BOARD OF COUNTY COMMISSIONERS
ESCAMBIA COUNTY, FLORIDA

OFFICE OF PURCHASING
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https://myescambia.com/our-services/purchasing

Paul R. Nobles
Purchasing Manager

August 22, 2017

To: All Known Prospective Bidders

ADDENDUM NUMBER 1:

Re: PD 16-17.076 Merlin Road Drainage Improvements Phase III

All:

We recently sent you an Invitation to Bid on the above-mentioned specification.

This Addendum Number 1 provides for answers to the following questions:

1. Will the yard drains tie into 15" pipe or are we to install 15" pipe (See Index No. 282)?

   Yard drains will be installed in accordance with Index No. 282, Sheet 3 of 3. Yard Drain will connect to the 15" pipe and then the 15" pipe will be connected to existing 19" x 30" ERCP storm sewer with a concrete collar.

2. If we are to install 15" pipe, where do we run the pipe to? The plans do not indicate.
   See response to #1 above

3. Line item 37 – 6" Waterline Relocation (includes fitting, if necessary.) First, the plans show the waterline that runs the length of the roadway being 8" not 6" waterline. Second, in the pre-bid I recall someone saying the waterline is to remain. My question is, "Is the waterline to be Removed/Relocated in this project? It says if necessary, who determines its necessity?"

   Waterline relocation is only applicable where the existing 8" waterline crosses the (2) – 14" x 23" storm sewer as shown on Sheet 10. The need for removal and relocation will be determined by the contractor when he is installing the storm sewer. The exact vertical location of the existing waterline is unknown.

4. Line item 38 – 6" Force main Relocation (includes fittings, if necessary.) This question is along the same topic as the previous question. Is this line to be Removed/Relocated? It says "if necessary", who determines its necessity?"

   As stated above, the need for removal and relocation will be determined by the contractor when he is installing the storm sewer. The exact vertical location of the existing force main is unknown.

5. The bid tab shows the same quantity for removal of asphalt and base as the installation of new asphalt. Is the asphalt to be removed from the "walk path" (the area with the asphalt curb) not considered in this quantity and should be accounted for separately?

   The asphalt removal quantity includes the existing asphalt roadway, bike path, sidewalk, side-streets, and the northern intersection with Meadson Road. Therefore, the "walk path" is accounted for in this quantity.

6. Are there any soils reports/asphalt core results available for this project?

   Yes, see attached report. However, this paving project is full-depth replacement so the soil report should not be necessary.

7. The bid set drawings appear to show existing elevations that correspond to the previous phase of storm work. Has a new topo been incorporated into this new set of drawings that reflect the current conditions?

   New topographic survey was collected for Merlin Road from Sorrento Road to Tarklin Oaks Drive. The remainder of the job utilizes the topographic survey from the previous phase of work.

This Addendum Number 1 is furnished to all known prospective bidders. Please sign and return one copy of this Addendum, with original signature, with your bid as an acknowledgement of your having received same. You may photo copy this form for your records.

Sincerely,

Jeffrey Lovingood
Purchasing Specialist

Acknowledgement of Receipt of Addendum:

SIGNED: _____

COMPANY: _____

JDL

EXISTING PAVEMENT EVALUATION

Merlin Road

Escambia County, Florida

PREPARED FOR:

SIGMA Consulting Group, Inc.
3298 Summit Boulevard, Suite 32
Pensacola, Florida 32503

NOVA Project Number: 8217032

March 14, 2017

NOVA

PROFESSIONAL | PRACTICAL | PROVEN

March 14, 2017

SIGMA CONSULTING GROUP, INC.
3298 Summit Boulevard, Suite 32
Pensacola, Florida 32503

Attention: Mr. Jason Lashley, P.E.

Subject: **Report of an Existing Pavement Evaluation**
MERLIN ROAD
Escambia County, Florida
NOVA Project Number 8217032

Dear Mr. Lashley:

NOVA Engineering and Environmental LLC (NOVA) has completed the authorized Existing Pavement Evaluation for Merlin Road located in Escambia County, Florida. The work was performed in general accordance with NOVA Proposal Number 016-20178918, dated February 28, 2017. This report briefly discusses our understanding of the project at the time of the subsurface exploration, describes the consulting services provided by NOVA, and presents our findings, design recommendations and construction considerations.

