6	Loose fine sand with trace silt [SP]
6	12	Medium dense fine sand [SP]
12	20*	Stiff clay [CL, CH]
Pond B-3 (B-3 – B-6)		
1	2	Fine sand [SP]
2	8	Loose fine sand, and fine sand with silt [SP, SP-SM]
8	12	Medium dense fine sand with clay, and clayey sand [SP-SC, SC]
12	20*	Loose to medium dense fine sand, and fine sand with clay [SP, SP-SC]
* Termination Depth of Deepest Boring [] Bracketed Text Indicates: Unified Soil Classification		

Variations in the depth, thickness and consistency of the aforementioned soil strata occurred at the individual test boring locations.

GROUNDWATER CONSIDERATIONS

We encountered groundwater at depths ranging from 2 to 4 feet below existing grade at the time of our investigation. The variations in the measured water levels are attributed to the variation in the ground surface elevation at this site as well as the soil type encountered.

Based upon our visual inspection of the recovered soil samples and existing site conditions, our best estimate is that the seasonal high groundwater level could be at approximately 2.5 feet below existing grade at A-1 pond boring locations, and at approximately 2 feet below grade at B-3 pond boring locations. The SHGWL are noted on the attached boring logs. Water could be temporarily ponded in the ditches and other low lying areas of the overall site especially during periods of heavy rainfall.



FILL SUITABILITY

In general, the typical criteria for determining the acceptability of a material for use as structural fill is based on the percent "fines" in the soil matrix (e.g. material passing the No. 200 sieve). The following grouping system explains more fully the suitability of various soil types with respect to the amount of fines.

Group "A"

These soils consist of clean sands which have less than 5% soil fines (Unified Soil Classification: SP, SW). These soils are the most desirable for use as engineering fill because they drain freely when excavated from beneath the groundwater table and are not as susceptible to moisture related instability.

Group "B"

These soils consist of sand with silt which contains between 5% and 12% soil fines (Unified Soil Classification: SP-SM, SP-SC). These soils are good sources of engineered fill, but require some extra care during placement and compaction. The moisture content of these soils should not be higher than 2% above optimum during placement and compaction in order to reduce the potential for moisture related instability. These soils drain fairly well, but will require some stockpiling and aeration time when excavated from below the groundwater table.

Group "C"

These soils consist of silty and clayey sands which contain between 12% and 20% soil fines (Unified Soil Classification: SM, SC). These soils are more difficult to use because they are moisture sensitive. The moisture content of these soils should be maintained at or below optimum in order to help mitigate the potential for moisture related instability during placement and compaction. Further, these soils will require significant stockpiling and aeration periods in order to reduce the moisture content if the soils are excavated from below the groundwater table. For similar reasons, we caution the use of these soils during the wet season in areas where groundwater might be encountered.

Group "D"

These soils consist of silty and clayey sands which have greater than 20% soil fines (Unified Soil Classification: SM, SC, CL, CH, ML, MH). These soils are not recommended for use as engineered fill because they will be too difficult to dry and work.

Onsite Soils

Based on the soil classification, the best suitable soils recommended for use as fill at each boring location are presented in the following table:



Boring No.	Suitable Depth (ft)	Unified Soil Classification	Soil Group
B-1	0 to 12	SP	A
B-2	0 to 12	SP	A
B-3	0 to 20	SP, SP-SC	A, B
B-4	0 to 8	SP, SP-SM	A, B
B-5	0 to 20	SP, SP-SM, SP-SC	A, B
B-6	0 to 20	SP, SP-SC	A, B

EXCAVATION CONSIDERATIONS

We did not encounter shallow hard rock at the test boring locations. However, a review of the Manatee County SCS did indicate **unweathered bedrock** from 47 to 51 inches below grade within pond B-3 area. If deep excavations encounter this material it may require specialized equipment to excavate. Soils excavated below the water table will require stockpile and drying. Areas not drilled for this report may encounter different soil types.

We suggest the gradation of the excavated material be periodically checked to determine their suitability as fill. General mixing of the materials can be expected to result in material gradations different from the gradations obtained from our test samples.

It should be noted that other excavation considerations, such as temporary and long term slope stability, erosion control, etc. were beyond the scope of this study.

LIMITATIONS

This report has been prepared in order to aid the architect/engineer in the design of the proposed stormwater management ponds. The scope of services provided was limited to the specific project and locations described herein. The description of the project's design parameters represents our understanding of significant aspects relevant to soil.

The recommendations submitted in this report are based upon the data obtained from the limited number of soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced. This report does not reflect any variations which may occur between the boring locations or unexplored areas of the site. This report should not be used for estimating such items as cut and fill quantities.

Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services **specifically** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.



All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report please review the document attached within the Appendix "Important Information About Your Geotechnical Engineering Report" prepared by ASFE, an association of firms practicing in the geosciences.

We appreciate the opportunity to have provided these services to you. If you have any questions, or if we may be of further service, please do not hesitate to call.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES

Certificate of Authorization Number 549



Yudelsy Alvarez
Project Engineer



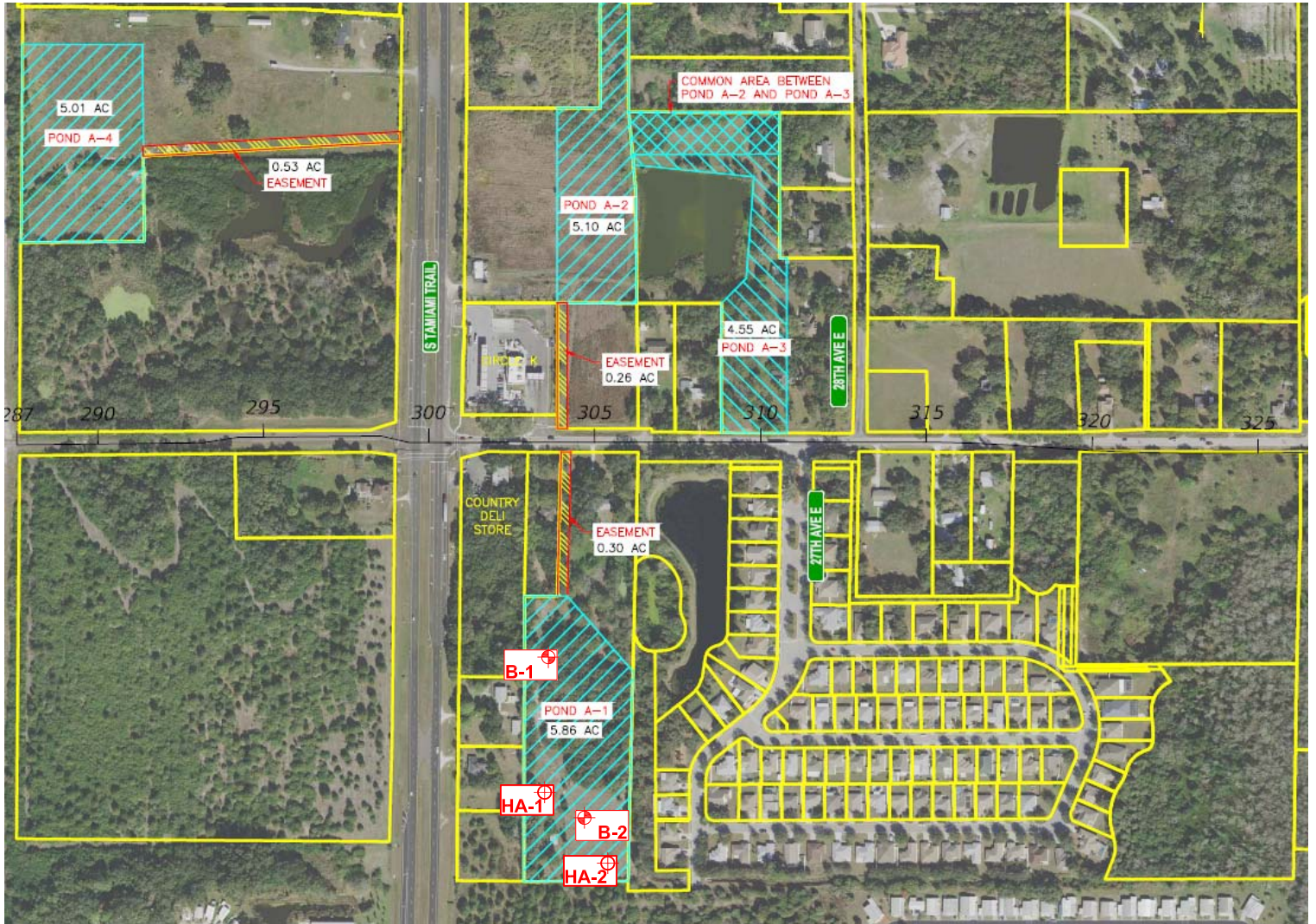
Robert Gomez, P.E. #58348
Branch Manager 11/5/19



Enclosure:

- Site Location Plan
- Test Location Plan
- SCS Soil Survey Map
- Soil Profiles
- Soil Classification Chart
- Important Information about Your Geotechnical Engineering Report
- Constraints and Restrictions
- General Conditions





LEGEND	
APPROXIMATE LOCATION	
	SPT BORING



A-2	BORING LOCATION PLAN	PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS US 41 TO WEST OF I-75 (GILLETTE DRIVE) PARISH, FL		DRAWN FOR	CARDNO
	THIS MAP SHOWS APPROXIMATE LOCATION	PROJECT NO: 1130.1800187.0000	REPORT NO: 14443	DRILLED BY	UES
				DRAWN BY	R.L.D
				DRAWING DATE	10/31/2019
				SCALE	NOT TO SCALE



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SARASOTA, FL.
941-358-7410



LEGEND	
APPROXIMATE LOCATION	
	SPT BORING



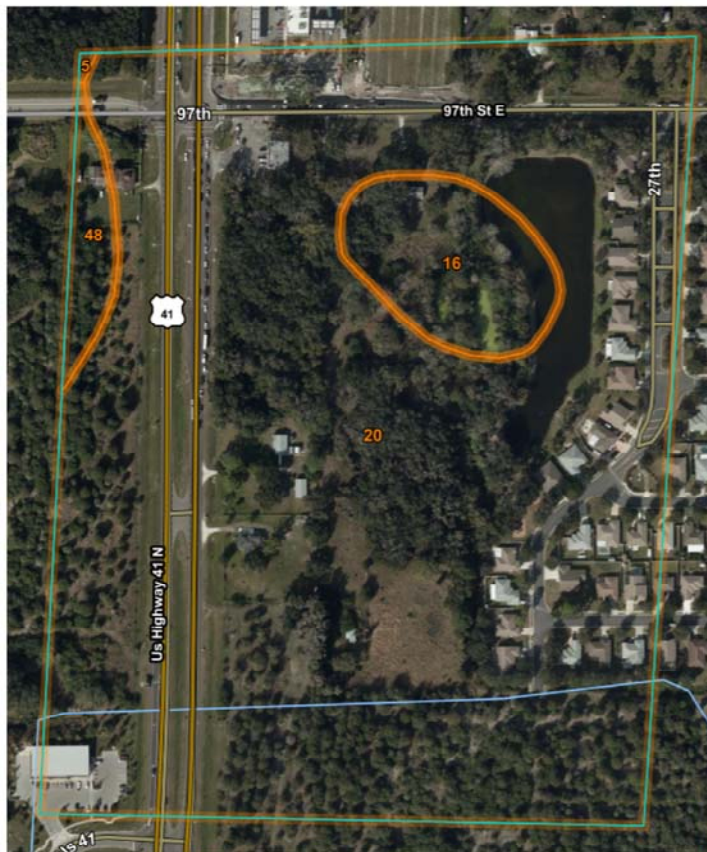
A-2.1	BORING LOCATION PLAN	PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS US 41 TO WEST OF I-75 (GILLETTE DRIVE) PARISH, FL		DRAWN FOR	CARDNO
	THIS MAP SHOWS APPROXIMATE LOCATION	PROJECT NO: 1130.1800187.0000	REPORT NO: 14443	DRILLED BY	UES
				DRAWN BY	R.L.D
				DRAWING DATE	10/31/2019
				SCALE	NOT TO SCALE



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B-3 POND



A-1 POND



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PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS
MOCCASIN WALLOW ROAD FROM US 41 TO WEST OF I 75
PARRISH, MANATEE COUNTY, FLORIDA

SCS SOIL SURVEY MAP

DRAWN BY: RLD	DATE: NOVEMBER 2019	CHECKED BY: R.G.	DATE: NOVEMBER 2019
SCALE: NOT TO SCALE	PROJECT NO: 1130.1800187.0000	REPORT NO: 14429	APPENDIX:



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
PAGE:	1

PROJECT: Proposed Moccasin Wallow Road Improvements
Parrish, Manatee County, FL

BORING DESIGNATION: **B-01** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT:

G.S. ELEVATION (ft):

DATE STARTED:

LOCATION:

WATER TABLE (ft):

DATE FINISHED:

REMARKS:

DATE OF READING:

DRILLED BY:

EST. W.S.W.T. (ft):

TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose light gray fine sand with roots (SP)						
						Loose dark yellowish brown fine sand with silt (SP-SM)						
						Loose yellowish brown fine sand with trace silt (SP)						
						Loose tanning brown fine sand with trace silt (SP)						
5						Medium dense brown fine sand with trace silt (SP)						
						Medium dense white fine sand (SP)						
						Medium dense brown fine sand (SP)						
10						Stiff light grayish brown clay (CL)						
						Stiff olive gray clay (CH)						
15												
20						Boring terminated at 20 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
PAGE:	2

PROJECT: Proposed Moccasin Wallow Road Improvements
Parrish, Manatee County, FL

BORING DESIGNATION: **B-02** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT:

G.S. ELEVATION (ft):

DATE STARTED:

LOCATION:

WATER TABLE (ft):

DATE FINISHED:

REMARKS:

DATE OF READING:

DRILLED BY:

EST. W.S.W.T. (ft):

TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose light gray fine sand with trace roots (SP)						
						Loose dark reddish brown fine sand with silt (SP-SM)						
						Loose tanning brown fine sand with trace silt (SP)						
5						Medium dense light grayish brown fine sand (SP)						
						Medium dense white fine sand (SP)						
10						Stiff light grayish brown clay (CL)						
15												
20						Boring terminated at 20 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
PAGE:	3

PROJECT: Proposed Moccasin Wallow Road Improvements
Parrish, Manatee County, FL

BORING DESIGNATION: **B-03** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT:
LOCATION:
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft):
DATE STARTED:
DATE FINISHED:
DATE OF READING:
DRILLED BY:
EST. W.S.W.T. (ft):
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand (SP)						
						Yellowish brown fine sand with trace silt (SP) Light gray fine sand (SP)						
						Loose brown fine sand with trace silt (SP)						
5						Loose light brown fine sand with trace clay (SP)						
						Medium dense light brown fine sand with clay (SP-SC)						
10						Loose to medium dense light grayish-brown fine sand with clay (SP-SC)						
15												
20						Boring terminated at 20 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
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PROJECT: Proposed Moccasin Wallow Road Improvements
Parrish, Manatee County, FL

BORING DESIGNATION: **B-04** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT:
LOCATION:
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft):
DATE OF READING:
EST. W.S.W.T. (ft):

DATE STARTED:
DATE FINISHED:
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand (SP)						
						Yellowish brown fine sand with trace silt (SP) Light gray fine sand (SP)						
						Loose brown fine sand with silt (SP-SM)						
5						Loose light brown fine sand with trace clay (SP)						
						Medium dense brown clayey sand (SC)						
10						Medium dense light grayish-brown clayey sand (SC)						
						Medium dense light grayish-brown fine sand with clay (SP-SC)						
15												
20						Boring terminated at 20 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
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PROJECT: Proposed Moccasin Wallow Road Improvements
Parrish, Manatee County, FL

BORING DESIGNATION: **B-05** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT:	G.S. ELEVATION (ft):	DATE STARTED:
LOCATION:	WATER TABLE (ft):	DATE FINISHED:
REMARKS:	DATE OF READING:	DRILLED BY:
	EST. W.S.W.T. (ft):	TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand (SP)						
						Yellowish brown fine sand with trace silt (SP)						
						Light gray fine sand (SP)						
5						Medium dense dark brown fine sand with silt (SP-SM)						
						Loose brown fine sand with trace silt (SP)						
						Medium dense light grayish-brown fine sand with clay (SP-SC)						
10												
						Medium dense light grayish-brown fine sand with trace clay (SP)						
15												
20						Boring terminated at 20 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
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PROJECT: Proposed Moccasin Wallow Road Improvements
Parrish, Manatee County, FL

BORING DESIGNATION: **B-06** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT:	G.S. ELEVATION (ft):	DATE STARTED:
LOCATION:	WATER TABLE (ft):	DATE FINISHED:
REMARKS:	DATE OF READING:	DRILLED BY:
	EST. W.S.W.T. (ft):	TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand (SP)						
						Yellowish brown fine sand with trace silt (SP) Light gray fine sand (SP)						
						Loose gray fine sand with trace clay (SP)						
5						Loose brown fine sand with trace silt (SP)						
						Medium dense light grayish-brown fine sand with clay (SP-SC)						
10												
						Loose light grayish-brown fine sand with trace clay (SP)						
15												
20						Boring terminated at 20 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
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PROJECT: Proposed Moccasin Wallow Road Improvements
 CLIENT: Parrish, Manatee County, FL

BORING DESIGNATION: **HA-1** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: G.S. ELEVATION (ft): DATE STARTED:
 LOCATION: WATER TABLE (ft): DATE FINISHED:
 REMARKS: DATE OF READING: DRILLED BY:
 EST. W.S.W.T. (ft): TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with trace roots (SP)						
					█	Dark reddish brown fine sand with silt (SP-SM)						
					█	Light brown fine sand (SP)						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	
REPORT NO.:	
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PROJECT: Proposed Moccasin Wallow Road Improvements
 CLIENT: Parrish, Manatee County, FL

