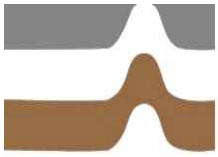
Subsurface Soil Exploration and
Review of USDA Soil Survey
Relative to PD&E Study
Round Lake Road
Lake County, Florida



Ardaman & Associates, Inc.

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Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

February 12, 2019
File No. 18-6334

Stantec Consulting Services
300 Primera Boulevard, Suite 300
Lake Mary, Florida 32746-2145

Attention: Mr. Luis Diaz, P.E.

Subject: Subsurface Soil Exploration and Review of USDA Soil Survey
Relative to PD&E Study
Round Lake Road
Lake County, Florida

Dear Mr. Diaz:

As requested and authorized, we have completed a subsurface soil exploration and review of the USDA Soil Survey for the subject project. The purpose of reviewing the USDA Soil Survey was to summarize information in the Soil Survey pertinent to the roadway project, including seasonal high ground water level data and any reported deleterious soil types such as organic muck, fat clay, and/or bouldery subsurface. The purpose of performing the subsurface exploration was to obtain soil boring data including soil stratigraphy and groundwater level within preliminarily designated stormwater pond locations. This report documents our findings.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for specific application to the project limits indicated in this report. No other warranty, expressed or implied, is made. The information submitted herein is based on the data reviewed and presented on Figures 2A through 2E, 3 and 4.

It is a pleasure assisting you with this project. If you have any questions, or when we may be of further assistance to you, please do not hesitate to contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.
Certificate of Authorization No. 5950

Charles H. Cunningham, P.E.
Orlando Branch Manager
Florida License No. 38189

ZAN C. BATES
LICENSE
No. 49917
2/12/19
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

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Senior Engineer
Florida License No. 49917

CHC/ZCB/nfm
18-6334 Round Lake Road.docx (2018 Geo)

TABLE OF CONTENTS

INTRODUCTION

1.1 Site Location

The proposed roadway project is located in Sections 10, 15, 22, 26, 27, 34 and 35 of Township 19 South, Range 28 East and Sections 3 and 4 of Township 20 South, Range 28 East in Lake County, Florida.

The approximate limits of the proposed project corridor are shown superimposed on the Sorrento, Florida, U.S.G.S. quadrangle map presented on Figure 1.

1.2 Project Corridor Description

It is our understanding that the proposed alignment will extend north approximately 4.75 miles from the Orange/Lake County line to Mangolia Avenue. The alignment will generally follow the existing Round Lake Road alignment from the Orange/Lake County line to Wolf Branch Road. From Wolf Branch Road, the corridors continues north through primarily undeveloped, forested land to the corridor terminus about 800 feet north of Mangolia Avenue.

1.3 Review of Available Data

1.3.1 USGS Quadrangle Map

The project corridor is shown superimposed on the Sorrento, Florida U.S.G.S quadrangle map presented on Figure 1. The approximate ground surface elevations along the project alignment are based on 1929 National Geodetic Vertical Datum (NGVD) and range between a low of approximately +90 feet to a high of approximately +160 feet.

1.3.2 Soil Survey Map

Based on the Web Soil Survey, as prepared by the U.S. Department of Agriculture Soil Conservation Service, numerous soil types exist along the proposed project alignment. The individual soil types and their characteristics are summarized and presented in Table 1. The type and location of the individual soils are also included on the Soil Survey Maps presented on Figures 2A through 2F.

1.3.3 Potentiometric Map

Based on review of the “Potentiometric Surface of the Upper Floridan Aquifer in the St. Johns River Water Management District and Vicinity, Florida” Map (dated June, 2010) published by the United States Geological Survey, the potentiometric elevation within the proposed project alignment is approximately +55 feet NGVD. Therefore, the proposed alignment does not traverse any areas where artesian conditions would be anticipated.

1.3.4 Regional Geology

According to D.D. Knochenmus and G.H. Hughes (1976), the geologic sequence within the upper 500 feet of deposits in Lake County consists of, in descending order: (i) the Pleistocene and Recent deposits; (ii) Citronella formation; (iii) Hawthorn Formation; (iv) Ocala Group Limestone; and (v) Avon Park Limestone. The approximate elevations where these geologic units can be encountered at the site are presented in the following table.

From (feet, NGVD)	To (feet, NGVD)	Geologic Unit
+150	+10	Pleistocene and Recent Deposits
+10	-25	Citronella Formation
-25	-50	Hawthorn Formation
-50	-80	Ocala Group Limestone
-80	<-350	Avon Park Limestone

The subject site is blanketed by undifferentiated deposits of Pleistocene and Recent Age. These geologic deposits consist mostly of quartz sand with varying amounts of clay and deposits of orangish-brown silty clayey sand which occur near the surface in some areas.

