

GEOTECHNICAL INVESTIGATION

LAFAYETTE STREET
SIDEWALK IMPROVEMENTS
LEON COUNTY, FLORIDA

Prepared For:

GENESIS GROUP, INC.
2507 CALLAWAY ROAD
SUITE 100
TALLAHASSEE, FLORIDA 32303

Prepared By:

ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
3154 ELIZA ROAD
TALLAHASSEE, FLORIDA 32308
(850) 386-1253

*June 2011
18-110-11-01*



ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

June 22, 2011

EGS File Number: 18-110-11-01

Genesis Group, Inc.
2507 Callaway Road
Suite 100
Tallahassee, FL 32303

ATTN: Deji Ajose-Adeogun, P.E.
Project Engineer

SUBJECT: Geotechnical Investigation
Lafayette Street
Sidewalk Improvements
Leon County, Florida

Dear Deji:

Environmental and Geotechnical Specialists, Inc. (**EGS**) has completed the Geotechnical Investigation for the Lafayette Street Sidewalk Improvements project, as authorized by the **Genesis Group**. The proposed design includes the construction of eight (8) foot sidewalks with retaining walls and some minor slope changes to allow for the widened sidewalks.

As **EGS** understands, the investigation was conducted to provide geotechnical design information for the new sidewalks, retaining walls, and side slopes. This Report contains a summary of the subsurface investigation, the materials encountered, and design recommendations.

SITE LOCATION AND CONDITIONS

The project site is located along Lafayette Street, immediately east of downtown Tallahassee in Leon County, Florida. A Project Location Map has been included as **Figure 1**, which indicates the general limits of the proposed sidewalk project. As can be seen from **Figure 1**, the project is located in a heavily developed residential area.

A United States Geological Survey (**USGS**) Topographic Map of the project area is included as **Figure 2**. **Figure 2** shows the fairly significant increase in elevation from west to east within the project limits. Photographs of existing site conditions can be seen in **Figures 3** and **4**, which show typical site conditions along the project including heavy vegetation along the existing side slopes, a narrow existing sidewalk, and some existing earth retaining structures.

It should be noted that some sloughing and surface erosion of the existing steep side slopes was noted at several locations along the projects limits. **EGS believes** these are isolated locations where runoff is concentrated and is not an indication of global stability failure.

SCOPE OF SERVICES

The Scope of Services authorized for this project included the following:

- Installation of ten (10) soil borings ranging in depth from 10½ feet to 20½ feet;
- Conducting Static Hand Cone Penetrometer Index tests to evaluate the relative strength of the subsoils;
- Performing laboratory testing of representative soil samples to classify the soils, and to evaluate uniformity and strength characteristics;
- Development of design recommendations; and,
- Preparation of this Report.

SUBSURFACE INVESTIGATION

The subsurface investigation for this Report was conducted by **EGS** during the month of May 2011. Derwood Sheppard, P.E., of **EGS** served as the project engineer and Myron L. Hayden, P.E., was the supervising Senior Geotechnical Engineer.

This study was completed with ten (10) soil borings, which have been labeled with respect to the construction centerline stationing and offsets. The boring numbers, locations, depths, and elevations for all of the soil borings used for this study are presented in **TABLE 1**. In addition, the locations of all soil borings included are shown in the Report of Core Borings and Report of Test Sheets included as **APPENDIX A**.

In order to evaluate the relative strength and uniformity of the subsurface materials, Static Hand Cone Penetrometer Index (**CPI**) tests were conducted on approximately two and one-half (2½) feet intervals throughout the depth of soil borings. **CPI** tests were conducted in conjunction with hand-auger soil samples. To facilitate a correlation of the subsurface data, the **CPI "C"** values were converted to equivalent **SPT "N"** values using the correlation $N = "C"/4$.

The laboratory testing included water contents, Atterberg limits, grain-size distributions, unconfined compression, natural density, and direct shear. The subsurface soils were classified with respect to both the Unified Soil Classification System (**UNIFIED**) and the American Association of State Highway and Transportation Officials (**AASHTO**) Soil Classification System.

A summary of the field and laboratory testing can be seen in the Report of Core Borings Sheets provided as **APPENDIX A**. Copies of the Soil Boring Logs and Soil Classification Data Sheets have been provided in **APPENDICES B** and **C**, respectively.

SUBSURFACE CONDITIONS

Existing Soils

As can be seen in the Report of Core Borings included as **APPENDIX A**, the subsurface conditions along the proposed walkways generally consist of at least 10½ feet of loose to medium dense silty fine and clayey sand (**SM** and **SC**).

Groundwater

Groundwater Data is provided in **TABLE 2** for each of the soil borings installed during this investigation, which includes the measured and estimated “normal” seasonal high groundwater elevations. As can be seen from **TABLE 2**, groundwater was encountered in only one (1) of the soil borings installed for this study. However, due to the high fines content and plasticity of some soil layers, “perched” groundwater conditions should be anticipated in some areas of the project following periods of wet weather.

DESIGN RECOMMENDATIONS

Existing Soils

In general, the subsurface soils are suitable to support the sidewalk, retaining wall, and proposed slopes; however, the foundation soils are primarily clayey to clayey fine sand (**SC/A-6** to **SC/A-2-6**).

Although, **EGS does not believe** that overexcavation of the existing soils will be necessary; the relatively high fines content and plastic nature of the soils encountered throughout this project means compaction of the bearing surfaces may be difficult, especially when wet. If compaction of the bearing soils cannot be achieved, **EGS recommends** that the bearing surface be overexcavated to a depth of at least six (6) inches for the sidewalks and one (1) foot for the retaining wall below the proposed bearing surface, and replaced with fill material as described below.

Fill Soils

EGS recommends that all fill soils be placed and compacted in accordance with the *Florida Department of Transportation’s (FDOT) Standard Specification for Road and Bridge Construction Section 125* using “SELECT” fill material as defined by *FDOT Design Standard Index 505*.

Groundwater/Surface Water Control

EGS does not believe that groundwater control (dewatering) will be necessary for the excavation and placement of the proposed retaining wall. However, surface water needs to be properly controlled to avoid water ponding within the limits of the proposed project. The presence of ponded water coupled with machine and/or foot traffic could result in previously compacted or prepared surfaces being unacceptable for use without additional compaction and/or partial replacement of the disturbed soils.

Overexcavation Considerations

As mentioned previously, **EGS does not believe** that overexcavation of the existing soils will be necessary to provide a stable bearing surface. However, if highly plastic soils (**STRATUM 4**) are encountered at the proposed bearing surface, these soils should be removed to a depth of at least six (6) inches below the sidewalk and one (1) foot below the bearing surface of the retaining wall.

Geotechnical Design Parameters

Based on a wall footing width of four (4) feet or less and the foundation bearing surface being prepared as described above, the following geotechnical design parameters can be used for the design of the retaining walls:

- Natural Soil Density (γ_{nat})..... 110 lb/ft³
- Effective Soil Density (γ_{eff}).....48 lb/ft³
- Allowable Net Bearing Pressure (q_{all})..... 2,000 lb/ft²
- Active Earth Pressure Coefficient (K_a)..... 0.33
- Passive Earth Pressure Coefficient (K_p)..... 3.00
- At Rest Earth Pressure Coefficient (K_0)..... 0.50
- Modulus of Subgrade Reaction (K_s)..... 56,000 lb/ft³
- Total Settlement (δ_t)..... \approx 1.0 inch
- Total Differential Settlement (δ_d)..... \approx 0.7 inch

It should be noted that the geotechnical design parameters were developed based on a maximum total settlement of one (1) inch and a total differential settlement of less than three quarters ($\frac{3}{4}$) of an inch.

Slope Stability

EGS evaluated the global stability of the slope using the geotechnical data acquired during the subsurface investigation and laboratory direct shear testing. The analysis was completed using the **FHWA/AASHTO** Reinforced and Unreinforced Slope Stability Analysis computer program ReSSA (3.0). The results of slope stability analysis are included in **APPENDIX D**, along with the results of the Direct Shear Testing.

As can be seen from the results of the analysis, the slope has a minimum Factor of Safety of $FS = 2.12$ when modeled under extreme groundwater conditions, which includes groundwater seepage and worst-case soil conditions. **EGS believes** the existing and proposed slope modifications are sufficiently stable.

However, due to the removal of existing vegetation, **EGS recommends** that a Turf Reinforcement Mat (**TRM**) be placed on all slopes where the existing vegetation is removed. The **TRM** should meet the minimum requirements of a Type 2 (E-4 Erosion Mat) in accordance *FDOT Standard Design Index 199*. Additionally, the erosion mat shall be pinned and anchored in accordance with *FDOT Standard Design Index 501*.

