REPORT OF GEOTECHNICAL CONSULTING SERVICES

Escambia County Public Works Department
Thompson, Crary and McNeal Roadway Project
Escambia County, Century,FL

Thompson Engineering Project No.: 15-1101-0297

June 14, 2016

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June 14, 2016

Escambia County Public Works Department
c/o Thompson Engineering, Inc.
2970 Cottage Hill Road, Suite 190
Mobile, Alabama 36606

To: Mr. Jake Gibbs, P.E.
Project Manager, TE

Re: **Report of Geotechnical Consulting Services**
Thompson, Crary and McNeal Dirt Road Paving and Drainage Improvements
Thompson Rd., Crary Rd., and McNeal Rd. – Century, Escambia County, Fl.
Project No.: 25871.01, 25871.02 and 25871.03
Thompson Project No.: 15-1101-0297

Dear Mr. Gibbs:

Thompson Engineering (TE) Geotechnical Services Group is pleased to present this engineering report for the paving of roadways specified above in Escambia County, Florida. TE is providing the county a revision to work initially started by others which includes geotechnical, surveying and civil engineering services. We understand that notice to proceed with the scope of services was received on November 25, 2015.

PURPOSE AND SCOPE OF WORK

The purpose of our services was to evaluate the site soil conditions and provide professional opinions and recommendations regarding roadway and drainage improvements on three existing unpaved roadways. Our scope of work included:

- A general reconnaissance of the site.
- A limited subsurface exploration program including drilling nine (9) Standard Penetration Test (SPT) borings to depths ranging between six and 30 feet.
- Laboratory testing of selected soil samples obtained from the exploratory borings.
- Engineering analyses and evaluation of the acquired data from the exploration and testing programs.
- A summary of our findings and recommendations in this written report.

PROJECT INFORMATION

This report was developed utilizing existing preliminary plans produced by others for each of the three roads as follows: the McNeal Rd. Paving and Drainage Plans for the 100 percent plan submittal, the Thompson Rd. Paving and Drainage Plans for the 100 percent submittal and the Crary Rd. Paving and Drainage Plans for the 90 percent plan submittal. The project consists of

the design and construction of asphalt paved roadway for the following roads located in Century, Escambia County, Florida:

Plate Description: Site Aerial with Roadways Labelled

- McNeal Road: This roadway begins at station 10+00 and ends at station 34+27.4 for a total length of 2,427.4 ft. In general, centerline finish grades are within (+/-) 3 feet of existing centerline grades.

- Thompson Road: This roadway begins at station 34+27.4 and ends at station 95+42.8 for a total length of 6,115.4 ft. In general, the centerline finish grade is within (+/-) 5 feet of the existing centerline grade.

- Crary Road: This roadway begins at station 10+27.8 and ends at station 68+65.8 for a total length of 5,838.0 ft. In general, centerline finish grades are within (+/-) 1 foot of

existing centerline grades except for between station 51+00 and station 61+00 where centerline grades are within (+/-) 5 feet of existing centerline grades.

From the preliminary project plans, the current project design considers a pavement section consisting of 2 inches of asphalt and 7 inches of graded aggregate base. As a lighter section alternative, a sand-clay base will be included in the pavement recommendations. Traffic data was not available for these roadways.

Note: If any loading conditions (earthen or traffic) vary in intensity or configuration from those stated above, the Project Geotechnical Engineer should be notified. Revisions to the site preparation and foundation design recommendations may be necessary.

SUBSURFACE EXPLORATION PROGRAM

Soil test boring locations were selected by TE and were performed on the shoulder of the roadway alignments. The boring stations and elevations are indicated on the appended **Table of Boring Results**. Nine (9) borings were advanced to depths of 6 feet below the current roadway grades. Two (2) borings were advanced to depths of 30 feet below the current roadway grades at the planned box culvert locations. Soil samples were collected using the Standard Penetration Test (SPT) protocol. All boreholes were backfilled to grade upon field work completion.

Standard Penetration Test (SPT) values were obtained using a standard split-barrel sampler with a 2.0 inch outer diameter and a recovery barrel length of greater than 24 inches. At each depth interval, the split-barrel sampler was driven into the underlying soils by repetitive blows of a standard 140-pound hammer free-falling a distance of 30 inches. The sum of the blowcounts for the final 12 inches of sampler penetration, after first seating six inches, is defined as the SPT value. Test procedures are described in the American Society of Testing and Materials (ASTM) Specification D-1586. SPT values, expressed in units of blows per foot of penetration, are presented opposite the respective depth interval on the Table of Boring Results, attached to this report.