The Citronella Formation makes up the lower part of the clastic aquifer and is a fairly well sorted sand which yields small quantities of water to wells for domestic supply.

The Hawthorn Formation of Miocene age, which underlies the Citronella deposits, consists primarily of gray to green, plastic, phosphatic, clayey quartz and silt, phosphatic sand and buff, impure, phosphatic limestone in the lower part of the formation. The clayey sands of the Hawthorn formation retard the vertical movement of water between the water table aquifer and the underlying limestone of the Floridian aquifer.

The Ocala Group Limestone of Eocene Age consists of the Crystal River, Williston, and Inglis Formations. In Lake County, the Ocala Group was deeply eroded and, in some areas, such as the subject site, entirely removed before the overlying formations were deposited (i.e. beneath Lake Harris and Lake Eustis).

The Avon Park Limestone of Eocene Age typically underlies the Ocala Group Limestone in Lake County. The formation is distinguished from overlying formations by the occurrence of many sand-sized cone-shaped foraminifera. In many areas of Lake County, the Avon Park Limestone is composed mostly of the shells of these tiny single-celled animals.

2.0 FIELD EXPLORATION PROGRAM

2.1 Roadway Borings

As requested, the field exploration program consisted of performing one auger boring at each of eight (8) potential retention pond locations. The auger borings were conducted using a 4-inch diameter continuous-flight auger and were advanced to a depth of 15 feet below the existing ground surface. A summary of the auger boring procedure is included in the Appendix.

Upon completion of drilling, the auger borings were backfilled with soil cuttings.

2.2 Groundwater Level

Where encountered, the groundwater level was measured in the boreholes during and/or upon completion of drilling. The measured groundwater levels and water depths are shown adjacent to the soil boring profiles presented on Figure 4.

2.3 Test Locations

The approximate locations of the borings are schematically illustrated on aerial photographs of the project alignment shown on Figures 2A through 2F. The locations of the borings were staked in the field by representatives of Ardaman & Associates using a hand-held GPS unit. The boring locations should only be considered as accurate to the degree implied by the method of measurement used.

3.0 LABORATORY TESTING PROGRAM

Representative soil samples obtained during our field sampling operation were packaged and transferred to our laboratory for further visual examination and classification to obtain more accurate descriptions of the existing soil strata. The soil samples were visually classified in general accordance with the AASHTO Soil Classification System.

In addition, sieve analysis tests were conducted on representative soil samples to aid in classification. Atterberg limits tests were conducted on selected samples visually determined to exhibit cohesive properties. The resulting soil descriptions and the results of our tests are shown in Table 2 and are summarized on the Soil Survey sheet presented as Figure 3.

4.0 SUMMARY

4.1 USDA Soil Survey Information

Based on our review of the Soil Survey for Lake County, the proposed alignment primarily traverses soil types consisting of sandy soils with relatively deep water levels. These types of soil are generally suitable for providing roadway support.

We note that there are some areas where the alignment traverses soil types identified as having relatively shallow water tables. These areas were typically located in the vicinity of proposed Pond 6 and south of the intersection of Round Lake Road and Wolf Branch Road. It will be important during design to accurately determine areas of high water tables in order to set grades and maintain proper base clearance. No soil types described as including organic soils, fat clay or boulders were identified in close proximity to the proposed roadway alignment.

We caution that the information in the USDA Soil Survey is very general in nature, and in our experience soil conditions often vary significantly within areas mapped in the Soil Survey. We recommend that subsurface exploration in the form of soil borings be performed during the design phase. This type of exploration will allow a better assessment of the soil and groundwater conditions than can be accomplished with a limited USDA Soil Survey review such as presented herein.

4.2 **USGS Quadrangle Map Information**

Based on our review of the quadrangle map, the topography along the proposed roadway alignment is typically rolling in nature ranging in elevation between approximately +30 to +160 feet. Several closed basins indicative of possible sinkholes are located in close proximity to the project alignment, particularly in the portion of the project north of Wolf Branch Road. We note, however, that the proposed roadway alignment shown on Figure 1 primarily avoids the features shown on Figure 1 that are likely possible sinkholes.

4.3 **General Soil Stratigraphy in Proposed Stormwater Ponds**

The results of the preliminary field exploration and laboratory testing programs relative to the proposed ponds are graphically summarized on the Soil Survey sheet (Figure 3) and the Soil Boring Profiles sheet (Figure 4). The stratification of the boring profiles represents our interpretation of the field boring logs and the results of the laboratory examination of the recovered samples. The stratification lines represent the approximate boundary between soil types. The actual transitions may be more gradual than implied.