We appreciate your selection of NOVA and the opportunity to be of service on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
NOVA Engineering and Environmental LLC

Jesse A. James E.I.
Staff Engineer
Florida Certificate No. 1100019359

William L. Lawrence, P.E.
Branch Manager
Florida Registration No. 60147

WILLIAM LEE LAWRENCE, JR. ★ LICENSE ★ No. 60147 ★ STATE OF FLORIDA ★ PROFESSIONAL ENGINEER

Copies Submitted: via electronic mail service

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 PROJECT INFORMATION

Our understanding of the proposed development is based on recent conversations and email exchanges with the client; review of aerial photography of the site via internet-based GIS software; and our experience with similar geotechnical conditions in the near vicinity to this project site.

1.2 SCOPE OF WORK

SIGMA Consulting Group, Inc., engaged NOVA to provide engineering geotechnical consulting services for the planned improvements to **Merlin Road**. This report briefly discusses our understanding of the proposed construction, describes our exploratory procedures, and presents our findings, conclusions, and recommendations.

The primary objective of this study was to provide a geotechnical exploration of the existing pavements and near surface soils present along the existing roadway alignment and bike-path/shoulder alignment, as well as assess the condition of the existing pavement sections. The authorized geotechnical engineering services included a site reconnaissance, twelve (12) pavement cores with subsequent subsurface borings, three (3) auger borings, engineering evaluation of the field data, and the preparation of this report. The boring/core locations are shown on the attached Boring Location Plan.

The services were performed substantially as outlined in our Proposal Number 016-20178918 (dated February 28, 2017), and in general accordance with industry standards.

The assessment of site environmental conditions, including the presence of wetlands or detection of pollutants in the soil, rock or groundwater, laboratory testing of samples, or a site-specific seismic study was beyond the scope of this geotechnical study. If requested, NOVA can provide these services.

2.0 FIELD AND LABORATORY PROCEDURES

2.1 FIELD EXPLORATION

Boring locations were established in the field by NOVA personnel using the provided Boring Location Plan and by estimating/taping distances and angles from existing site landmarks. The approximate locations are shown in Appendix B. Consequently, referenced boring locations and elevations should be considered approximate. If increased accuracy is desired by the client, NOVA recommends that the boring locations and elevations be surveyed.

Our field exploration was conducted on March 8, 2017 and included:

- Performing twelve (12) pavement cores with subsequent 5-foot deep auger borings as well as three (3) auger borings, and;
- Obtaining digital photographs to document the existing pavement conditions.

Drilling, testing and sampling operations were performed in general accordance with ASTM designations and other industry standards. The Test Boring Records provided in the Appendix present the soil conditions encountered at each core/boring location. These records represent our interpretation of the subsurface conditions based on the field exploration data, visual examination of the samples, and generally accepted geotechnical engineering practices. The stratification lines and depth designations represent approximate boundaries between various subsurface strata. Actual transitions between materials may be gradual. Also, subsurface conditions intermediate of each core/boring location may vary.

The groundwater levels reported on the Test Boring Records represent measurements made at the completion of the borings. The borings were backfilled with soil cuttings, and the core locations were capped with cold-patch asphalt at completion of the field exploration for safety concerns. Please refer to the Test Boring Records included in the Appendix for the subsurface conditions encountered at the specific boring locations.

2.2 LABORATORY TESTING

A laboratory testing program was conducted to characterize materials which exist at the site using the recovered samples. Selected test data are presented on the Test Boring Records and Lab Summary attached in the Appendix. The specific tests are briefly described on the following page.

It should be noted that all soil samples will be properly disposed of 30 days following the submittal of this NOVA subsurface exploration report unless you request otherwise.

2.2.1 Soil Classification

Soil classification provides a general guide to the engineering properties of various soil types and enable the engineer to apply past experience to current problems. In our explorations, samples obtained during drilling operations are observed in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our Test Boring Records. The classification system discussed above is primarily qualitative; laboratory testing is generally performed for detailed soil classification. Using the test results, the soils were classified using the Unified Soil Classification Systems. This classification system and the in-place physical soil properties provide an index for estimating the soil's behavior. The soil classification and physical properties obtained are presented in this report.