BORING DESIGNATION: **HA-2** SHEET: **1 of 1**
 SECTION: TOWNSHIP: RANGE:

CLIENT: G.S. ELEVATION (ft): DATE STARTED:
 LOCATION: WATER TABLE (ft): DATE FINISHED:
 REMARKS: DATE OF READING: DRILLED BY:
 EST. W.S.W.T. (ft): TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Light brown fine sand (SP)						
						Dark reddish gray fine sand with silt (SP-SM)						
						Yellowish brown fine sand (SP)						



SOIL CLASSIFICATION CHART

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

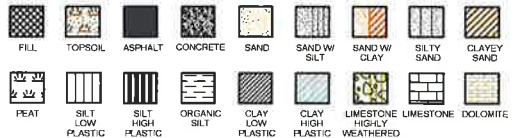
GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

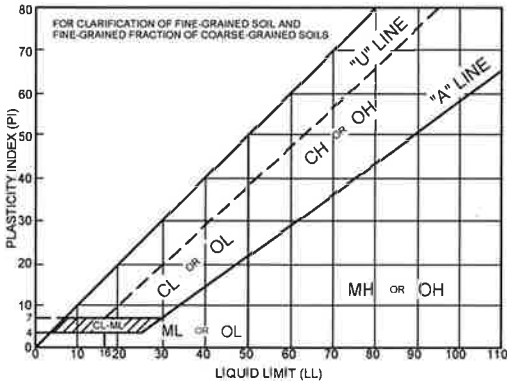
SOIL SYMBOLS



OTHER SYMBOLS

▼ Measured Water Table Level ▽ Estimated Seasonal High Water Table

Major Divisions	Group Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material		
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for GW	mm < 0.074	Sieve sizes < #200 #200 to #40 #40 to #10 #10 to #4	
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines				
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	GM	Silty gravels, gravel-sand-silt mixtures	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for SW	mm 0.074 to 0.42 0.42 to 2.00 2.00 to 4.76	Silt or clay Sand Fine Medium Coarse
			GC	Clayey gravels, gravel-sand-silt mixtures			
		SW	Well-graded sands, gravelly sands, little or no fines				
	Sands with fines (Appreciable amount of fines)	SP	Poorly-graded sands, gravelly sands, little or no fines	Atterberg limits below "A" line or P.I. less than 4 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	mm 4.76 to 19.1 19.1 to 76.2 76.2 to 304.8 304.8 to 914.4	Sieve #4 to 3/4 in. 3/4 in. to 3 in. 3 in. to 12 in. 12 in. to 36 in.	
		SM	Silty sands, sand-silt mixtures				
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	mm 4.76 to 19.1 19.1 to 76.2 76.2 to 304.8 304.8 to 914.4	Sieve #4 to 3/4 in. 3/4 in. to 3 in. 3 in. to 12 in. 12 in. to 36 in.	
		SC	Clayey sands, sand-clay mixtures				
	Silt and Clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve), coarse-grained soils are classified as follows: Less than 5 percent..... GW, GP, SW, SP More than 12 percent..... GM, GC, SM, SC 5 to 12 percent..... Borderline cases requiring dual symbols*	mm 4.76 to 19.1 19.1 to 76.2 76.2 to 304.8 304.8 to 914.4	Sieve #4 to 3/4 in. 3/4 in. to 3 in. 3 in. to 12 in. 12 in. to 36 in.	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays				
		OL	Organic silts and organic silty clays of low plasticity				
		MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts				
	Silt and Clays (Liquid limit greater than 50)	CH	Inorganic clays of high plasticity, fat clays	Plasticity Chart (see below)	mm 4.76 to 19.1 19.1 to 76.2 76.2 to 304.8 304.8 to 914.4	Sieve #4 to 3/4 in. 3/4 in. to 3 in. 3 in. to 12 in. 12 in. to 36 in.	
OH		Organic clays of medium to high plasticity, organic silts					
Highly Organic Soils	Pt	Peat and other highly organic soils					



Plasticity Chart

* When the percent passing a No. 200 sieve is between 5% and 12%, a dual symbol is used to denote the soil. For example: SP-SC, poorly-graded sand with clay content between 5% and 12%.

Important Information about This Geotechnical-Engineering Report

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

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

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

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer about Change

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

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

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

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

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

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

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

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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



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CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until construction begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other explorations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

Universal Engineering Sciences, Inc.
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

- 1.1 *Universal Engineering Sciences, Inc.*, ("UES"), has the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of *Universal Engineering Sciences, Inc.*'s agents, employees, professional staff, and subcontractors.
- 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.
- 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.
- 1.4 Universal will not be responsible for scheduling our services and will not be responsible for tests or inspections that are not performed due to a failure to schedule our services on the project or any resulting damages.
- 1.5 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

- 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.
- 2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.
- 2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.
- 2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

- 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.
- 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

- 4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.
- 4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.
- 4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

- 5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.
- 5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.
- 5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

- 6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.
- 6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.
- 6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.
- 6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the express written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

- 7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site.
- 7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.
- 7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.
- 7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.
- 7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

- 8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

- 9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

- 10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.
- 10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:
- the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and
 - The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

- 11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.
- 11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

- 12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

- 13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.
- 13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

- 14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.
- 14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

PAGE: 1

PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-001** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 15.50 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark gray fine sand with silt and trace shell (SP-SM)						
					▽		Brown fine sand with trace silt (SP)					
5			▼	Boring terminated at 5 feet below grade								



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

PAGE: 2

PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-002** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan

G.S. ELEVATION (ft): 16.00 DATE STARTED: 8/10/18
WATER TABLE (ft): 4.6 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
							Gray fine sand with trace silt and rock fragments (SP)					
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-003** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 17.50 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with trace silt (SP)						
						Brown fine sand (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-004** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 18.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-005** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 19.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-006** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 19.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark gray fine sand with silt (SP-SM)							
						Dark brown fine sand with silt (SP-SM)							
					▽								
					▼		Light brown fine sand (SP)						
							Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-007** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 20.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-008** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 20.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Gray fine sand with trace silt (SP)					
5							Boring terminated at 5 feet below grade					



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-009** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 22.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand (SP)						
						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-010** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 21.50 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)	5.3	10.7				
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-011** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 23.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-012** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 23.50 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-013** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 24.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						▽ ▽	Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-014** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 25.00 DATE STARTED: 8/10/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.0 DATE FINISHED: 8/10/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/10/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-015** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 25.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5							Boring terminated at 5 feet below grade					



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-016** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 25.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽		Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-017** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-018** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-019** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-020** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-021** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-022** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 28.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-023** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 28.50 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.3 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-024** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.50 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-025** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.50 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-026** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/13/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/13/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/13/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
					▽		Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-027** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-028** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade	2.0	20.5				



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BORING DESIGNATION: **HA-029** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.3 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-030** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 31.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-031** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 31.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						▽	Brown fine sand with trace silt (SP)					
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-032** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 31.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						▽	Brown fine sand with trace silt (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-033** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 32.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.3 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-034** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 32.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)	2.1	8.3				
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-035** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-036** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand (SP)					
5				▼		Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-037** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Light yellow brown fine sand with trace silt (SM)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-038** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-039** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.5 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-040** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/14/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/14/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/14/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
				▽								
				▼								
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-041** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-042** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
						▽	Brown fine sand with trace silt (SP)					
5				▼		Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-043** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-044** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-045** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.50 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-046** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-047** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.50 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-048** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.50 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-049** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-050** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.50 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-051** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)						
						Light brown fine sand with trace silt (SP)						
5				▽		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-052** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/16/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/16/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/16/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with silt (SP-SM)	3.1	13.8				
						Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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Parrish, Manatee County, FL

BORING DESIGNATION: **HA-053** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand (SP)						
5				▽		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-054** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-055** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-056** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-057** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (Sp-SM)						
							Tan fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-058** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
							Tan fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-059** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-060** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-061** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Brown fine sand with silt (SP-SM)							
							Yellowish brown fine sand with silt (SP-SM)						
						▽	Tan fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-062** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Yellowish brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-063** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Grayish brown fine sand with silt (SP-SM)						
5				▽		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-064** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Grayish brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-065** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Brown fine sand with silt and shell (SP-SM)							
							Brown fine sand with silt (SP-SM)						
						▽	Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-066** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with silt and shell (SP-SM)						
							Dark gray fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-067** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/20/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/20/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/20/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-068** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-069** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-070** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-071** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-072** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/21/18
WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with silt (SP-SM)	4.7	8.7				
						▽	Brown fine sand with silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-073** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellowish brown fine sand with trace silt (SP)						
						Brown fine sand with silt (SP-SM)						
							Brown fine sand with silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-074** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 38.00 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with silt (Sp-SM)						
						▽	Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-075** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)						
						Gray fine sand with silt (SP-SM)						
						▽	Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-076** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)						
						Gray fine sand with silt (SP-SM)	4.0	27.0				
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-077** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)	6.6	19.8				
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-078** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.00 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-079** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.50 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-080** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 37.50 DATE STARTED: 8/21/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/21/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/21/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with trace silt (SP)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-081** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.50 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with trace silt (SP)						
						Light brown fine sand (SP)						
						Brown fine sand with trace silt (SP)						
				▽		Gray clayey sand (SC)						
5						Boring terminated at 5 feet below grade	16.6	18.6				



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-082** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Brown fine sand with silt (SP-SM)							
						Gray fine sand with silt (SP-SM)							
							Light brown fine sand (SP)						
							Brown fine sand with silt (SP)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-083** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.50 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-084** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						▽	Dark gray fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-085** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
						▽	Dark gray fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-086** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and shell (SP-SM)						
							Gray fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-087** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 36.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and shell (SP-SM)						
						Gray fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-088** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.50 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
							Gray fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-089** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark gray fine sand with silt and rock fragments (SP-SM)						
						Light gray fine sand (SP)						
5						Boring terminated at 5 feet below grade	2.8	16.7				



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-090** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
				▽		Gray fine sand (SP)						
5												
						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-091** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.7 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Grayish brown fine sand with silt and shell (SP-SM)							
						Dark gray fine sand with silt (SP-SM)							
							Dark brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-092** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Grayish brown fine sand with silt and shell (SP-SM)							
						Dark gray fine sand with silt (SP-SM)							
							Dark brown fine sand with silt (SP-SM)						
						▽	Light brown fine sand (SP)						
5				▼	Boring terminated at 5 feet below grade								



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-093** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 5.0 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						▽	Dark brown fine sand with silt (SP-SM)					
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-094** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.9 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
				▽		Dark brown fine sand with trace silt (SP)		4.7	23.6			
5				▼		Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-095** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/22/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/22/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/22/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt and shell (SP-SM)	26.9	21.3				
						Gray clayey sand (SC)						
									Gray fine sand with silt (SP-SM)			
									Dark gray fine sand with silt (SP-SM)			
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-096** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 35.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.9 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Grayish brown fine sand with silt (SP-SM)						
						Dark gray fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-097** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SC)						
						Gray clayey sand (SC)						
						Light gray fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-098** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/23/18
WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)	10.9	11.8				
						Light gray fine sand with clay (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-099** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Gray fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-100** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.50 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Gray fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-101** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
				▽		Light gray sandy clay (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-102** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand with clay (SP-SC)						
						Light gray sandy clay (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-103** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and shell (SP-SM)						
						Gray fine sand with silt (SP-SM)						
							Light brown fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-104** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and shell (SP-SM)						
						Gray fine sand with silt (SP-SM)						
							Light brown fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-105** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.50 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
							Grayish brown fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-106** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 34.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt and roots (SP-SM)						
						Gray fine sand with silt (SP-SM)						
							Grayish brown fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-107** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.50 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark gray fine sand with silt (SP-SM)							
						Gray fine sand with silt (SP-SM)							
							Brayish brown fine sand with clay (SP-SC)						
						▽	Light brown fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-108** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.00 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Light gray fine sand with clay (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-109** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.50 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)	8.9	10.7				
						Gray fine sand with clay (SP-SC)						
									Light brown fine sand with silt (SP-SM)			
									Gray fine sand with clay (SP-SC)			
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-110** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.50 DATE STARTED: 8/23/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): >5 DATE FINISHED: 8/23/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/23/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark gray fine sand with silt (SP-SM)							
						Gray fine sand with clay (SP-SC)							
							Light brown fine sand with silt (SP-SM)						
							Gray fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-111** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 33.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-112** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 32.50 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.3 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0					▨	Gray fine sand with clay (SP-SC)						
				▽	▨	Dark brown fine sand with silt (SP-SM)						
5				▼	▨	Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-113** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan

G.S. ELEVATION (ft): 32.00 DATE STARTED: 8/24/18
WATER TABLE (ft): 4.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-114** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 32.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-115** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 31.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-116** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 32.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
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BORING DESIGNATION: **HA-117** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 31.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						Gray clayey sand (SC)						
						Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-118** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 31.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Gray fine sand with clay (SP-SC)							
						Gray clayey sand (SC)							
							Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-119** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt and shell (SP-SM)						
						Gray fine sand with silt, shell and rock fragments (SP-SM)						
						Light brown fine sand (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-120** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						White clayey sand (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-121** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						White clayey sand (SC)						
				▼								
							25.3	15.9				
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-122** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with clay (SP-SC)						
						White clayey sand (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-123** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 28.50 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light brown fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-124** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.50 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.5 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light brown fine sand with clay (SP-SC)						
						White clayey sand (SC)	27.2	15.5				
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-125** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellow clayey sand (SC)						
						Yellow fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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BORING DESIGNATION: **HA-126** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Yellow clayey sand (SC)						
						Yellow fine sand with clay (SP-SC)						
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-127** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.8 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with clay (SP-SC)						
						Yellowish brown fine sand with clay (SP-SC)						
							Yellow fine sand with clay (SP-SC)					
5						Boring terminated at 5 feet below grade						



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-128** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.9 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with clay (SP-SC)						
						Yellow fine sand with clay (SP-SC)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-129** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/24/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/24/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/24/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
				▽		Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-130** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.9 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
							Brown fine sand with silt (SP-SM)					
5							Boring terminated at 5 feet below grade					



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-131** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽		Brown fine sand with trace silt (SP)						
5				▼		Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-132** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 28.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Brown fines sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-133** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.50 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-134** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5							Boring terminated at 5 feet below grade					



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-135** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 28.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-136** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-137** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-138** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-139** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.50 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.8 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Brown fine sand with trace silt (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-140** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 30.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5							Boring terminated at 5 feet below grade					



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-141** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-142** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 29.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown clayey sand (SC)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-143** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 28.00 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-144** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.50 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 1.5 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
5												
						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-145** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/27/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/27/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/27/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▼								
						Brown fine sand with trace silt (SP)						
5												
						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-146** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
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BORING DESIGNATION: **HA-147** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.0 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▼								
						Brown fine sand with trace silt (SP)						
5												
						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-148** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.5 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Brown fine sand with silt (SP-SM)							
						▽ ▼	Brown fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade							



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Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-149** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 2.3 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Brown fine sand with trace silt (SP)						
							Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-150** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.0 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽		Brown fine sand with trace silt (SP)						
				▼		Dark brown fine sand with silt (SP-SM)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-151** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.2 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
					▽	Brown fine sand with trace silt (SP)						
						▼	Dark brown fine sand with silt (SP-SM)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-152** SHEET: **1 of 2**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.6 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 25 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Gray fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-152** SHEET: **2 of 2**
SECTION: TOWNSHIP: RANGE:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
				▽								



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-153** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3.8 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 2.5 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
				▽		Dark brown fine sand with silt (SP-SM)						
						▼	Gray fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-154** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
					▽		Light brown fine sand (SP)					
5				▼	Boring terminated at 5 feet below grade							



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-155** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno
LOCATION: See Boring Location Plan

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18
WATER TABLE (ft): 4.3 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM
EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
				▽		Dark brown fine sand with silt (SP-SM)						
						▼	Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-156** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
				▽		Dark brown fine sand with silt (SP-SM)						
						▼	Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-157** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand with silt (SP-SM)						
						Dark brown fine sand with silt (SP-SM)						
							Light brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-158** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Gray fine sand with silt (SP-SM)							
						Dark brown fine sand with silt (SP-SM)							
							Light gray fine sand (SP)						
						▽	Brown fine sand (SP)						
5				▼		Boring terminated at 5 feet below grade							



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-159** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Light gray fine sand (SP)						
						Gray fine sand with trace silt (SP)						
							Brown fine sand (SP)					
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-160** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/28/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.5 DATE FINISHED: 8/28/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/28/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
						Gray fine sand with trace silt (SP)						
						Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-161** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Gray fine sand with trace silt (SP)							
						Brown fine sand with trace silt (SP)							
						Light brown fine sand (SP)							
5					Boring terminated at 5 feet below grade								



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-162** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)	
									LL	PI			
0						Dark brown fine sand with silt (SP-SM)							
						Gray fine sand with trace silt (SP)							
						Brown fine sand with trace silt (SP)							
						Light brown fine sand (SP)							
5					Boring terminated at 5 feet below grade								



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PROJECT NO.: 1130.1800187.0000

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-163** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽								
				▼		Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-164** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.50 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.0 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽								
				▼		Light brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-165** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 27.00 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽								
				▼		Light brown fine sand with trace silt (SP)						
5												
Boring terminated at 5 feet below grade												



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PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-166** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.00 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.3 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽								
				▼		Brown fine sand with trace silt (SP)						
5						Boring terminated at 5 feet below grade						



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.1800187.0000

REPORT NO.: 13620

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PROJECT: Proposed Moccasin Wallow Road Improvements
Moccasin Wallow Road From US 41 to West of I 75
Parrish, Manatee County, FL

BORING DESIGNATION: **HA-167** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Cardno

G.S. ELEVATION (ft): 26.00 DATE STARTED: 8/29/18

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4.2 DATE FINISHED: 8/29/18

REMARKS: Elevation is estimated from the Topographic Map provided on 1/8/2019

DATE OF READING: 8/29/2018 DRILLED BY: LR / TM

EST. W.S.W.T. (ft): 3 TYPE OF SAMPLING: ASTM D1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		UCS (tsf)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine sand with silt (SP-SM)						
				▽								
				▼		Brown fine sand with trace silt (SP)						
5												
Boring terminated at 5 feet below grade												



**UNIVERSAL
ENGINEERING SCIENCES**

**GEOTECHNICAL EXPLORATION
PROPOSED MAST ARM STRUCTURES
MOCCASIN WALLOW ROAD
PALMETTO, MANATEE COUNTY; FL**

**UES PROJECT NO.: 1130.1800187.0000
UES REPORT NO.: 14602**

Prepared For:

Cardno
380 Park Place Boulevard, Suite 300
Clearwater, FL 333759

Prepared By:

Universal Engineering Sciences, Inc.
1748 Independence Boulevard, Ste. B-1
Sarasota, FL 34234
(941) 358-7410

January 16, 2020



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January 16, 2020

Cardno
380 Park Place Boulevard, Suite 300
Clearwater, FL 333759

Attn: Mr. Hamid R. Faraji, PE

Reference: **GEOTECHNICAL EXPLORATION**
Proposed Mast Arm Structures
Moccasin Wallow Road
Palmetto, Manatee County; FL
UES Project No.: 1130.1800187.0000
UES Report No.: 14602

Dear Mr. Faraji:

Universal Engineering Sciences, Inc. (UES) has completed the subsurface exploration for the above referenced project. The scope of our exploration was planned in conjunction with and authorized by you.