The results of our borings indicate the following general soil types:

Stratum No.	**Description**	**Classification**	
		AASHTO	**Index 505**
1	Light brown to brown, gray brown and orange brown fine sand and fine sand with silt	A-3	S
2	Orange brown and gray brown silty fine sand	A-2-4	S
3	Brown and orange brown clayey fine sand or silty clayey fine sand	A-2-6 A-7-5	P

Soil comprising Stratum No. 1 is generally considered to be relatively permeable. Soil comprising Strata Nos. 2 and 3 have a low permeability and are generally considered to be aquicludes for stormwater pond recovery modeling.

Relative to the potential use of soil excavated from the ponds as fill, the results of our exploration indicate that the soil conditions encountered in the borings presented on Figure 4 are appropriate for construction of the proposed roadway in accordance with standard FDOT design and construction practices, except where plastic soils are present. Soil Strata 1 and 2 (A-3, A-2-4) may be considered as Select materials based on FDOT criteria (Index 120-001). Soil Stratum 3 (A-2-6, A-7-5) should be considered as non-select material as this stratum is considered Plastic. The use of these soils relative to embankment construction should be in accordance with Index 120-001.

4.4 **Estimated Seasonal High Water Table**

The estimated seasonal high water table each year is the level in the August-September period at the end of the rainy season during a year of normal (average) rainfall. The water table elevations associated with a flood level would be much higher than the seasonal high water table elevations. The estimated high water levels would more approximate the seasonal high water table elevations.

The estimated seasonal high water table is affected by a number of factors. The drainage characteristic of the soils, the land surface elevation, relief points such as lakes, rivers, swamp areas, etc., and distance to relief points are some of the more important factors influencing the seasonal high water table elevation.

Based on our interpretation of the site conditions using our boring log data, we estimate the seasonal high water table at the boring locations to be greater than 12 feet below the existing ground surface. If site drainage conditions are altered from those existing at the time of our borings, our estimate may not be valid. We note that groundwater may perch temporarily at higher levels atop the silty and clayey soils (Strata 2 and 3) during periods of heavy and/or prolonged rainfall.

TABLE 1

Review of Soil Survey Maps
Round Lake Road PD&E Study
Lake County, Florida

Soil Map Unit	Description	Permeability		Approximate Depth Below Natural Ground Surface to Normal Seasonal High Groundwater Level
		depth (inches)	(inches/ hour)	
5 – Apopka sand, 0 to 5 percent slopes	Nearly level to gently sloping, well drained sandy soil that has a sandy clay loam subsoil. These soils occur throughout the upland ridge.	0-55 55-80	6-20 0.6-6	Greater than 80 inches.
6 – Apopka sand, 5 to 12 percent slopes	Sloping to strongly sloping, well drained sandy soil. These soils occur throughout the upland ridge.	0-55 55-80	6-20 0.6-6	Greater than 80 inches.
8 – Candler sand, 0 to 5 percent slopes	Nearly level to gently sloping, excessively drained sandy soil with a sandy clay loam subsoil on undulating upland ridges.	0-80	>20	Greater than 80 inches.
9 – Candler sand, 5 to 12 percent slopes	Sloping to strongly sloping, excessively drained sandy soil. These soils occur on rolling uplands of the central ridge.	0-80	>20	Greater than 80 inches.
10 – Candler sand, 12 to 40 percent slopes	Very steep, excessively drained sand soil. These soils occur on rolling uplands of the central ridge.	0-80	>20	Greater than 80 inches.
17 – Arents	Soil that has been mixed, reworked and leveled or shaped by earth moving equipment.	N/A	N/A	Between 30 and 60 inches.
34 – Orlando fine sand, 0 to 5 percent slopes	Nearly level to gently sloping, moderately well drained soils on low ridges and knolls on the flatwoods.	0-80	6-20	Greater than 80 inches.
38 – Placid sand, frequently flooded, 0 to 2 percent slopes	Nearly level, very poorly drained soils in low wet areas on the upland ridge and in the flatwoods.	0-80	6-20	At or above natural ground surface.
45 – Tavares fine sand, 0 to 5 percent slopes	Nearly level to gently sloping, moderately well drained sandy soil. These soils formed in beds of marine sand.	0-80	>20	Between 40 and 60 inches.