Representative portions of the subsurface soils recovered from the boreholes were placed in sealed containers and transported to the geotechnical laboratory facility. Soil samples will be kept in storage for a period of 90 days following report submittal, at which time they will be discarded.

LABORATORY SOILS TESTING PROGRAM

Soil specimens were visually classified by an experienced geotechnical engineer. Subsurface stratifications and soil classifications are presented on the appended **Table of Boring Results**. Recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards.

Representative samples were selected for laboratory soil index testing. Tests included natural moisture content, Atterberg Limits, and gradation distribution testing. Tests were performed in accordance with the applicable ASTM and AASHTO Standards. The test results are presented in the appended **Table of Boring Results**.

All soil classification designations in this report are based on the Unified Soil Classification System (USCS) as referenced in ASTM D-2487 and the AASHTO system, where applicable.

Abbreviated Grain Size Tests: Relative grain size distribution was determined by performing U.S. Standard No. 200 washes on selected samples. In performing the test, each soil sample was oven dried, weighed, and then washed over a U.S. Standard No. 200 Sieve. The material retained on the No. 200 sieve was then oven dried and weighed. The percent combined silt and clay fraction or "% finer # 200" is defined as the percent by weight of material finer than the No. 200 sieve. Test procedures were in accordance with ASTM D-1140-54. Test results of 21 selected samples are presented on the **Table of Boring Results**, attached.

Natural Moisture Content Determinations: Additional information regarding soil compressibility characteristics and geologic preloading (of fine grained soils) may be estimated through water content values in conjunction with Atterberg Limits. The water content is defined as the weight of water in a moist sample expressed as a percentage of the soil sample's total dry weight. Moisture content tests were performed in accordance with ASTM D-2216. Twelve (12) samples were selected for testing. The results are indicated on the **Table of Boring Results**, attached.

Atterberg Limits Test: To obtain information regarding soil consistency with variations in soil water content or soil plasticity characteristics, Atterberg Limits Tests were performed. The Atterberg Limits are defined as the Liquid Limit (LL) and Plastic Limit (PL) which are the moisture contents at which the soil sample is in the boundary condition between the liquid and plastic state, and between the plastic and semi-solid state, respectively. The Plastic Index (PI) represents the range of moisture content over which the soil will behave as a deformable material and is determined as the numerical difference between the LL and PL. Test methods are described in ASTM D-4318. Twelve (12) samples were selected for testing, however, ten of the 12 samples were found to be non-plastic. Test results are indicated on the **Table of Boring Results**, attached.

Sieve Analysis: Five (5) representative samples of the encountered soils were selected to be tested for relative grain size analysis. Preparation of selected samples for sieve analyses include oven drying of samples and recording total sample weights before placing into sieves to determine percentage of grain size passing each sieves. The sieve analyses were performed using sieve sizes No.10, No.40, No.60, and No.200 in accordance with the specifications outlined in ASTM D-422.

SUBSURFACE FINDINGS

The **Table of Boring Results** indicates the specific soils encountered at each boring location. It should be noted that subsurface conditions may vary from those found at the boring locations.

For engineering purposes, subsurface soils encountered at the project site may be described as two soil layers. Within the sampled project area, Clayey and Silty Sands (A-2-4 and A-2-6) are the primary soil types found directly beneath the existing roadway. Clayey and Silty Sands (A-2-4) into fine Sands and Sandy Clays (A-7) are the primary types of soils encountered in the deeper borings (BC-1 and BC-2) below depths ranging between 8.5 and 10 feet.

GROUNDWATER LEVELS

Groundwater was not apparent in any of the boreholes representing the upper 6 feet of the subsurface profile. At the two culvert locations where deeper explorations were made, groundwater was not encountered within the 30 foot explored depths. Fluctuations of groundwater levels can be expected to occur seasonally as a result of rainfall, surface runoff, perching, within wetlands/detention areas, and other site specific factors that may vary from the time the soil test borings were performed.

GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

Our geotechnical assessment of soil conditions at the project site was based on subsurface information presented earlier in this report. In evaluating the data, we used correlations which have been previously made between Standard Penetration Test values and soil test strength and behavioral characteristics observed in soil conditions similar to those encountered at the project site.

Subgrade Soil Suitability

The three unimproved roadways appear to have well compacted surficial soils based on the SPT values recovered in our field explorations. Below the surface material, soil consistency varies from dense to very loose. The very loose sandy soils, if encountered, will require recompacting to provide a firm subgrade for later subbase placement and compaction. The majority of subgrade soils are anticipated to resemble “Structural fill” (A-2-4) as defined in later report sections and should provide good workability and drainage characteristics. In a few locations, sandy clays (A-6/7) were encountered within the boring depths and may be encountered within the project limits at subgrade elevations. These sandy clay soils are difficult to rework due to their sensitivity to changes in moisture conditions. Generally, these clay soils should be undercut and replaced with select fill to provide a separation from the pavement section using sandy soils. The clay soils will not be considered suitable for flexible pavement subgrade within a depth of 18 inches from the bottom of the constructed base course. This measure will prevent the perching or trapping of infiltrating surface waters from weaking the subbase materials.

Excavated sandy soils resulting from general site grading, undercut operations, or drainage ditch excavations which safisfy the specifications for “structural fill” should be stockpiled for future on-site subgrade applications. These sandy soils are expected to respond well to surface compaction efforts and are deemed suitable for roadway embankment fill. Laboratory index testing (i.e. Atterberg Limits, grain size analyses, Proctor Density testing) performed during the construction phase of the project will be appropriate for suitability confirmation.

Moisture Control

During periods of wet weather, in localized areas with perched groundwater near the surface or within utility excavations, it may be difficult to control the moisture to allow for proper compaction of soils with fines content in excess of 25 percent. If there is no time for air drying, it will be necessary to undercut and backfill with "structural fill" or “select sand” material. The amount of undercut which will be required as a result of excess moisture will depend on the type of soil and actual moisture conditions.

Dewatering

The subsurface findings suggest that groundwater control measures will not be required during project construction. Construction-phase dewatering efforts may be necessary only if localized and random shallow perched groundwater conditions are encountered. Excavations for the planned drainage features may require temporary stormwater diversion or groundwater control measures during the construction period.

Subgrade Undercut

Soils having excessive fines content, such as sandy clays, clays and silty/clayey sands, and/or soils having excessive moisture levels will not be considered suitable for long-term embankment, base course and pavement section support. With reliance on the soil test boring findings, as indicated in the **Table of Boring Results,** some specific undercuts are recommended. In-situ subsurface conditions exposed during construction may require modifications to these recommendations. The table below provides an estimate of site preparation required based on the soil boring data and planned grade changes along the roadway alignment.

McNeal Road			
Starting Station	**Ending Station**	**Cut/Fill/ Match**	**Recommendations for Subgrade Preparation**
10 + 10	15 + 00	Cut 2' – 3'	Undercutting may require an additional of 18 inch due to underlying A-6 clay soils.
15 + 00	17 + 50	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
17 + 50	24 + 00	Fill 1'	Preparation of subgrade to receive fill.
24 + 00	29 + 50	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
29 + 50	34 + 27	Fill 2'	Preparation of subgrade to receive fill.

Thompson Road			
Starting Station	**Ending Station**	**Cut/Fill/ Match**	**Recommendations for Subgrade Preparation**
34 + 25	37 + 75	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
37 + 75	42 + 75	Fill 2'-4'	Preparation of subgrade to receive fill.
42 + 75	44 + 75	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
44 + 75	72 + 25	Fill 2'-4'	Preparation of subgrade to receive fill.
72 + 25	87 + 75	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
87 + 75	95 + 42	Fill 1'-2'	Preparation of subgrade to receive fill.

Crary Road			
Starting Station	**Ending Station**	**Cut/Fill/ Match**	**Recommendations for Subgrade Preparation**
10 + 27.8	13 + 00	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
13 + 00	16 + 00	Cut 1'	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
16 + 00	21 + 75	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
21 + 75	29 + 25	Fill 1'-2'	Preparation of subgrade to receive fill.
29 + 25	50 + 25	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.
50 + 25	61 + 50	Fill 3'-4'	Preparation of subgrade to receive fill.
61 + 50	68 + 66	Match	Reprocessing of the subgrade to a depth of 12 inches should be adequate to serve as the subbase system.

