

## MEMORANDUM

**EGS FILE:** 18-115-12-02

**DATE:** October 9, 2012

**TO:** James Sullivan, P.E. – Vice President  
Genesis Group, Inc.

**FROM:** Myron Hayden, P.E. – Principal Geotechnical Engineer  
Environmental and Geotechnical Specialists, Inc.  
Matthew Monteith, E.I. – Staff Engineer  
Environmental and Geotechnical Specialists, Inc.

**SUBJECT:** **ADDENDUM B** – Anomaly Investigation  
Report of Geotechnical Investigation  
Lafayette Street Drainage Improvements  
Leon County, Florida  
(Report Dated August 4, 2008)

Environmental and Geotechnical Specialists, Inc. (**EGS**) has completed the investigation of the anomalies detected in the Ground Penetrating Radar (**GPR**) Study performed and reported in **ADDENDUM A** to this Report. The work conducted in this study was authorized by Genesis Group, Inc., and Leon County Department of Public Works. This Memorandum contains a summary of findings and recommendations concerning the likely makeup of the **GPR** anomalies.

### SUBSURFACE INVESTIGATION

The additional subsurface investigation outlined in this Memorandum was conducted in October 2012 by Matthew Monteith, E.I., Staff Engineer, under the supervision of Myron Hayden, P.E., Principal Geotechnical Engineer.

A total of three (3) soil borings were installed for this study. The soil boring locations were based on locations of the anomalies detected in the **GPR** study. A detailed summary of the soil boring locations with baseline stationing and offset along with Global Positioning System (**GPS**) coordinates have been provided in **TABLE B-1**. In addition, the soil boring locations have been displayed graphically on “updated” Subgrade Plan and Profile sheets provided as **Figures B-1** and **B-2**.

**EGS** cored the existing pavement structure at the three (3) soil boring locations. The soil borings were installed using a hand auger coupled with hand cone index (**CPI**) tests conducted on 2 ½ feet centers to a depth of approximately 10 feet below the pavement surface. The soil samples were collected on 6-inch centers and classified visually in the field by **EGS** personnel prior to being sealed and transported to **EGS**'s soils laboratory for further examination.

## FINDINGS

A copy of the soil boring logs from the three (3) Soil Borings has been included as **Figures B-3** through **B-5**. As can be seen in the Soil Boring Logs, the zones corresponding to anomalies detected in the **GPR** study are “Medium Dense Silty Fine Sand with Layers of Hard Cemented Sand”. The cemented sand has a consistency of concrete; however, in this case it likely occurred naturally and represents a “hardpan” layer created by cementation of calcium in the groundwater that “perched” on the underlying plastic clay soils.

The presence of this “hardpan” layer may impact the installation of small utilities, but likely will not have a significant impact on the excavation for the larger utilities prior to repaving the roadway.

## RECOMMENDATION

Based on the soils and subsurface conditions encountered in this investigation, **EGS** does not believe that overexcavation and removal of this zone of Medium Dense Silty Fine Sand with Layers of Hard Cemented Sand is necessary or cost-effective.

## PLAN NOTE

**EGS recommends the following note be added to the Plans:**

- Lenses of hard cemented sand may be encountered.

If you have any questions or concerns related to this project, feel free to contact myself or Matt Monteith, E.I., at (850) 386-1253.

**TABLE B-1  
SOIL BORING LOCATION DATA  
ADDENDUM B  
LAFAYETTE STREET DRAINAGE IMPROVEMENTS  
LEON COUNTY, FLORIDA**

BORING NUMBER	BORING DEPTH <sup>1</sup>  (FEET)	EXISTING ELEVATION <sup>2</sup>  (FEET)	BASELINE STATION  (FEET)	OFFSET FROM BASELINE  (FEET)	STATE PLANE COORDINATES		GLOBAL POSITIONING SATELLITE SYSTEM COORDINATES			
							LATITUDE		LONGITUDE	
					NORTHING	EASTING	DEG (°)	MIN (')	DEG (°)	MIN (')
<b>VERIFICATION SOIL BORINGS</b>										
LS-16	10.5	114.7	420+20	7.5 FEET RIGHT	521953	2039932	30	26.101	84	16.400
LS-17	10.5	133.6	423+40	8.0 FEET RIGHT	521891	2040246	30	26.091	84	16.341
LS-18	10.5	150.3	426+30	9.0 FEET RIGHT	521834	2040530	30	26.082	84	16.287