2.2.2 Moisture Content and Percent Fines

The moisture content is the ratio expressed as a percentage of the weight of water in a given mass of soil to the weight of the solid particles. The percent fines is defined as the percentage of the total dry soil mass which passes a #200 sieve. These tests were conducted in general accordance with ASTM D-2216 and ASTM D-1140, respectively.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGY

The site is located in the Escambia County, Florida area and according to the United States Geological Survey (USGS), is situated within the greater Gulf Coastal Plain region. The site is generally covered with Alluvium sediments of the Pleistocene/Holocene periods underlain by the Citronelle formation of the Pliocene/Pleistocene periods. The alluvial sediments typically consist of siliciclastics that are fine to coarse quartz sand containing clay lenses and gravel in places. Sands consists primarily of very fine to very coarse poorly sorted quartz grains; gravel is composed of quartz, quartzite, and chert pebbles. In areas of the Valley and Ridge province gravels are generally composed of angular to sub-rounded chert, quartz, and quartzite pebbles. Coastal deposits in the Escambia County area include fine to medium quartz sand with shell fragments and accessory heavy minerals along Gulf beaches and fine to medium quartz sand, silt, clay, peat, mud and ooze in the Mississippi Sound, Little Lagoon, bays, lakes, streams, and estuaries. The Citronelle formation consists primarily of varicolored/mottled lenticular beds of poorly sorted sand, clayey sand, clay, and clayey gravel. Limonite pebbles and lenses of limonite cemented sand occur locally in weathered Miocene exposures.

Surficial soils in the region are primarily siliciclastic sediments deposited in response to the renewed uplift and erosion in the Appalachian highlands to the north and sea-level fluctuations. The extent and type of deposit is influenced by numerous factors, including mineral composition of the parent rock and meteorological events.

3.2 SOIL CONDITIONS

The following paragraph provides a generalized description of the subsurface profiles and soil conditions encountered in the borings conducted during this study. The Test Boring Records in the Appendix should be reviewed to provide detailed descriptions of the conditions encountered at each boring location. Conditions may vary at other locations and times.

The test borings generally encountered a pavement section consisting of between 1 inch to 4 inches of asphalt (7 of the 12 cores encountered 1 inch of asphalt) and roughly 4 inches to 15 inches of sand clay base course (7 of the 13 roadway auger borings encountered between 4 inches to 6 inches of sand clay base) underlain by fine-grained sands (USCS classification of SP) to the maximum depth explored of about 5 feet below existing grade (BEG). We note that the thicker pavement sections were found to be present in the (newer) shoulder and bike path alignments.

3.3 GROUNDWATER CONDITIONS

3.3.1 General

Groundwater in the Gulf Coastal Plain typically occurs as an unconfined aquifer condition. Recharge is provided by the infiltration of rainfall and surface water through the soil overburden. More permeable zones in the soil matrix can affect groundwater conditions. The groundwater table is expected to be a subdued replica of the original surface topography. Based on a review of topographic maps and our visual site observations, we anticipate the groundwater flow at the site to be towards the north.

Groundwater levels vary with changes in season and rainfall, construction activity, surface water runoff, tidal influences and other site-specific factors. Groundwater levels in the Pensacola area are typically lowest in the late fall to winter and highest in the early spring to mid-summer with annual groundwater fluctuations by seasonal rainfall; consequently, the water table may vary at times.

3.3.2 Soil Test Boring Groundwater Conditions

Groundwater was encountered in test borings at depths between about 2 feet and 5 feet BEG at the time of our field exploration, which occurred during a period of relatively normal seasonal rainfall, and shortly following a significant rain event.

Based on comparisons of current annual monthly rainfall data to historical rainfall data extending back 50+ years in time, we estimate that the normal permanent seasonal high groundwater (SHGW) table for this roadway alignment will occur within 1 foot above the groundwater levels measured in the borings at the time of drilling.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on our understanding of the proposed construction, our site observations, our evaluation and interpretation of the field and laboratory data obtained during this exploration, our experience with similar subsurface conditions on other projects in the vicinity of this project site, and generally accepted geotechnical engineering principles and practices.

Subsurface conditions in unexplored locations or at other times may vary from those encountered at specific core/boring locations. If such variations are noted during construction, or if project construction plans are changed, we request the opportunity to review the changes and amend our recommendations, if necessary.

As previously noted, boring locations were established by estimating distances and angles from existing site landmarks. If increased accuracy is desired by the client, we recommend that the core/boring locations and elevations be surveyed.