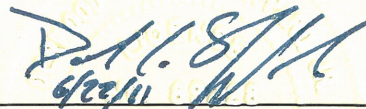
CLOSURE

The data and results presented in this Report are intended for the use of the **Genesis Group** and the **Leon County Department of Public Works** for the Lafayette Street sidewalk improvements, as described herein. This Report is not intended for any other use and will likely not be applicable. The data and recommendations presented in this Report are based on the borings made at the specific locations and depths noted. Subsurface conditions at other locations may vary significantly from those presented herein. Should data become available which is different from the data presented herein, Environmental and Geotechnical Specialists, Inc. requests the opportunity to review the data and make any modifications to the design recommendations which may be appropriate.

The Client recognizes the preliminary nature of the recommendations and that a detailed design is necessary prior to the start of construction.

SIGNATURE

Environmental and Geotechnical Specialists, Inc.
Florida Certificate of Engineering Authorization Number 6222



Derwood C. Sheppard, Jr., P.E.
Geotechnical Engineer II
FL P.E. Number 69228

TABLES

**TABLE 1
SOIL BORING LOCATION DATA
LAFAYETTE STREET
SIDEWALK IMPROVEMENTS
LEON COUNTY, FLORIDA**

BORING NUMBER	BORING DEPTH¹ (FEET)	ELEVATION² (FEET)	CONSTRUCTION CENTERLINE STATIONING³ (FEET)	OFFSET³ (FEET)
B-420-R1	10.5	113.7	420+00	15.0 RIGHT
B-420-R2	20.5	122.2	420+00	30.0 RIGHT
B-421+50-R1	10.5	122.0	421+50	15.0 RIGHT
B-421+50-R2	15.5	125.8	421+50	30.0 RIGHT
B-425+50	10.5	146.5	425+50	15.0 RIGHT
B-430+50-R1	10.5	175.2	430+50	15.0 RIGHT
B-430+50-R2	15.5	185.3	430+50	30.0 RIGHT
B-432+50-R1	10.5	183.3	432+50	18.0 RIGHT
B-432+50-R2	15.5	191.4	432+50	30.0 RIGHT
B-441+50	10.5	201.6	441+50	15.0 RIGHT

NOTES: 1. DEPTHS ARE BELOW EXISTING GROUND SURFACE.

2. ELEVATIONS ESTIMATED FROM DRAWINGS PROVIDED BY GENESIS GROUP, INC.

3. STATIONING AND OFFSETS ARE APPROXIMATE BASED ON DRAWINGS PROVIDED BY GENESIS GROUP, INC.

**TABLE 2
GROUNDWATER DATA
LAFAYETTE STREET
SIDEWALK IMPROVEMENTS
LEON COUNTY, FLORIDA**

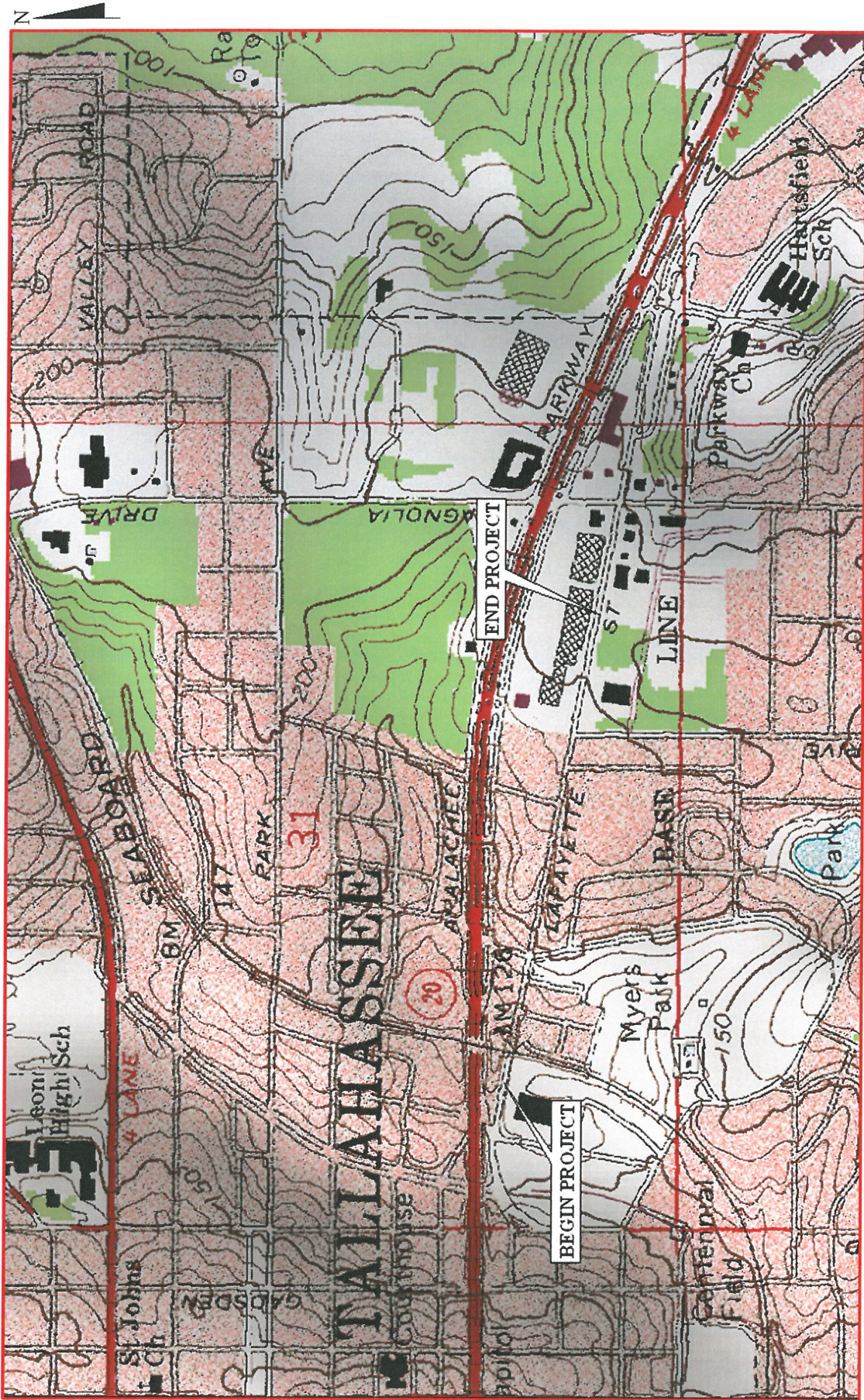
BORING NUMBER	BORING DEPTH ¹ (FEET)	ELEVATION OF GROUND SURFACE ² (FEET)	MEASURED GROUNDWATER		ESTIMATED "NORMAL" SEASONAL HIGH GROUNDWATER	
			DEPTH (FEET)	ELEVATION (FEET)	DEPTH (FEET)	ELEVATION (FEET)
B-420-R1	10.5	113.7	> 10.5	< 103.2	8.0	105.7
B-420-R2	20.5	122.2	19.5	102.7	17.0	105.2
B-421+50-R1	10.5	122.0	> 10.5	< 111.5	2.0 ³	120.0
B-421+50-R2	15.5	125.8	> 15.5	< 110.3	5.0 ³	120.8
B-425+50	10.5	146.5	> 10.5	< 136.0	3.0 ³	143.5
B-430+50-R1	10.5	175.2	> 10.5	< 164.7	> 10.5	< 164.7
B-430+50-R2	15.5	185.3	> 15.5	< 169.8	> 15.5	< 169.8
B-432+50-R1	10.5	183.3	> 10.5	< 172.8	> 10.5	< 172.8
B-432+50-R2	15.5	191.4	> 15.5	< 175.9	> 15.5	< 175.9
B-441+50	10.5	201.6	> 10.5	< 191.1	> 10.5	< 191.1

NOTES: 1. DEPTHS ARE BELOW THE EXISTING GROUND SURFACE.
2. ELEVATIONS ESTIMATED BASED ON DRAWINGS PROVIDED BY GENESIS GROUP, INC.
3. DEPTH ESTIMATED BASED ON GROUNDWATER POTENTIAL TO BECOME "PERCHED" ABOVE HIGHLY PLASTIC MATERIAL.