TABLE 2

Summary of Laboratory Test Results
Round Lake Road PD&E Study
Lake County, Florida

Boring	Station No.	Depth (ft)	Stratum No.	Grain Size Distribution - Percent Passing					OC (%)	NM (%)	Atterberg Limits (%)	
				#10 (%)	#40 (%)	#60 (%)	#100 (%)	#200 (%)			Liquid Limit	Plasticity Index
AB-1	1	1.5 – 11.5	1	100	94	57	16	2	--	--	--	--
AB-3	3	13 – 15	1	100	99	96	34	7	--	--	--	--
AB-5	5	0.5 – 4	1	100	94	71	24	2	--	--	--	--
AB-6	6	3.5 –7	1	100	94	60	17	2	--	--	--	--
AB-7	7	6 – 13	1	100	92	58	16	1	--	--	--	--
AB-4	4	11 – 15	2	100	99	98	96	33	--	--	--	--
AB-8	8	10 – 11.5	2	100	97	87	60	24	--	14	24	6
AB-2	2	10 – 12	3	100	99	94	79	38	--	15	49	30
AB-4	4	6 – 11	3	100	94	79	59	32	--	15	34	18

APPROXIMATE ALIGNMENT

N

0 1500 3000
SCALE: (FEET)

SECTIONS 10, 14, 15, 22, 23, 26, 27, 34 AND 35
TOWNSHIP 19 SOUTH
RANGE 28 EAST

OBTAINED FROM U.S.G.S. QUAD MAP: SORRENTO, FLORIDA 1960
(PHOTOREVISED 1980)

QUADRANGLE LOCATION

SITE LOCATION MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 01/29/19
FILE NO. 18-6334	APPROVED BY:	FIGURE: 1

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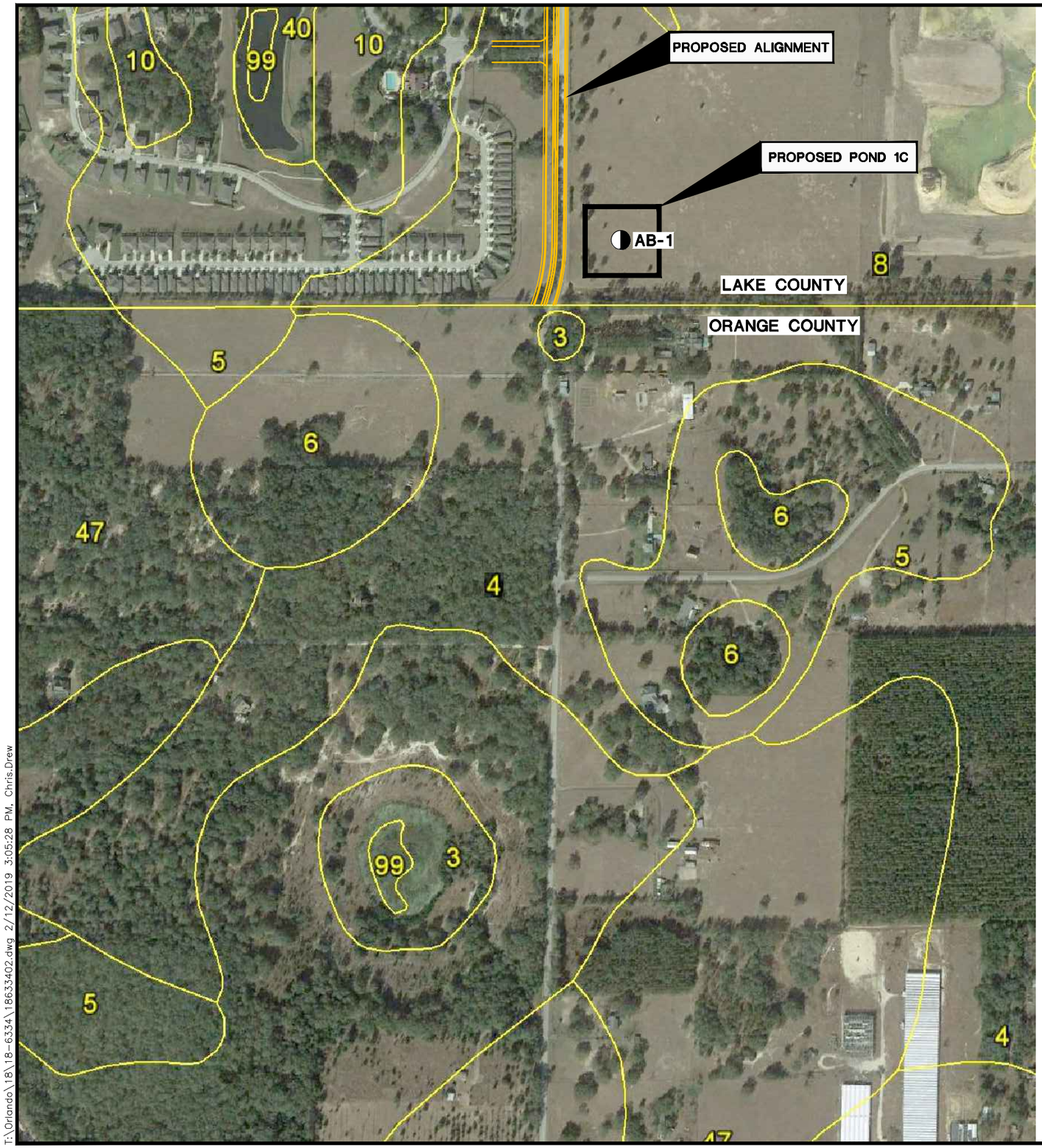