4.1 PAVEMENT CONDITION SURVEY

Based on the results of the asphalt cores and our observations of the condition of the existing pavement sections made at the time of our field exploration as memorialized by the photographs presented in the Appendix, we present these types of pavement distresses that were observed to be present along the roadway alignment of study:

Cracking – Horizontal and/or vertical displacement of a pavement surface which is categorized in terms of both severity (Class 1B, Class II, or Class III) and type (single, branch, alligator, block, or combination cracks). Class 1B cracks are “hairline” cracks less than 1/8-inch-wide, Class II cracks are 1/8 to ¼ inch wide, and Class III cracks are ¼ inch or wider. Single and branch cracks can be longitudinal and/or transverse to the roadway, and can be caused by hardening of the asphalt or fatigue failure of either the asphalt concrete or the supporting soils.

Patching – Patches, indicative of previous repairs, are considered a defect in the pavement that has been repaired, and is considered a pavement distress.

Potholes - Bowl-shaped holes of various sizes in the pavement surface.

Water Bleeding and Pumping - Seeping or ejection of water from beneath the pavement through cracks. In some cases, detectable by deposits of fine material left on the pavement surface, which were eroded (pumped) from the support layers and have stained the surface.

The photographs presented in the Appendix of this report were obtained on March 8, 2017. In general, the visual pavement survey identified pavement distresses common to the entire alignment in the form of severe oxidation, significant isolated cracking as well as block and alligator cracking, and some isolated patches.

4.2 ASPHALT, BASE COURSE, AND SUBGRADE CONDITIONS

The table below presents the results of the asphalt cores performed along the roadway alignment of study. The table includes the asphalt and base course thicknesses and indicates the type of base course encountered at each core location.

Table 1 – Asphalt and Base Evaluation			
Core Location	Asphalt Thickness (inches)	Base Thickness (inches)	Base Type
B-1	2½	12	Sand-Clay (SM)
B-2	1	4	Sand-Clay (SM)
B-3	1	8	Sand-Clay (SM)
B-4	1	4	Sand-Clay (SM)
B-5	1	5	Sand-Clay (SM)
B-6	1	8	Sand-Clay (SM)
B-7	1	5	Sand-Clay (SM)
B-8	0*	4	Sand-Clay (SM)
B-9	1	4	Sand-Clay (SM)
B-10	3	6	Sand-Clay (SM)
B-11	3¼	9	Sand-Clay (SM)
B-12	2¾	12	Sand-Clay (SM)
B-13	3	15	Sand-Clay (SM)

** Boring B-8 was conducted in a pothole and therefore did not encounter asphalt.*

Based on our observations of the existing pavements present along roadway alignment of study, it is our professional opinion that the entire roadway alignment should be stripped to the finished subgrade elevation and replaced with a new asphalt section that is compliant with applicable FDOT and County Specifications.

Based on our experience, a typical pavement section that has performed well for secondary residential roadways in the southwestern portion of Escambia County has consisted of 1½ inches of asphaltic surface course (FDOT SuperPave – FC 12.5) and 6 inches of properly compacted FDOT Graded Aggregate Base course (GAB, minimum Limerock Bearing Ration value of 100), installed over a Stabilized Subgrade course having a minimum LBR value of 40.

We recommend utilizing a GAB course for this project in lieu of crushed limerock or crushed concrete base given the area surrounding Merlin Road's tendency to flood during the wet season.

The existing sand clay base material can be blended in place with underlying subgrade soils to produce a composite material having an LBR value of 40 that will qualify to be incorporated into the new pavement section as the Stabilized Subgrade course.

The GAB and Stabilized Subgrade courses should be placed and compacted in general accordance with applicable FDOT and County requirements.

4.3 STORMWATER RETENTION POND

Auger borings R-1 and R-2 were performed at client-specified locations to provide preliminary design information with respect to a potential stormwater retention pond that could be needed to treat and dispose of stormwater runoff associated with planned improvements to Merlin Road (as well as being an added measure to alleviate the flooding tendency noted above).

Based on the results of these auger borings, it appears that designing a new pond for wet detention may be the only viable design alternative, given the presence of a relatively high groundwater table (2½ feet BEG), and a corresponding shallow depth go the normal permanent SHGW table (about 1½ feet BEG).