FIGURES



DRAWN: A. ROMANELLI, E.I.	CHECKED: M. HAYDEN, P.E.	TITLE: PROJECT LOCATION MAP LAFAYETTE STREET SIDEWALK IMPROVEMENTS LEON COUNTY, FLORIDA	
ENGINEER: D. SHEPPARD, P.E.	 Environmental & Geotechnical Specialists, Inc. 3154 Eliza Road Tallahassee, Florida 32308 Office #: (850) 386-1253 Fax #: (850) 385-8050		
CLIENT: GENESIS GROUP, INC.	SCALE:	DATE: JUNE 2011	FIGURE NO.: 1
PROJ. NO.: 18-110-11-01			



DRAWN: A. ROMANELLI, E.I.	CHECKED: M. HAYDEN, P.E.	<h1 style="text-align: center;">EGS</h1> <p style="text-align: center;">Environmental & Geotechnical Specialists, Inc. 3154 Eliza Road Tallahassee, Florida 32308 Office #: (850) 386-1253 Fax #: (850) 385-8050</p>	TITLE: USGS TOPOGRAPHIC MAP LAFAYETTE STREET SIDEWALK IMPROVEMENTS LEON COUNTY, FLORIDA
ENGINEER: D. SHEPPARD, P.E.	CLIENT: GENESIS GROUP, INC.		
PROJ. NO.: 18-110-11-01	SCALE:		

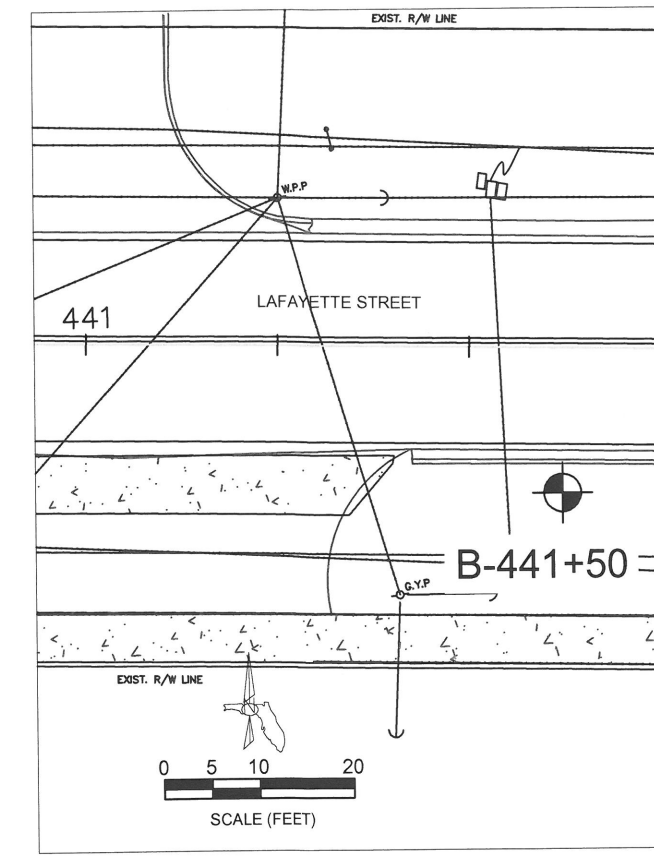
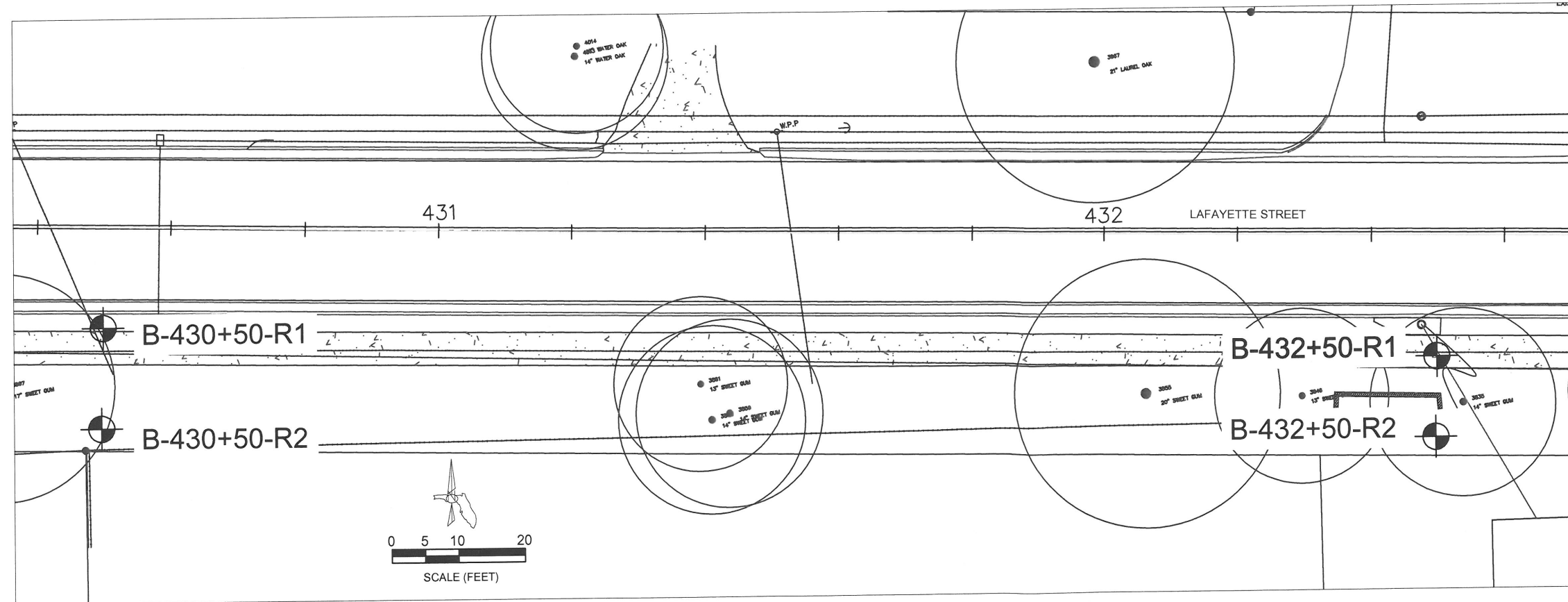
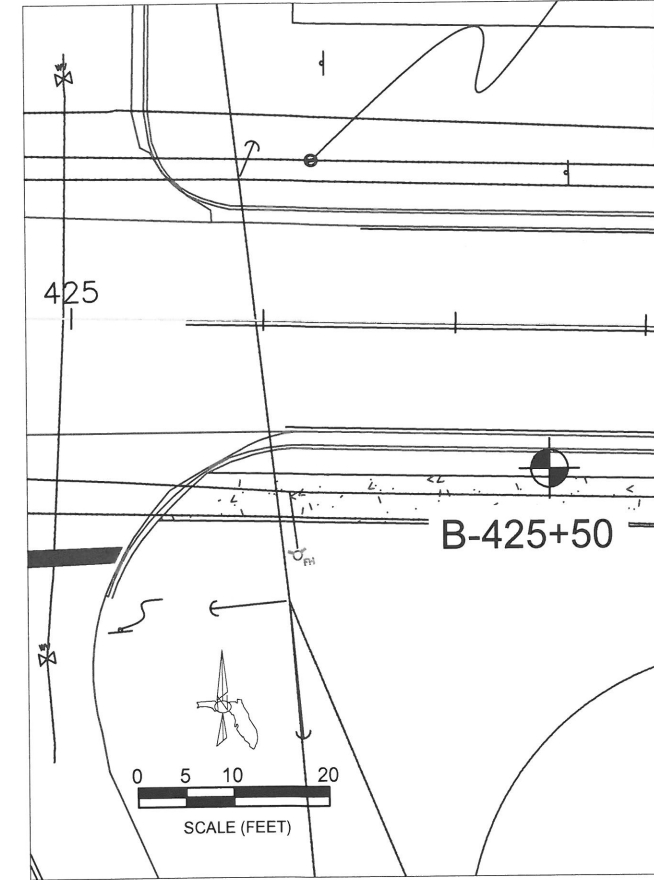
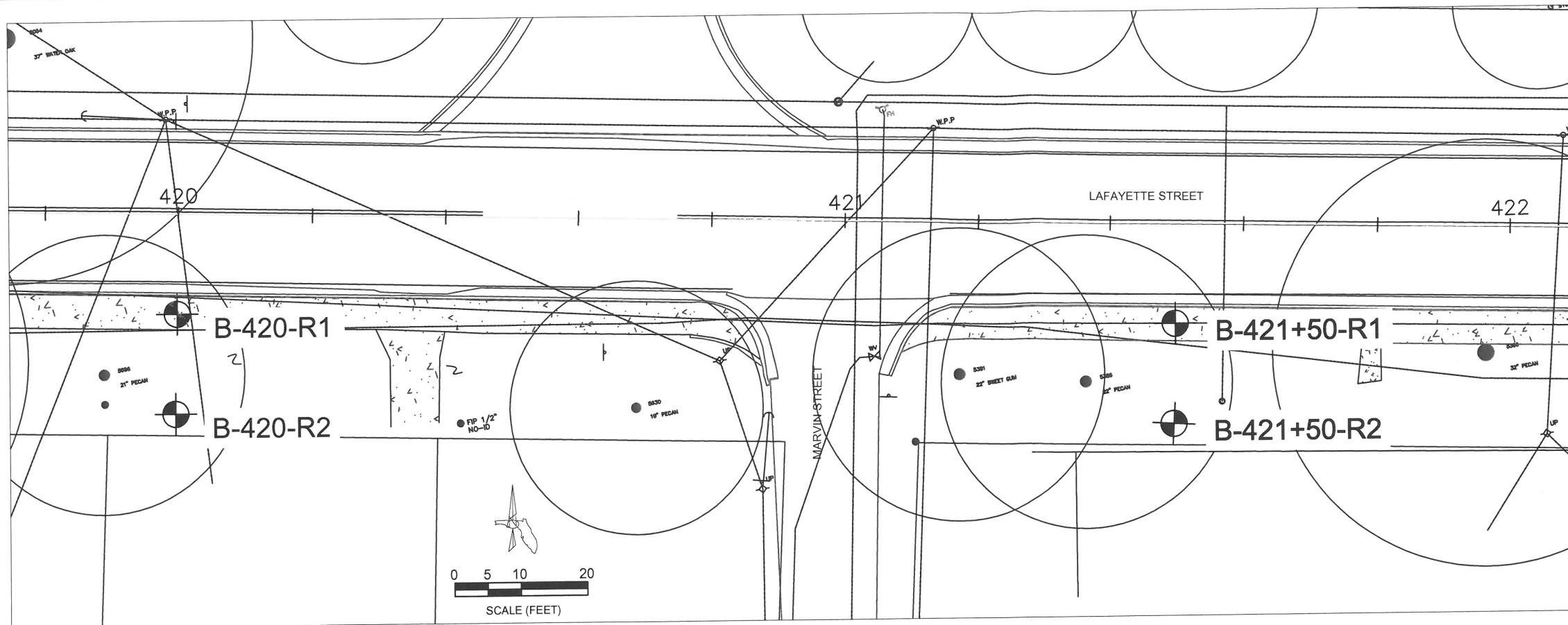