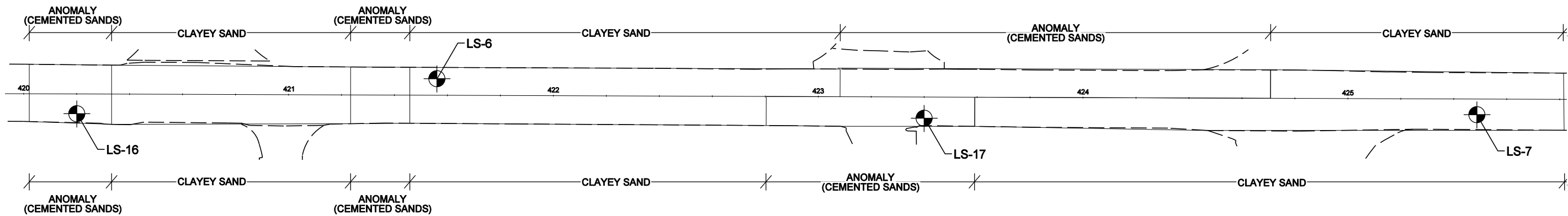
**NOTES:** 1. DEPTHS ARE BELOW EXISTING PAVEMENT.

2. ELEVATION, BASELINE STATION, AND OFFSET DETERMINED FROM PLANS PROVIDED BY GENESIS GROUP, INC.



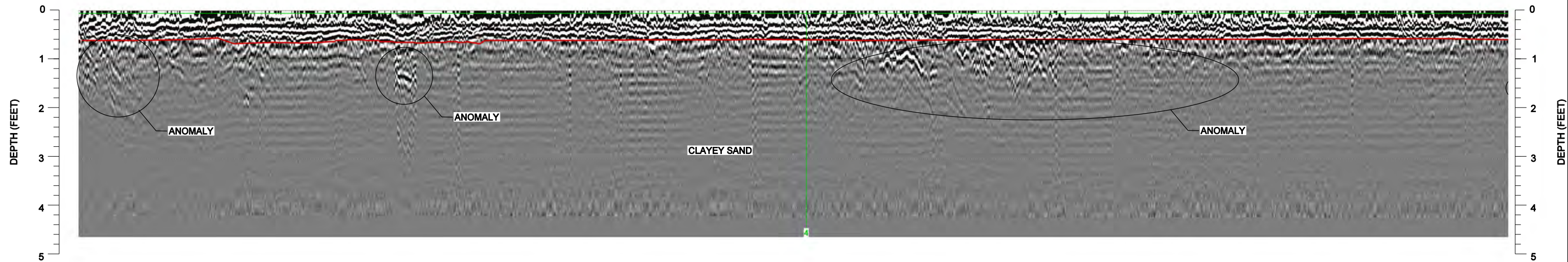
## SUBGRADE SOILS MAP

PLAN VIEW



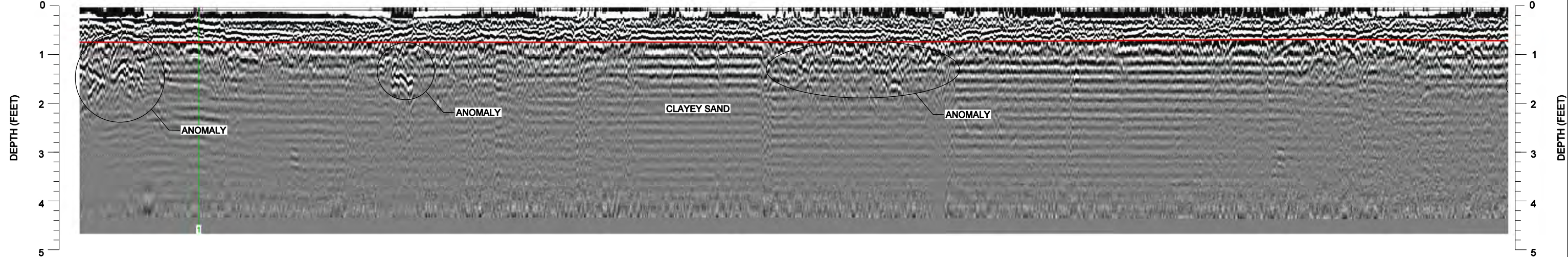
## WESTBOUND SUBGRADE SCAN

PROFILE VIEW



## EASTBOUND SUBGRADE SCAN

PROFILE VIEW



**LEGEND**

- SOIL BORING LOCATION

**NOTE**

1. GROUND PENETRATING RADAR SCANS WERE CONDUCTED USING A 1,600 MHz ANTENNA PRODUCED BY MALA GEOSCIENCES.

PREPARED BY:	M. MONTEITH, E.I.
CHECKED:	M. HAYDEN, P.E.
REVISED:	M. MONTEITH, E.I.
ENGINEER:	M. HAYDEN, P.E.