This report contains the results of our exploration, an engineering interpretation of these results with respect to the project characteristics described to us, and recommendations to aid in foundation design, and site preparation.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization Number 549

Yudelsy Alvarez
Project Engineer

Robert Gomez, P.E. #58348
Branch Manager

RG/YA:

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GENERAL CONDITIONS

1.0 INTRODUCTION

1.1 GENERAL

In this report, we present the results of the subsurface exploration of the proposed mast arm structures. A general location plan of the project appears in Appendix A: Site Location Plan. We have divided this report into the following sections:

- SCOPE OF SERVICES - Defines what we did
- FINDINGS - Describes what we encountered
- RECOMMENDATIONS - Describes what we encourage you to do
- LIMITATIONS - Describes the restrictions inherent in this report
- APPENDICES - Presents support materials referenced in this report.

2.0 SCOPE OF SERVICES

2.1 PROJECT DESCRIPTION

The project consists of the construction of mast arms structures within three (3) intersections along Moccasin Wallow Road in Palmetto, FL. A site plan showing the pole locations was provided to us.

Our recommendations are based upon the above considerations. If any of this information is incorrect or if you anticipate any changes, inform Universal Engineering Sciences so that we may review our recommendations.

2.2 PURPOSE

The purposes of this exploration were:

- To explore the general subsurface conditions at the site;
- To interpret and review the subsurface conditions with respect to the proposed construction; and
- To provide geotechnical engineering recommendations for foundation design, and site preparation.

Recommendations concerning other soil related considerations were beyond the scope of our exploration. This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. Our work did not address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.



2.3 FIELD EXPLORATION

The subsurface conditions were explored by drilling and sampling eleven (11) Standard Penetration Test (SPT) borings within the intersection areas to a depth of 40 feet below existing grades.

We performed the Standard Penetration Test using our truck mounted drill rig utilizing mud rotary procedures according to the procedures of ASTM D-1586, with continuous sampling performed above a depth of 10 feet, to detect slight variations in the soil profile at shallow depths, and then at five-foot intervals thereafter. The basic procedure for the Standard Penetration Test is as follows: A standard split-barrel sampler is driven into the soil by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler 1-foot, after seating 6 inches, is designated the penetration resistance, or N-value; this value is an index to soil strength and consistency.

The boring locations were located by our drill crew based on the site plan and existing site conditions. The test boring locations are shown on the attached Boring Location Plan in Appendix A as B-1 through B-11.

2.4 LABORATORY INVESTIGATION

The soil samples recovered from the soil test borings were returned to our laboratory and then an engineer visually examined and reviewed the field descriptions. We selected representative soil samples for laboratory testing consisting of ten (10) wash 200 determinations and moisture content tests.

We performed these tests to aid in classifying the soils and to help evaluate the general engineering characteristics of the site soils. See Appendix A: Boring Logs and Description of Testing Procedures for further data and explanations. Jar samples of the soils will be held in our laboratory for your inspection for sixty days unless we are notified otherwise.

3.0 FINDINGS

3.1 SURFACE CONDITIONS

A Universal Engineering Sciences representative performed a visual site observation of the subject property to gain a "hands-on" familiarity of the project area. The overall existing roadways are relatively level and generally elevated above surrounding grade and consist of ditches along the roadside for drainage.

3.2 SOIL SURVEY-PUBLISHED INFORMATION

The "Soil Survey of Manatee County, Florida", published by the published by the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS), was reviewed for general near-surface soil information prior to development within the general project vicinity. The USDA, SCS primary soil mapping groups within the proposed project area, and some characteristics and properties are summarized below. The location of these groups can be observed on the SCS Soil Survey Map provided in the Appendix A.



EauGallie (Soil Group No. 20): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 42 inches, sandy clay loam from 42 to 50 inches, and fine sand from 50 to 65 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

Felda (Soil Group No. 22): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 35 inches, fine sandy loam from 35 to 43 inches, and extremely paragravelly fine sand from 43 to 80 inches below grade. Based on the soil survey, the water table is from the ground surface to 12 inches below grade.

Floridana-Immokalee-Okeelanta (Soil Group No. 26): Under natural conditions, this soil group consists of fine sand and **muck** from the surface to a depth of about 20 inches, fine sand from 20 inches to 36 inches; sandy clay loam from 36 to 63 inches, and fine sand from 63 to 80 inches below grade. Based on the soil survey, the water table is at the ground surface.

Palmetto (soil Group No. 38): Under natural conditions, this soil group consists of sand from the surface to a depth of 45 inches, sandy clay loam from 45 to 64 inches, and loamy sand from 64 to 68 inches below grade. Based on the soil survey, the water table is at the ground surface.

Tavares (soil Group No. 45): This soil group consists of fine sand from the surface to a depth of about 80 inches below grade. Based on the soil survey, the water table is from 42 to 72 inches below grade, under natural conditions.

Wabasso (Soil Group No. 48): Under natural conditions, this soil group consists of fine sands from the surface to a depth of about 37 inches, sandy clay loam from 37 to 65 inches, and fine sand from 65 to 80 inches below grade. Based on the soil survey, the water table is from 6 to 18 inches below grade.

3.3 SUBSURFACE CONDITIONS

The boring locations and detailed subsurface conditions are illustrated in Appendix A: Boring Location Plan and Boring Logs. The classifications and descriptions shown on the logs are generally based upon visual characterizations of the recovered soil samples. Also, see Appendix A: Soils Classification Chart, for further explanation of the symbols and placement of data on the Boring Logs. The following table summarizes the soil conditions encountered.



TABLE 1 General Soil Profile		
Typical depth (ft)		Soil Descriptions
From	To	
B-1 – B-4: Moccasin Wallow Rd and 36th Ave Intersection		
0	2	Fine sand with silt [SP-SM]
2	6	Fine sand [SP]
6	8	Loose to medium dense fine sand with trace silt [SP]
8	12	Loose fine sand with trace silt [SP]
12	17	Medium dense to loose fine sand [SP]
17	32	Very dense clayey sand, and stiff to very hard clay [SC, CL/CH]
32	40*	Very hard clay [CL/CH]
B-5 – B-7: Moccasin Wallow Rd and Artisian Lakes Pkwy Intersection		
0	4	Very loose to loose fine sand, and fine sand with silt and roots [SP, SP-SM]
4	8	Medium dense fine sand, and clayey sand [SP, SC]
8	17	Very loose to loose fine sand, and clayey sand [SP, SC]
17	22	Very loose clayey sand, and medium stiff clay [SC, CL]
22	40*	Very hard clay [CL]
B-8 – B-11 Moccasin Wallow Rd and Gateway Blvd Intersection		
0	4	Fine sand with silt [SP-SM]
4	6	Fine sand, and fine sand with silt [SP, SP-SM]
6	12	Loose to medium dense fine sand with trace silt [SP]
12	17	Loose to medium dense silty clayey sand with shell, phosphates, and limestone fragments [SC-SM]
17	22	Loose silty clayey sand with shell, phosphates, and limestone fragments, and still clay [SC-SM, CL]
22	32	Loose clayey sand, and stiff to very hard clay [SC, CL]
32	40*	Very hard clay [CL]
* Termination Depth of Deepest Boring		
[] Bracketed Text Indicates: Unified Soil Classification		



Variations in the depth, thickness and consistency of the aforementioned soil strata occurred at the individual test boring locations. We encountered groundwater at depths ranging from 3.5 to 6 feet below existing grade at the time of our investigation. The variations in the measured water levels are attributed to the variation in the ground surface elevation at this site as well as the soil type encountered.

Shallow clayey soils were encountered in the soil borings. These soils may be moisture sensitive and difficult to compact if encountered during construction.

Very dense cemented sands and very hard cemented clays (rock-like material) were encountered in the borings below a depth of 22 feet with N-values of more than 50 blows per foot. This soil may vary across the site in depth and consistency, and may be difficult to excavate.

4.0 RECOMMENDATIONS

4.1 GENERAL

The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. If the assumed structural loadings, building locations, building sizes, or grading plans change or are different from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

Additionally, if subsurface conditions are encountered during construction which was not encountered in the borings, report those conditions immediately to us for observation and recommendations.

In this section of the report, we present our detailed recommendations for groundwater control, building foundations, and site preparation.

4.2 GROUNDWATER CONSIDERATIONS

The groundwater table will fluctuate seasonally depending upon local rainfall and tidal fluctuation. Temporary dewatering may be required for deeper excavations, such as large foundation elements, elevator pits and utility trenches. Surface drainage and dewatering measures may be required during site preparation procedures such as proof-compacting of the existing soils, and fill placement particularly if construction proceeds during the wet season. Further, we recommend that the groundwater table be maintained 18 to 24 inches below earthwork and compaction surfaces.

We recommend sufficient quantities of fill be placed in the building and pavement areas to mitigate the effect of groundwater on shallow excavations, such as foundations. Further, we recommend the bottom of the base course used in pavement construction be maintained at least 18 inches above the seasonal high water levels.

Temporary dewatering may be required during site preparation, especially if construction proceeds during the wet season or periods of heavy rainfall. Temporary dewatering may also be required for deeper excavations, such as utility trenches, the backfilling of the



drainfield area and other excavations. We recommend that the contract documents provide for determining the groundwater level just prior to construction and for any dewatering measures which might be required. We recommend that the groundwater table be maintained at least 24 inches below all earthwork and compaction surfaces.

4.3 SOIL DESIGN PARAMETERS

Based on the SPT test results and soils encountered with the borings along the evaluated roads, soil design parameters of angle of internal friction, earth pressure coefficient, unit weights, cohesion, shear modulus, and bearing pressure were estimated and are presented in Table 2 below.

Table 2											
Estimated Soil Design Parameter											
Typical Depth		Effective Unit Weight (pcf)	Saturated Unit Weight (pcf)	Dry Unit Weight (pcf)	Friction Angle (psf)	Cohesion (psf)	Recommended Earth Pressure Coefficients			Allowable Bearing Pressure (Ksf)	Shear Modulus (psf)
From	To						At Rest K _o	Active K _A	Passive K _P		
B-1 – B-4: Moccasin Wallow Rd and 36 th Ave Intersection											
0	6	42.6*	105	100	29	0	0.52	0.34	2.88	1.5	86,400
6	12	47.6	110	105	30	0	0.50	0.33	3.00	2.0	259,200
12	22	42.6	105	100	29	0	0.52	0.34	2.88	2.5	86,400
22	32	57.6	120	115	0	1,250	1.00	1.00	1.00	3.0	72,000
32	40	62.6	125	120	0	6,250	1.00	1.00	1.00	4.0	308,571
B-5 – B-7: Moccasin Wallow Rd and Artisian Lakes Pkwy Intersection											
0	4	42.6*	105	100	29	0	0.52	0.34	2.88	1.5	86,400
4	8	47.6	110	105	30	0	0.50	0.33	3.00	2.0	259,200
8	17	42.6	105	100	29	0	0.52	0.34	2.88	2.5	86,400
17	22	52.6	115	110	0	750	1.00	1.00	1.00	3.0	72,000
22	40	57.6	62.6	125	120	6,250	1.00	1.00	1.00	4.0	308,571
B-8 – B-11 Moccasin Wallow Rd and Gateway Blvd Intersection											
0	6	42.6*	105	100	29	0	0.52	0.34	2.88	1.5	86,400
6	8	47.6	110	105	30	0	0.50	0.33	3.00	2.0	259,200
8	17	42.6	105	100	29	0	0.52	0.34	2.88	2.5	86,400
17	32	57.6	120	115	0	1,250	1.00	1.00	1.00	3.0	72,000
32	40	62.6	125	120	0	6,250	1.00	1.00	1.00	4.0	308,571



4.4 DRILLED SHAFTS FOR MAST ARM STRUCTURES

The finished grade elevations of the mast arm footings are assumed to be at the existing ground surface. The shaft tips are recommended to be embedded a minimum depth below the ground surface following the site preparation recommendations. The estimated allowable resistance values were based on static analysis, as determined during the field exploration and laboratory testing. Geotechnical information to aid in mast arms foundation design, for the specific boring locations, is shown at the above table.

4.4.1 Drilled Shaft Installation

The previously recommended allowable pile resistance values are estimates based on anticipated installation techniques, the subsurface conditions at the site, and our experience in the area. Significant movement of a pile may be necessary to develop the full shear strength of the soil. The magnitude of this movement may not be compatible with the desired structural “fixity”, and allowable deflection may become the governing criterion for capacity rather than the ultimate shear strength of the soil. This is particularly true for piles subjected to uplift. Based on our experience, the previously recommended capacities should result in deflections tolerable to the proposed self supported cell tower.

Installation of the drilled shafts must also be monitored by a representative from UES. The auger teeth used to install the drilled shafts should have cutting teeth in good condition to prevent soil from being smeared on the shaft sidewalls. All production shafts should contain at least the neat-line volume of concrete calculated for the length of shaft installed.

Groundwater was encountered at the boring locations at depths ranging from 3.5 to 6 feet below existing ground surface, therefore depending on the design depth of the drilled shafts, and the rainfall variations, water may be encountered during the placement of the drilled shafts. Water in the bottom of the drilled shafts should be removed by pumping. Due to possible presence of groundwater, a temporary steel casing should be installed along the entire length of the shaft during drilling operations. Once the drilled shaft has been advanced to its designed depth the bottom of the shaft should be evaluated by a representative of UES to verify the proper diameter and that the bottom of the shaft is free of loose soil. The steel reinforcing cage should be installed upon the satisfactory evaluation of the drilled shaft excavation. The concrete should then be placed as soon as practicable to reduce the deterioration of the supporting soils due to sidewall caving and groundwater intrusion.

If the contractor elects to install the drilled shafts by ‘wet’ or ‘slurry’ methods a temporary casing may be needed in conjunction with the slurry. The slurry level should be at least a minimum of 5 feet or one shaft diameter, whichever is greater, above the groundwater level. The pH, specific gravity, and sand content of the drilling slurry should be periodically tested during the placement of the shafts. A significant change in any of these parameters during the drilling of the shafts may indicate excess soil migration into the slurry, which may settle on the bottom of the excavation and consequently result in a reduction of the allowable end bearing capacity of the drilled shafts.



We recommend a thorough testing program for the concrete placed in drilled shafts. During concrete placement the concrete may be allowed to fall freely through the open area in the reinforcing steel cage as long as the concrete is not allowed to strike the rebar or the casing prior to reaching the bottom of the shaft. If the shafts are advanced utilizing the 'wet' method the concrete should be placed using a tremie pipe which should be placed about 1 shaft diameter above the bottom of the shaft. The bottom of the tremie pipe must be below the concrete during placement. Qualified personnel should be present to cast compressive representative test specimens of the concrete being placed in the drilled shafts. We recommend that at least two sets of specimens, four specimens per set, be cast per day and that at least one set of specimens be cast for every 50 cubic yards of concrete placed. Batching tickets should reference the mix approved in the specifications and show batching times. The concrete mix shall have a slump of 6 to 8 inches. Admixtures, such as super plasticizer, may be needed to achieve this specified slump. The protective steel casing should be extracted as the concrete is being placed, however a head of concrete should be maintained above the bottom of the shaft casing to prevent soil and water intrusions into the shaft.

Buried obstructions such as debris or boulders can prevent shaft installation. If drilled shafts stop short of their design depths, it may be necessary to make backhoe explorations or one or more exploratory borings to evaluate the condition. Based on the findings, it may be necessary to add shafts. Likewise, it is possible that longer shafts may be required in some areas. Therefore, the contract documents should contain provisions for adding or deducting shaft length or installing additional shafts.

4.5 CONSTRUCTION RELATED SERVICES

We recommend the owner retain Universal Engineering Sciences to perform construction materials tests and observations on this project. Field tests and observations include verification of foundation and pavement subgrades by monitoring proof-rolling operations and performing quality assurance tests on the placement of compacted structural fill and pavement courses.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.



5.0 LIMITATIONS

This report has been prepared in order to aid the architect/engineer in the design of the proposed mast arm structures. The scope of services provided was limited to the specific project and locations described herein. The description of the project's design parameters represents our understanding of significant aspects relevant to soil and foundation characteristics.

The recommendations submitted in this report are based upon the data obtained from the limited number of soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced. This report does not reflect any variations which may occur between the boring locations or unexplored areas of the site. This report should not be used for estimating such items as cut and fill quantities.

