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- Rockledge
- Sarasota
- St. Petersburg
- Tampa
- Tifton, GA
- West Palm Beach

June 26, 2019

Caliri, LLC
1021 Royal Gardens Circle
Lake Mary, Florida 32746

Attention: Mr. Allen Pyle
allenlot@hotmail.com

Reference: Preliminary Geotechnical Exploration
Caliri – Former Golf Range Property
Central Parkway and Franklin Avenue
Altamonte Springs, Seminole County, Florida
UES Project No. 0130.1900229.0000
UES Report No. 1685630

Dear Mr. Pyle:

Universal Engineering Sciences, Inc. (UES) has completed a preliminary geotechnical exploration at the referenced site in Altamonte Springs, Florida. Our exploration was planned in conjunction with and authorized by you. Our exploration was performed in general accordance with UES Proposal No. 1671648 dated May 9, 2019 and generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

The following report presents the results of our field exploration with a geotechnical engineering interpretation of those results with respect to the project characteristics as provided to us. We have included soil and groundwater conditions at the boring locations, potential constraints to site development, and a preliminary geotechnical assessment regarding the planned construction.

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 No. 549

Ricardo C. Kiriakidis, PhD., P.E.
Geotechnical Department Manager

Andrew S. Wilderotter, P.E.
Geotechnical Project Manager
Date: _____
Florida Registration No. 65727



**UNIVERSAL ENGINEERING
SCIENCES**

PRELIMINARY GEOTECHNICAL EXPLORATION

CALIRI – FORMER GOLF RANGE PROPERTY
CENTRAL PARKWAY AND FRANKLIN AVENUE
ALTAMONTE SPRINGS, SEMINOLE COUNTY, FLORIDA

UES PROJECT No. 0130.1900229.0000
UES REPORT No. 1685630

PREPARED FOR:

Caliri, LLC
1021 Royal Gardens Circle
Lake Mary, Florida 32746

PREPARED BY:

Universal Engineering Sciences
3532 Maggie Boulevard
Orlando, Florida 32811
(407) 423-0504

June 26, 2019

Consultants in: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspection
Offices in: • Orlando (Headquarters) • Daytona Beach • Fort Myers • Fort Pierce • Gainesville • Jacksonville • Miami • Ocala • Palm Coast
• Panama City • Pensacola • Rockledge • Sarasota • St. Petersburg • Tampa • Tifton, GA • West Palm Beach • Atlanta, GA

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1.0 PROJECT DESCRIPTION

We understand that you are intending to sell the subject property in Altamonte Springs, Florida for possible re-development. The site has been previously used as a borrow site circa 1957 and subsequently became a Class III Solid Waste Facility between 1974 and 1984. Since then the property became a golf range facility and now is being considered for redevelopment. No site or development plans had been established at the time of our exploration. We assume that the re-development would consist of several low to mid-rise commercial structures or a high-rise office building.

Please note that our exploration was preliminary in nature and conducted to acquire general subsurface information only. Once final site configuration, building detail and structural/grading information is available, a comprehensive geotechnical exploration will be required to provide final design recommendations. Note that the information obtained from this exploration is not sufficient to meet the industry standard of care for final design of foundation systems, building and pavement grades, and stormwater ponds.

2.0 PURPOSE

The purposes of this preliminary exploration were:

- to explore the subsurface conditions at general locations and depths as directed by the client,
- to provide soil and groundwater conditions at the boring locations,
- to identify potential constraints to development and provide a preliminary geotechnical assessment regarding the planned construction

This report presents an evaluation of site conditions on the basis of geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards.

Our exploration was not designed to specifically address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. This evaluation requires a more extensive range of field services than those performed in this study. We would be pleased to conduct an exploration to evaluate the probable effect of the regional geology upon the proposed construction, if you so desire.

3.0 SITE DESCRIPTION

The subject site is located within Section 11, Township 21 South, Range 29 East in Seminole County, Florida. More specifically, the site is located on the south side of Central Parkway, roughly 1,000 feet west of Douglas Avenue. At the time of drilling, the subject property was vacant and undeveloped. Based on historical research, the property was previously used as a golf range, landfill facility and borrow pit.



3.1 SOIL SURVEY

There is one (1) soil type mapped vicinity of the subject property according to the USDA NRCS Soil Survey of Seminole County (soil survey). A brief summary of the mapped surficial soil type(s) is presented in Table I.