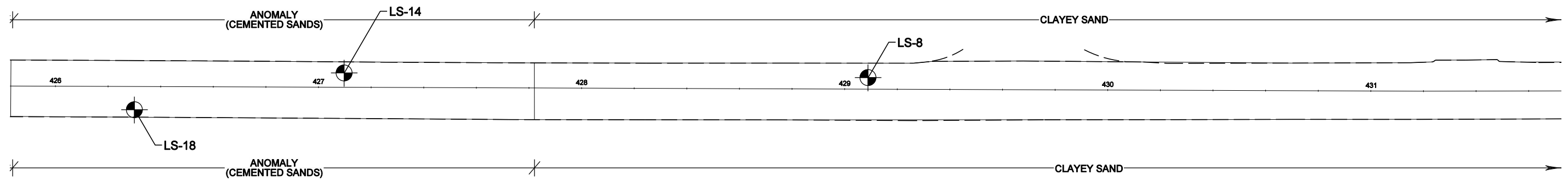
**EGS**  
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 Tallahassee, Florida 32308  
 Office : (850) 386-1253 Fax : (850) 385-8050

<b>UPDATED SUBGRADE PLAN AND PROFILE LAFAYETTE STREET DRAINAGE IMPROVEMENTS LEON COUNTY, FLORIDA</b>	
SCALE:	DATE: <b>OCTOBER 2012</b>
PROJ. NO.: <b>18-115-12-02</b>	FIGURE NO.: <b>B-1</b>



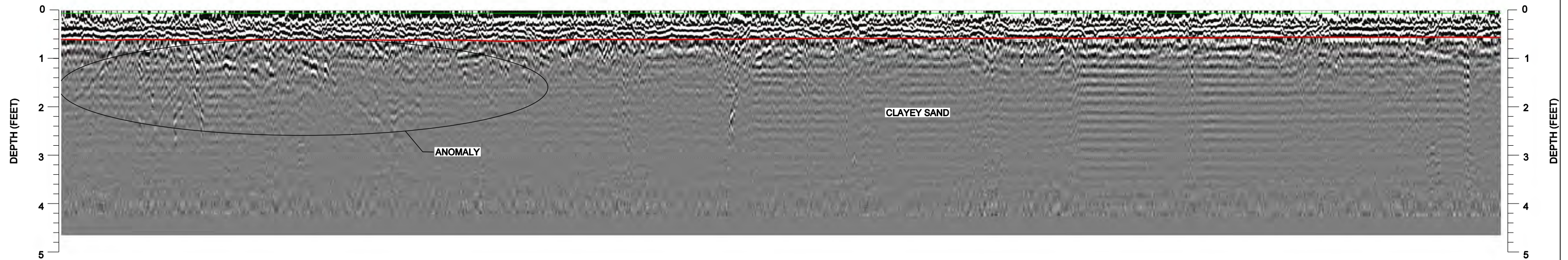
# SUBGRADE SOILS MAP

PLAN VIEW



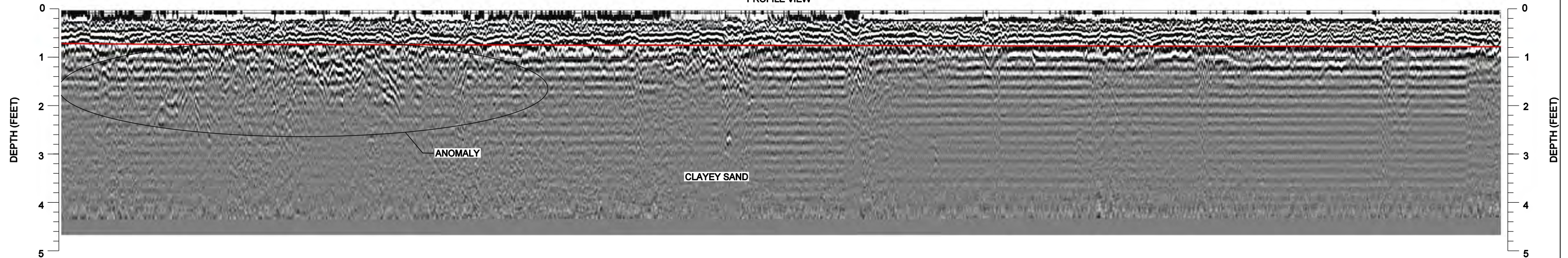
## WESTBOUND SUBGRADE SCAN

PROFILE VIEW



## EASTBOUND SUBGRADE SCAN

PROFILE VIEW



**LEGEND**

- SOIL BORING LOCATION

**NOTE**

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PREPARED BY:	M. MONTEITH, E.I.
CHECKED:	M. HAYDEN, P.E.
REVISED:	M. MONTEITH, E.I.
ENGINEER:	M. HAYDEN, P.E.