LEGEND

AB — AUGER BORING LOCATION

SOIL LEGEND

8 - CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES

NOTES:
1. THE AERIAL PHOTOGRAPH FOR THE SOIL SURVEY MAP WAS OBTAINED FROM GOOGLE EARTH PRO, DATED 1/3/2018.
2. SOIL SURVEY OBTAINED FROM SOILWEB.

N

0 250 500
SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 01/29/19
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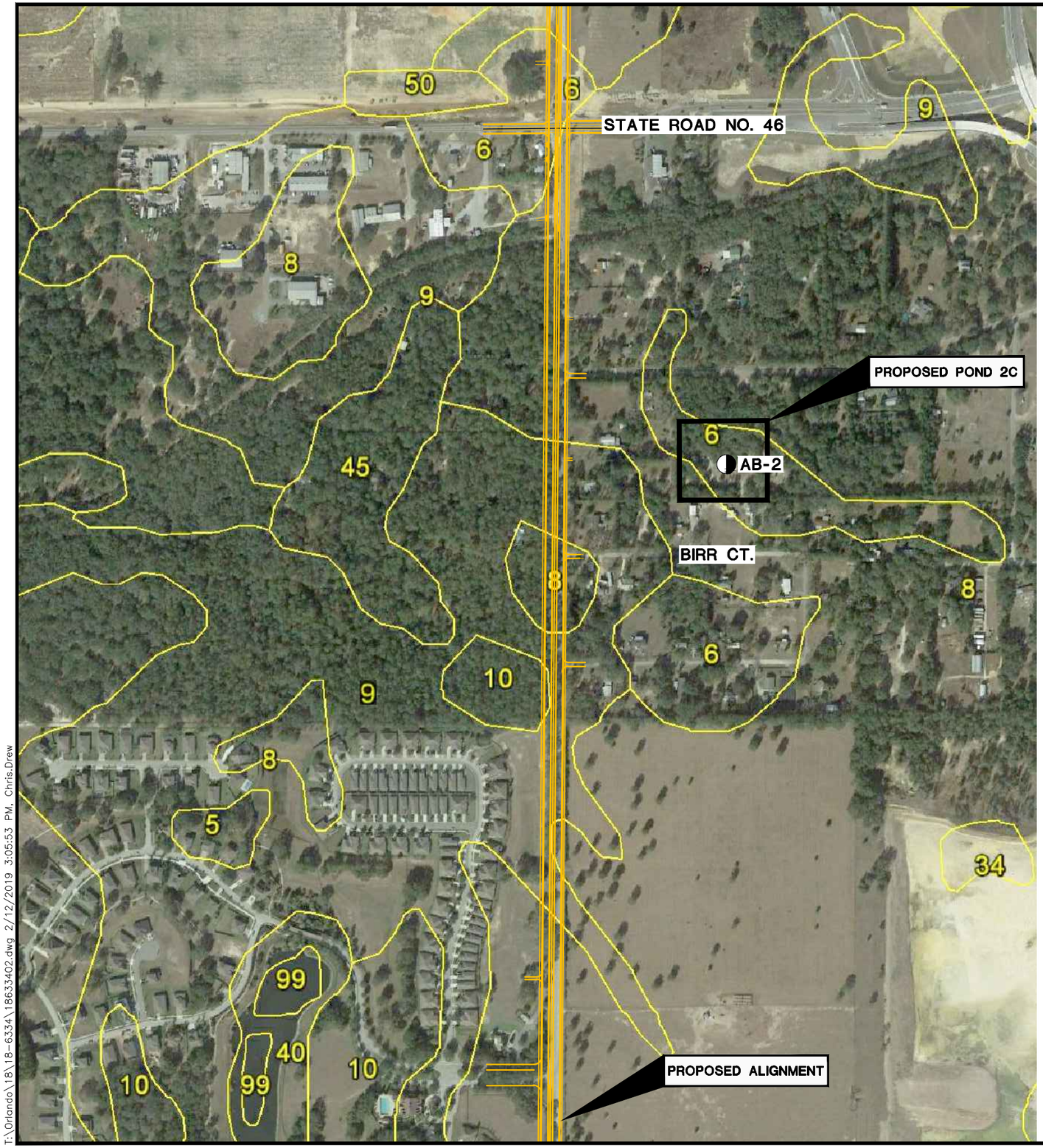

LEGEND

AB — AUGER BORING LOCATION

SOIL LEGEND

6 - APOPKA SAND, 5 TO 12 PERCENT SLOPES
8 - CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
9 - CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES
10 - CANDLER FINE SAND, 12 TO 40 PERCENT SLOPES

NOTES:
1. THE AERIAL PHOTOGRAPH FOR THE SOIL SURVEY MAP WAS OBTAINED FROM GOOGLE EARTH PRO, DATED 1/3/2018.
2. SOIL SURVEY OBTAINED FROM SOILWEB.