**TABLE I
SUMMARY OF PUBLISHED SOIL DATA**

Soil Symbol	Soil Type	Hydrologic Group	Drainage Characteristics	Depth of Published Seasonal High GWT (feet)
26	Udorthents, excavated	A	Moderately well drained	----

According the soil survey, Udorthents (26) consists of excavated areas of unconsolidated or heterogeneous soil and geologic materials which have been removed for fill materials (borrow pit).

3.2 TOPOGRAPHY

Site specific topographic information was not provided by the client for our review at the time of this report preparation. According to information obtained from the United States Geologic Survey (USGS) Forest City, Florida quadrangle map, the native ground surface elevation across the site area is approximately +75 to +85 feet National Geodetic Vertical Datum (NGVD). A copy of a portion of the USGS Map is included in Appendix A.

4.0 SCOPE OF SERVICES

The services conducted by UES during our preliminary geotechnical exploration are as follows:

- Drilled six (6) Standard Penetration Test (SPT) borings scattered throughout the subject property to depths of 50 and 55 feet below existing land surface (bls).
- Secured samples of representative soils encountered in the soil borings for review, laboratory analysis and classification by a Geotechnical Engineer.
- Measured the existing site groundwater levels
- Conducted laboratory testing on selected soil samples obtained in the field to determine their engineering properties.
- Prepared a report which documents the results of our preliminary exploration and laboratory testing program with analysis.

5.0 FIELD EXPLORATION

The SPT soil borings were performed with a truck mounted drilling rig. Horizontal and vertical survey control was not provided for the test locations prior to our field exploration program. UES located the test borings by using the provided site plan, measuring from existing on-site landmarks shown on an aerial photograph, and by using handheld GPS devices. The indicated



test locations should be considered accurate to the degree of the methodologies used. The approximate boring locations are shown in Appendix B.

The SPT borings, designated B-01, B-03 and B-04 through B-08 on the attached Boring Location Plan in Appendix B, were performed in general accordance with the procedures of ASTM D 1586 “Standard Method for Penetration Test and Split-Barrel Sampling of Soils”.

Initially, the scope of our exploration included two (2) borings to 50 feet and six (6) borings to 35 feet. Based on the depth of the landfill debris, the shallower borings were extended until native soils were encountered. Two (2) of the proposed borings were eliminated to make up for the additional footage.

6.0 LABORATORY TESTING

The soil samples recovered from the test borings were returned to our laboratory and visually classified in general accordance with ASTM D 2487 “Standard Classification of Soils for Engineering Purposes” (Unified Soil Classification System). Based on the results of the borings and the subsurface conditions encountered, no samples were submitted for laboratory index testing as part of this preliminary study.

7.0 SUBSURFACE SOIL CONDITIONS

7.1 GENERALIZED SOIL PROFILE

The results of our field exploration and laboratory analysis, together with pertinent information obtained from the SPT borings, such as soil profiles, penetration resistance and groundwater levels are shown on the boring logs included in Appendix B. The Key to Boring Logs, Soil Classification Chart is also included in Appendix B. The soil profiles were prepared from field logs after the recovered soil samples were examined by a Geotechnical Engineer. The stratification lines shown on the boring logs represent the approximate boundaries between soil types, and may not depict exact subsurface soil conditions. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils encountered at our boring locations is presented in Table II. For detailed soil profiles, please refer to the attached boring logs.

TABLE II
 GENERALIZED SOIL PROFILE

Typical Depth (feet, bls)		Soil Description	Range of SPT “N” Values (blows/ft)
From	To		
Surface	4	Very loose to medium dense fine SAND [SP-SM] with traces of concrete debris	3 to 12
4	43	LANDFILL WASTE AND CLEARING DEBRIS	3 to 30
43	55*	Very loose to very dense fine SAND [SP, SP-SM] and silty-clayey SAND [SC, SC-SM] with cemented sands	2 to 50+

* denotes maximum termination depth of the borings



7.2 NOTABLE FINDINGS – LANDFILL DEBRIS

Up to 48 feet of landfill materials were encountered at the boring locations. The landfill materials consisted of typical waste (rubber, plastic, trash, etc.), construction/demolition debris (concrete, asphalt, metal, wood, etc.) and clearing debris (tree stumps, roots, leaves, organics, etc.). These landfill materials are unsuitable for support of structures, pavements, utilities, etc. The use of a geogrid reinforced subgrade, reinforced mat/slab foundations and/or deep pile foundations will be necessary to limit settlements within the building, pavement and utility line areas.

It should also be noted that strong gas (methane) odors were observed during drilling operations. Vapors could be seen emitting from the borehole at boring location B-03. Passive or active vapor mitigation systems will likely need to be installed beneath the buildings to prevent vapor intrusion if the landfill materials remain.