**FIGURE 3: PHOTOGRAPH OF EXISTING SITE CONDITIONS
(LOOKING EAST)**



**FIGURE 4: PHOTOGRAPH OF EXISTING SITE CONDITIONS
(LOOKING WEST)**

APPENDIX A
**REPORT OF CORE BORINGS
& REPORT OF TESTS**



REVISIONS				

SEAL:
 DERWOOD SHEPPARD, P.E.
 P.E. NO.: 69228

Environmental & Geotechnical Specialists, Inc.
EGS
 3154 ELIZA ROAD
 TALLAHASSEE, FLORIDA 32308
 OFFICE: (850) 386-1253
 FAX: (850) 385-8050
 Cert. of Auth.: 6222

LEON COUNTY
 PROJECT TITLE
LAFAYETTE STREET
SIDEWALK IMPROVEMENTS

REPORT OF CORE BORINGS
REPORT OF TESTS

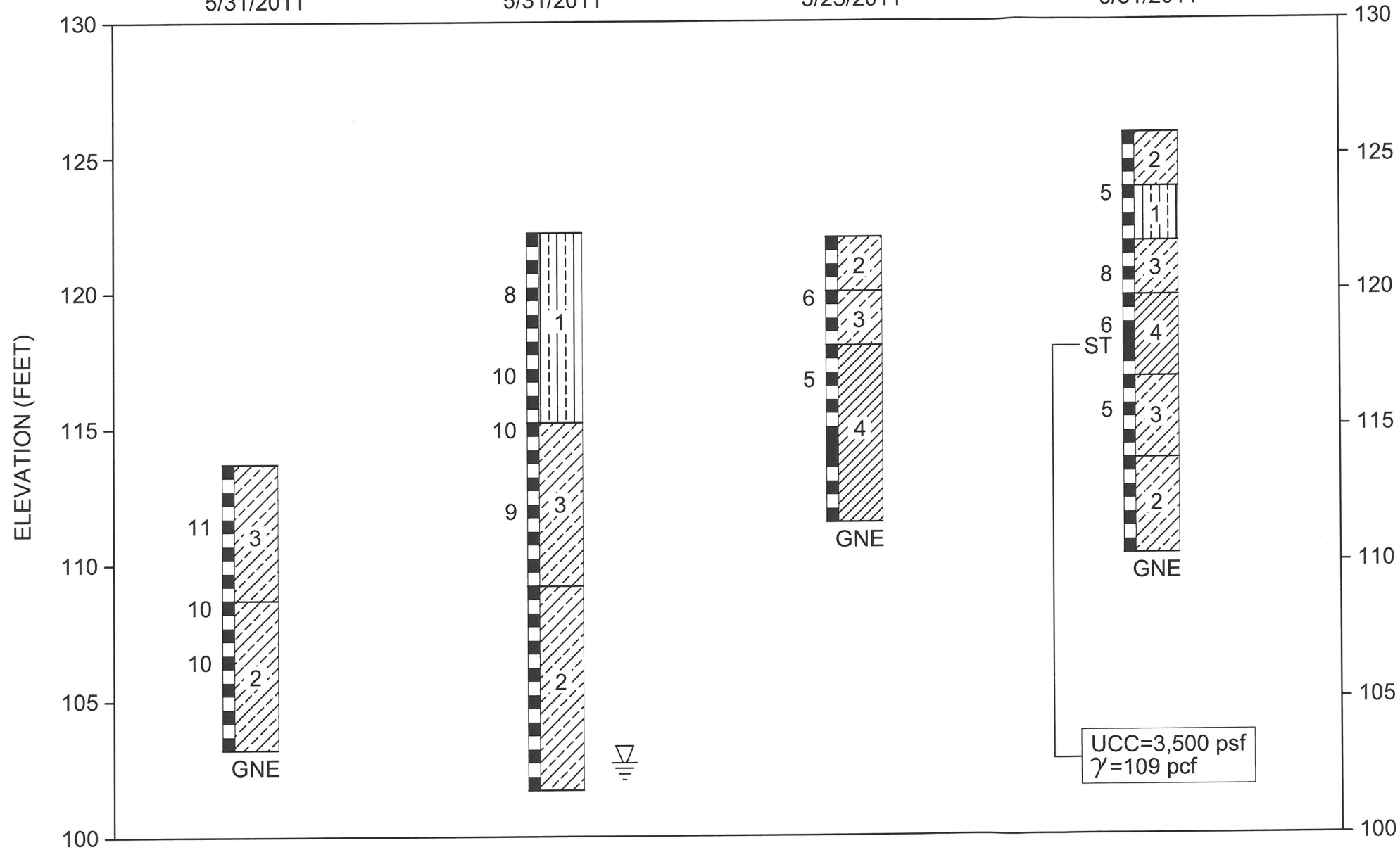
SHEET NO.

BORING No. B-420-R1
ELEV. 113.7 FEET
5/31/2011

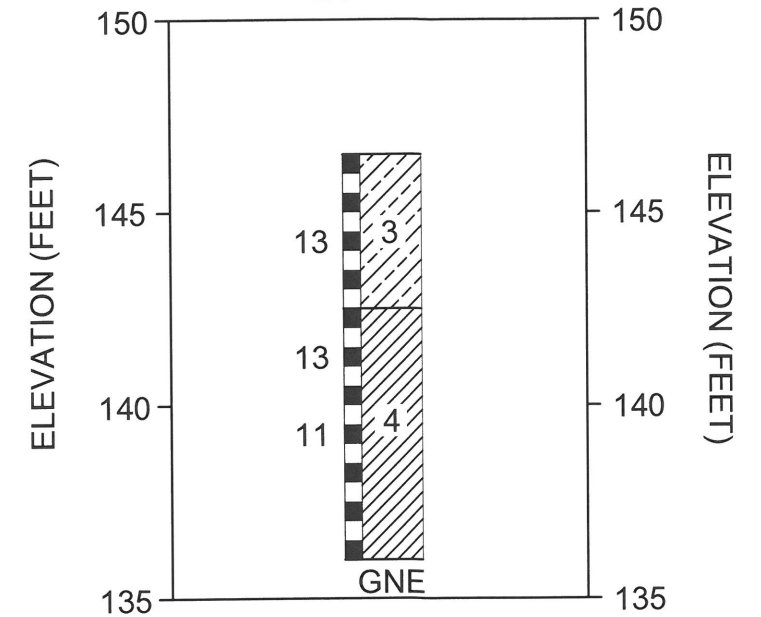
BORING No. B-420-R2
ELEV. 122.2 FEET
5/31/2011

BORING No. B-421+50-R1
ELEV. 122.0 FEET
5/23/2011

BORING No. B-421+50-R2
ELEV. 125.8 FEET
5/31/2011



BORING No. B-425+50
ELEV. 146.5 FEET
5/31/2011



REVISIONS

SEAL:

Environmental & Geotechnical Specialists, Inc.