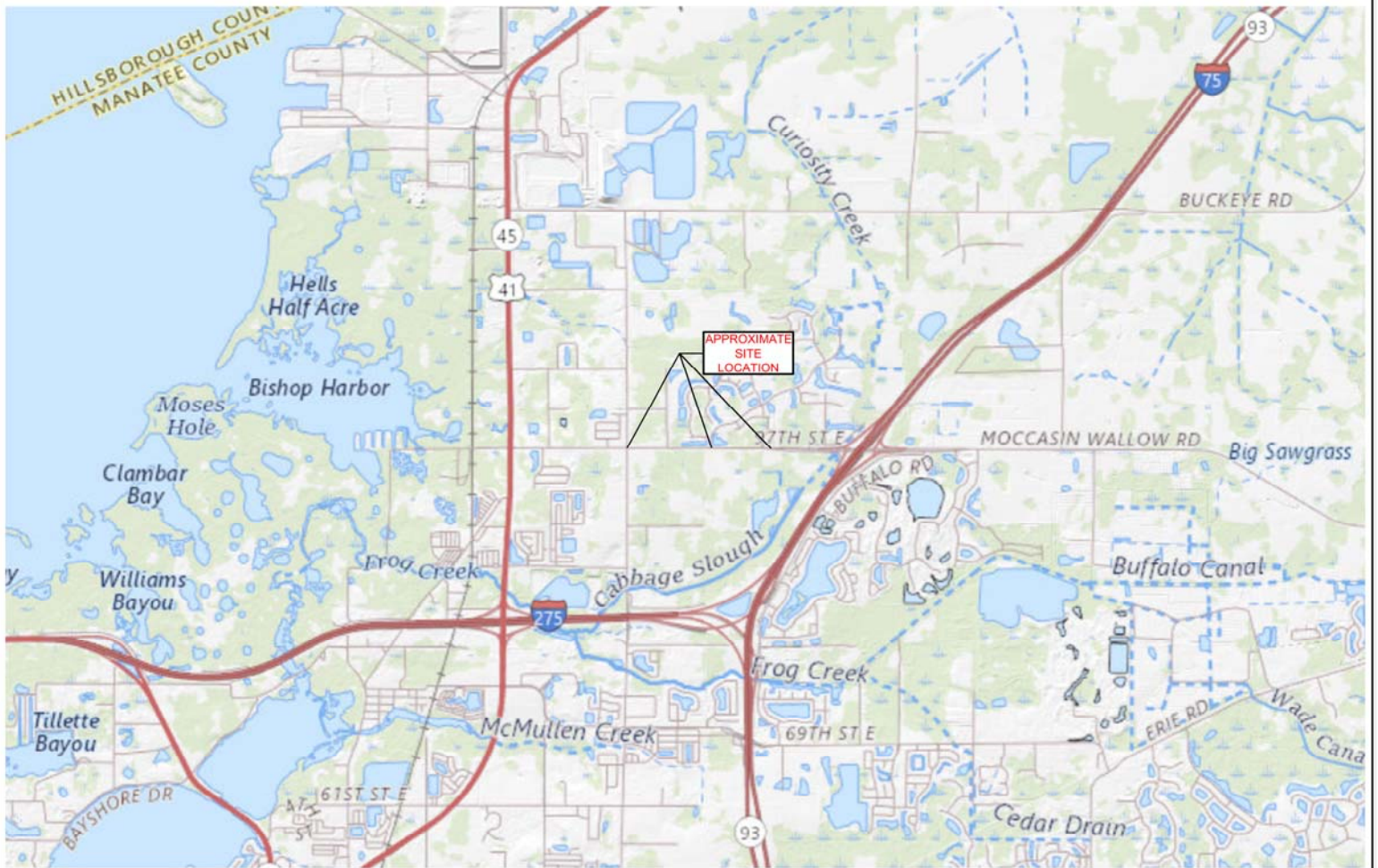
Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services **specifically** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.


All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

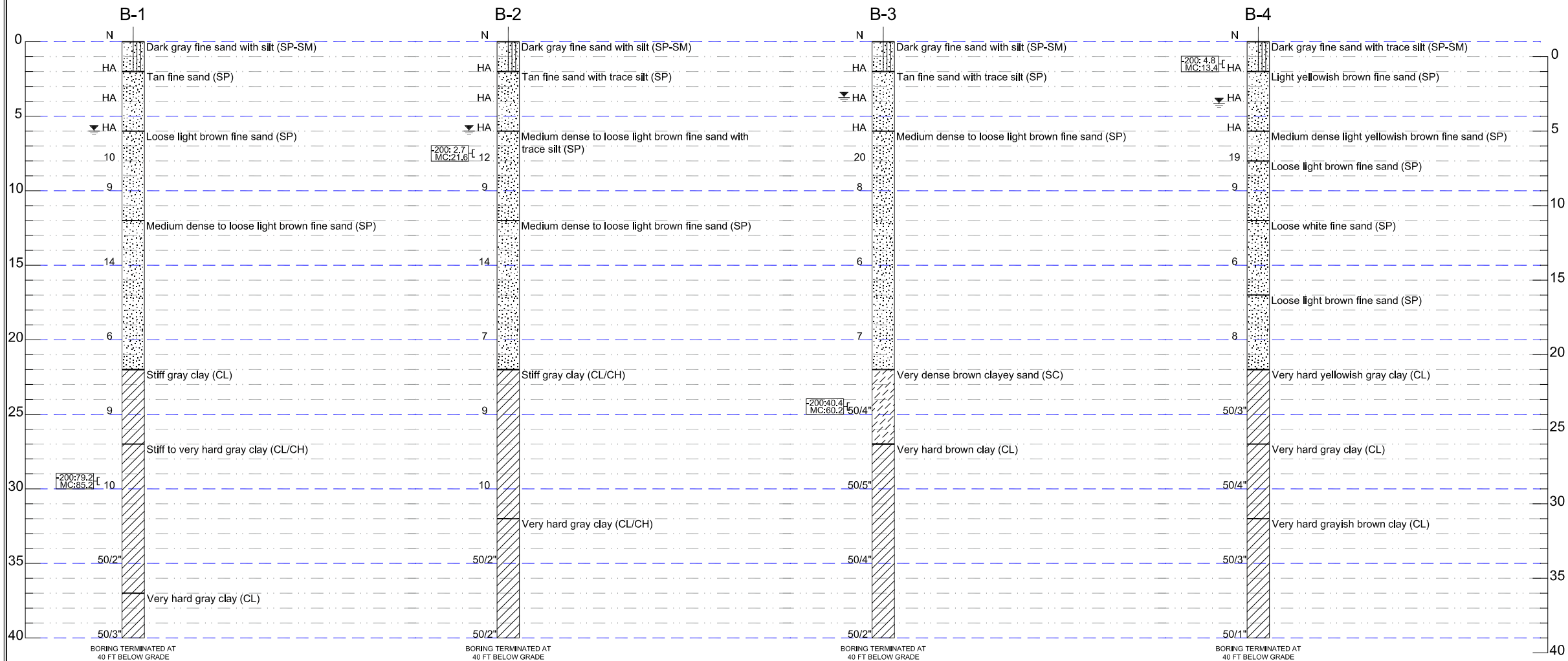
For a further description of the scope and limitations of this report please review the document attached within Appendix B "Important Information About Your Geotechnical Engineering Report" prepared by ASFE, an association of firms practicing in the geosciences.



APPENDIX A

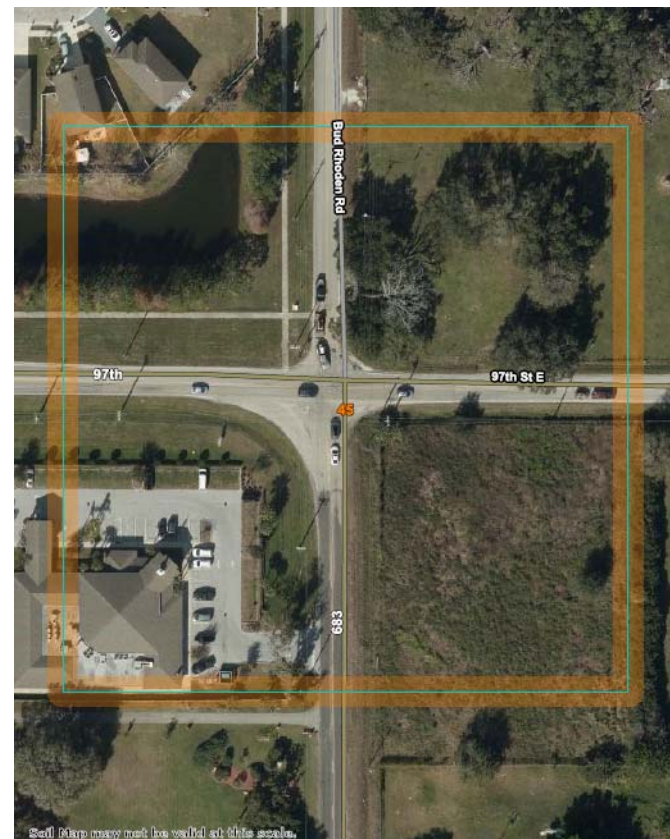
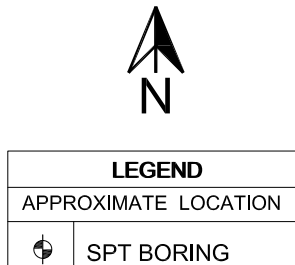
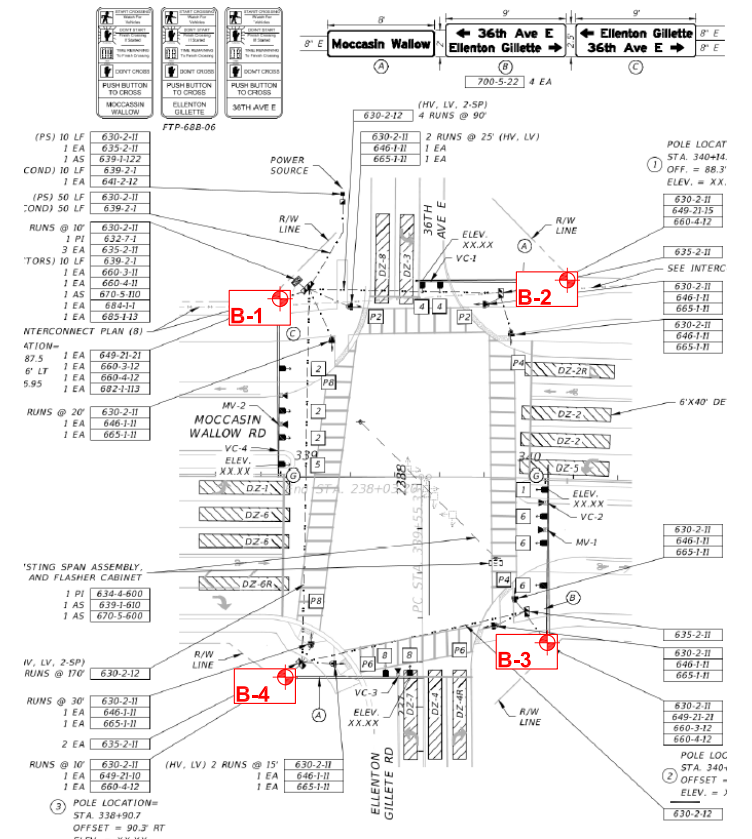


A-1	SITE LOCATION PLAN	PROPOSED CIRCLE K 4219 MOCCASIN WALLOW ROAD PALMETTO, FL		DRAWN FOR THOMAS ENGINEERING	 UNIVERSAL ENGINEERING SCIENCES 1748 INDEPENDENCE BLVD. SARASOTA, FL. 941-358-7410
	OBTAINED FROM YAHOO MAPS 2018	PROJECT NO: 1130.1900375.0000	REPORT NO: 14404	DRILLED BY NP / CL	
			DRAWN BY R.L.D.	DRAWING DATE 12/30/2019	
			SCALE NOT TO SCALE		



- LEGEND**
- [SP] UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D2487) BASED ON VISUAL OBSERVATION AND LABORATORY TEST.
 - N STANDARD PENETRATION RESISTANCE (N-VALUE) IN BLOWS PER FOOT (ASTM D1586)
 - HA HAND AUGER
 - GROUND WATER LEVEL MEASURED ON DATE DRILLED
 - SEASONAL HIGH WATER LEVEL
 - GNE GROUNDWATER LEVEL NOT ENCOUNTERED
 - (%) LOSS OF CIRCULATION (%)
 - 200 FINES PASSING NO. 200 U.S. STANDARD SIEVE (%)
 - WOH WEIGHT OF HAMMER
 - 50/1" 50 BLOWS FOR 1 INCH
 - OC ORGANIC CONTENT (%)
 - MC NATURAL MOISTURE CONTENT (%)
 - PL PLASTICITY INDEX (%)
 - LL LIQUID LIMIT (%)
 - NP NON PLASTIC
 - UCS UNCONFINED COMPRESSION STRENGTH

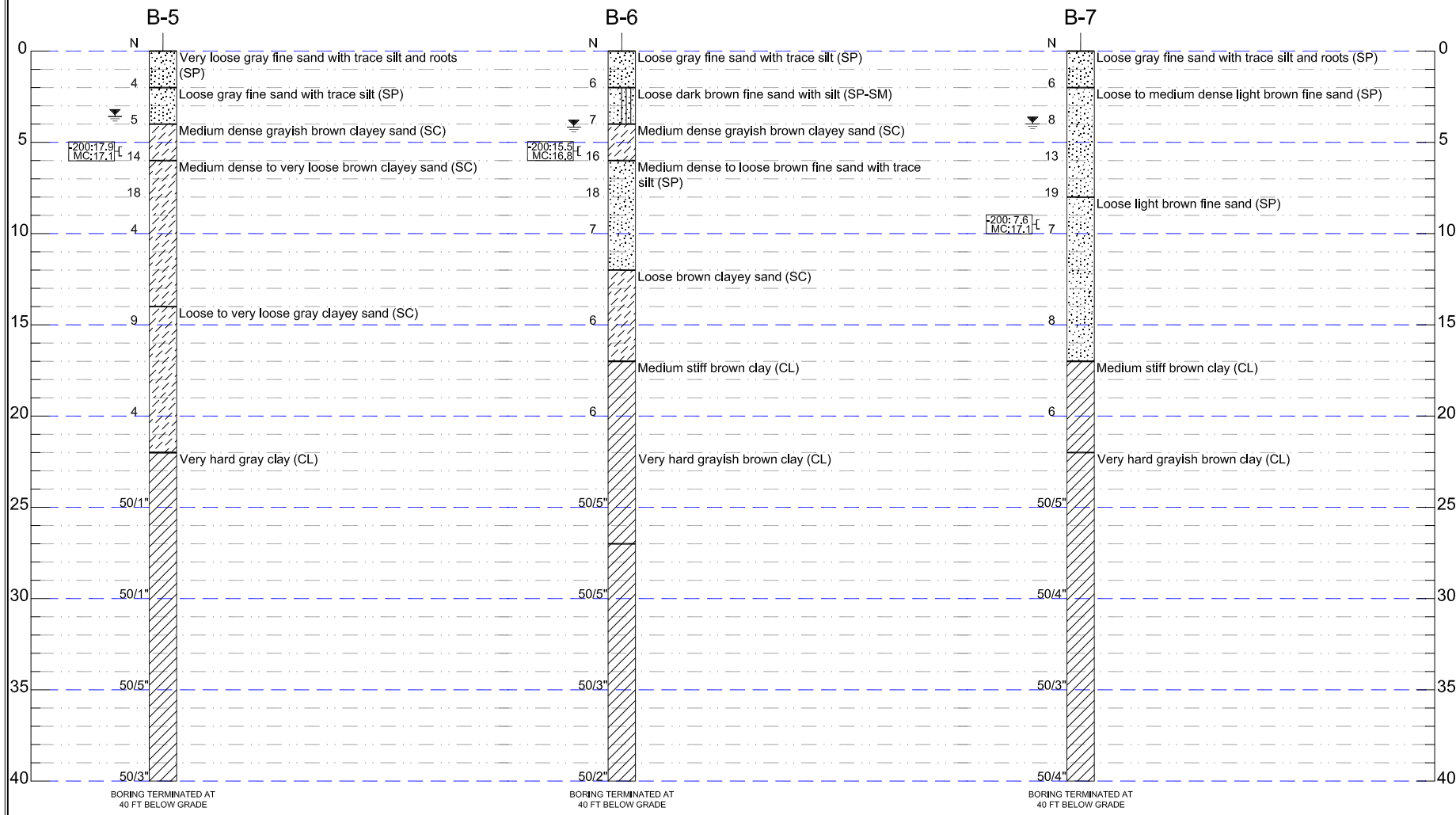
CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL			
COARSE-GRAINED SOILS-SANDS		FINES - CLAY AND SILT	
CONSISTENCY DESIGNATION	SPT (BLOWS/FT)	CONSISTENCY DESIGNATION	SPT (BLOWS/FT)
VERY LOOSE	0-4	VERY SOFT	0-1
LOOSE	5-10	SOFT	2-3
MEDIUM DENSE	11-30	MEDIUM STIFF	4-7
DENSE	31-50	STIFF	8-15
VERY DENSE	>50	VERY STIFF	16-31
		HARD	32-50
		VERY HARD	>50



UNIVERSAL
ENGINEERING SCIENCES
1748 INDEPENDENCE BLVD.
SARASOTA, FL.
941-356-7410

DRAWN FOR	CARDNO	PROJECT NO	1130-1800187-0000
DRILLED BY	NP / CL	REPORT NO	14602
DRAWN BY	R.L.D	PROPOSED MAST ARMS MOCCASIN WALLOW ROAD PALMETTO, FL	
DRAWING DATE	12/30/2019	SOIL BORING PROFILES ALL SOIL BORING TEST ARE APPROXIMATE. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED	
SCALE	NOT TO SCALE		

A-4.0



LEGEND

[SP] UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D2487) BASED ON VISUAL OBSERVATION AND LABORATORY TEST.