8.0 GROUNDWATER CONDITIONS

We measured the water levels in the boreholes on June 5 through 7, 2019 during drilling operations. The encountered groundwater levels at the boring locations ranged from approximately 35 to 45 feet bls. Stabilized groundwater readings were not obtained due to the use of drilling fluid and the grouting of the boreholes. The non-stabilized water levels are shown on the individual boring logs in Appendix B. Fluctuations in groundwater levels should be anticipated throughout the year, primarily due to seasonal variations in rainfall, surface runoff, and other factors that may vary from the time the borings were conducted.

9.0 PRELIMINARY GEOTECHNICAL ASSESSMENT

9.1 SUBGRADE PREPARATION AND FOUNDATION OPTIONS

Based on the results of our exploration, unsuitable landfill waste and clearing debris was encountered to depths of roughly 40 to 45 feet. We assume that the proposed development would consist of either several low to mid-rise commercial structures or a high-rise office building. Options for supporting the proposed structures are as follows:

- Complete removal of unsuitable debris laden soils – Based on depth of the unsuitable soils (40+ feet), we do not believe this option would be practical for this project.
- Partial excavation with reinforced subgrade and mat foundations – This option would be feasible for low to mid-rise (3 stories or less) construction.
- Deep foundations – The use of deep foundations would be the most practical option for high-rise construction.

A preliminary discussion of these subgrade preparation and foundation options are presented in the following sections.



9.1.1 Complete Removal and Replacement

Provided that the landfill debris materials are completely removed and replaced with compacted approved backfill, conventional shallow foundations would be adequate to support most structures with loadings of up to 1,500 kips for individual columns and 35 kips/ft for walls. Based on our experience with similar projects, this would equate to about a 5 to 8 story office/commercial building. However, based on the depth and nature of the unsuitable soils, complete over-excavation and replacement is most likely not a practical or economically feasible option.

9.1.2 Reinforced Subgrade and Mat Foundations

For typical low to mid-rise structures (3 stories or less), we believe that a geogrid reinforced subgrade with a mat foundation would be the most viable option. For low-rise construction (up to 2 stories), it is anticipated that 4 feet of suitable subgrade soils with geotextile reinforcement would be necessary. For mid-rise construction (2 to 3 stories), we anticipate that a 6 foot reinforced subgrade section would be necessary. Partial excavation of the landfill materials would likely be necessary depending on structural loading and final grading. Based on our work with similar projects, 2 to 4 layers of geotextile would likely be required. The geotextile would consist of a combination of Mirafi RSi and Tensar TX products. Once the subgrade has been properly prepared, the structures could be supported on reinforced mat/slab foundations.

9.1.3 Deep Foundations

For high-rise structures (4+ stories), we believe that the use of deep foundations would be necessary for adequate support. This option would limit the amount of earthwork and provide higher capacities for vertical construction. Driven piles (concrete or steel) or drilled piles/shafts would likely be the most feasible option for deep foundations. The piles/shafts would need to extend at least 10 feet below the landfill debris, or a minimum of 60 feet based on the results of preliminary borings. We anticipate that the deep foundations will need to extend to depths of 80 to 100 feet to achieve the required capacities. For driven piles, pre-drilling will likely be necessary to penetrate the construction debris in some areas. In addition, casing will likely be necessary for augered piles or drilled shafts to prevent the loss of concrete/grout within the debris zone.

9.3 PRELIMINARY PAVEMENT/UTILITY DESIGN

For the proposed asphaltic parking lots and roadways, we recommend the use of geogrid reinforced subgrade. At a minimum, the reinforced subgrade would consist of 2 layers of Tensar TX-160 geogrid and 3 feet of compacted sand below the base course. The first layer of geogrid would be placed 2 feet below the stabilized subgrade section. The second layer would be placed above the stabilized subgrade, immediately below the base course.

For below grade utility lines, any debris materials will need to be removed and replaced with clean compacted sand backfill to a depth of at least 2 feet below pipe bedding level. For large concrete pipes, a layer of geotextile would need to be installed below the 2 feet of compacted subgrade.



9.4 VAPOR MITIGATION

As mentioned previously, strong gas (methane) odors were observed during drilling operations at this site. Vapor mitigation methods will need to be considered as part of the building design. All buildings will need to include some form of vapor mitigation system. Once final grading plans and building configurations have been established, specific active or passive vapor systems will need to be designed. In addition, vapor/soil screening and additional site/laboratory testing should be performed to determine the levels and type of gases present at the site.