5.0 CONSTRUCTION OBSERVATIONS

5.1 PAVEMENTS

The recommended pavement sections should utilize materials and be constructed in accordance with applicable FDOT and County specifications. Also, NOVA should be retained during construction to confirm subgrade conditions are as anticipated and that the construction process is as required by the contract documents

APPENDIX A
Figures and Maps

Scale: Not To Scale	
Date Drawn: March 13, 2017	
Drawn By: J. James	
Checked By: W. Lawrence	

NOVA

140-A Lurton Street
Pensacola, Florida 32505
850.607.7782 ♦ 850.249.6683

PROJECT LOCATION MAP
Merlin Road EPE
Escambia County, Florida
NOVA Project Number 8217032

Soil Map—Escambia County, Florida
(8217032 Merlin Road EPE)

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Escambia County, Florida
Survey Area Data: Version 14, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

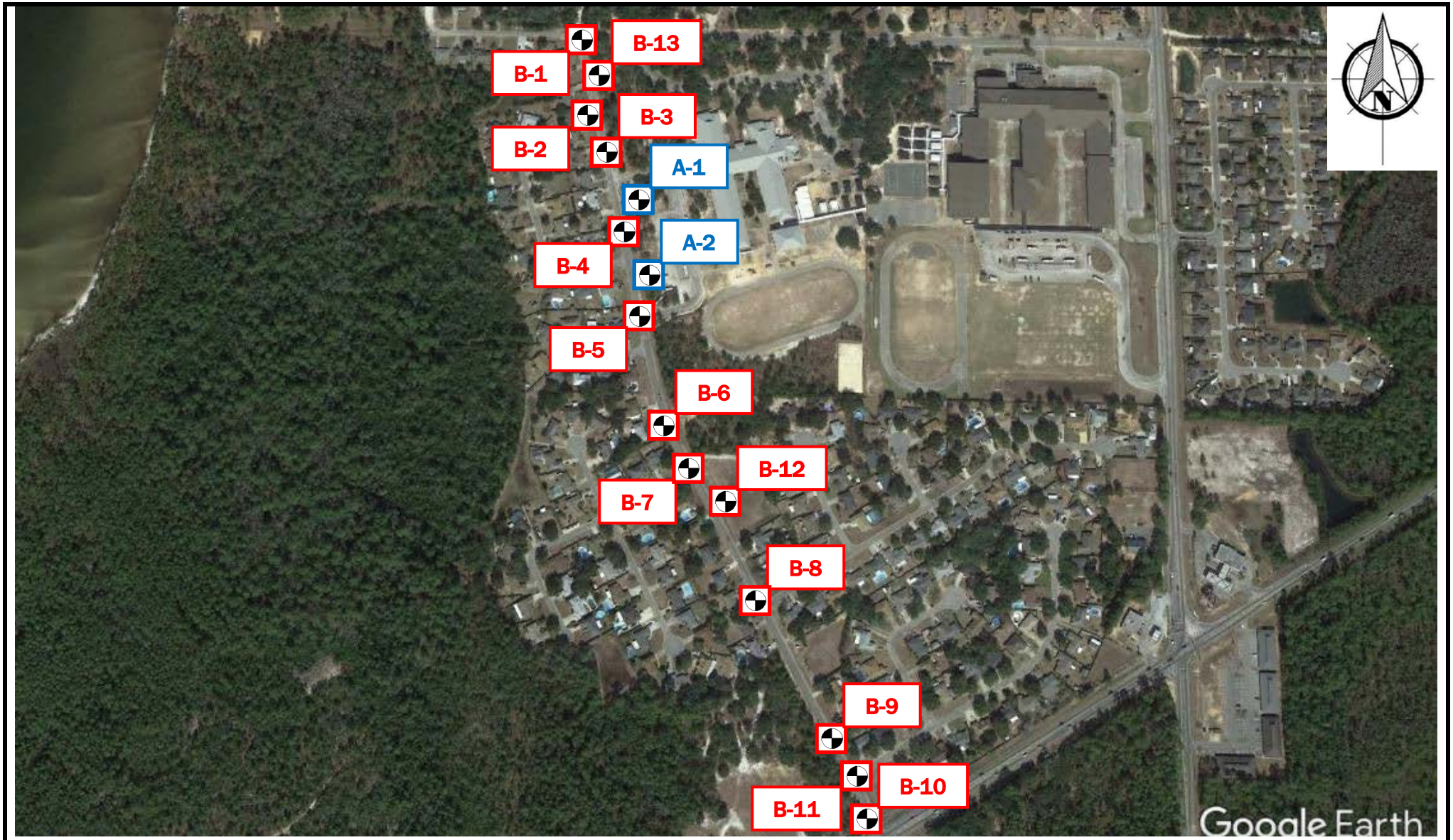
Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Escambia County, Florida (FL033)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
11	Hurricane sand, 0 to 5 percent slopes	8.4	75.0%
13	Lakeland sand, 0 to 5 percent slopes	2.8	25.0%
Totals for Area of Interest		**11.2**	**100.0%**