N

0 250 500
SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

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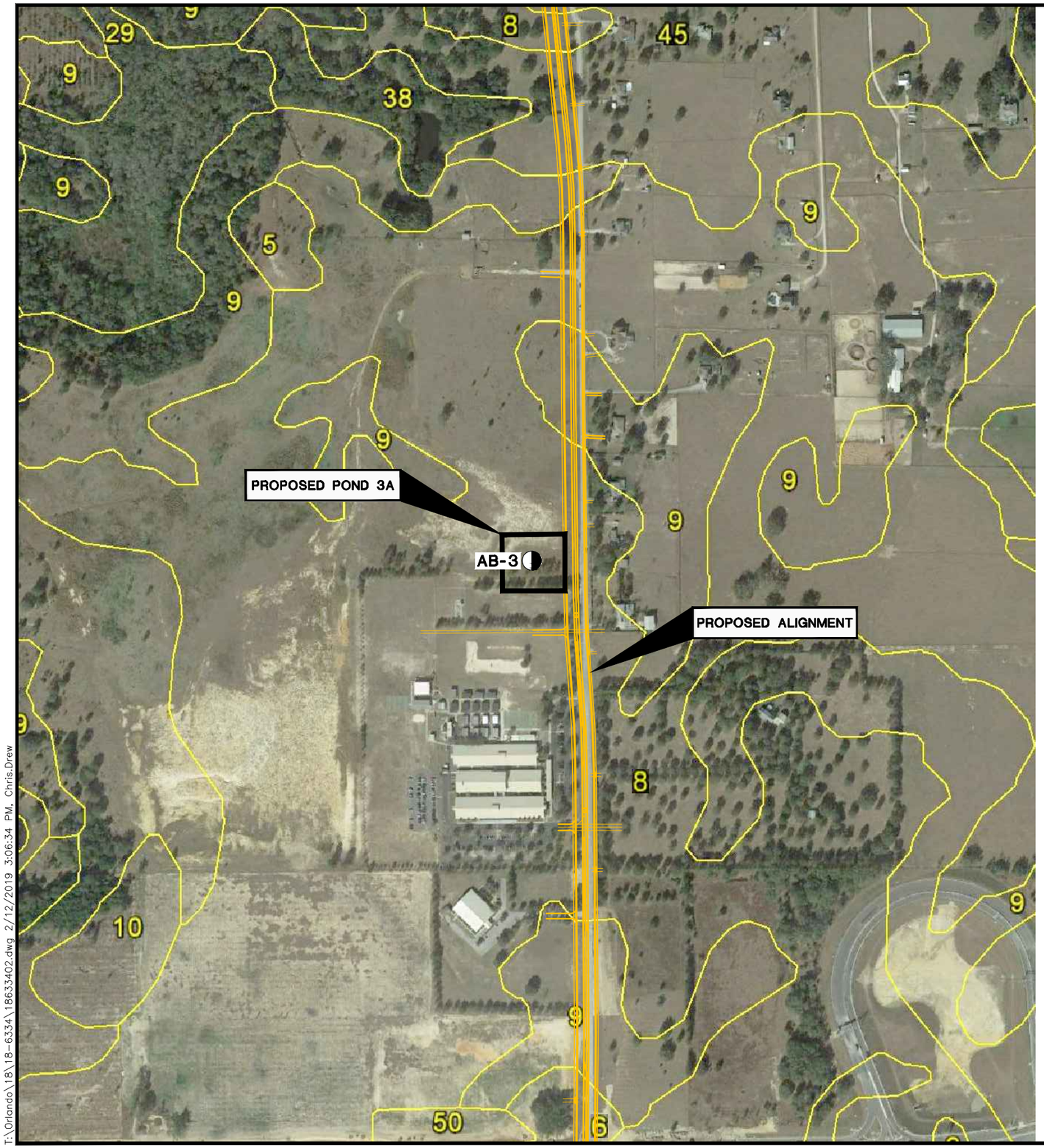

LEGEND

AB — AUGER BORING LOCATION

SOIL LEGEND

6 - APOPKA SAND, 5 TO 12 PERCENT SLOPES
8 - CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
9 - CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES
38 - PLACID SAND, FREQUENTLY FLOODED, 0 TO 2 PERCENT SLOPES
45 - TAVARES SAND, 0 TO 5 PERCENT SLOPES

NOTES:
1. THE AERIAL PHOTOGRAPH FOR THE SOIL SURVEY MAP WAS OBTAINED FROM GOOGLE EARTH PRO, DATED 1/3/2018.
2. SOIL SURVEY OBTAINED FROM SOILWEB.