LEON COUNTY

SHEET NO.

DERWOOD SHEPPARD, P.E.
P.E. NO.: 69228

EGS
Cert. of Auth.: 6222

3154 ELIZA ROAD
TALLAHASSEE, FLORIDA 32308
OFFICE: (850) 386-1253
FAX: (850) 385-8050

PROJECT TITLE
LAFAYETTE STREET
SIDEWALK IMPROVEMENTS

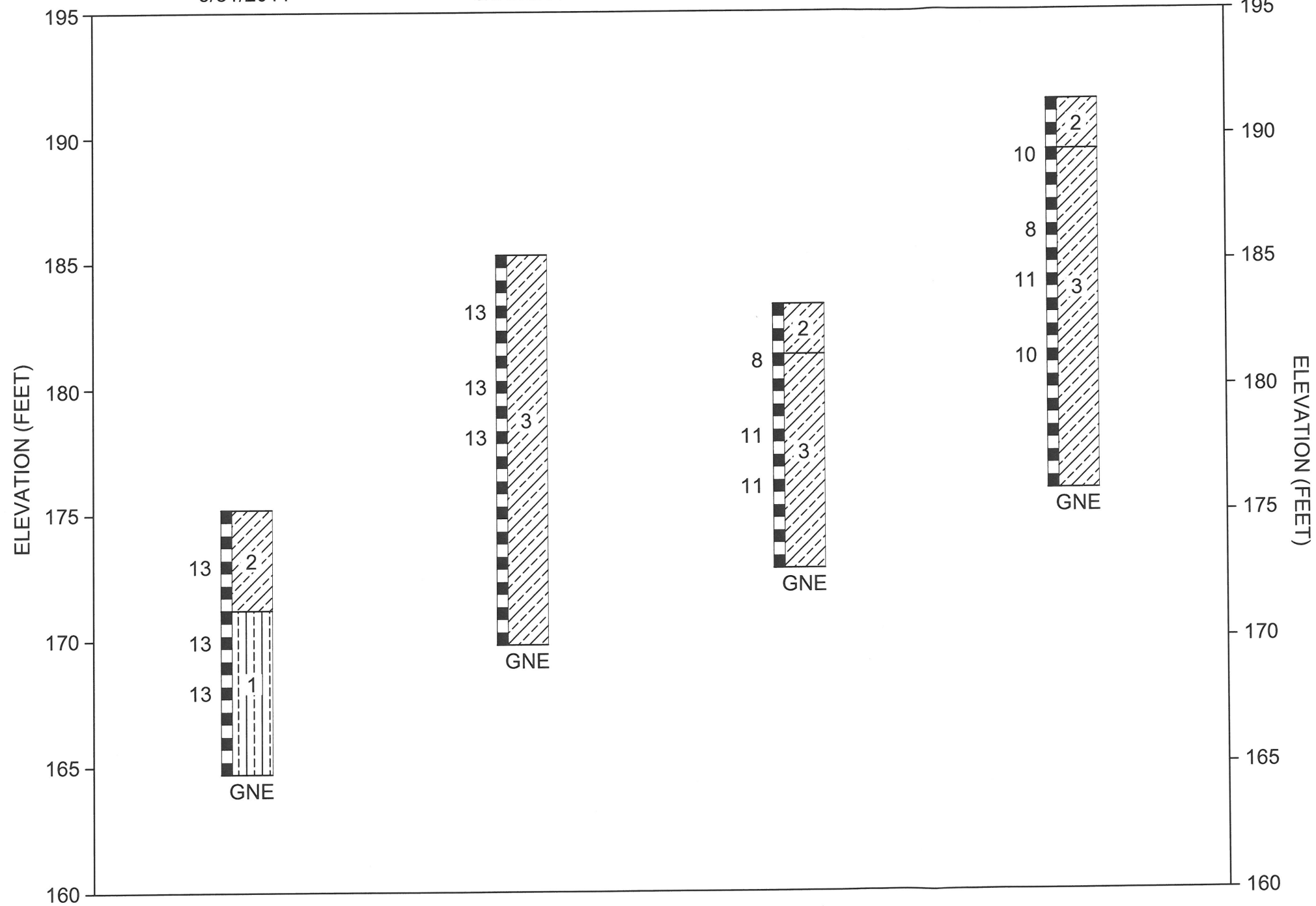
REPORT OF CORE BORINGS
REPORT OF TESTS

BORING No. B-430+50-R1
ELEV. 175.2 FEET
5/31/2011

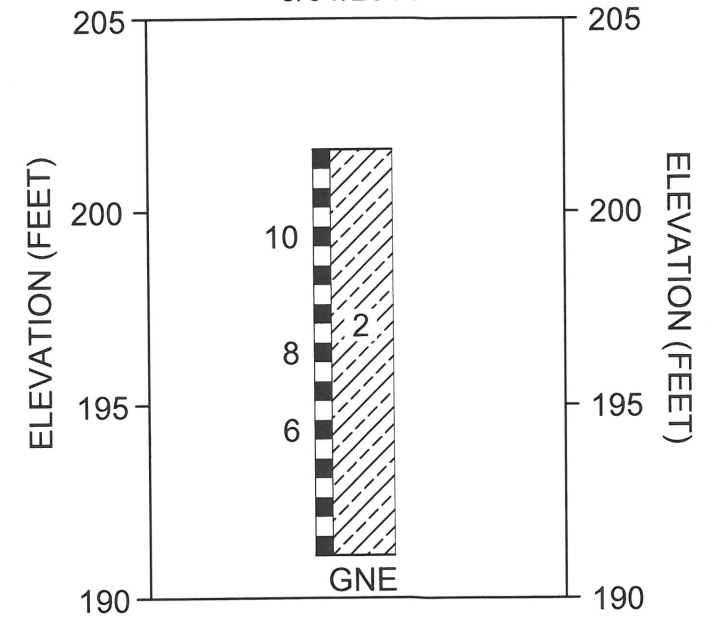
BORING No. B-430+50-R2
ELEV. 185.3 FEET
5/31/2011

BORING No. B-432+50-R1
ELEV. 183.3 FEET
5/31/2011

BORING No. B-432+50-R2
ELEV. 191.4 FEET
5/31/2011



BORING No. B-441+50
ELEV. 201.6 FEET
5/31/2011



REVISIONS

NO.	DESCRIPTION	DATE

SEAL:

DERWOOD SHEPPARD, P.E.
P.E. NO.: 69228

Environmental & Geotechnical Specialists, Inc.

EGS

Cert. of Auth.: 6222

3154 ELIZA ROAD
TALLAHASSEE, FLORIDA 32308
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FAX: (850) 385-8050

LEON COUNTY

PROJECT TITLE

LAFAYETTE STREET
SIDEWALK IMPROVEMENTS

REPORT OF CORE BORINGS
REPORT OF TESTS

SHEET NO.

REPORT OF TESTS

DATE OF SURVEY : 06-09-11
 SURVEY MADE BY : ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
 SUBMITTED BY : D. SHEPPARD, P.E.