The above tables indicate the estimated site preparation required along the project. As recommended below, all site preparation activities should be performed under the observation of a qualified soils technician, to indentify area of loose, soft, or unstable subgrade soil conditions.

Based on the results of the borings, "French" drains and underdrains are not anticipated for this project. Should groundwater and/or saturated soil conditions be encountered during construction activities, the Project Geotechnical Engineer should be contacted to evaluate the need for pavement drainage improvements.

SITE PREPARATION RECOMMENDATIONS

Geotechnical site preparation should begin with the clearing and grubbing within the planned pavement area. Tree stumps, major root systems, unsuitable surface soils, vegetation cover, old pavements and foundation systems, concrete flatwork/ditches, above grade structures, and any buried service lines and structures should be removed in their entirety from beneath these project areas.

Rough grading operations should be performed to expose subgrade soils. The subgrade preparation recommendations presented on the tables in the previous section should be implemented. A qualified, experienced soils technician should be present to observe and document site preparation operation.

Unusual or unanticipated subgrade conditions identified during the site preparation activities, such as ground waving or groundwater pumping under construction traffic, should be identified by the qualified soils inspector and be addressed by the project geotechnical engineer.

The replacement granular fill soils should be placed using maximum 8-inch loose lifts. Replacement fill soils should be compacted to the minimum in-place soil density recommended below for embankment construction. A minimum 12 inches compacted layer of structural fill shall serve as the pavement subbase layer.

Provided filling is required, the surface of the existing roadway should be scarified prior to the placement/compaction of additional subgrade fill and/or base course soils.

At the end of each work day the roadbed surface should be sloped and sealed to promote positive drainage and prevent standing surface water conditions.

Base Course Selection

As shown on the initial project plans a minimum compacted base course thickness of 7 inches of graded aggregate will serve as the pavement base layer for roadways on this project. The base course should conform to the material specifications for graded aggregate base specified in FDOT 204-3. Base course fill materials should be compacted to a minimum of 98 percent AASHTO T-180.

For a lighter pavement section and as an economical alternate to the stone base, a sand-clay base material may be utilized. A minimum compacted base course thickness of 8 inches of sand-clay base material as per section 912 of the FDOT Standard Specifications for Road and Bridge Construction, 1991 edition may be selected. The placement criteria are included in Section 240 of the same standards. With the sand-clay base option, a prime coat should be placed on the completed base layer prior to application of the wearing course.

It is noted that the selection of base material will affect the durability and cost of the completed roadways. Stone base materials will provide a longer lasting and more durable pavement system. The sand-clay base will provide a minimal pavement system, but, will have a lower initial cost. Selection of the preferred pavement base should be made with reliance on projected overlay schedules, traffic growth and maintenance considerations.

Fill Soils

Select fill for the use of embankment construction may be onsite cut soils or off-site select fill soils. Sandy soils recovered from any on-site cut operations may be considered for backfill and fill applications on this project provided that the material properties satisfy the specifications for “Structural” fill or “Select Sand” fill. Imported fill soils should consist of “structural fill”.

a. “Structural” fill is defined as a non-plastic sandy soil free of organics, debris, and otherwise deleterious materials and containing less than 25 percent passing the No. 200 sieve and 95 percent or less passing the No. 40 sieve, by weight.

b. “Select Sand” fill is defined as a non-plastic sandy soil free of organics, debris, and otherwise deleterious materials and containing less than 8 percent passing the No. 200 sieve and a maximum of 95 percent passing the No. 40 sieve, by weight. Select sand fill shall be used as initial fill in excavations which have high moisture levels. These soils shall not be used as embankment fill above adjacent grades.

Embankment fill should be compacted to a minimum of 95 percent AASHTO T-99; the final lift should be compacted to 100 percent of AASHTO T-99. Fill compaction efforts should be implemented with a vibratory surface roller of appropriate size. In general vibratory surface compaction operations should be limited to no closer than 50 feet from existing structures supported on shallow foundations and concrete flatwork. In-place field density tests should be

performed on the compacted fill soils for every 10,000 square feet of fill area per lift of fill soils.