N STANDARD PENETRATION RESISTANCE (N-VALUE) IN BLOWS PER FOOT (ASTM D1586)

HA HAND AUGER

GROUND WATER LEVEL MEASURED ON DATE DRILLED

SEASONAL HIGH WATER LEVEL

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

(%) LOSS OF CIRCULATION (%)

-200 FINES PASSING NO. 200 U.S. STANDARD SIEVE (%)

WOH WEIGHT OF HAMMER

50/1" 50 BLOWS FOR 1 INCH

OC ORGANIC CONTENT (%)

MC NATURAL MOISTURE CONTENT (%)

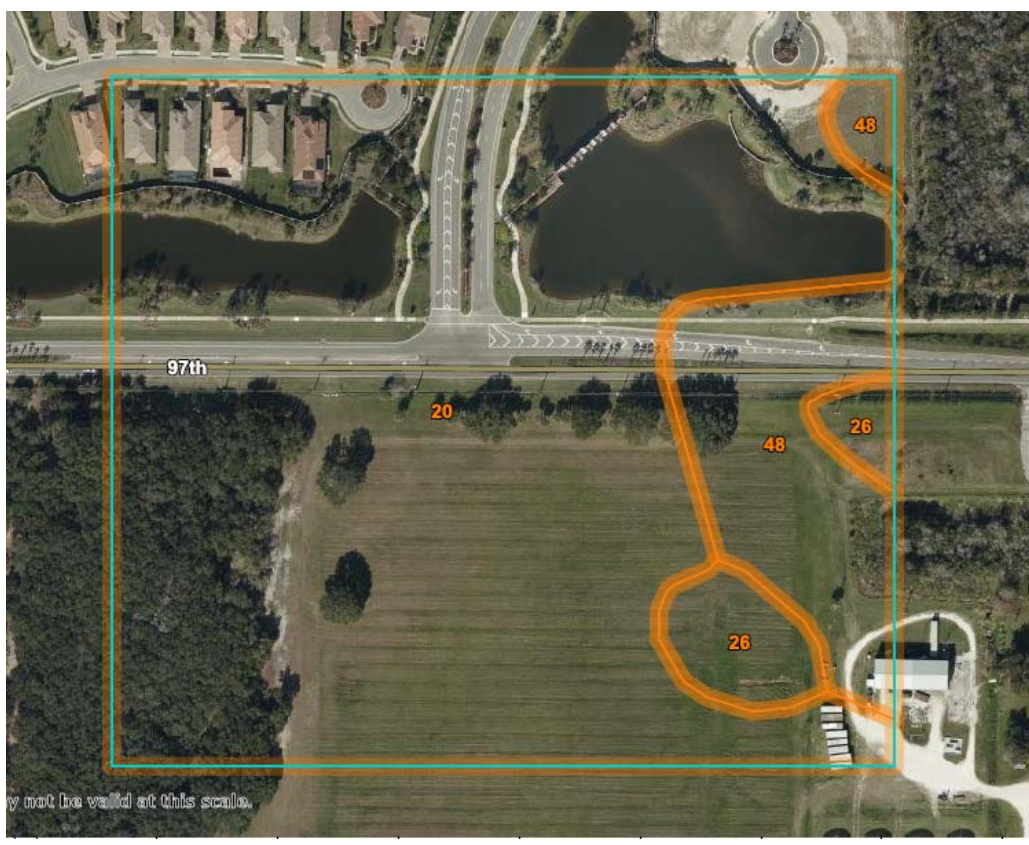
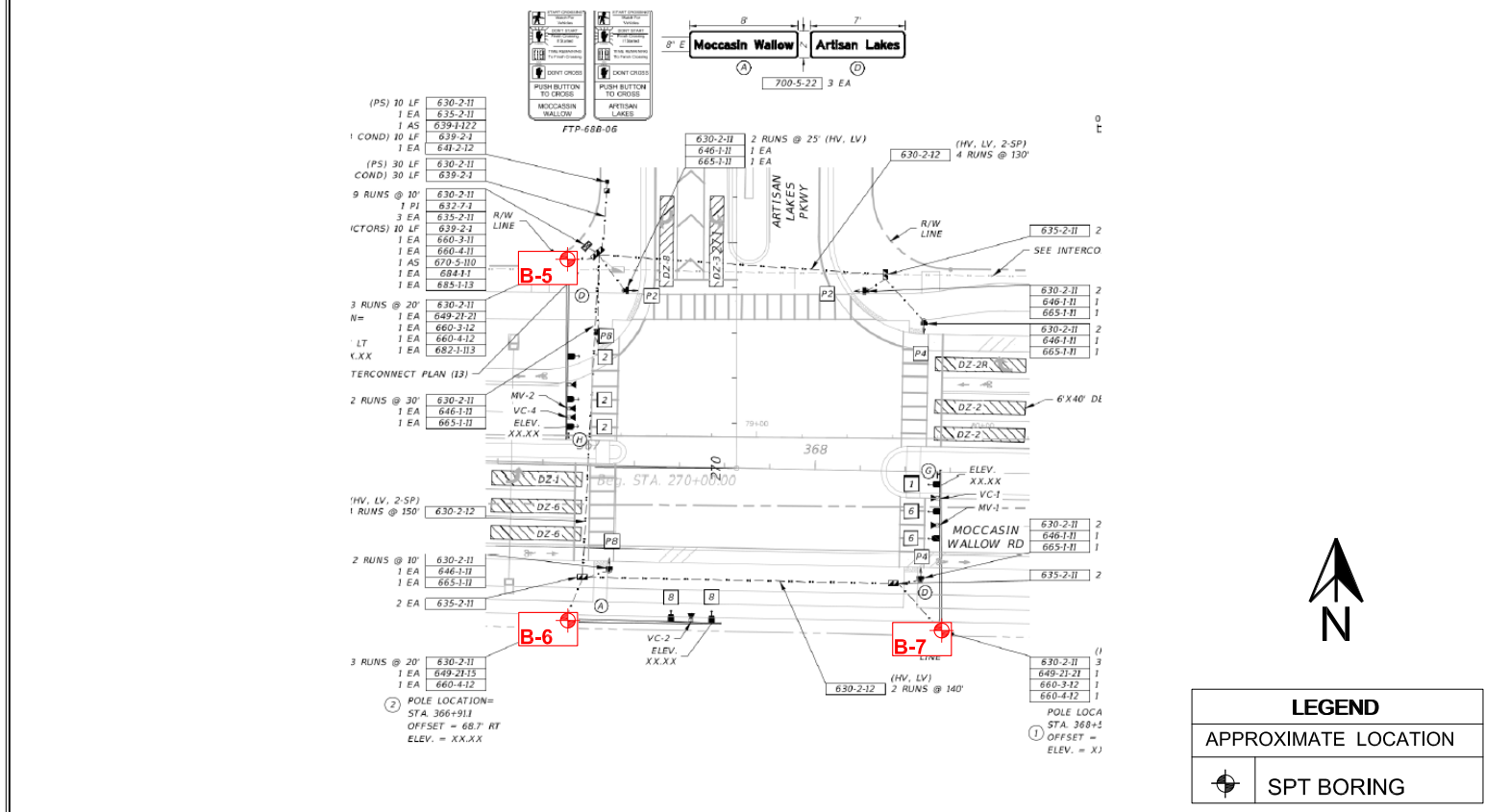
PL PLASTICITY INDEX (%)

LL LIQUID LIMIT (%)

NP NON PLASTIC

UCS UNCONFINED COMPRESSION STRENGTH

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL			
COARSE-GRAINED SOILS-SANDS		FINES - CLAY AND SILT	
CONSISTENCY DESIGNATION	SPT N(BLOWS/FT)	CONSISTENCY DESIGNATION	SPT N(BLOWS/FT)
VERY LOOSE	0-4	VERY SOFT	0-1
LOOSE	5-10	SOFT	2-3
MEDIUM DENSE	11-30	MEDIUM STIFF	4-7
DENSE	31-50	STIFF	8-15
VERY DENSE	>50	VERY STIFF	16-31
		HARD	32-50
		VERY HARD	>50



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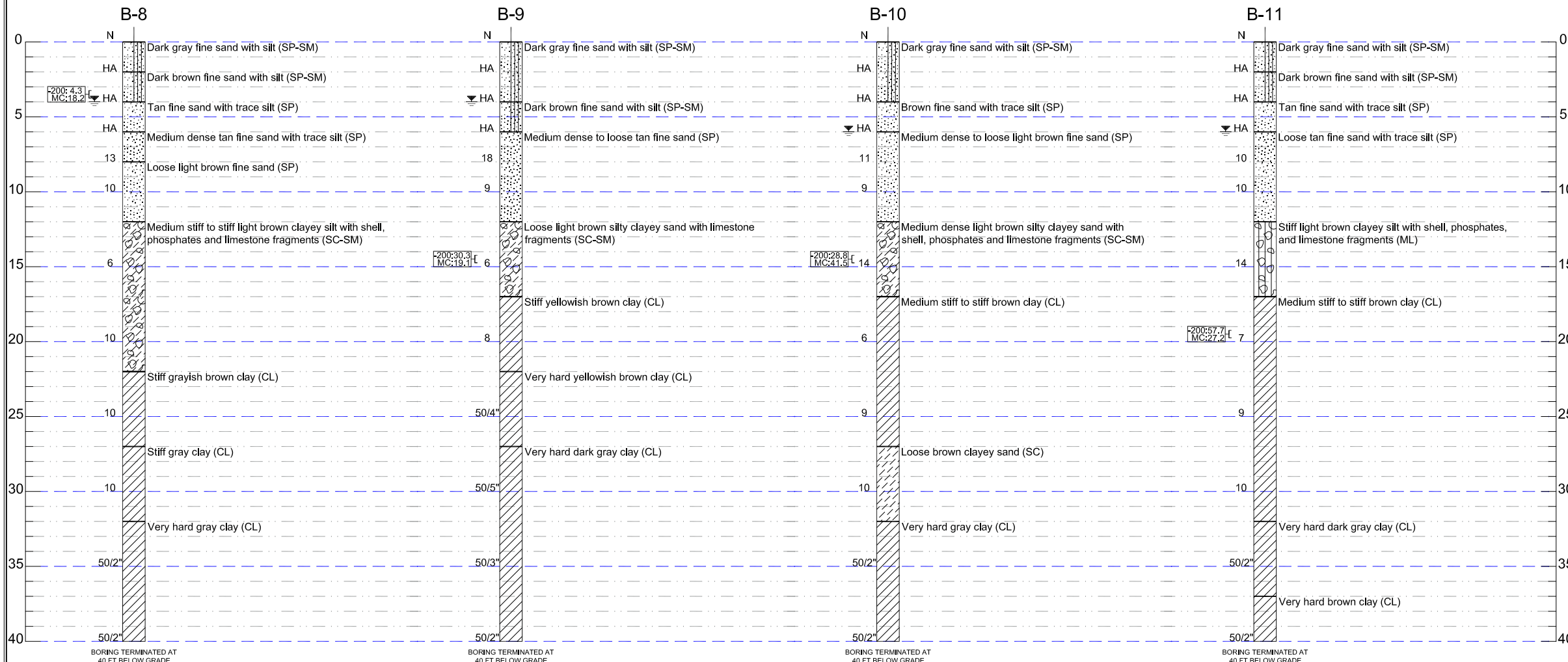
SOIL BORING PROFILES

PROPOSED MAST ARMS
MOCCASIN WALLOW ROAD
PALMETTO, FL

ALL SOIL BORING TEST ARE APPROXIMATE. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED.

A-4.1

PROJECT NO:	1130-1800187-0000
REPORT NO:	14602
CARDNO	
NP / CL	
R.L.D	
12/30/2019	
NOT TO SCALE	
DRAWN FOR	
DRILLED BY	
DRAWN BY	
DRAWING DATE	
SCALE	



LEGEND

[SP] UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D2487) BASED ON VISUAL OBSERVATION AND LABORATORY TEST.

N STANDARD PENETRATION RESISTANCE (N-VALUE) IN BLOWS PER FOOT (ASTM D1586)

HA HAND AUGER

SEASONAL HIGH WATER LEVEL

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

(%) LOSS OF CIRCULATION (%)

-200 FINES PASSING NO. 200 U.S. STANDARD SIEVE (%)

WOH WEIGHT OF HAMMER

50/1" 50 BLOWS FOR 1 INCH

OC ORGANIC CONTENT (%)

MC NATURAL MOISTURE CONTENT (%)

PL PLASTICITY INDEX (%)

LL LIQUID LIMIT (%)

NP NON PLASTIC

UCS UNCONFINED COMPRESSION STRENGTH

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL			
COARSE-GRAINED SOILS-SANDS		FINES - CLAY AND SILT	
CONSISTENCY DESIGNATION	SPT (BLOWS/FT)	CONSISTENCY DESIGNATION	SPT (BLOWS/FT)
VERY LOOSE	0-4	VERY SOFT	0-1
LOOSE	5-10	SOFT	2-3
MEDIUM DENSE	11-30	MEDIUM STIFF	4-7
DENSE	31-50	STIFF	8-15
VERY DENSE	>50	VERY STIFF	16-31
		HARD	32-50
		VERY HARD	>50

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941-358-7410

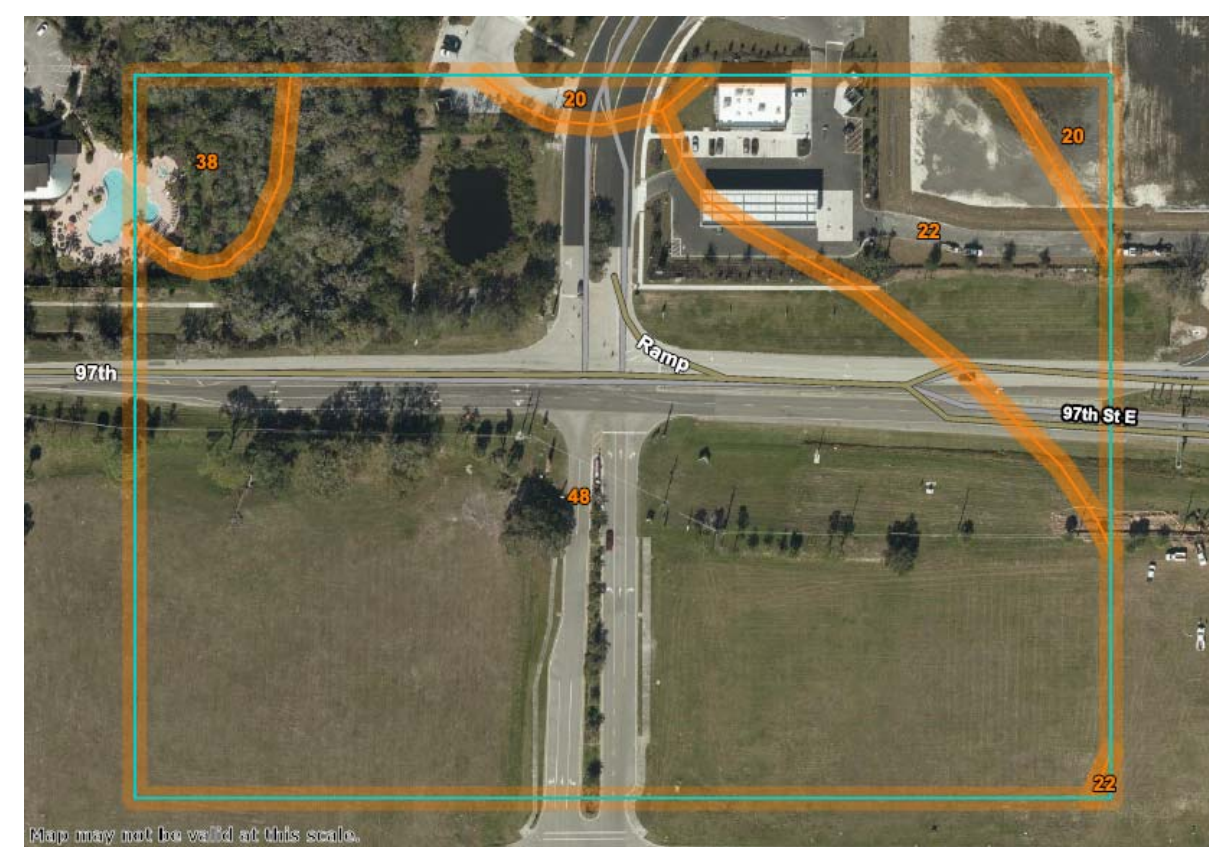
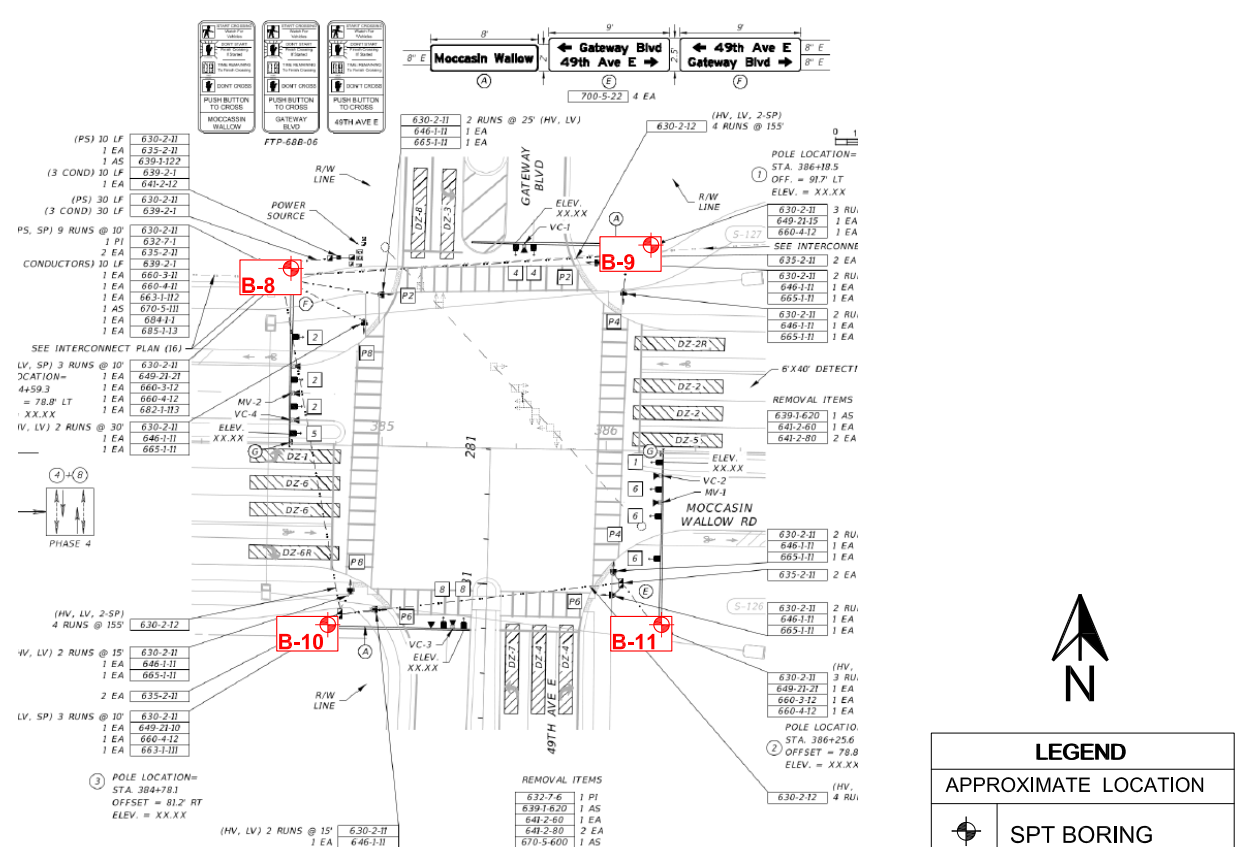
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DRAWN BY	SCALE
DRAWING DATE	SCALE
NOT TO SCALE	