APPENDIX B
Subsurface Data



LEGEND

B-x = Roadway Core/Auger Boring

A-x = SMS Auger Boring

Scale: Not To Scale	NOVA	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	BORING LOCATION PLAN **Merlin Road EPE** Escambia County, Florida *NOVA Project Number 8217032*
Date Drawn: March 10, 2017			
Drawn By: J. James			
Checked By: W. Lawrence			

KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than 50% retained on the the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Medium Stiff – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

NOVA

TEST BORING RECORD B-1

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 5 ft. AFTER 24 HOURS: CAVING>

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx. 2 1/2 inches)				
		Sand/Clay Base with some gravel (Approx. 12 inches) (SM)				
1						
		Brown/tan fine-grained SAND (SP)				
2						
3						
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed at northern terminal of roadway.

NOVA

TEST BORING RECORD B-2

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 5 ft. AFTER 24 HOURS: CAVING>

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch)				
		Sand/Clay Base with some gravel (Approx. 4 inches) (SM)				
		Tan fine-grained SAND (SP)				
1						
2						
3						
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed about 100 feet south of B-1 within reflection crack with noticable bleeding.

NOVA

TEST BORING RECORD B-3

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 3.5 ft AFTER 24 HOURS: CAVING>

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch)				
		Sand/Clay Base with some gravel (Approx. 8 inches) (SM)				
1		Tan fine-grained SAND (SP)				
2						
3						
4						
5		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed 20 feet north od school exit.

NOVA

TEST BORING RECORD B-4

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 3 ft. AFTER 24 HOURS: CAVING>

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch)				
		Sand/Clay Base with some gravel (Approx. 4 inches) (SM)				
		Tan fine-grained SAND (SP)				
1						
2						
3						
		Light-tan fine-grained SAND (SP)				
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed adjacent from school entrance.

NOVA

TEST BORING RECORD B-5

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2.5 ft. AFTER 24 HOURS: CAVING>

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch,)				
		Sand/Clay Base with some gravel (Approx. 5 inches) (SM)				
		Tan fine-grained SAND (SP)				
1						
2						
3						
		Light-tan fine-grained SAND (SP)				
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

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

Within reflection crack about 100 feet north of Bay Oaks Drive.

NOVA

TEST BORING RECORD B-6

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft AFTER 24 HOURS: CAVING>

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch)				
		Sand/Clay Base with some gravel (Approx. 8 inches) (SM)				
1		Brown fine-grained SAND with Silt (SP-SM)				
		Tan fine-grained SAND (SP)				
2						
		Light-tan fine-grained SAND (SP)				
3						
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Adjacent to Bay Oaks Drive

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

NOVA

TEST BORING RECORD B-7

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft. AFTER 24 HOURS: CAVING>

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch,)				
		Sand/Clay Base with some gravel (Approx. 5 inches) (SM)				
		Tan fine-grained SAND (SP)				
1						
2		Light-tan fine-grained SAND (SP)				
3						
4						
5		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed adjacent to oak View Drive.

NOVA

TEST BORING RECORD B-8

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft. AFTER 24 HOURS: CAVING> 3

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		Sand/Clay Base with some gravel (Approx. 4 inches) (SM)				
		Dark-brown/gray fine-grained SAND with Silt (SP-SM)				
1		Light-brown/gray fine-grained SAND (SP)				
		Light-gray fine-grained SAND (SP)				
2						
3		Boring Terminated at 3 ft.				
4						
5						
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

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

Performed within pothole adjacent to B-7, Standing water within hole, boring collapsed at 3 feet.

NOVA

TEST BORING RECORD B-9

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft. AFTER 24 HOURS: CAVING> 3.5

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 1 inch,)				
		Sand/Clay Base with some gravel (Approx. 4 inches) (SM)				
		Dark-brown/gray fine-grained SAND with Silt (SP-SM)				
1		Light-brown/gray fine-grained SAND (SP)				
		Light-gray fine-grained SAND (SP)				
2						
3						
		Boring Terminated at 3.5 ft.				
4						
5						
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

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

Performed about 100 feet north of Tarkin Oaks Drive within noticable alligator cracking. Boring collapsed at 3.5 feet.