Representative samples of the fill soils should be collected for laboratory classification and compaction testing. The maximum dry density, optimum moisture content, gradation, and plasticity should be determined for each sample. These tests are needed for quality control of the compacted fill.

PAVEMENT SECTION EVALUATION

The pavement analyses considered a pavement section consisting of 2 inches of asphalt wearing course, 7 inches of graded aggregate base or 8 inches of sand-clay base, and the site preparation recommended previously. The following coefficients were used to estimate a structural number for the planned pavement sections:

a_1 = 0.50, FDOT 334 - Superpave Bituminous Concrete Base, Binder, and Wearing Surface
a_{2a} = 0.14, FDOT 204 - Graded Aggregate Base
a_{2b} = 0.06, FDOT 240 (1991) – Sand-Clay Base
a_3 = 0.05, FDOT 290 – Granular Subbase

Incorporating the selected layer thicknesses, the stone base option will provide a structural number of about 2.6 and the sand-clay base option will provide a structural number of around 2.0.

The DARWin software, which incorporates the AASHTO pavement design requirements, was used to determine traffic capabilities based on the structural number, a 12-yr pavement design life (3 stage construction), and a subgrade CBR value of 10 (approx. resilient modulus value of 6500 psi). Additional factors included initial/terminal serviceability values of 4.5/2.0, a standard deviation of 0.49, and a 2 percent growth of volume.

Based on these assumptions, it has been determined that the pavement section using the crushed stone base is capable of handling 500 vehicles per day with 7.5 percent of those being class 5 trucks (1 ESAL per truck). The pavement section using the sand-clay base has been determined to be capable of handling 300 vehicles per day with 3 percent trucks traffic.

BOX CULVERTS AND DRAINAGE PIPE INSTALLATION

To remove very loose sands and/or soft clays, the box culverts shall be undercut to a depth of three feet below underside of concrete level at Box Culvert 1 (BC-1). Undercut the new culvert at Culvert 2 (BC-2) two feet below underside of concrete level. The undercut shall extend a minimum of three feet beyond the perimeter of the culverts. The subgrade shall be inspected by a qualified soils inspector. If soft, organic laden or unsuitable soils are discovered within the subgrade areas, the qualified soils inspector shall contact the Project Geotechnical Engineer for additional undercut direction and approval prior to starting the additional work.

Materials used for bedding at the culverts shall be a pea gravel (river gravel) or crushed stone gravel satisfying the criteria of No. 57 stone (ASTM C-33). The bedding layer shall extend a minimum of 12 inches in thickness below the invert of the pipe. It is recommended that a turn-down edge (minimum 18 inches) be included at the up and down gradient ends of the bottom

slab to prevent possible piping or scour action. All excavations shall satisfy the current OSHA requirements for stepping and sloping of excavation sidewalls.

It is recommended that a minimum pipe bedding thickness of 6 inches be installed below the bottom of drainage pipe sections. It is further recommended that a minimum bedding thickness of 24 inches be installed below manholes. Pipe bedding shall consist of No. 57 gravel (ASTM C-33) installed to the spring line of the pipe. Pipe bedding shall extend 6 inches beyond the outside of the pipe and 24 inches around manholes. Excavation subgrades shall be inspected by a qualified soils technician and undercutting, if required, shall be approved by the Project Geotechnical Engineer and the County's representative.

REPORT LIMITATIONS

This geotechnical report is intended to assist the project design team and the Escambia County Engineering Department during project planning, design and construction. This report has been prepared in accordance with contractual obligations with Escambia County, and generally accepted local geotechnical engineering practices; no other warranty is expressed or implied.

The evaluation and recommendations submitted in this report are based in part upon the data obtained from the soil test borings performed at the indicated locations. The nature or extent of variations throughout the subsurface profile may not become evident until the time of construction. If variations then appear evident, it may be necessary to reevaluate our recommendations as provided herein.

CLOSING

Thompson Engineering Geotechnical Services Group appreciates the opportunity to provide engineering support with geotechnical discipline matters on this project. Do not hesitate to contact the writers with any questions.