10.0 ADDITIONAL GEOTECHNICAL EXPLORATIONS

Please note that this exploration was preliminary in nature, and was designed to help determine the presence of any subsurface constraints which would significantly impact the intended development of the subject site, as well as affect the cost of construction. The information obtained from this exploration is not sufficient to meet the industry standard of care for final design of foundation systems, building and pavement grades, and stormwater ponds.

We strongly recommended that the information obtained from this preliminary exploration be supplemented with a more comprehensive subsurface exploration once the building layouts and the site plan have been finalized. Deeper soil borings may also be required to provide final foundation design recommendations. The foundations for the building and the pavement grades should be designed based on the information obtained from a comprehensive geotechnical exploration program.

This report has not been prepared to meet the full needs of design professionals, contractors, or any other parties. Any use of this report without the guidance of the geotechnical engineer who prepared it constitutes improper usage which could lead to erroneous assumptions, faulty conclusions, and other problems.

11.0 LIMITATIONS

This report has been prepared for the exclusive use of **Caliri, LLC** for the specific project discussed in this report. No other site or project facilities should be designed using the soil information contained in this report. As such, UES will not be responsible for the performance of any other site improvements designed using the data in this report.

This report should not be relied upon by unauthorized third parties without the expressed written consent of UES. Unauthorized third parties that rely upon the information contained herein without the expressed written consent of UES assume all risk and liability for such reliance.

The recommendations submitted in this report are based upon the data obtained from the 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. The nature and extent of such variations may not become evident until the course of construction. If variations become evident, it will then be necessary for a re-evaluation of the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of the variations.



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 estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information 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 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 UES 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 UES to locate or identify such concerns. UES 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.

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. A Geotechnical Business Council (GBC) publication, "Important Information About This Geotechnical Engineering Report" appears in Appendix C, and will help explain the nature of geotechnical issues.

Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

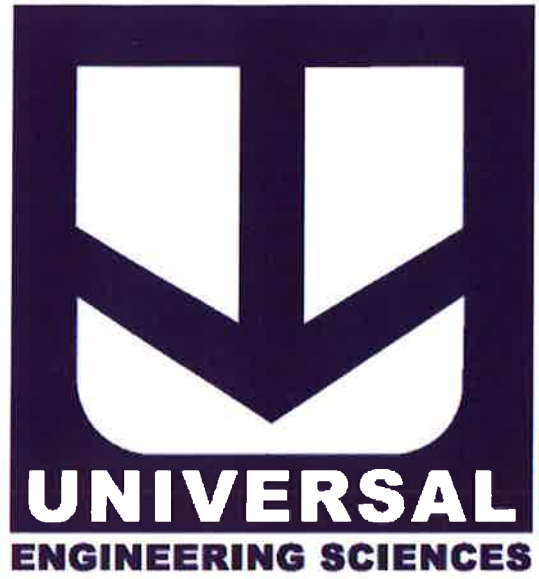
12.0 CLOSURE

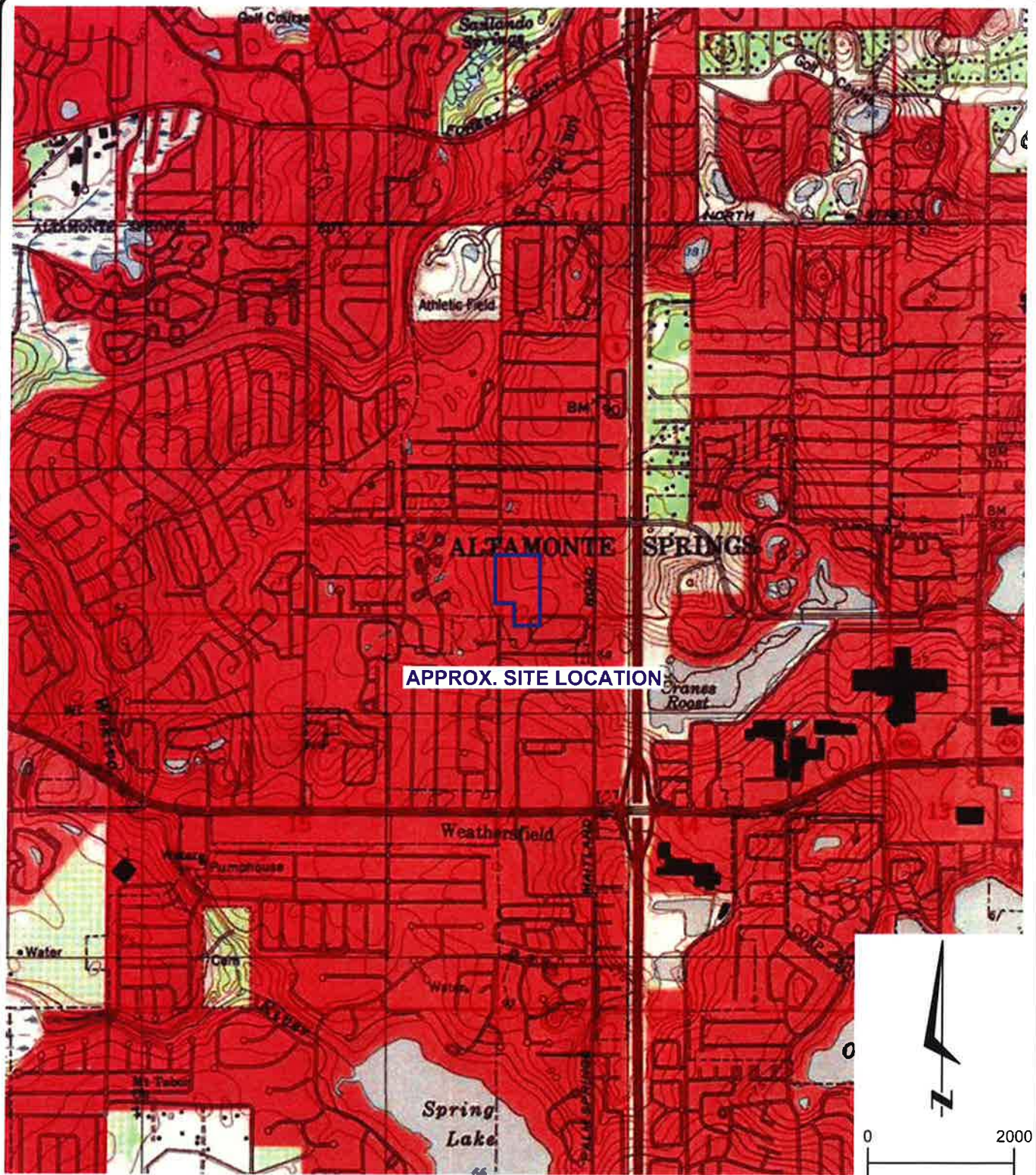
We appreciate this opportunity to be of service as your geotechnical consultant on this phase of the project and look forward to providing follow up explorations and geotechnical engineering analyses as the project progresses through the design phase. If you have any questions concerning this report or when we may be of any further service, please contact us.

* * * * *

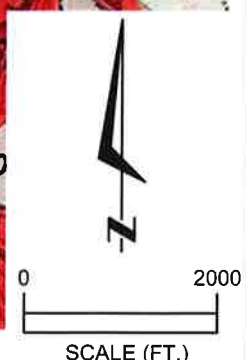


APPENDIX A





SOURCE: USGS QUADRANGLE MAP OF "FOREST CITY, FLORIDA".



PRELIMINARY GEOTECHNICAL EXPLORATION
 CALIRI FORMER GOLF RANGE PROPERTY
 CENTRAL PARKWAY & FRANKLIN AVENUE
 ALTAMONTE SPRINGS, SEMINOLE COUNTY, FLORIDA
 USGS TOPOGRAPHIC MAP



UNIVERSAL
 ENGINEERING SCIENCES

DRAWN BY: N.F.	DATE: 6 - 12 - 19	CHECKED BY: A.S.W.	DATE: 6 - 17 - 19
SCALE: AS SHOWN	PROJECT NO: 0130.1900229.0000	REPORT NO: 1685630	PAGE NO: A-1


19-0366-01

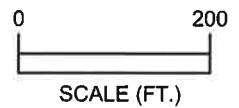
APPENDIX B





LEGEND


 APPROX. STANDARD PENETRATION TEST
 BORING LOCATION (SPT)
 PERFORMED 6/5/19 - 6/7/19



THIS DRAWING CREATED USING PLAN PROVIDED BY CLIENT.