STRATUM NO.	ORGANIC CONTENT			SIEVE ANALYSIS RESULTS % PASS							ATTERBERG LIMITS %			CLASSIFICATION		CORROSION TEST RESULTS					
	NO. OF TESTS	% ORGANIC	MOISTURE CONTENT	NO. OF TESTS	10 MESH	20 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	UNIFIED GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULPHATES ppm	pH
1	--	--	--	4	100	98 - 99	81 - 86	36 - 60	17 - 35	13 - 18	--	--	--	A-2-4	SM	BROWN SILTY FINE SAND	--	--	--	--	--
2	--	--	--	13	100	98 - 100	86 - 99	61 - 93	35 - 60	22 - 35	6	24 - 36	12 - 16	A-2-6	SC	BROWN AND GRAY CLAYEY FINE SAND	--	--	--	--	--
3	--	--	--	13	100	97 - 99	88 - 94	60 - 88	41 - 73	36 - 48	10	23 - 37	11 - 16	A-6	SC	BROWN AND GRAY CLAYEY SAND	--	--	--	--	--
4	--	--	--	5	100	99 - 100	93 - 98	73 - 94	60 - 92	47 - 87	4	45 - 82	23 - 53	A-7-6	SC/CH	BROWN AND GRAY PLASTIC CLAYEY SAND TO HIGHLY PLASTIC CLAY	--	--	--	--	--

Materials utilized as a bearing surface should be "SELECT" soils as defined by the Florida Department of Transportation.

STRATUM 1 is a "SELECT" soil, as defined by FDOT.

STRATA 2 and 3 are "PLASTIC" soils, as defined by FDOT. If these materials are used within the project limits, they will be extremely difficult to compact when wet.

STRATUM 4 is a "HIGHLY PLASTIC" soil, as defined by FDOT. If encountered, this material should be completely removed to a depth of at least one (1) foot below any bearing surface. This material will be extremely difficult to work.

NOTES

- Strata boundaries are approximate.
- Numbers left of borings indicate standard penetration test (SPT) N-values for 12 in. penetration (Unless otherwise noted)
- Water elevations shown represent the water elevations encountered. Fluctuations in the elevations of the water should be expected.
- Soil descriptions, test data, and standard penetration values shown are for the soil boring only and may not apply to any other locations except at the location of the soil boring. Extrapolation of the soil boring data to other locations is the sole responsibility of the person performing the extrapolation.

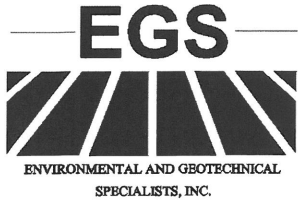
Granular Materials Relative Density	SPT (blows/12 in.)	Silts and Clays Consistency	SPT (blows/12 in.)
Very Loose	Less than 3	Very Soft	Less than 1
Loose	3 - 8	Soft	1 - 3
Medium or Compact	8 - 24	Firm	3 - 6
Dense	24 - 40	Stiff	6 - 12
Very Dense	Greater than 40	Very Stiff	12 - 24
		Hard	Greater than 24

LEGEND

UNMEASURED PARAMETERS	--
MEASURED GROUNDWATER	▽
GROUNDWATER NOT ENCOUNTERED	GNE
SHELBY TUBE	ST
UNCONFINED COMPRESSIVE STRENGTH	UCC
NATURAL UNIT WEIGHT	γ

REVISIONS <table border="1" style="width: 100%; height: 40px;"> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>					SEAL: DERWOOD SHEPPARD, P.E. P.E. NO.: 69228	Environmental & Geotechnical Specialists, Inc. 3154 ELIZA ROAD TALLAHASSEE, FLORIDA 32308 OFFICE: (850) 386-1253 FAX: (850) 385-8050 Cert. of Auth.: 6222	LEON COUNTY <hr/> PROJECT TITLE LAFAYETTE STREET SIDEWALK IMPROVEMENTS	REPORT OF CORE BORINGS REPORT OF TESTS	SHEET NO. _____

APPENDIX B
SOIL BORING LOGS



PROJECT: LAFAYETTE STREET SIDEWALK IMPROVEMENTS
 CLIENT: GENESIS GROUP, INC.
 PROJECT NO.: 18-110-11-01
 PROJECT LOCATION: LEON COUNTY, FLORIDA
 BORING NO.: B-420-R1
 DRILLER: W. DUNLAP
 DEPTH TO WATER: INITIAL: ∇ GNE 24 HR: ∇ GNE

HAMMER TYPE: H.A.
 STATIONING: 420+00
 OFFSET: 15.0' RIGHT
 ELEVATION (FEET): 113.7
 DATE: 5/31/2011
 FLUID LOSS: N/A
 CAVING: NONE

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/AASHTO	TEST RESULTS	Wc (%)	N	N-Value	
									10	20
0	0									
	3			MEDIUM DENSE BROWN CLAYEY SAND	SC A-6	-200%=42 LL=29 PI=12		11		
1.5	6			MEDIUM DENSE GRAY CLAYEY FINE SAND	SC A-2-6	-200%=24		10		
3	9					-200%=25		10		
	23									
	12									
	4.5									
	15									
	18									
6	21									

H.A. - HAND AUGER



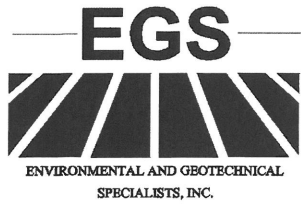
PROJECT: LAFAYETTE STREET SIDEWALK IMPROVEMENTS
 CLIENT: GENESIS GROUP, INC.
 PROJECT NO.: 18-110-11-01
 PROJECT LOCATION: LEON COUNTY, FLORIDA
 BORING NO.: B-420-R2
 DRILLER: R. ROGERS
 DEPTH TO WATER: INITIAL: 19.5' 24 HR: 19.5' CAVING: NONE

HAMMER TYPE: H.A.
 STATIONING: 420+00
 OFFSET: 30.0' RIGHT
 ELEVATION (FEET): 122.2
 DATE: 5/31/2011
 FLUID LOSS: N/A

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/AASHTO	TEST RESULTS	Wc (%)		N	N-Value	
							Wc (%)			10	20
0	0			MEDIUM DENSE BROWN SILTY FINE SAND	SM A-2-4	-200%=17	5		8		
1.5	3			MEDIUM DENSE BROWN SILTY FINE SAND	SM A-2-4	-200%=18	4		10		
3	6			MEDIUM DENSE BROWN CLAYEY SAND	SC A-6	-200%=48 LL=34 PI=15	12		10		
4.5	9			MEDIUM DENSE GRAY CLAYEY FINE SAND	SC A-2-6	-200%=22	14		9		
6	12			MEDIUM DENSE GRAY CLAYEY FINE SAND	SC A-2-6	-200%=25 LL=32 PI=16	14				
6	15			MEDIUM DENSE BROWN CLAYEY FINE SAND		-200%=30 LL=34 PI=13	11				
6	18			MEDIUM DENSE BROWN CLAYEY FINE SAND			10				
6	21						13				
6	24						16				
6	27						17				
6	30						20				
6	33						28				
6	36						28				
6	39						29				

H.A. - HAND AUGER



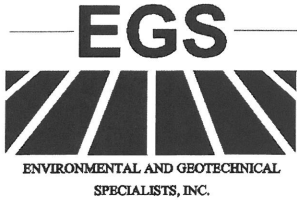
PROJECT: LAFAYETTE STREET SIDEWALK IMPROVEMENTS
 CLIENT: GENESIS GROUP, INC.
 PROJECT NO.: 18-110-11-01
 PROJECT LOCATION: LEON COUNTY, FLORIDA
 BORING NO.: B-421+50-R2
 DRILLER: R. ROGERS
 DEPTH TO WATER: INITIAL: ∇ GNE 24 HR: ∇ GNE CAVING ∇ NONE

HAMMER TYPE: H.A.
 STATIONING: 421+50
 OFFSET: 30.0' RIGHT
 ELEVATION (FEET): 125.8
 DATE: 5/31/2011
 FLUID LOSS: N/A

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/AASHTO	TEST RESULTS	Wc (%)	Wc (%)		N	N-Value	
								10	20		30	40
0	0			LOOSE BROWN CLAYEY FINE SAND	SC A-2-6		10	10				
	13			LOOSE BROWN SILTY FINE SAND WITH WOOD	SM A-2-4	-200%=18	4	13		5		
	9			BROWN SILTY FINE SAND			9					
	6			LOOSE BROWN CLAYEY SAND	SC A-6	-200%=44 LL=33 PI=13	16	23		8		
	38			STIFF BROWN HIGHLY PLASTIC CLAY	CH A-7-6	-200%=87 LL=82 PI=53	45	39		6		
	24			LOOSE BROWN AND GRAY CLAYEY SAND	SC A-6	-200%=37	24	23		5		
	25						25					
	24			LOOSE BROWN AND GRAY CLAYEY FINE SAND	SC A-2-6	-200%=29 LL=36 PI=15	22	20				
	22						22					
	22						22					