N

0 250 500
SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

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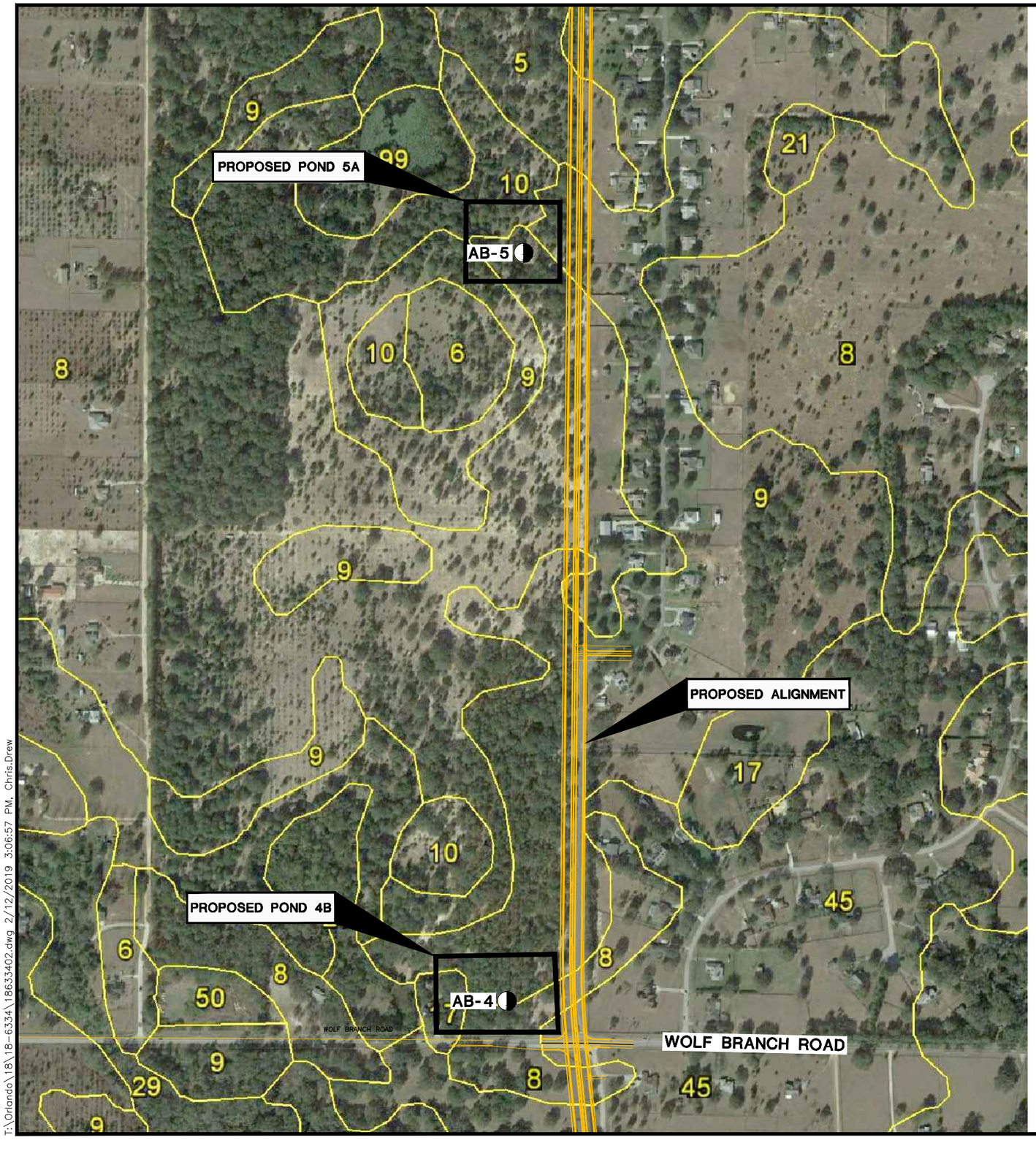

LEGEND

◑ AB — AUGER BORING LOCATION

SOIL LEGEND

5 - APOPKA SAND, 0 TO 5 PERCENT SLOPES
8 - CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
9 - CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES
10 - CANDLER FINE SAND, 12 TO 40 PERCENT SLOPES
17 - ARENTS
45 - TAVARES SAND, 0 TO 5 PERCENT SLOPES

NOTES:
1. THE AERIAL PHOTOGRAPH FOR THE SOIL SURVEY MAP WAS OBTAINED FROM GOOGLE EARTH PRO, DATED 1/3/2018.
2. SOIL SURVEY OBTAINED FROM SOILWEB.