NOVA

TEST BORING RECORD B-10

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft. AFTER 24 HOURS: CAVING> 4

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx 3 inch,)				
		Sand/Clay Base with some gravel (Approx. 6 inches) (SM)				
1		Dark-brown/gray fine-grained SAND with Silt (SP-SM)				
		Tan fine-grained SAND (SP)				
2		Light-gray fine-grained SAND (SP)				
3						
4		Boring Terminated at 4 ft.				
5						
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed about 50 feet north of south terminal of Merlin Road. Boring collapsed at 4 feet.

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

NOVA

TEST BORING RECORD B-11

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft. AFTER 24 HOURS: CAVING> 4

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx. 3 1/4 inches)				
		Sand/Clay Base with some gravel (Approx. 9 inches) (SM)				
1		Dark-brown/gray fine-grained SAND with Silt (SP-SM)				
2		Light-gray fine-grained SAND (SP)				
3						
4		Boring Terminated at 4 ft.				
5						
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

Performed within bike lane at southern portion of roadway, boring collapsed at 4 feet.

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

NOVA

TEST BORING RECORD B-12

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2 ft. AFTER 24 HOURS: CAVING>

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx. 2 3/4 inches)				
		Sand/Clay Base with some gravel (Approx. 12 inches) (SM)				
1						
		Tan fine-grained SAND (SP)				
2						
		Light-tan fine-grained SAND (SP)				
3						
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

■ %<#200
● BLOW COUNT
▲ NATURAL MOISTURE

PLASTIC LIMIT ├──┤ LIQUID LIMIT
10 20 30 40 50 70 90

Performed within bike lane across from stormwater pond.

NOVA

TEST BORING RECORD B-13

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Surface
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Coring/Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 3 ft. AFTER 24 HOURS: CAVING> C

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

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		ASPHALT (Approx. 3 inches)				
		Sand/Clay Base with some gravel (Approx. 15 inches) (SM)				
1						
		Tan fine-grained SAND (SP)				
2						
		Light-tan fine-grained SAND (SP)				
3						
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

■ %<#200
● BLOW COUNT
▲ NATURAL MOISTURE

PLASTIC LIMIT ├──┤ LIQUID LIMIT
10 20 30 40 50 70 90

Performed within bike lane at northern portion of roadway.

NOVA

TEST BORING RECORD A-1

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Grade
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2.5 feet AFTER 24 HOURS: CAVING>

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		Brown fine-grained SAND with Silt (SP-SM)				
1		Tan fine-grained SAND (SP)				
2		Light-tan fine-grained SAND (SP)				
3						
4						
5		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

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

NOVA

TEST BORING RECORD A-2

PROJECT: Merlin Road EPE | PROJECT NO.: 8217032
CLIENT: 8217032
PROJECT LOCATION: Escambia County, Florida
LOCATION: Per Boring Location Plan | ELEVATION: Existing Grade
DRILLER: J. James | LOGGED BY: J. James
DRILLING METHOD: Hand Auger | DATE: March 8, 2017
DEPTH TO - WATER> INITIAL: 2.5 feet AFTER 24 HOURS: CAVING>

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample Type	N-Value
0		Brown fine-grained SAND with Silt (SP-SM)				
		Tan fine-grained SAND (SP)				
1						
2						
		Light-tan fine-grained SAND (SP)				
3						
4						
5						
		Boring Terminated at 5 ft.				
6						
7						

%<#200
BLOW COUNT
NATURAL MOISTURE
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 70 90

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

APPENDIX C
Laboratory Data

SUMMARY OF CLASSIFICATION & INDEX TESTING

Merlin Road EPE
Escambia County, Florida
NOVA Project No. 8217032

SUMMARY OF CLASSIFICATION AND INDEX TESTING				
Boring No.	Sample Depth (BEG)	Natural Moisture (%)	Percent Fines (%- #200)	USCS Soil Classification
B-1	0-1’	9	19	SM
B-2	1’-2’	9	5	SP
B-5	0-5”	10	20	SM
B-6	1’-1.25’	9	11	SP-SM
B-8	4”-1’	13	12	SP-SM
B-8	1’-1’4”	11	5	SP

APPENDIX D
Pavement Condition Survey

PHOTO 1

The above photo depicts the pavement conditions at the northern termination of Merlin Road. Reflection cracking (in the direction of travel), severe block cracking and large transverse cracks exist in the area which were noted to extend the full depth of the asphalt.