H.A. - HAND AUGER



PROJECT: LAFAYETTE STREET SIDEWALK IMPROVEMENTS
 CLIENT: GENESIS GROUP, INC.
 PROJECT NO.: 18-110-11-01
 PROJECT LOCATION: LEON COUNTY, FLORIDA
 BORING NO.: B-425+50
 DRILLER: W. DUNLAP
 DEPTH TO WATER: INITIAL: ∇ GNE 24 HR: ∇ GNE CAVING ∇ C NONE

HAMMER TYPE: H.A.
 STATIONING: 425+50
 OFFSET: 15.0' RIGHT
 ELEVATION (FEET): 146.5
 DATE: 5/31/2011
 FLUID LOSS: N/A

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/AASHTO	TEST RESULTS	Wc (%)		N	N-Value		
							Wc (%)	N		N-Value	N-Value	
0	0			MEDIUM DENSE GRAY CLAYEY SAND	SC A-6	-200%=36 LL=23 PI=12	13		13			
	3						11					
1.5	6			MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND	SC A-7-6	-200%=47 LL=47 PI=23	20		13			
	9						30					
3	12						23					
	15						29					
	18						31		11			
	21						27					
							30					

H.A. - HAND AUGER



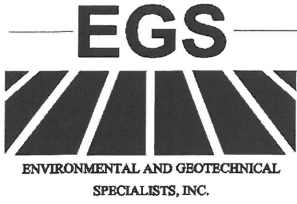
PROJECT: LAFAYETTE STREET SIDEWALK IMPROVEMENTS
 CLIENT: GENESIS GROUP, INC.
 PROJECT NO.: 18-110-11-01
 PROJECT LOCATION: LEON COUNTY, FLORIDA
 BORING NO.: B-430+50-R1
 DRILLER: W. DUNLAP
 DEPTH TO WATER: INITIAL: ∇ GNE 24 HR: ∇ GNE CAVING ∇ C NONE

HAMMER TYPE: H.A.
 STATIONING: 430+50
 OFFSET: 15.0' RIGHT
 ELEVATION (FEET): 175.2
 DATE: 5/31/2011
 FLUID LOSS: N/A

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/AASHTO	TEST RESULTS	Wc (%)		N	N-Value									
							Wc (%)	N		10	20	30	40	60	80				
0	0			MEDIUM DENSE BROWN CLAYEY FINE SAND	SC A-2-6	-200%=30 LL=24 PI=12	14	13											
1.5	6			MEDIUM DENSE BROWN SILTY FINE SAND	SM A-2-4	-200%=13	4	13											
3	9						2												
4.5	15						2												
6	21						2												

H.A. - HAND AUGER



PROJECT: LAFAYETTE STREET SIDEWALK IMPROVEMENTS
 CLIENT: GENESIS GROUP, INC.
 PROJECT NO.: 18-110-11-01
 PROJECT LOCATION: LEON COUNTY, FLORIDA
 BORING NO.: B-432+50-R2
 DRILLER: R. ROGERS
 DEPTH TO WATER: INITIAL: ∇ GNE 24 HR: ∇ GNE CAVING ∇ C NONE

HAMMER TYPE: H.A.
 STATIONING: 432+50
 OFFSET: 30.0' RIGHT
 ELEVATION (FEET): 191.4
 DATE: 5/31/2011
 FLUID LOSS: N/A

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/AASHTO	TEST RESULTS	Wc (%)		N	N-Value	
							Wc (%)	N		N	N-Value
0	0			MEDIUM DENSE BROWN CLAYEY FINE SAND WITH ROOTS	SC A-2-6	-200%=26	7				
				MEDIUM DENSE BROWN CLAYEY FINE SAND					7		
	3						11		10		
							9				
1.5							14				
	6						12		8		
							14				
	9			MEDIUM DENSE BROWN CLAYEY SAND	SC A-6	-200%=38	13		11		
									13		
3							12				
	12						11		10		
							12				
	15						12				
4.5							10				
							11				
	18						11				
6							9				
	21										

H.A. - HAND AUGER

APPENDIX C
SOIL CLASSIFICATION DATA

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-420-R1

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	WC (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	8												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
1.0-1.5	13												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
2.0-2.5	12	100	100	99	91	73	55	42	29	12		11	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
3.0-3.5	15												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
4.0-4.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
5.0-5.5	12	100	100	98	88	62	39	24				10	SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
6.0-6.5	13												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
7.0-7.5	15											10	SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
8.0-8.5	13	100	100	99	97	81	40	25					SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
9.0-9.5	12												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
10.0-10.5	23												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-420-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	WC (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	5												SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
1.0-1.5	4	100	100	98	83	57	33	17					SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
2.0-2.5	9											8	SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
3.0-3.5	4												SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
4.0-4.5	9												SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
5.0-5.5	6	100	100	99	86	55	30	18				10	SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
6.0-6.5	8												SM	A-2-4	1	MEDIUM DENSE BROWN SILTY FINE SAND
7.0-7.5	12											10	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
8.0-8.5	17												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
9.0-9.5	16	100	100	99	93	78	62	48	34	15			SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
10.0-10.5	14											9	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-420-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
11.0-11.5	14												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
12.0-12.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
13.0-13.5	10	100	100	98	95	79	39	22					SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
14.0-14.5	13												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
15.0-15.5	16												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
16.0-16.5	17												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
17.0-17.5	20	100	100	100	98	78	47	25	32	16			SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
18.0-18.5	28												SC	A-2-6	2	MEDIUM DENSE GRAY CLAYEY FINE SAND
19.0-19.5	28												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
20.0-20.5	29	100	100	100	98	61	42	30	34	13			SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-421+50-R1

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	11												SC	A-2-6	2	LOOSE GRAY CLAYEY FINE SAND
1.0-1.5	9	100	100	99	88	66	42	26					SC	A-2-6	2	LOOSE GRAY CLAYEY FINE SAND
2.0-2.5	20											6	SC	A-6	3	LOOSE BROWN CLAYEY SAND
3.0-3.5	24												SC	A-6	3	LOOSE BROWN CLAYEY SAND
4.0-4.5	37	100	100	99	94	86	79	69					CH	A-7-6	4	FIRM BROWN HIGHLY PLASTIC CLAY
5.0-5.5	47											5	CH	A-7-6	4	FIRM BROWN HIGHLY PLASTIC CLAY
6.0-6.5	48												CH	A-7-6	4	FIRM BROWN HIGHLY PLASTIC CLAY
7.0-8.0	49	100	100	99	96	93	91	86	80	52			CH	A-7-6	4	FIRM BROWN HIGHLY PLASTIC CLAY
8.0-8.5	51												CH	A-7-6	4	FIRM BROWN HIGHLY PLASTIC CLAY
9.0-9.5	34												SC	A-7-6	4	LOOSE BROWN PLASTIC CLAYEY SAND
10.0-10.5	28	100	100	100	98	89	67	47	45	23			SC	A-7-6	4	LOOSE BROWN PLASTIC CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-421+50-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	WC (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	10												SC	A-2-6	2	LOOSE BROWN CLAYEY FINE SAND
1.0-1.5	13												SC	A-2-6	2	LOOSE BROWN CLAYEY FINE SAND
2.0-2.5	4	100	100	98	81	60	35	18				5	SM	A-2-4	1	LOOSE BROWN CLAYEY FINE SAND
3.0-3.5	9												SM	A-2-4	1	SILTY FINE SAND WITH WOOD
4.0-4.5	16												SC	A-6	3	LOOSE BROWN SILTY FINE SAND
5.0-5.5	23	100	100	98	88	72	61	44	33	13		8	SC	A-6	3	LOOSE BROWN CLAYEY SAND
6.0-6.5	38												CH	A-7-6	4	STIFF BROWN CLAYEY SAND
7.0-8.0	45	100	100	99	97	94	92	87	82	53		6	CH	A-7-6	4	STIFF BROWN HIGHLY PLASTIC CLAY
8.0-8.5	39												CH	A-7-6	4	STIFF BROWN HIGHLY PLASTIC CLAY
9.0-9.5	24	100	100	97	94	88	73	37					SC	A-6	3	LOOSE BROWN AND GRAY CLAYEY SAND
10.0-10.5	23											5	SC	A-6	3	LOOSE BROWN AND GRAY CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-421+50-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
11.0-11.5	25												SC	A-6	3	LOOSE BROWN AND GRAY CLAYEY SAND
12.0-12.5	24												SC	A-2-6	2	LOOSE BROWN AND GRAY CLAYEY FINE SAND
13.0-13.5	22	100	100	100	99	93	52	29	36	15			SC	A-2-6	2	LOOSE BROWN AND GRAY CLAYEY FINE SAND
14.0-14.5	20												SC	A-2-6	2	LOOSE BROWN AND GRAY CLAYEY FINE SAND
15.0-15.5	22	100	100	100	99	89	35	22	24	12			SC	A-2-6	2	LOOSE BROWN AND GRAY CLAYEY FINE SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-425+50