PROJECT NO: 1130-1800187-0000
REPORT NO: 14602

PROPOSED MAST ARMS
MOCCASIN WALLOW ROAD
PALMETTO, FL

SOIL BORING PROFILES
ALL SOIL BORING TEST ARE APPROXIMATE. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED

A-4.2



Map may not be valid at this scale.



SOIL CLASSIFICATION CHART

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

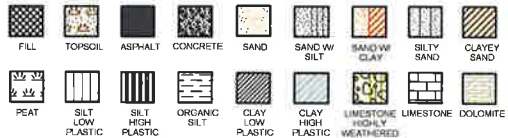
FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

- Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.
- Surface elevations are based on topographic maps and estimated locations.
- Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

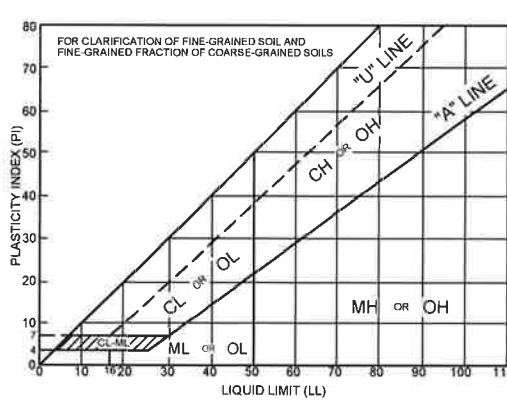
SOIL SYMBOLS



OTHER SYMBOLS

- Measured Water Table Level
- Estimated Seasonal High Water Table

Major Divisions	Group Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material		
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for GW	Sieve sizes < #200 #200 to #40 #40 to #10 #10 to #4		
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines				
		GM	Silty gravels, gravel-sand-silt mixtures				
		GC	Clayey gravels, gravel-sand-silt mixtures				
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for SW	mm < 0.074 0.074 to 0.42 0.42 to 2.00 2.00 to 4.76	
			SP	Poorly-graded sands, gravelly sands, little or no fines			
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures			Atterberg limits below "A" line or P.I. less than 4 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures			Atterberg limits above "A" line or P.I. greater than 7 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	U LINE A LINE CH OR OH CL OR OL MH OR OH ML OR OL	Particle Size Sieve mm 4.76 to 19.1 19.1 to 76.2 76.2 to 304.8 304.8 to 914.4		
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays				
	OL	Organic silts and organic silty clays of low plasticity					
	Silts and Clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts				
		CH	Inorganic clays of high plasticity, fat clays				
	Highly Organic Soils	OH	Organic clays of medium to high plasticity, organic silts				
Pt		Peat and other highly organic soils					



Plasticity Chart

* When the percent passing a No. 200 sieve is between 5% and 12%, a dual symbol is used to denote the soil. For example; SP-SC, poorly-graded sand with clay content between 5% and 12%.

APPENDIX B

Important Information about This Geotechnical-Engineering Report

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

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

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

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer about Change

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

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

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

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

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

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

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

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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



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CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until construction begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other explorations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

SECTION 1: RESPONSIBILITIES

- 1.1 *Universal Engineering Sciences, Inc.*, ("UES"), has the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of *Universal Engineering Sciences, Inc.*'s agents, employees, professional staff, and subcontractors.
- 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.
- 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.
- 1.4 Universal will not be responsible for scheduling our services and will not be responsible for tests or inspections that are not performed due to a failure to schedule our services on the project or any resulting damages.
- 1.5 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

- 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.
- 2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.
- 2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.
- 2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

- 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.
- 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

- 4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.
- 4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.
- 4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

- 5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.
- 5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.
- 5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

- 6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.
- 6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.
- 6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.
- 6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the express written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

- 7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site.
- 7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.
- 7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.
- 7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.
- 7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

- 8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

- 9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

- 10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.
- 10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:
- the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and
 - The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

- 11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.
- 11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

- 12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

- 13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.
- 13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

- 14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.
- 14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.



UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Construction Materials Testing • Threshold Inspection
Building Inspection • Plan Review • Building Code Administration

LOCATIONS:

- Atlanta
- Daytona Beach
- Fort Myers
- Fort Pierce
- Gainesville
- Jacksonville
- Miami
- Ocala
- Orlando (Headquarters)
- Palm Coast
- Panama City
- Pensacola
- Rockledge
- Sarasota
- St. Petersburg
- Tampa
- Tifton
- West Palm Beach

March 9, 2020

Cardno
380 Park Place Boulevard, Suite 300
Clearwater, FL 333759

Attn: Mr. Hamid R. Faraji, PE

Reference:

GEOTECHNICAL TESTING SERVICE

Existing Pavement Cores

Proposed Moccasin Wallow Road Improvements

Moccasin Wallow Road, 36th Avenue E, and Bud Rhoden Road

Parrish, Manatee County, FL

UES Project No. 1130.1800187.0000

UES Report No.: 14715

Dear Mr. Faraji:

Universal Engineering Sciences, Inc. (UES) has completed the pavement cores for the above referenced project. The scope of our work was planned in conjunction with and authorized by you.

PROJECT INFORMATION

We understand that you are considering widening, milling and resurfacing the existing Moccasin Wallow Road located in Parrish, FL. The purpose of the cores was to confirm the existing asphalt and base material thickness of the existing paved roadway.

FIELD EXPLORATION

UES performed twelve (12) pavement cores along a roadway section of Moccasin Wallow Road, 36th Avenue E, and Bud Rhoden Road at the locations shown on plan provided. A hand auger borings was also performed at each core location to a depth of 4 feet below the bottom of the base. Samples of the asphalt and base materials were extracted from the existing sections using a 4-inch I.D. diamond impregnated core barrel. The base material was visually classified and thickness of the various components was measured. The asphalt and base material recovered from the core locations were returned to our office and then a geotechnical engineering staff member visually examined and reviewed the field descriptions. The core locations and photographs are presented in the appendix of this report.

CORE RESULTS

The core test results indicate the existing pavement section consists of 2.5 to 6 inches of asphalt, 1 to 10 inches of cement treated shell and limerock base, and sandy subgrade soils. The results of the cores are presented in the following table:

CORE NO.	TOTAL ASPHALT THICKNESS (IN)	BASE THICKNESS (IN)	BASE MATERIAL
C-1	3.5	10.0	Cement treated shell
C-2	3.5	9.0	Cement treated shell
C-3	2.5	9.0	Cement treated shell
C-4	3.5	10.0	Cement treated shell
C-5	2.75	9.0	Cement treated shell
C-6	3.0	10.0	Cement treated shell
C-7	4.5	10.0	Limerock
C-8	3.5	9.0	Limerock
C-9	9.0	6.0	Limerock
C-10	4.0	5.5	Limerock
C-11	6.0	-	Bituminous
C-12	6.0	1.0	Bituminous /Cement treated shell

CLOSURE

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

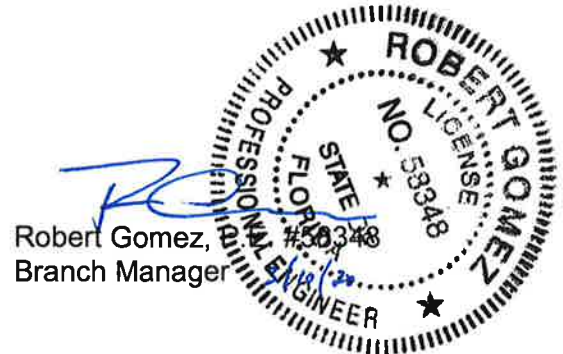
Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization Number 549



Yudelsy Alvarez
Project Engineer

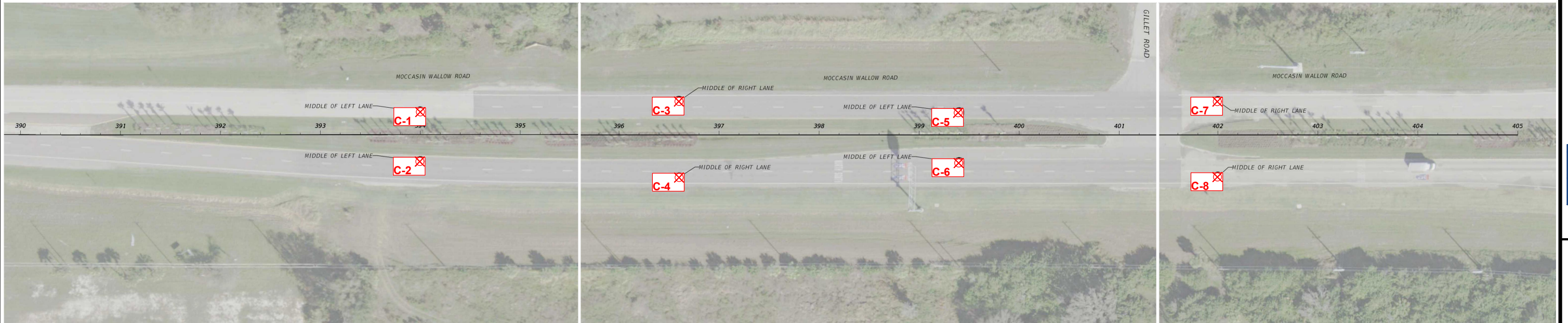
RG/YA:



APPENDICES:

Test Location Plan
Core Photographs
Soil Profiles
Information about Your Geotechnical Report
Constraints and Restrictions
General Conditions

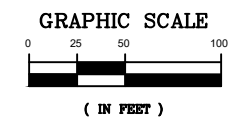
MOCCASIN WALLOW RD




36TH AVE E



BUD RHODEN RD

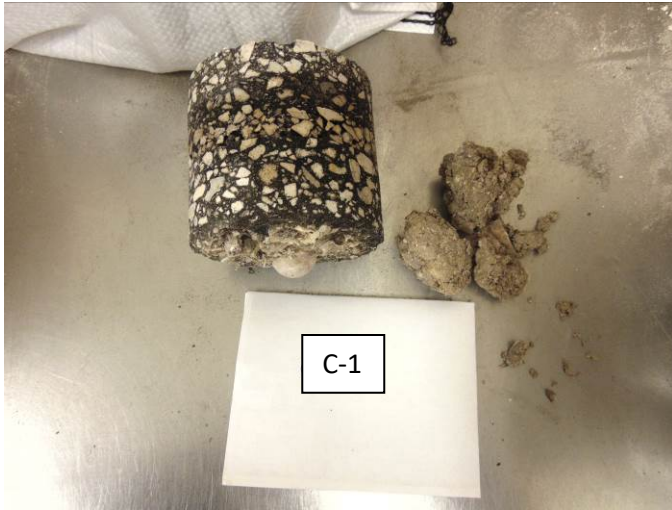


LEGEND	
	APPROXIMATE LOCATION
	CORE TEST

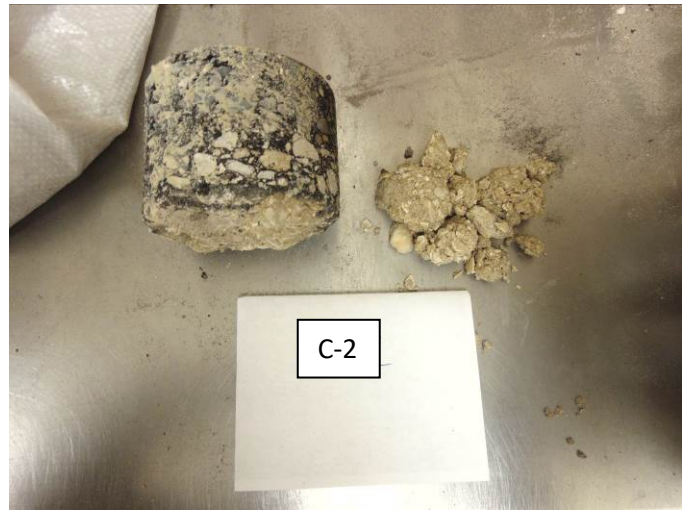
		UNIVERSAL ENGINEERING SCIENCES 1748 INDEPENDENCE BLVD. SARASOTA, FL. 941-356-7410	
DRAWN FOR	CARDINO	PROJECT NO.	1130.1800187.0000
DRILLED BY	M.B.	PROPOSED MOCCASIN WALLOW ROAD IMPROVEMENTS	MOCASIN WALLOW ROAD PARRISH, MANATEE COUNTY, FL
DRAWN BY	S.B.	MOCCASIN WALLOW ROAD PARRISH, MANATEE COUNTY, FL	
DRAWING DATE	3/2020	REPORTING	14715
SCALE	1" = 100'	CORE LOCATION PLAN THIS MAP SHOWS APPROXIMATE LOCATION	
A-1			