PRELIMINARY GEOTECHNICAL EXPLORATION
CALIRI FORMER GOLF RANGE PROPERTY
CENTRAL PARKWAY & FRANKLIN AVENUE
ALTAMONTE SPRINGS, SEMINOLE COUNTY, FLORIDA
BORING LOCATION PLAN

DRAWN BY: N.F.	DATE: 6 - 12 - 19	CHECKED BY: A.S.W.	DATE: 6 - 17 - 19
SCALE: AS SHOWN	PROJECT NO: 0130.1900229.0000	REPORT NO: 1685630	PAGE NO: B-1

19-0366-01



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0130.1900229.0000

REPORT NO.: 1685630

PAGE: B-2.1

PROJECT: PRELIMINARY GEOTECHNICAL EXPLORATION
CALIRI FORMER GOLF RANGE PROPERTY
ALTAMONTE SPRINGS, FLORIDA

BORING I.D.: **B-01**

SHEET: **1 of 1**

SECTION: 11

TOWNSHIP: 21

RANGE: 29

CLIENT: CALIRI, LLC

G.S. ELEVATION (ft): N.S.

DATE STARTED: 6/7/19

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): 45

DATE FINISHED: 6/7/19

REMARKS: N.S. = NOT SURVEYED

DATE OF READING: 6/7/2019

DRILLED BY: ORL - KR/JB/NR

EST. SHGWT (ft):

TYPE OF SAMPLING: ASTM D 1586

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						Dark brown fine SAND with silt, trace of concrete debris [SP-SM]						
5						LANDFILL WASTE & CLEARING DEBRIS						
10												
15												
20												
25												
30												
35	X	22-5-5	10									
40	X	7-5-4	9									
45	X	9-4-5	9	▼								
50	X	2-1-1	2			Very loose light grey brown fine SAND with silt [SP-SM]						
55	X	3-4-4	8			-- loose						
						BORING TERMINATED AT 55.0 FEET						

W-10480.GPJ



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	0130.1900229.0000
REPORT NO.:	1685630
PAGE:	B-2.2

PROJECT: PRELIMINARY GEOTECHNICAL EXPLORATION
 CALIRI FORMER GOLF RANGE PROPERTY
 ALTAMONTE SPRINGS, FLORIDA

BORING I.D.: **B-03** SHEET: **1 of 1**
 SECTION: 11 TOWNSHIP: 21 RANGE: 29

CLIENT: CALIRI, LLC
 LOCATION: SEE BORING LOCATION PLAN
 REMARKS: N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S. DATE STARTED: 6/5/19
 WATER TABLE (ft): 45 DATE FINISHED: 6/5/19
 DATE OF READING: 6/5/2019 DRILLED BY: ORL - KR/JB/DW
 EST. SHGWT (ft): TYPE OF SAMPLING: ASTM D 1586

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						Medium dense very dark brown fine SAND with silt [SP-SM]						
		7-6-6	12									
		5-4-3	7			LANDFILL WASTE & CLEARING DEBRIS						
5		6-3-13	16									
		8-7-1	8									
		3-2-4	6									
10		3-5-5	10									
15		3-7-2	9									
20		3-3-3	6									
25		1-3-2	5									
30		9-6-11	17									
35		8-6-5	11									
40		3-5-3	8									
45		8-8-30	38	▼		Dense dark brown silty fine SAND, trace of concrete fragments [SM] -- STRONG GAS ODOR						
50		13-15-13	28			-- medium dense						
55		5-7-9	16			Medium dense very light brown fine SAND [SP]						
						BORING TERMINATED AT 55.0 FEET						

W-10480 GPJ



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	0130.1900229.0000
REPORT NO.:	1685630
PAGE:	B-2.3

PROJECT: PRELIMINARY GEOTECHNICAL EXPLORATION
CALIRI FORMER GOLF RANGE PROPERTY
ALTAMONTE SPRINGS, FLORIDA

BORING I.D.: **B-05** SHEET: **1 of 1**
SECTION: 11 TOWNSHIP: 21 RANGE: 29

CLIENT: CALIRI, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S. DATE STARTED: 6/6/19
WATER TABLE (ft): 40 DATE FINISHED: 6/6/19
DATE OF READING: 6/6/2019 DRILLED BY: ORL - KR/JB/DW
EST. SHGWT (ft): TYPE OF SAMPLING: ASTM D 1586

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												
		12-9-1	10		[SP-SM]	Loose to very loose dark brown fine SAND with silt, trace of concrete debris [SP-SM]						
		1-1-2	3									
5		8-3-3	6									
		3-2-3	5									
		2-3-3	6									
10		5-6-5	11									
					[X-Cross]	LANDFILL WASTE & CLEARING DEBRIS						
15		8-4-5	9									
20		1-2-1	3									
25		3-2-4	6									
30		1-1-2	3									
35		5-5-4	9									
40		50/1"	50/1"	▼								
45		8-11-15	26		[SC]		Medium dense grey brown clayey fine SAND [SC]					
50		5-6-6	12		[Dotted]		-- light brown					
							BORING TERMINATED AT 50.0 FEET					
55												