Respectfully,

THOMPSON ENGINEERING, INC

Charles D. Tisher
Associate Geotechnical Engineer

BRADNER CLARK RALPH
LICENSE
6-14-16
No. 75182
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Brad C. Ralph, P.E.
Senior Geotechnical Engineer
P.E. Registration No. 75182

Attachments:

Appendix A - McNeal Road
Appendix B - Thompson Road
Appendix C - Crary Road

Appendix A

McNeal Road

Google earth

feet 3000
km 1

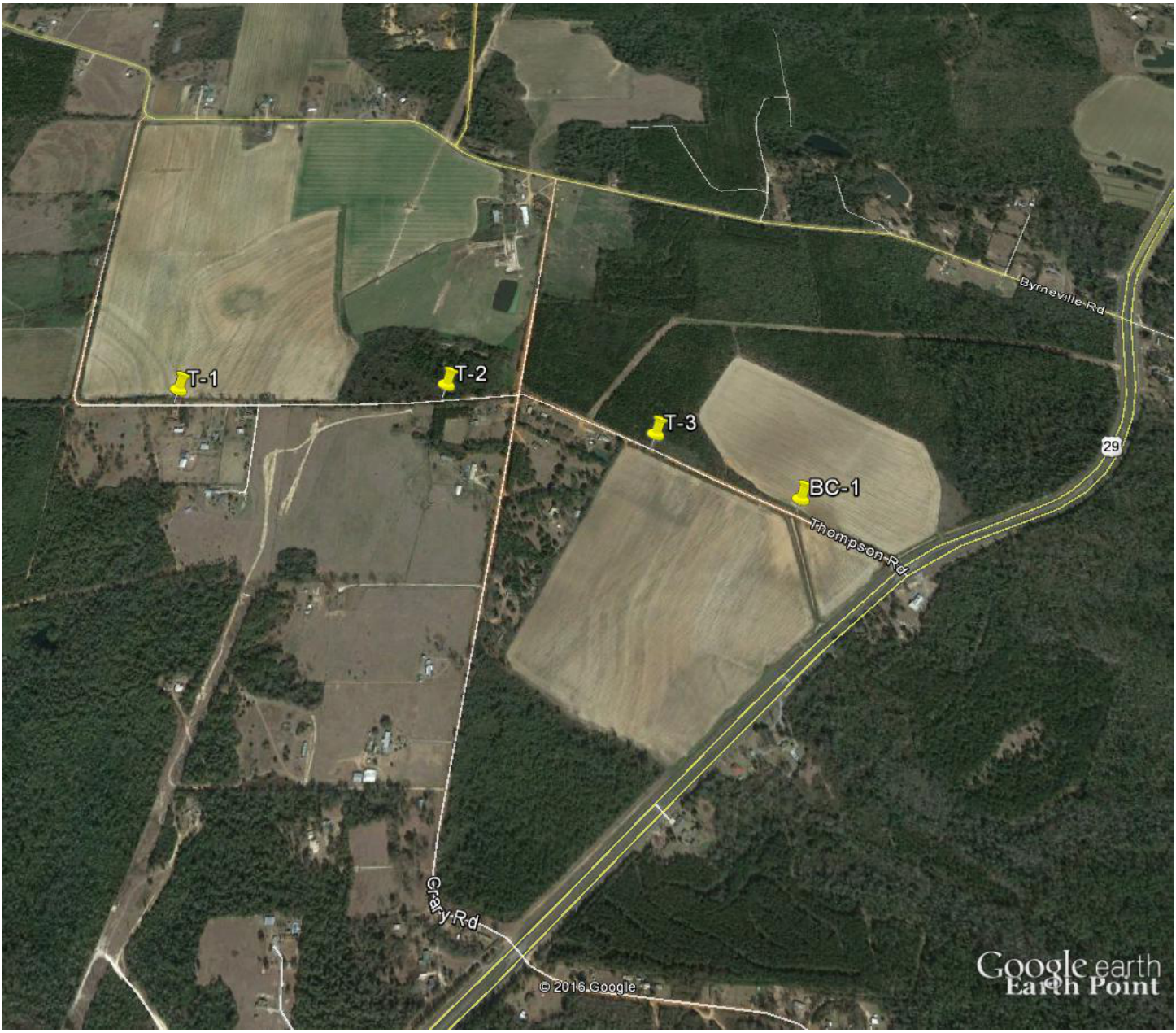
TABLE OF BORING RESULTS
MCNEAL ROAD- ESCAMBIA COUNTY, FLORIDA-25871.01
THOMPSON PROJECT NO.: 15-1101-0297