Core Photographs
Cardno – Moccasin Wallow
UES Project No.:1130.1800187.0000

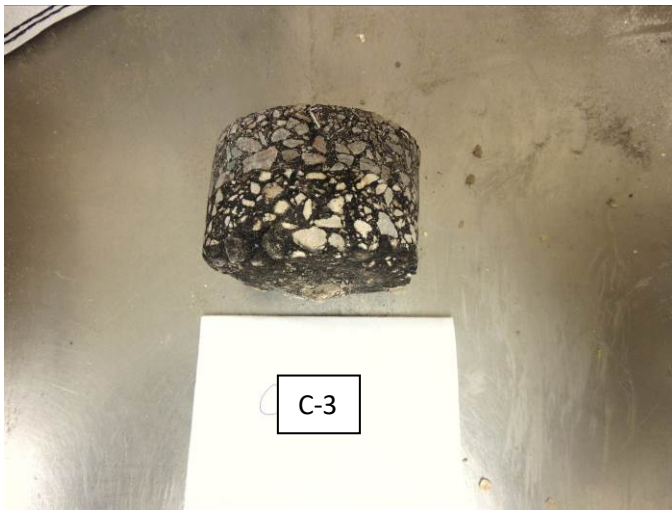
Core-1



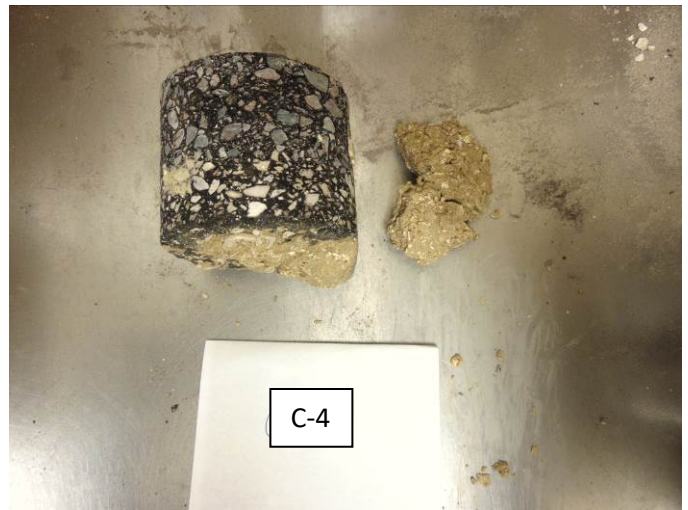
Core-2



Core-3

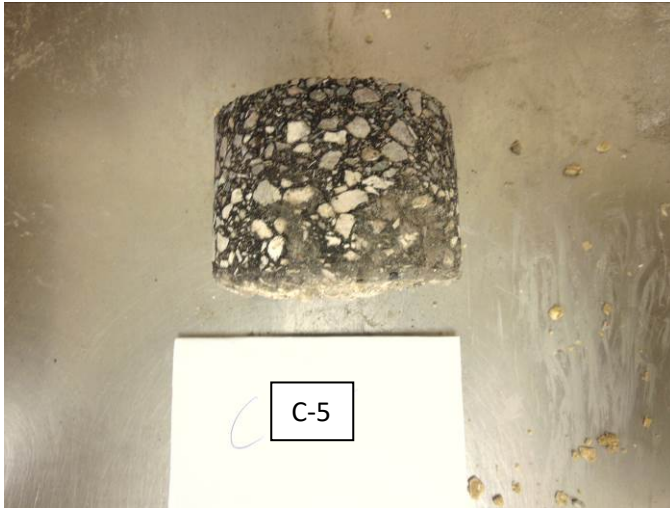


Core-4

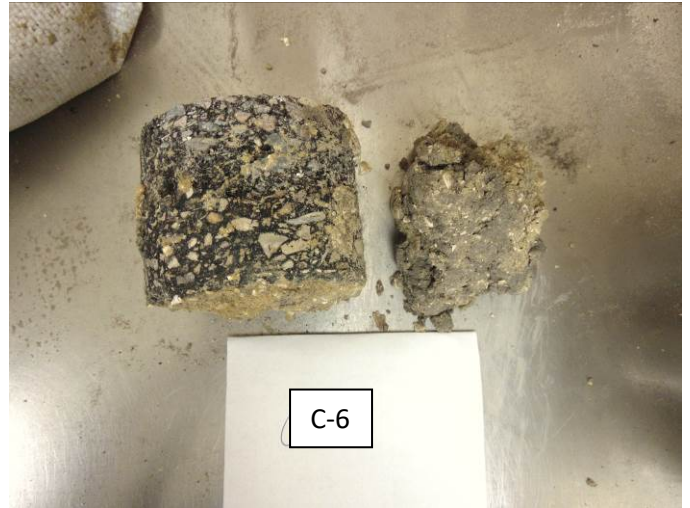


Core Photographs
Cardno – Moccasin Wallow
UES Project No.:1130.1800187.0000

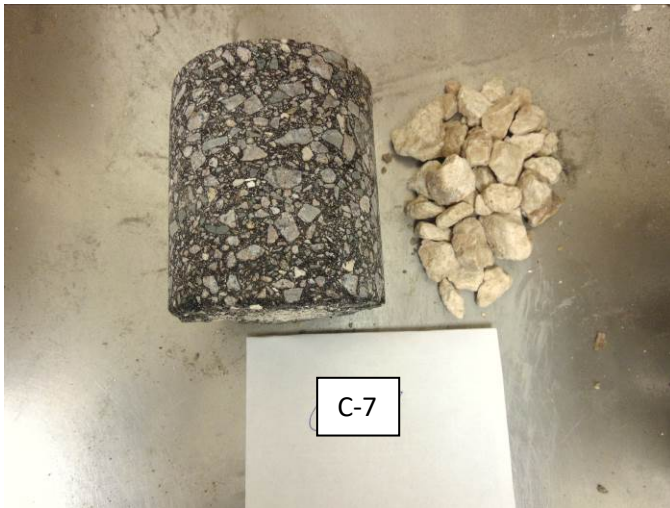
Core-5



Core-6



Core-7



Core-8

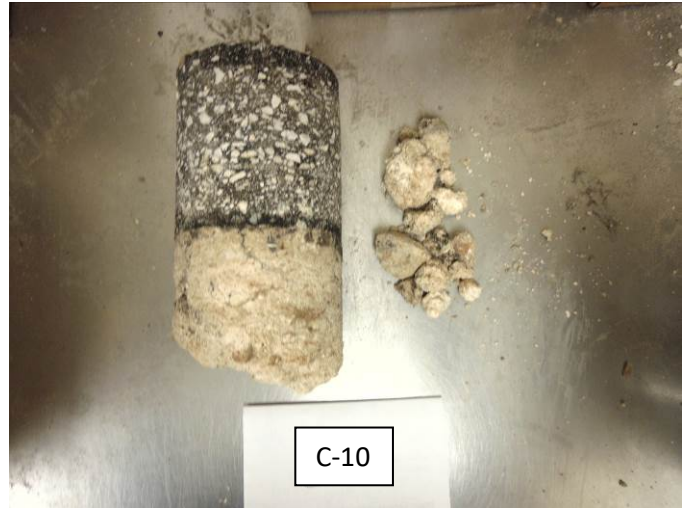


Core Photographs
Cardno – Moccasin Wallow
UES Project No.:1130.1800187.0000

Core-9



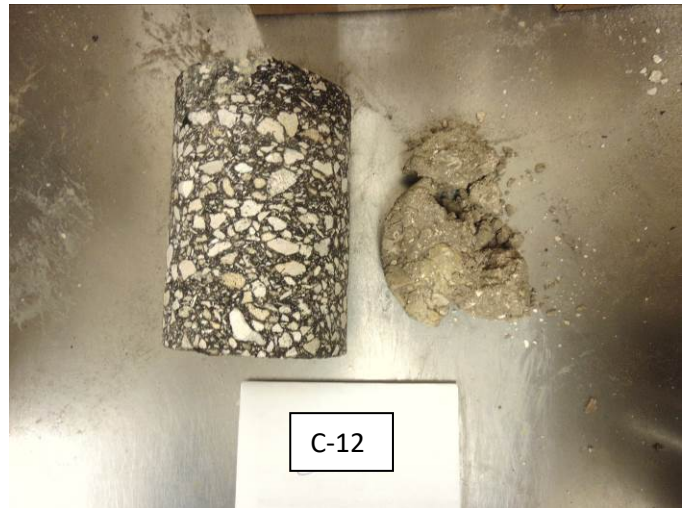
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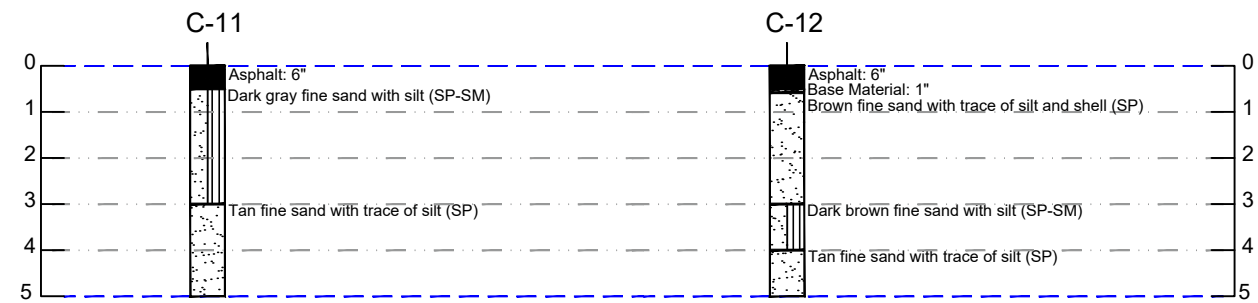
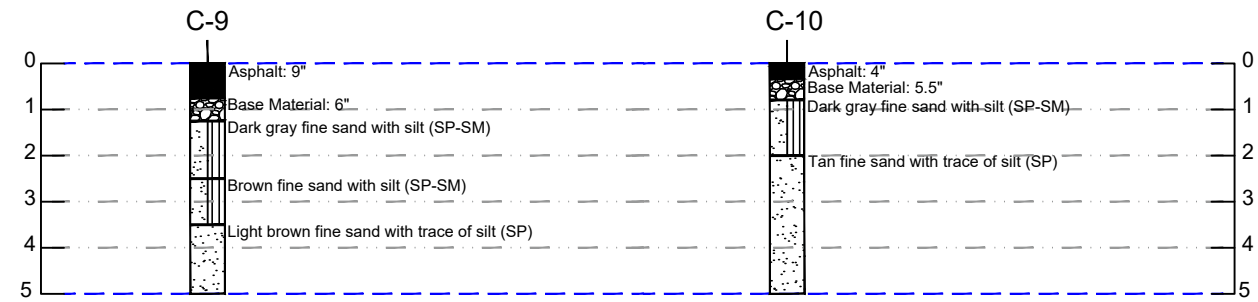
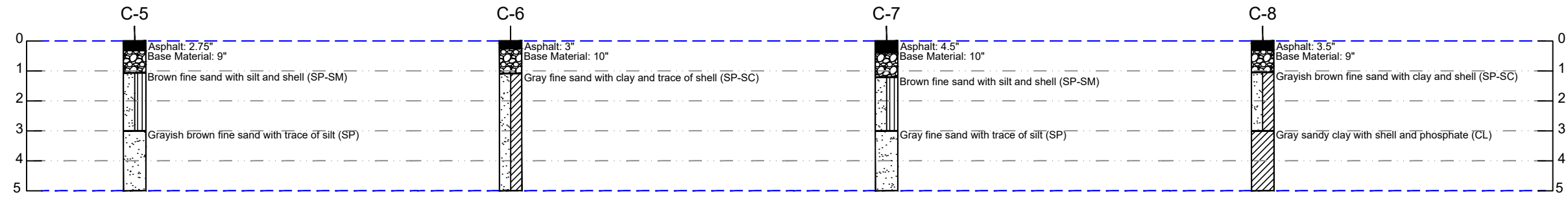
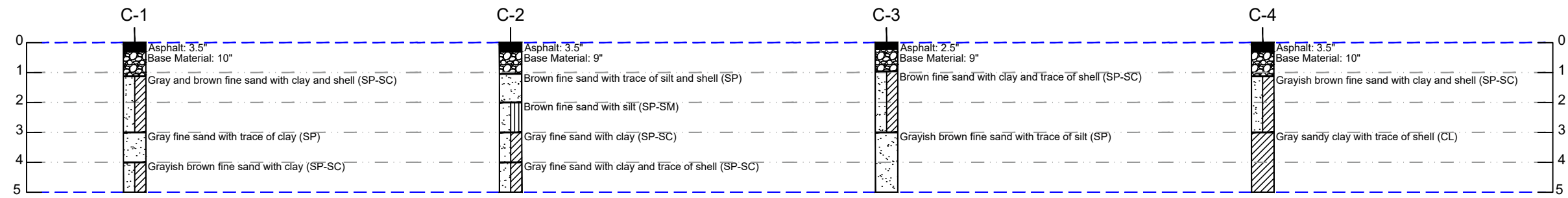


Core-11



Core-12





LEGEND

[SP] UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D2487), BASED ON VISUAL OBSERVATION AND LABORATORY TEST.

N STANDARD PENETRATION RESISTANCE (N-VALUE) IN BLOWS PER FOOT (ASTM D1586)

HA HAND AUGER

GROUND WATER LEVEL MEASURED ON DATE DRILLED

SEASONAL HIGH WATER LEVEL

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

(%) LOSS OF CIRCULATION (%)

-200 FINES PASSING NO. 200 U.S. STANDARD SIEVE (%)

WOH WEIGHT OF HAMMER

50/1" 50 BLOWS FOR 1 INCH

OC ORGANIC CONTENT (%)

MC NATURAL MOISTURE CONTENT (%)

PL PLASTICITY INDEX (%)

LL LIQUID LIMIT (%)

NP NON PLASTIC

UCS UNCONFINED COMPRESSION STRENGTH

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL			
COARSE-GRAINED SOILS-SANDS		FINES - CLAY AND SILT	
CONSISTENCY DESIGNATION	SPT (BLOWS/FT)	CONSISTENCY DESIGNATION	SPT (BLOWS/FT)
VERY LOOSE	0-4	VERY SOFT	0-1
LOOSE	5-10	SOFT	2-3
MEDIUM DENSE	11-30	MEDIUM STIFF	4-7
DENSE	31-50	STIFF	8-15
VERY DENSE	>50	VERY STIFF	16-31
		HARD	32-50
		VERY HARD	>50

DRAWN FOR	CARDNO
DRILLED BY	M.B.
DRAWN BY	S.B.
DRAWING DATE	3/2020
SCALE	1" = 10'

PROJECT NO.	1130.1800187.0000
REPORTING	14715
PROPOSED MOCCASIN WALLLOW ROAD IMPROVEMENTS	
MOCCASIN WALLLOW ROAD	
PARRISH, MANATEE COUNTY, FL	

SOIL BORING PROFILES

ALL SOIL BORING TEST ARE APPROXIMATE. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED



SOIL CLASSIFICATION CHART

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

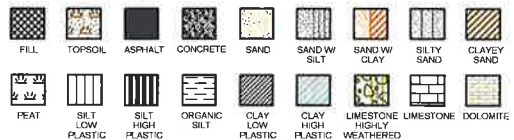
GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

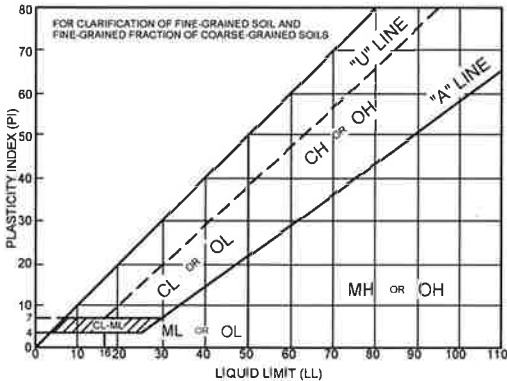
SOIL SYMBOLS



OTHER SYMBOLS

▼ Measured Water Table Level ▽ Estimated Seasonal High Water Table

Major Divisions	Group Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material	
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for GW Atterberg limits below "A" line or P.I. less than 4 Atterberg limits above "A" line or P.I. greater than 7 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	Sieve sizes < #200 #200 to #40 #40 to #10 #10 to #4	
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines			
		GM	Silty gravels, gravel-sand-silt mixtures			
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting all gradation requirements for SW Atterberg limits below "A" line or P.I. less than 4 Atterberg limits above "A" line or P.I. greater than 7 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	mm < 0.074 0.074 to 0.42 0.42 to 2.00 2.00 to 4.76
			SP	Poorly-graded sands, gravelly sands, little or no fines		
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures		
			SC	Clayey sands, sand-clay mixtures		
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silt and Clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows: Less than 5 percent..... GW, GP, SW, SP More than 12 percent..... GM, GC, SM, SC 5 to 12 percent..... Borderline cases requiring dual symbols*	Particle Size mm #4 to 3/4 in. 3/4 in. to 3 in. 3 in. to 12 in. 12 in. to 36 in.	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
		OL	Organic silts and organic silty clays of low plasticity			
	Silt and Clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts			
		CH	Inorganic clays of high plasticity, fat clays			
		OH	Organic clays of medium to high plasticity, organic silts			
	Highly Organic Soils	Pt	Peat and other highly organic soils			



Plasticity Chart

* When the percent passing a No. 200 sieve is between 5% and 12%, a dual symbol is used to denote the soil. For example: SP-SC, poorly-graded sand with clay content between 5% and 12%.

Important Information about This Geotechnical-Engineering Report

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

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

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

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer about Change

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

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

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

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

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

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

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

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

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CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until construction begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other explorations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

Universal Engineering Sciences, Inc.
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

- 1.1 *Universal Engineering Sciences, Inc.*, ("UES"), has the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of *Universal Engineering Sciences, Inc.*'s agents, employees, professional staff, and subcontractors.
- 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.
- 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.
- 1.4 Universal will not be responsible for scheduling our services and will not be responsible for tests or inspections that are not performed due to a failure to schedule our services on the project or any resulting damages.
- 1.5 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

- 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.
- 2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.
- 2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.
- 2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

- 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.
- 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

- 4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.
- 4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.
- 4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

- 5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.
- 5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.
- 5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

- 6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.
- 6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.
- 6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.
- 6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the express written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

- 7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site.
- 7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.
- 7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.
- 7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.
- 7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

- 8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

- 9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

- 10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.
- 10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:
- the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and
 - The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

- 11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.
- 11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

- 12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

- 13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.
- 13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

- 14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.
- 14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

Proposed Moccassin Wallow Road Improvements UES Project No. 1130.1800187.000

Boring No.	Date Drilled	*Approximate Station No.	*Approximate Offset (ft)	*Approximate Surface Elevation (ft)	**Measured Water Table Depth (ft)	*Approximate Water Table Elevation (ft)	*Estimated SHGWL Depth (ft)	**Estimated SHWGL Elevation (ft)
HA-001	8/10/2018	13+10	17 ft S. of center line	15.50	5	10.50	3	12.50
HA-002	8/10/2018	13+70	16 ft N. of center line	16.00	4.6	11.40	3	13.00
HA-003	8/10/2018	14+30	17 ft S. of center line	17.50	2	15.50	2	15.50
HA-004	8/10/2018	15+10	20 ft N. of center line	18.00	3.5	14.50	2.5	15.50
HA-005	8/10/2018	15+50	16 ft S. of center line	19.00	3	16.00	2.5	16.50
HA-006	8/10/2018	16+10	17 ft N. of center line	19.00	3.5	15.50	2.5	16.50
HA-007	8/10/2018	16+70	18 ft S. of center line	20.00	3.5	16.50	2.5	17.50
HA-008	8/10/2018	17+30	16 ft N. of center line	20.00	3	17.00	2.5	17.50
HA-009	8/10/2018	18+00	15 ft S. of center line	22.00	3	19.00	2.5	19.50
HA-010	8/10/2018	18+50	17 ft N. of center line	21.50	3.5	18.00	2.5	19.00
HA-011	8/10/2018	19+10	15 ft S. of center line	23.00	4	19.00	2.5	20.50
HA-012	8/10/2018	19+80	16 ft N. of center line	23.50	4	19.50	2.5	21.00
HA-013	8/10/2018	20+30	15 ft S. of center line	24.00	3	21.00	2.5	21.50
HA-014	8/10/2018	20+90	17 ft N. of center line	25.00	3	22.00	2.5	22.50
HA-015	8/13/2018	21+50	14 ft S. of center line	25.00	5	20.00	3	22.00
HA-016	8/13/2018	22+10	17 ft N. of center line	25.00	5	20.00	3	22.00
HA-017	8/13/2018	23+10	21 ft S. of center line	26.50	5	21.50	3	23.50
HA-018	8/13/2018	23+30	16 ft N. of center line	26.50	5	21.50	3	23.50
HA-019	8/13/2018	23+90	15 ft S. of center line	26.00	5	21.00	3	23.00
HA-020	8/13/2018	24+60	18 ft N. of center line	27.00	5	22.00	3	24.00
HA-021	8/13/2018	25+20	17 ft S. of center line	27.00	4.5	22.50	3	24.00
HA-022	8/13/2018	25+70	16 ft N. of center line	28.00	4.5	23.50	3	25.00
HA-023	8/13/2018	26+30	15 ft S. of center line	28.50	4.3	24.20	3	25.50
HA-024	8/13/2018	26+80	15 ft N. of center line	29.50	4	25.50	3	26.50
HA-025	8/13/2018	27+50	16 ft S. of center line	29.50	4	25.50	3	26.50
HA-026	8/13/2018	28+20	17 ft N. of center line	30.00	4.2	25.80	3	27.00
HA-027	8/14/2018	28+70	15 ft S. of center line	30.00	4.5	25.50	3	27.00
HA-028	8/14/2018	29+30	16 ft N. of center line	30.50	4.5	26.00	3	27.50
HA-029	8/14/2018	29+90	15 ft S. of center line	30.50	4.3	26.20	3	27.50
HA-030	8/14/2018	30+50	14 ft N. of center line	31.00	4.2	26.80	3	28.00