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	13												SC	A-6	3	MEDIUM DENSE GRAY CLAYEY SAND
1.0-1.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
2.0-2.5	10	100	100	99	92	60	41	36	23	12		13	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
3.0-3.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
4.0-4.5	20												SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
5.0-5.5	30											13	SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
6.0-6.5	23												SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
7.0-7.5	29											11	SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
8.0-8.5	31	100	100	99	93	73	60	47	47	23			SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
9.0-9.5	27												SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
10.0-10.5	30												SC	A-7-6	4	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-430+50-R1

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	WC (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	14												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
1.0-1.5	7												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
2.0-2.5	7	100	100	99	89	66	43	30	24	12		13	SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
3.0-3.5	8												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
4.0-4.5	4												SM	A-2-4	1	MEDIUM DENSE BROWN CLAYEY FINE SAND
5.0-5.5	4											13	SM	A-2-4	1	SILTY FINE SAND MEDIUM DENSE BROWN
6.0-6.5	4												SM	A-2-4	1	MEDIUM DENSE BROWN CLAYEY FINE SAND
7.0-7.5	4											13	SM	A-2-4	1	MEDIUM DENSE BROWN CLAYEY FINE SAND
8.0-8.5	2	100	100	99	84	36	17	13					SM	A-2-4	1	SILTY FINE SAND MEDIUM DENSE BROWN
9.0-9.5	2												SM	A-2-4	1	SILTY FINE SAND MEDIUM DENSE BROWN
10.0-10.5	2												SM	A-2-4	1	SILTY FINE SAND MEDIUM DENSE BROWN

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-430+50-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	10												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
1.0-1.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
2.0-2.5	12	100	100	99	93	79	57	41	30	12		13	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
3.0-3.5	17												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
4.0-4.5	12												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
5.0-5.5	12											13	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
6.0-7.0	11	100	100	99	92	78	59	44	33	16			SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
7.0-7.5	11											13	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
8.0-8.5	11	100	100	99	92	77	56	41	33	14			SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
9.0-9.5	12												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
10.0-10.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-430+50-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	WC (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
11.0-11.5	12												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
12.0-12.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
13.0-13.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
14.0-14.5	10	100	100	99	93	76	52	38	28	13			SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
15.0-15.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Boring: B-432+50-R1

Project No.: 18-110-11-01

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	11												SC	A-2-6	2	MEDIUM DENSE BROWN
1.0-1.5	11	100	100	99	89	71	45	28					SC	A-2-6	2	CLAYEY FINE SAND WITH ROOTS
2.0-2.5	9											8	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY FINE SAND
3.0-3.5	10												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
4.0-4.5	13	100	100	98	91	77	58	42					SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
5.0-5.5	13											11	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
6.0-6.5	13												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
7.0-7.5	13	100	100	99	91	77	58	43	37	15			SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
8.0-8.5	16												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
9.0-9.5	12												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
10.0-10.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-432+50-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	7												SC	A-2-6	2	MEDIUM DENSE BROWN
1.0-1.5	7	100	100	98	86	65	42	26					SC	A-2-6	2	CLAYEY FINE SAND WITH ROOTS
2.0-2.5	11											10	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY FINE SAND
3.0-3.5	9												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
4.0-4.5	14												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
5.0-5.5	12											8	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
6.0-6.5	14												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
7.0-7.5	13											11	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
8.0-8.5	13												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
9.0-9.5	12	100	100	99	89	72	53	38					SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
10.0-10.5	11											10	SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-432+50-R2

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
11.0-11.5	12												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
12.0-12.5	12												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
13.0-13.5	10	100	100	99	94	72	45	36	28	11			SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
14.0-14.5	11												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND
15.0-15.5	9												SC	A-6	3	MEDIUM DENSE BROWN CLAYEY SAND

SOIL CLASSIFICATION DATA

Project: LAFAYETTE STREET SIDEWALK IMPROVEMENTS

Client: GENESIS GROUP, INC.

Project No.: 18-110-11-01

Boring: B-441+50

Location: LEON COUNTY, FLORIDA

DEPTH (FEET)	WC (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Mat. No.	Description
0.0-0.5	4												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
1.0-1.5	12												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
2.0-2.5	6	100	100	99	96	85	60	32				10	SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
3.0-3.5	7												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
4.0-4.5	10												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
5.0-5.5	10											8	SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
6.0-6.5	10												SC	A-2-6	2	MEDIUM DENSE BROWN CLAYEY FINE SAND
7.0-7.5	12											6	SC	A-2-6	2	LOOSE BROWN CLAYEY FINE SAND
8.0-8.5	14	100	100	99	93	75	51	35	25	12			SC	A-2-6	2	LOOSE BROWN CLAYEY FINE SAND
9.0-9.5	14												SC	A-2-6	2	LOOSE BROWN CLAYEY FINE SAND
10.0-10.5	15												SC	A-2-6	2	LOOSE BROWN CLAYEY FINE SAND

APPENDIX D
SAMPLE CALCULATIONS

Retaining Wall Bearing Capacity

N_γ , N_q , and N_c = BEARING CAPACITY FACTORS
 B = BASE WIDTH
 FS = FACTOR OF SAFETY
 q = EFFECTIVE STRESS AT BOTTOM OF FOUNDATION
 D = DEPTH OF FOUNDATION AS SHOWN IN PLANS

Proposed Retaining Walls

SILTY FINE TO CLAYEY SAND (SM TO SC)

$$N_{cor} := 10 \quad \phi := 30 \cdot \text{deg} \quad \gamma := 110 \cdot \frac{\text{lb}}{\text{ft}^3} \quad K_a := \frac{1 - \sin(\phi)}{1 + \sin(\phi)} \quad K_a = 0.33 \quad K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)} \quad K_p = 3$$

$$N_\gamma := 19.13 \quad N_c := 37.16 \quad N_q := 22.46 \quad FS := 2.0 \quad B := 4.0 \cdot \text{ft} \quad c := 0 \cdot \frac{\text{lb}}{\text{ft}^2} \quad D := 2.0 \cdot \text{ft} \quad q := D \cdot \gamma \quad q = 220 \cdot \frac{\text{lb}}{\text{ft}^2}$$

$$q_{ult} := c \cdot N_c + q \cdot N_q + \left(\frac{1}{2}\right) \cdot B \cdot \left(\gamma - 62.4 \cdot \frac{\text{lb}}{\text{ft}^3}\right) \cdot N_\gamma \quad q_{ult} = 6762 \cdot \frac{\text{lb}}{\text{ft}^2}$$

$$q_{all1} := \frac{q_{ult}}{FS} \quad q_{all1} = 3381 \cdot \frac{\text{lb}}{\text{ft}^2} \quad \leftarrow \text{TERZAGHI'S BEARING CAPACITY}$$

$$F_d := 1 + 0.33 \left(\frac{D}{B}\right) \quad \text{where: } D = \text{depth of foundation} \quad F_d := \text{if}(F_d > 1.33, 1.33, F_d)$$

$S := 1$ $F_d = \text{depth factor}$
 $R := 0.50$ $S = \text{maximum settlement}$ $F_d = 1.165$
 $R = \text{water table reduction}$

$$q_{net_all2} := \frac{N_{cor}}{2.5} F_d \cdot S \cdot R \cdot \frac{\text{lb}}{\text{ft}^2} \cdot \text{kip} \quad q_{net_all2} = 2330 \cdot \frac{\text{lb}}{\text{ft}^2} \quad \leftarrow \text{MEYERHOF BEARING CAPACITY FOR FOUNDATION BASE WIDTH LESS THAN OR EQUAL TO 4 FEET}$$

$$q_{all} = 2000 \cdot \frac{\text{lb}}{\text{ft}^2} \quad \leftarrow \text{RECOMMENDED VALUE}$$

$$K_s := \frac{q_{net_all2} \cdot FS}{S \cdot \text{in}} \quad K_s = 55920 \cdot \frac{\text{lb}}{\text{ft}^3}$$

$$K_s = 56000 \cdot \frac{\text{lb}}{\text{ft}^3} \quad \leftarrow \text{MODULUS OF SUBGRADE REACTION}$$

Slope Stability Analysis

ReSSA "Output"

Direct Shear Test Results