PHOTO 2

Prevalent cracks in the vicinity of Photo 2 are shown above to be approximately ½-inch in width and were found to extend the full depth of the asphalt pavement.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*1 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 3

The above photo depicts the typical pavement conditions from the northern termination looking south. Longitudinal (between shoulder and roadway alignment) as well as severe block cracking and reflective cracking (across the roadway alignment in the direction of travel) were observed along the entire alignment.

PHOTO 4

Photo of longitudinal cracks where the bike path and roadway alignment meet.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*2 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 5

The above photo depicts broken curbing that was prevalent along the entire roadway alignment of study.

PHOTO 6

Photo of rear exit drive of the elementary school where many distresses (block cracking and potholes) were observed, as well as spalling of the longitudinal cracks between the roadway and shoulder.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*3 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 7

Photograph of raveling and advanced oxidation near the school exit.

PHOTO 8

Photo of entrance drive into elementary school where both longitudinal and traverse cracking, were prevalent along the entire alignment; advanced oxidation can be seen as well.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*4 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 9

The above photo depicts a previous repair in the construction joint where the pavement has spalled and potholes have formed.

PHOTO 10

Another photo of a previous failed repair where “alligator cracking” has occurred in the roadway alignment. The pavement has spalled and significant potholes have formed, also indicative of base course failure.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*5 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 11

The above photo depicts severe “alligator cracking” in the center of the roadway.

PHOTO 12

Photo depicts raveling near a saw-cut control joint. Noticeable “bleeding” of the sand/clay base is also visible here.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*6 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 13

Photo depicts raveling, alligator cracking, rutting and bleeding of the base course within the pavement section.

PHOTO 14

Photo of very severe crack as well as severe block cracking.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*7 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

PHOTO 15

The above photo depicts raveling of the roadway edge near the southern termination of Merlin Road.

PHOTO 16

Photo of southern termination of Merlin road.

Scale: Not to Scale	NOVA	PHOTO ESSAY	Page
Date Taken: March 8, 2017	140-A Lurton Street Pensacola, Florida 32505 850.607.7782 ♦ 850.249.6683	**Merlin Road EPE**	*8 of 8*
Taken by: J. James		Escambia County, Florida	
Checked by: W. Lawrence		*NOVA Project Number 8217032*	

APPENDIX E
Qualifications of Recommendations

QUALIFICATIONS OF RECOMMENDATIONS

The findings, conclusions and recommendations presented in this report represent our professional opinions concerning subsurface conditions at the site. The opinions presented are relative to the dates of our site work and should not be relied on to represent conditions at later dates or at locations not explored. The opinions included herein are based on information provided to us, the data obtained at specific locations during the study, and our previous experience. If additional information becomes available which might impact our geotechnical opinions, it will be necessary for NOVA to review the information, re-assess the potential concerns, and re-evaluate our conclusions and recommendations.

Regardless of the thoroughness of a geotechnical exploration, there is the possibility that conditions between borings may differ from those encountered at specific boring locations, that conditions are not as anticipated by the designers and/or the contractors, or that either natural events or the construction process has altered the subsurface conditions. These variations are an inherent risk associated with subsurface conditions in this region and the approximate methods used to obtain the data. These variations may not be apparent until construction.

The professional opinions presented in this report are not final. Field observations and foundation installation monitoring by the geotechnical engineer, as well as soil density testing and other quality assurance functions associated with site earthwork and foundation construction, are an extension of this report. Therefore, NOVA should be retained by the owner to observe all earthwork and foundation construction to confirm that the conditions anticipated in this study actually exist, and to finalize or amend our conclusions and recommendations. NOVA is not responsible or liable for the conclusions and recommendations presented in this report if NOVA does not perform these observation and testing services.

This report is intended for the sole use of **SIGMA Consulting Group, Inc.** only. The scope of work performed during this study was developed for purposes specifically intended **SIGMA Consulting Group, Inc.** only, and may not satisfy other users' requirements. Use of this report or the findings, conclusions or recommendations by others will be at the sole risk of the user. NOVA is not responsible or liable for the interpretation by others of the data in this report, nor their conclusions, recommendations or opinions.

Our professional services have been performed, our findings obtained, our conclusions derived and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices in the State of Florida. This warranty is in lieu of all other statements or warranties, either expressed or implied.

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.

GEOTECHNICAL BUSINESS COUNCIL
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