Boring No.	Date Drilled	*Approximate Station No.	*Approximate Offset (ft)	*Approximate Surface Elevation (ft)	**Measured Water Table Depth (ft)	*Approximate Water Table Elevation (ft)	*Estimated SHGWL Depth (ft)	**Estimated SHWGL Elevation (ft)
HA-031	8/14/2018	31+10	15 ft S. of center line	31.00	4.5	26.50	3	28.00
HA-032	8/14/2018	31+60	15 ft N. of center line	31.00	4.5	26.50	3	28.00
HA-033	8/14/2018	32+30	14 ft S. of center line	32.00	4.3	27.70	3	29.00
HA-034	8/14/2018	32+90	17 ft N. of center line	32.50	4.2	28.30	3	29.50
HA-035	8/14/2018	33+50	15 ft S. of center line	33.00	4	29.00	2.5	30.50
HA-036	8/14/2018	34+00	15 ft N. of center line	33.50	4	29.50	2.5	31.00
HA-037	8/14/2018	34+60	14 ft S. of center line	33.50	4	29.50	2.5	31.00
HA-038	8/14/2018	35+30	16 ft N. of center line	34.50	4	30.50	2.5	32.00
HA-039	8/14/2018	35+90	15 ft S. of center line	34.50	2.5	32.00	2.5	32.00
HA-040	8/14/2018	36+60	17 ft N. of center line	35.00	4	31.00	2.5	32.50
HA-041	8/16/2018	37+00	15 ft S. of center line	35.00	5	30.00	3	32.00
HA-042	8/16/2018	37+70	14 ft N. of center line	36.00	5	31.00	3	33.00
HA-043	8/16/2018	38+30	15 ft S. of center line	35.00	5	30.00	3	32.00
HA-044	8/16/2018	38+90	16 ft N. of center line	36.00	4	32.00	3	33.00
HA-045	8/16/2018	39+50	14 ft S. of center line	36.50	>5	<31.50	3	33.50
HA-046	8/16/2018	40+10	17 ft N. of center line	36.00	>5	<31.00	3	33.00
HA-047	8/16/2018	40+70	15 ft S. of center line	36.50	>5	<31.50	3	33.50
HA-048	8/16/2018	41+10	15 ft N. of center line	36.50	>5	<31.6	3	33.50
HA-049	8/16/2018	41+90	16 ft S. of center line	37.00	>5	<32.00	3	34.00
HA-050	8/16/2018	42+50	17 ft N. of center line	36.50	>5	<31.50	3	33.50
HA-051	8/16/2018	43+10	14 ft S. of center line	37.50	>5	<32.50	3	34.50
HA-052	8/16/2018	43+40	21 ft N. of center line	37.00	>5	<32.00	3	34.00
HA-053	8/20/2018	44+30	15 ft S. of center line	37.50	>5	<32.50	3	34.50
HA-054	8/20/2018	44+90	21 ft N. of center line	37.50	>5	<32.50	3	34.50
HA-055	8/20/2018	45+50	15 ft S. of center line	37.50	>5	<32.50	3	34.50
HA-056	8/20/2018	46+10	16 ft N. of center line	37.00	>5	<32.00	3	34.00
HA-057	8/20/2018	46+70	17 ft S. of center line	38.00	>5	<33.00	3	35.00
HA-058	8/20/2018	47+30	18 ft N. of center line	38.00	>5	<33.00	3	35.00
HA-059	8/20/2018	47+90	15 ft S. of center line	37.50	>5	<32.50	3	34.50
HA-060	8/20/2018	48+50	19 ft N. of center line	38.00	>5	<33.00	3	35.00
HA-061	8/20/2018	49+10	16 ft S. of center line	38.00	>5	<33.00	3	35.00
HA-062	8/20/2018	49+70	18 ft N. of center line	38.00	>5	<33.00	3	35.00

Boring No.	Date Drilled	*Approximate Station No.	*Approximate Offset (ft)	*Approximate Surface Elevation (ft)	**Measured Water Table Depth (ft)	*Approximate Water Table Elevation (ft)	*Estimated SHGWL Depth (ft)	**Estimated SHWGL Elevation (ft)
HA-063	8/20/2018	50+20	21 ft S. of center line	37.00	>5	<32.00	3	34.00
HA-064	8/20/2018	51+20	20 ft N. of center line	37.50	>5	<32.50	3	34.50
HA-065	8/20/2018	51+50	17 ft S. of center line	38.00	>5	<33.00	3	35.00
HA-066	8/20/2018	52+10	15 ft N. of center line	37.50	>5	<32.50	3	34.50
HA-067	8/20/2018	52+70	15 ft S. of center line	38.00	>5	<33.00	3	35.00
HA-068	8/21/2018	53+30	14 ft N. of center line	38.00	>5	<33.00	3	35.00
HA-069	8/21/2018	53+90	15 ft S. of center line	38.00	>5	<33.00	3	35.00
HA-070	8/21/2018	54+50	16 ft N. of center line	37.50	>5	<32.50	3	34.50
HA-071	8/21/2018	55+10	15 ft S. of center line	37.50	>5	<32.50	3	34.50
HA-072	8/21/2018	55+70	17 ft N. of center line	37.00	>5	<32.00	3	34.00
HA-073	8/21/2018	56+30	15 ft S. of center line	37.50	>5	<32.50	3	34.50
HA-074	8/21/2018	57+00	15 ft N. of center line	38.00	>5	<33.00	3	35.00
HA-075	8/21/2018	57+50	16 ft S. of center line	37.00	>5	<32.00	3	34.00
HA-076	8/21/2018	58+10	16 ft N. of center line	37.50	>5	<32.50	3	34.50
HA-077	8/21/2018	58+70	15 ft S. of center line	37.00	>5	<32.00	3	34.00
HA-078	8/21/2018	59+30	17 ft N. of center line	37.00	>5	<32.00	3	34.00
HA-079	8/21/2018	59+90	15 ft S. of center line	36.50	>5	<31.50	3	33.50
HA-080	8/21/2018	60+20	16 ft N. of center line	37.50	>5	<32.50	3	34.50
HA-081	8/22/2018	61+10	16 ft S. of center line	36.50	>5	<31.50	3	33.50
HA-082	8/22/2018	61+70	17 ft N. of center line	36.00	>5	<31.00	3	33.00
HA-083	8/22/2018	62+30	15 ft S. of center line	35.50	>5	<30.50	3	32.50
HA-084	8/22/2018	63+00	16 ft N. of center line	36.00	>5	<31.00	3	33.00
HA-085	8/22/2018	63+60	15 ft S. of center line	36.00	>5	<31.00	3	33.00
HA-086	8/22/2018	64+10	18 ft N. of center line	36.00	>5	<31.00	3	33.00
HA-087	8/22/2018	64+70	15 ft S. of center line	36.00	>5	<31.00	3	33.00
HA-088	8/22/2018	65+30	16 ft N. of center line	35.50	>5	<30.50	3	32.50
HA-089	8/22/2018	65+90	14 ft S. of center line	35.00	>5	<30.00	3	32.00
HA-090	8/22/2018	66+50	16 ft N. of center line	35.00	>5	<30.00	3	32.00
HA-091	8/22/2018	67+10	17 ft S. of center line	35.00	4.7	30.30	3	32.00
HA-092	8/22/2018	67+70	16 ft N. of center line	35.00	4.5	30.50	3	32.00
HA-093	8/22/2018	68+30	16 ft S. of center line	35.00	5	30.00	3	32.00
HA-094	8/22/2018	68+90	17 ft N. of center line	34.50	4.9	29.60	3	31.50

Boring No.	Date Drilled	*Approximate Station No.	*Approximate Offset (ft)	*Approximate Surface Elevation (ft)	**Measured Water Table Depth (ft)	*Approximate Water Table Elevation (ft)	*Estimated SHGWL Depth (ft)	**Estimated SHWGL Elevation (ft)
HA-095	8/22/2018	69+50	15 ft S. of center line	34.50	>5	<29.50	3	31.50
HA-096	8/23/2018	70+10	20 ft N. of center line	35.00	4.9	30.10	3	32.00
HA-097	8/23/2018	70+90	18 ft S. of center line	34.50	>5	<29.50	3	31.50
HA-098	8/23/2018	71+00	18 ft N. of center line	34.50	>5	<29.50	3	31.50
HA-099	8/23/2018	71+90	10 ft S. of center line	34.00	>5	<29.00	3	31.00
HA-100	8/23/2018	72+00	12 ft N. of center line	34.50	>5	<29.50	3	31.50
HA-101	8/23/2018	73+10	16 ft S. of center line	34.00	>5	<29.00	3	31.00
HA-102	8/23/2018	73+70	17 ft N. of center line	34.00	>5	<29.00	3	31.00
HA-103	8/23/2018	74+30	16 ft S. of center line	34.00	>5	<29.00	3	31.00
HA-104	8/23/2018	74+90	15 ft N. of center line	34.00	>5	<29.00	3	31.00
HA-105	8/23/2018	75+50	16 ft S. of center line	33.50	>5	<28.50	3	30.50
HA-106	8/23/2018	76+10	15 ft N. of center line	34.00	>5	<29.00	3	31.00
HA-107	8/23/2018	76+70	17 ft S. of center line	33.50	>5	<28.50	3	30.50
HA-108	8/23/2018	77+30	16 ft N. of center line	33.00	>5	<28.00	3	30.00
HA-109	8/23/2018	77+90	15 ft S. of center line	33.50	>5	<28.50	3	30.50
HA-110	8/23/2018	78+20	16 ft N. of center line	33.50	>5	<28.50	3	30.50
HA-111	8/24/2018	79+10	22 ft S. of center line	33.00	4.5	28.50	3	30.00
HA-112	8/24/2018	79+70	22 ft N. of center line	32.50	4.3	28.20	3	29.50
HA-113	8/24/2018	80+30	12 ft S. of center line	32.00	4	28.00	2.5	29.50
HA-114	8/24/2018	81+00	21 ft N. of center line	32.00	4	28.00	2.5	29.50
HA-115	8/24/2018	81+50	12 ft S. of center line	31.00	3.5	27.50	2.5	28.50
HA-116	8/24/2018	82+10	20 ft N. of center line	32.00	3.5	28.50	2.5	29.50
HA-117	8/24/2018	82+70	12 ft S. of center line	31.00	2	29.00	2	29.00
HA-118	8/24/2018	83+30	20 ft N. of center line	31.00	2	29.00	2	29.00
HA-119	8/24/2018	83+90	13 ft S. of center line	30.00	2	28.00	2	28.00
HA-120	8/24/2018	84+50	18 ft N. of center line	30.00	2	28.00	2	28.00
HA-121	8/24/2018	85+00	12 ft S. of center line	30.00	2	28.00	2	28.00
HA-122	8/24/2018	85+70	18 ft N. of center line	30.00	2	28.00	2	28.00
HA-123	8/24/2018	86+30	18 ft S. of center line	28.50	2	26.50	2	26.50
HA-124	8/24/2018	86+90	18 ft N. of center line	29.50	2.5	27.00	2	27.50
HA-125	8/24/2018	87+50	19 ft S. of center line	30.00	4.5	25.50	3	27.00
HA-126	8/24/2018	88+10	17 ft N. of center line	30.00	4.2	25.80	3	27.00

Boring No.	Date Drilled	*Approximate Station No.	*Approximate Offset (ft)	*Approximate Surface Elevation (ft)	**Measured Water Table Depth (ft)	*Approximate Water Table Elevation (ft)	*Estimated SHGWL Depth (ft)	**Estimated SHWGL Elevation (ft)
HA-127	8/24/2018	88+70	17 ft S. of center line	30.00	3.8	26.20	3	27.00
HA-128	8/24/2018	89+30	18 ft N. of center line	30.00	3.9	26.10	3	27.00
HA-129	8/24/2018	89+40	17 ft S. of center line	30.00	4	26.00	3	27.00
HA-130	8/27/2018	90+50	18 ft N. of center line	30.00	3.9	26.10	3	27.00
HA-131	8/27/2018	91+10	19 ft S. of center line	30.00	4	26.00	3	27.00
HA-132	8/27/2018	91+70	21 ft N. of center line	28.00	3.5	24.50	3	25.00
HA-133	8/27/2018	92+30	22 ft S. of center line	29.50	3.5	26.00	3	26.50
HA-134	8/27/2018	92+90	22 ft N. of center line	29.00	4	25.00	3	26.00
HA-135	8/27/2018	93+50	25 ft S. of center line	28.00	4	24.00	3	25.00
HA-136	8/27/2018	94+10	11 ft N. of center line	30.00	3.5	26.50	3	27.00
HA-137	8/27/2018	94+70	25 ft S. of center line	29.00	3.5	25.50	3	26.00
HA-138	8/27/2018	95+30	12 ft N. of center line	30.00	4	26.00	3	27.00
HA-139	8/27/2018	95+90	22 ft S. of center line	29.50	3.8	25.70	3	26.50
HA-140	8/27/2018	96+00	16 ft N. of center line	30.00	4.5	25.50	3	27.00
HA-141	8/27/2018	97+50	18 ft S. of center line	29.00	4.2	24.80	3	26.00
HA-142	8/27/2018	97+70	22 ft N. of center line	29.00	4.5	24.50	3	26.00
HA-143	8/27/2018	98+30	18 ft S. of center line	28.00	3.5	24.50	3	25.00
HA-144	8/27/2018	98+90	22 ft N. of center line	27.50	1.5	26.00	2	25.50
HA-145	8/27/2018	99+50	20 ft S. of center line	26.50	2	24.50	2	24.50
HA-146	8/28/2018	100+10	22 ft N. of center line	27.00	2	25.00	2	25.00
HA-147	8/28/2018	100+70	20 ft S. of center line	27.00	2	25.00	2	25.00
HA-148	8/28/2018	101+30	22 ft N. of center line	27.00	2.5	24.50	2	25.00
HA-149	8/28/2018	101+90	20 ft S. of center line	27.00	2.3	24.70	2	25.00
HA-150	8/28/2018	102+50	17 ft N. of center line	27.00	3	24.00	2.5	24.50
HA-151	8/28/2018	103+10	18 ft S. of center line	27.00	3.2	23.80	2.5	24.50
HA-152	8/28/2018	103+70	18 ft N. of center line	27.00	3.6	23.40	2.5	24.50
HA-153	8/28/2018	104+30	17 ft S. of center line	27.00	3.8	23.20	2.5	24.50
HA-154	8/28/2018	104+90	19 ft N. of center line	26.00	4.5	21.50	3	23.00
HA-155	8/28/2018	105+50	22 ft S. of center line	27.00	4.3	22.70	3	24.00
HA-156	8/28/2018	105+60	20 ft N. of center line	27.00	4.5	22.50	3	24.00
HA-157	8/28/2018	106+70	22 ft S. of center line	27.00	4.5	22.50	3	24.00
HA-158	8/28/2018	107+30	18 ft N. of center line	26.50	4.2	22.30	3	23.50

Boring No.	Date Drilled	*Approximate Station No.	*Approximate Offset (ft)	*Approximate Surface Elevation (ft)	**Measured Water Table Depth (ft)	*Approximate Water Table Elevation (ft)	*Estimated SHGWL Depth (ft)	**Estimated SHWGL Elevation (ft)
HA-159	8/28/2018	107+90	19 ft S. of center line	27.00	4.5	22.50	3	24.00
HA-160	8/28/2018	108+50	22 ft N. of center line	26.50	4.5	22.00	3	23.50
HA-161	8/29/2018	109+10	20 ft S. of center line	27.00	4	23.00	3	24.00
HA-162	8/29/2018	109+70	19 ft N. of center line	26.50	4.2	22.30	3	23.50
HA-163	8/29/2018	110+30	22 ft S. of center line	27.00	4	23.00	3	24.00
HA-164	8/29/2018	110+90	18 ft N. of center line	26.50	4	22.50	3	23.50
HA-165	8/29/2018	111+50	22 ft S. of center line	27.00	4.2	22.80	3	24.00
HA-166	8/29/2018	112+10	23 ft N. of center line	26.00	4.3	21.70	3	23.00
HA-167	8/29/2018	112+70	23 ft S. of center line	26.00	4.2	21.80	3	23.00

Notes:

*Approximate elevation from the Topographic Map provided on 1/8/2019

** Water table depth measured at the time of boring from existing ground surface.