W-10480.GPJ



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0130.1900229.0000

REPORT NO.: 1685630

PAGE: B-2.4

PROJECT: PRELIMINARY GEOTECHNICAL EXPLORATION
CALIRI FORMER GOLF RANGE PROPERTY
ALTAMONTE SPRINGS, FLORIDA

BORING I.D.: **B-06**

SHEET: **1 of 1**

SECTION: 11

TOWNSHIP: 21

RANGE: 29

CLIENT: CALIRI, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S. DATE STARTED: 6/5/19
WATER TABLE (ft): 40 DATE FINISHED: 6/5/19
DATE OF READING: 6/5/2019 DRILLED BY: ORL - KR/JB/DW
EST. SHGWT (ft): TYPE OF SAMPLING: ASTM D 1586

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 grey brown fine SAND with silt [SP-SM]						
		4-3-3	6									
		4-2-2	4			-- brown						
5		2-1-3	4			LANDFILL WASTE & CLEARING DEBRIS						
		3-3-3	6									
		5-4-5	9									
10		4-5-10	15									
15		2-14-16	30									
20		8-10-11	21									
25		2-3-4	7									
30		4-11-13	24									
35		3-3-2	5									
40		5-4-3	7	▼								
45		2-1-1	2			Very loose grey brown clayey fine SAND [SC]						
50		2-5-2	7			Loose light grey brown silty clayey fine SAND with cemented sands [SC-SM] BORING TERMINATED AT 50.0 FEET						
55												

WL-10480.GPJ



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	0130.1900229.0000
REPORT NO.:	1685630
PAGE:	B-2.5

PROJECT: PRELIMINARY GEOTECHNICAL EXPLORATION
 CALIRI FORMER GOLF RANGE PROPERTY
 ALTAMONTE SPRINGS, FLORIDA

BORING I.D.: **B-07** SHEET: **1 of 1**
 SECTION: 11 TOWNSHIP: 21 RANGE: 29

CLIENT: CALIRI, LLC
 LOCATION: SEE BORING LOCATION PLAN
 REMARKS: N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S. DATE STARTED: 6/7/19
 WATER TABLE (ft): 40 DATE FINISHED: 6/7/19
 DATE OF READING: 6/7/2019 DRILLED BY: ORL - KR/JB/NR
 EST. SHGWT (ft): TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT/DAY)	ORG. CONT. (%)
									LL	PI		
0						Dark brown fine SAND with silt, trace of concrete debris [SP-SM]						
5						LANDFILL WASTE & CLEARING DEBRIS						
10												
15												
20												
25												
30												
35	X	7-4-4	8									
40	X	3-3-4	7	▼								
45	X	5-8-11	19			Medium dense light grey brown silty clayey fine SAND with cemented sand [SC-SM]						
50	X	3-4-12	16			BORING TERMINATED AT 50.0 FEET						
55												

W-10480 GPJ



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0130.1900229.0000

REPORT NO.: 1685630

PAGE: B-2.6

PROJECT: PRELIMINARY GEOTECHNICAL EXPLORATION
CALIRI FORMER GOLF RANGE PROPERTY
ALTAMONTE SPRINGS, FLORIDA

BORING I.D.: **B-08**

SHEET: **1 of 1**

SECTION: 11

TOWNSHIP: 21

RANGE: 29

CLIENT: CALIRI, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S. DATE STARTED: 6/7/19
WATER TABLE (ft): 35 DATE FINISHED: 6/7/19
DATE OF READING: 6/7/2019 DRILLED BY: ORL - KR/JB/NR
EST. SHGWT (ft): TYPE OF SAMPLING: ASTM D 1586

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						Dark brown fine SAND with silt, trace of concrete debris [SP-SM]						
5						LANDFILL WASTE & CLEARING DEBRIS						
10												
15												
20												
25												
30												
35	X	13-20-9	29	▼								
40	X	14-5-5	10			Loose light grey green clayey fine SAND with cemented sand [SC]						
45	X	37-50/5"	50/5"			-- very dense BORING TERMINATED AT 45.0 FEET						
50												
55												