Station	Offset	Boring #	Existing Elevation Feet	Finished Elevation Feet	Recommended Undercut*	Groundwater Depth Inches	Sample Number	Sample Depth	N Value	Natural Moisture, %	Atterberg Limits, %		Sieve Analysis % Finer by Weight		AASHTO Classification	Visual Description
											LL	PI	#40	#200		
11+00	CL	MC-1	243.8	241.6	0	Not Encountered	1	0.0-1.5'	20	8	NP	NP		24.3	A-2-4	Brown Clayey Sand, fine grained
							2	1.5-3.0'	6							Brown Clayey Sand, fine grained
							3	3.0-4.5'	8	15	36	18		40.4	A-6	Brown Sandy Clay
							4	4.5-6.0'	7							Brown Sandy Clay
28+00	CL	MC-2	249.2	249.27	0	Not Encountered	1	0.0-1.5'	11							Brown Clayey Sand, fine grained
							2	1.5-3.0'	28	18	49	23		47.3	A-7	Reddish brown Clay
							3	3.0-4.5'	25	14	NP	NP		26.9	A-2-4	Brown Clayey Sand, fine grained
							4	4.5-6.0'	30							Brown Clayey Sand, fine grained

* Undercut depths are based on conditions encountered at each boring. Actual undercut depths to be determine by qualified soil technician during field activities (See Site Preparation Section of the geotechnical report).
** B.E.G. = Below existing ground surface

Appendix B

Thompson Road



Google earth

feet 3000
km 1

TABLE OF BORING RESULTS
THOMPSON ROAD- ESCAMBIA COUNTY, FLORIDA-25871.02
THOMPSON PROJECT NO.: 15-1101-0297

Station	Offset	Boring #	Existing Elevation Feet	Finished Elevation Feet	Recommended Undercut*	Groundwater Depth Inches	Sample Number	Sample Depth	N Value	Natural Moisture, %	Atterberg Limits, %		Sieve Analysis % Finer by Weight		AASHTO Classification	Visual Description
											LL	PI	#40	#200		
88+50	CL	BC-1	162.1	162.03	24"	Not Encountered	1	0.0-1.5'	12							Brown and light brown Silty Sand, fine grained, trace Gravel
							2	1.5-3.0'	15	11	NP	NP	57	13.7	A-2-4	Brown and light brown Silty Sand, fine grained, trace Clay and Gravel
							3	3.0-4.5'	10							Brown Clayey Sand, fine grained
							4	5.5-6.0'	7							Brown Clayey Sand, fine grained
							5	6.0-7.5'	W.O.H.	14	19	7		32	A-2-4	Brown and dark brown Sandy Clay
							6	8.5-10.0'	3							Brown Sandy Clay
							7	13.5-15.0'	40							Light brown and tan Clayey Sand, fine grained, trace Gravel
							8	18.5-20.0'	13	10	NP	NP		13.7		Tan Sand, fine grained
							9	23.5-25.0'	13							White and tan Silty Sand, fine grained
							10	28.5-30.0'	19	8.7	NP	NP		10		White and tan Silty Sand, fine grained
42+50	CL	T-1	244.7	245.79	0	Not Encountered	1	0.0-1.5'	13	12	NP	NP		29.2	A-2-4	Brown Clayey Sand, fine grained
							2	1.5-3.0'	26							Brown Clayey Sand, fine grained
							3	3.0-4.5'	31	14	NP	NP		21.5	A-2-4	Brown Clayey Sand, fine grained
							4	4.5-6.0'	27							Brown Clayey Sand, fine grained
62+50	CL	T-2	201.9	203.59	0	Not Encountered	1	0.0-1.5'	27	6	NP	NP	64	22.3	A-2-4	Dark brown and brown Clayey Sand, fine grained, trace Gravel
							2	1.5-3.0'	11							Brown Clayey Sand, fine grainied
							3	3.0-4.5'	8	9	NP	NP		23	A-2-4	Brown Clayey Sand, fine grainied
							4	4.5-6.0'	10							Brown Clayey Sand, fine grainied
78+00	CL	T-3	171.8	172.62	0	Not Encountered	1	0.0-1.5'	25	8	NP	NP	61	18.4	A-2-4	Brown Clayey Sand, fine grained, trace Gravel
							2	1.5-3.0'	25							Brown and light brown Clayey Sand, fine grained
							3	3.0-4.5'	4							Brown Clayey Sand, fine grained
							4	4.5-6.0'	8	14	34	18		33.4	A-2-6	Brown Clayey Sand, fine grained