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**UPDATED SUBGRADE PLAN AND PROFILE  
 LAFAYETTE STREET  
 DRAINAGE IMPROVEMENTS  
 LEON COUNTY, FLORIDA**

SCALE:	DATE: <b>OCTOBER 2012</b>
PROJ. NO.: <b>18-115-12-02</b>	FIGURE NO.: <b>B-2</b>



**PROJECT:** LAFAYETTE STREET DRAINAGE IMPROVEMENTS    **HAMMER TYPE:** SAFETY  
**CLIENT:** GENESIS GROUP    **STATION:** 420+20  
**PROJECT NO.:** 18-115-12-02    **OFFSET:** 7.5 FEET RIGHT  
**PROJECT LOCATION:** LEON COUNTY, FLORIDA    **ELEVATION (FEET):** 114.7  
**BORING NO.:** LS-16    **DATE:** 9-21-2012  
**DRILLER:** W. DUNLAP  
**DEPTH TO - WATER> INITIAL:** 10.0'    **AFTER 24 HOURS:** N/M    **CAVING>** C 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 (%)	Wc (%)					N	N-Value						
								10	20	30	40	60		10	20	30	40	60	80	
0	0			2.0-INCH ASPHALT 7.0-INCH CONCRETE																
	2			MEDIUM DENSE BROWN AND GRAY CLAYEY SAND	SC A-6								11							
	4			MEDIUM DENSE BROWN SILTY FINE SAND WITH CEMENTED SAND	SM A-2-4								12							
	8			MEDIUM DENSE BROWN AND GRAY CLAYEY FINE SAND	SC A-2-6								7							
	14																			

FIGURE B-3



PROJECT: <u>LAFAYETTE STREET DRAINAGE IMPROVEMENTS</u>	HAMMER TYPE: <u>SAFETY</u>
CLIENT: <u>GENESIS GROUP</u>	STATION: <u>423+40</u>
PROJECT NO.: <u>18-115-12-02</u>	OFFSET: <u>8.0 FEET RIGHT</u>
PROJECT LOCATION: <u>LEON COUNTY, FLORIDA</u>	ELEVATION (FEET): <u>133.6</u>
BORING NO.: <u>LS-17</u>	DATE: <u>9-21-2012</u>
DRILLER: <u>W. DUNLAP</u>	
DEPTH TO - WATER> INITIAL: $\nabla$ <u>&gt; 10.5'</u> AFTER 24 HOURS: $\nabla$ <u>N/M</u> CAVING> $\zeta$ <u>NONE</u>	

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	60		10	20	30	40	60
0	0			1.5-INCH ASPHALT 6.0-INCH CONCRETE														
	2			LOOSE BROWN AND GRAY CLAYEY SAND	SC A-6							4		●				
	4													7	●			
	6			MEDIUM DENSE BROWN SILTY FINE SAND WITH CEMENTED SAND	SM A-2-4							7		●				
	8			MEDIUM DENSE BROWN AND GRAY CLAYEY FINE SAND	SC A-2-6													
	10																	
	12																	
	14																	

FIGURE B-4



**PROJECT:** LAFAYETTE STREET DRAINAGE IMPROVEMENTS     **HAMMER TYPE:** SAFETY  
**CLIENT:** GENESIS GROUP     **STATION:** 426+30  
**PROJECT NO.:** 18-115-12-02     **OFFSET:** 9.0 FEET RIGHT  
**PROJECT LOCATION:** LEON COUNTY, FLORIDA     **ELEVATION (FEET):** 150.3  
**BORING NO.:** LS-18     **DATE:** 9-21-2012  
**DRILLER:** M. McCONNELL  
**DEPTH TO - WATER> INITIAL:**  $\nabla$  > 10.5'     **AFTER 24 HOURS:**  $\nabla$  N/M     **CAVING>** C 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 (%)	Wc (%)					N	N-Value					
								10	20	30	40	60		10	20	30	40	60	80
0	0			1.2-INCH ASPHALT 5.7-INCH CONCRETE															
	2			LOOSE BROWN SILTY FINE SAND WITH CEMENTED SAND	SM A-2-4							7	●						
	4			STIFF GRAY SANDY CLAY	CL A-6							7	●						
	6			STIFF GRAY HIGHLY PLASTIC CLAY	CH A-7-6							7	●						
	8																		
	10																		
	12																		
	14																		

FIGURE B-5