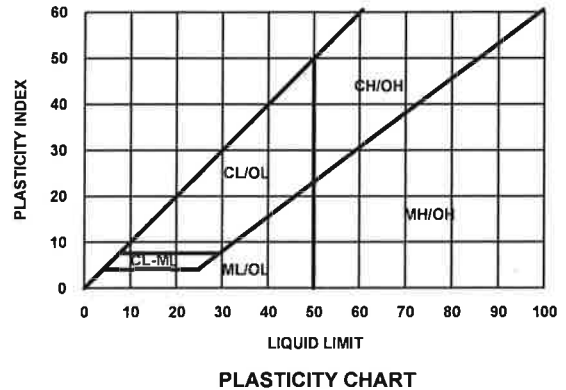
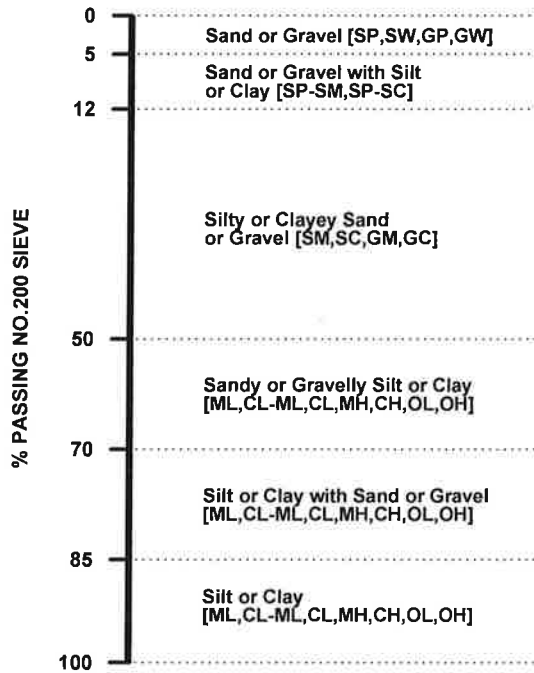
W-10480.GPJ

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*















**UNIVERSAL
ENGINEERING
SCIENCES, INC.**








GROUP NAME AND SYMBOL




COARSE GRAINED SOILS

	POORLY-GRADED SANDS [SP]		WELL-GRADED GRAVELS [GW]
	POORLY-GRADED SANDS WITH SILT [SP-SM]		POORLY-GRADED GRAVELS [GP]
	POORLY-GRADED SANDS WITH CLAY [SP-SC]		POORLY-GRADED GRAVELS WITH SILT [GP-GM]
	SILTY SANDS [SM]		POORLY-GRADED GRAVELS WITH CLAY [GP-GC]
	CLAYEY SANDS [SC]		SILTY GRAVELS [GM]
	SILTY CLAYEY SANDS [SC-SM]		CLAYEY GRAVELS [GC]

FINE GRAINED SOILS

	INORGANIC SILTS SLIGHT PLASTICITY [ML]
	INORGANIC SILTY CLAY LOW PLASTICITY [CL-ML]
	INORGANIC CLAYS LOW TO MEDIUM PLASTICITY [CL]
	INORGANIC SILTS HIGH PLASTICITY [MH]
	INORGANIC CLAYS HIGH PLASTICITY [CH]

HIGHLY ORGANIC SOILS

	ORGANIC SILTS/CLAYS LOW PLASTICITY [OL]**
	ORGANIC SILTS/CLAYS MEDIUM TO HIGH PLASTICITY [OH]**
	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS [PT]**

* IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.



RELATIVE DENSITY (SAND AND GRAVEL)

VERY LOOSE - 0 to 4 Blows/ft.
LOOSE - 5 to 10 Blows/ft.
MEDIUM DENSE - 11 to 30 Blows/ft.
DENSE - 31 to 50 Blows/ft.
VERY DENSE - more than 50 Blows/ft.

CONSISTENCY (SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
SOFT - 3 to 4 Blows/ft.
FIRM - 5 to 8 Blows/ft.
STIFF - 9 to 16 Blows/ft.
VERY STIFF - 17 to 30 Blows/ft.
HARD - more than 30 Blows/ft.

MISCELLANEOUS SYMBOLS

	ENCOUNTERED WATER TABLE
	ESTIMATED SEASONAL HIGH WATER TABLE
-200	PERCENT PASSING NO. 200 SIEVE
MC	MOISTURE CONTENT, %
WOR	SPOON ADVANCES DUE TO WEIGHT OF RODS AND/OR HAMMER

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX C



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.

Geotechnical 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 civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you 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 the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- 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. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of 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.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* 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 environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of 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. Confer with you GBC-Member geotechnical engineer for more information.



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CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

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 excavation 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 investigations 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.