* Undercut depths are based on conditions encountered at each boring. Actual undercut depths to be determine by qualified soil technician during field activities (See Site Preparation Section of the geotechnical report).
** B.E.G. = Below existing ground surface

Appendix C

Crary Road

Google earth

feet 3000
km 1

TABLE OF BORING RESULTS
CRARY ROAD- ESCAMBIA COUNTY, FLORIDA-25871.03
THOMPSON PROJECT NO.: 15-1101-0297

Station	Offset	Boring #	Existing Elevation Feet	Finished Elevation Feet	Recommended Undercut*	Groundwater Depth Inches	Sample Number	Sample Depth	N Value	Natural Moisture, %	Atterberg Limits, %		Sieve Analysis % Finer by Weight		AASHTO Classification	Visual Description
											LL	PI	#40	#200		
53+00	CL	BC-2	203.9	207.06	18	Not Encountered	1	0.0-1.5'	22	9	NP	NP	54	17.6	A-2-4	Brown Silty Sand, fine grained, trace gravel and clay
							2	1.5-3.0'	48							Brown Clayey Sand, fine grained
							3	3.0-4.5'	9							Brown Clayey Sand, fine grained
							4	5.5-6.0'	9	11	NP	NP		24.1	A-2-4	Brown Clayey Sand, fine grained
							5	6.0-7.5'	10							Brown Clayey Sand, fine grained
							6	8.5-10.0'	26							Brown Clayey Sand, fine grained
							7	13.5-15.0'	14	7	NP	NP		7.6		Light brown and tan Sand, fine grained
							8	18.5-20.0'	19							Light brown and tan Sand, fine grained
							9	23.5-25.0'	12							Light brown and tan Sand, fine to medium grained
							10	28.5-30.0'	19	28	87	68		80.7	A-7	Brown and light gray Clay
66+50	CL	C-1	245.0	244.58	0	Not Encountered	1	0.0-1.5'	42	7	30	15	67.5	23.8	A-2-6	Brown Clayey Sand, fine grained, trace Gravel
							2	1.5-3.0'	11							Brown Clayey Sand, fine grained
							3	3.0-4.5'	16	8	NP	NP		32.2	A-2-4	Brown Clayey Sand, fine grained
							4	4.5-6.0'	18							Brown Clayey Sand, fine grained
42+00	CL	C-2	178.8	178.63	0	Not Encountered	1	0.0-1.5'	25	5	NP	NP		18	A-2-4	Brown Silty Sand, fine grained, trace clay
							2	1.5-3.0'	5							Brown Silty Sand, fine grained, trace clay
							3	3.0-4.5'	4	8	NP	NP		21.7	A-2-4	Brown Clayey Sand, fine grained
							4	4.5-6.0'	5							Brown Clayey Sand, fine grained
26+00	CL	C-3	168.4	169.67	0	Not Encountered	1	0.0-1.5'	30	5	NP	NP		15.5	A-2-4	Brown and dark brown Silty Sand, fine grained, trace Clay
							2	1.5-3.0'	5							Brown Clayey Sand, fine grained
							3	3.0-4.5'	8	14	NP	NP		33.3	A-2-4	Brown Sandy Clay
							4	4.5-6.0'	6							Brown Clayey Sand, fine grained
13+50	CL	C-4	164.6	164.0	0	Not Encountered	1	0.0-1.5'	16	6	NP	NP		21.8	A-2-4	Brown and dark brown Clayey Sand, fine grained
							2	1.5-3.0'	11							Brown Clayey Sand, fine grained
							3	3.0-4.5'	10	14	NP	NP		32.8	A-2-4	Reddish brown Clayey Sand, fine grained
							4	4.5-6.0'	9							Reddish brown Clayey Sand, fine grained

* Undercut depths are based on conditions encountered at each boring. Actual undercut depths to be determine by qualified soil technician during field activities (See Site Preparation Section of the geotechnical report).
** B.E.G. = Below existing ground surface