N

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SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

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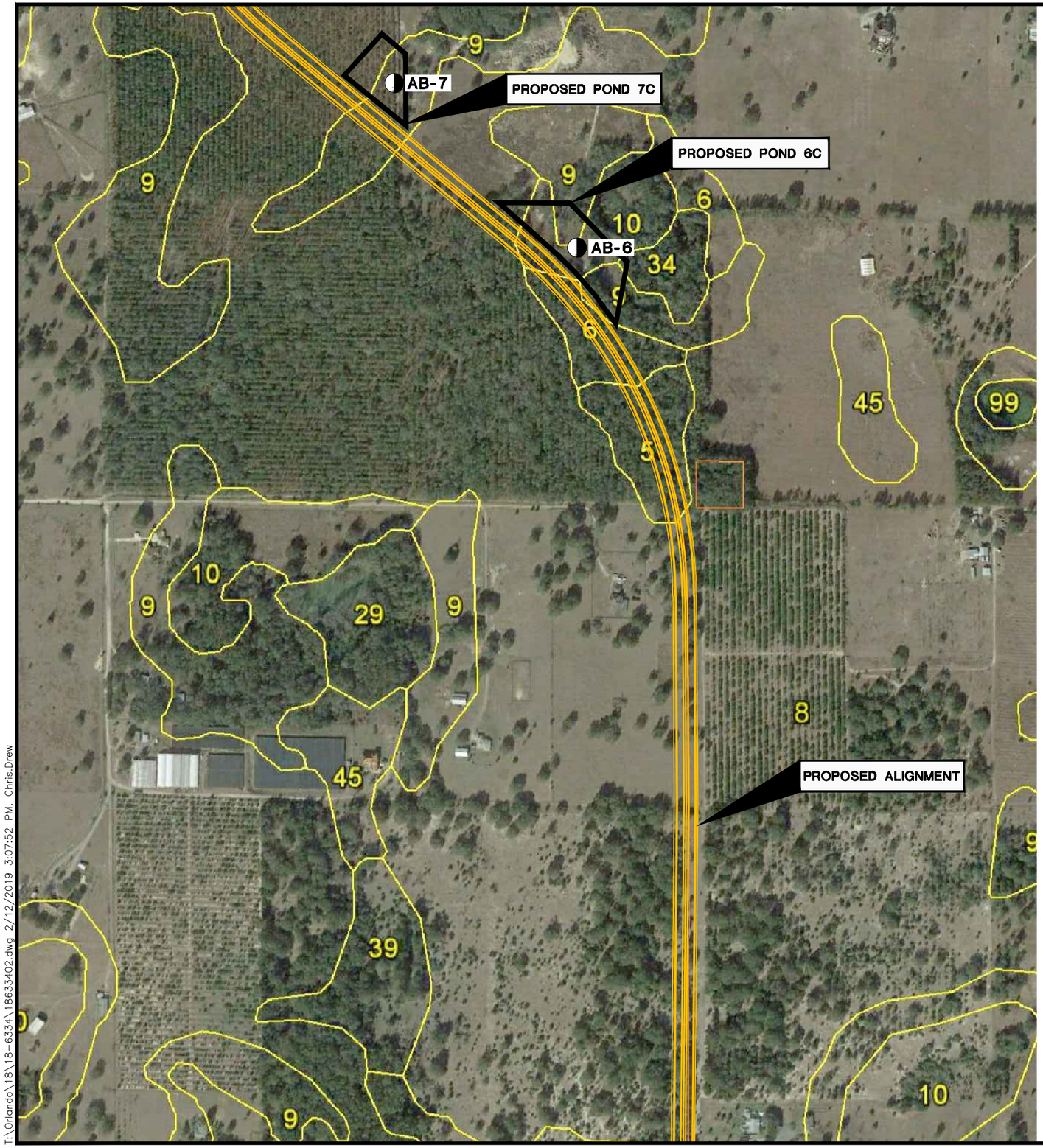

LEGEND

AB — AUGER BORING LOCATION

SOIL LEGEND

5 - APOPKA SAND, 0 TO 5 PERCENT SLOPES
6 - APOPKA SAND, 5 TO 12 PERCENT SLOPES
8 - CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
9 - CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES
10 - CANDLER FINE SAND, 12 TO 40 PERCENT SLOPES
34 - ORLANDO FINE SAND, 0 TO 5 PERCENT SLOPES

NOTES:
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2. SOIL SURVEY OBTAINED FROM SOILWEB.

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SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

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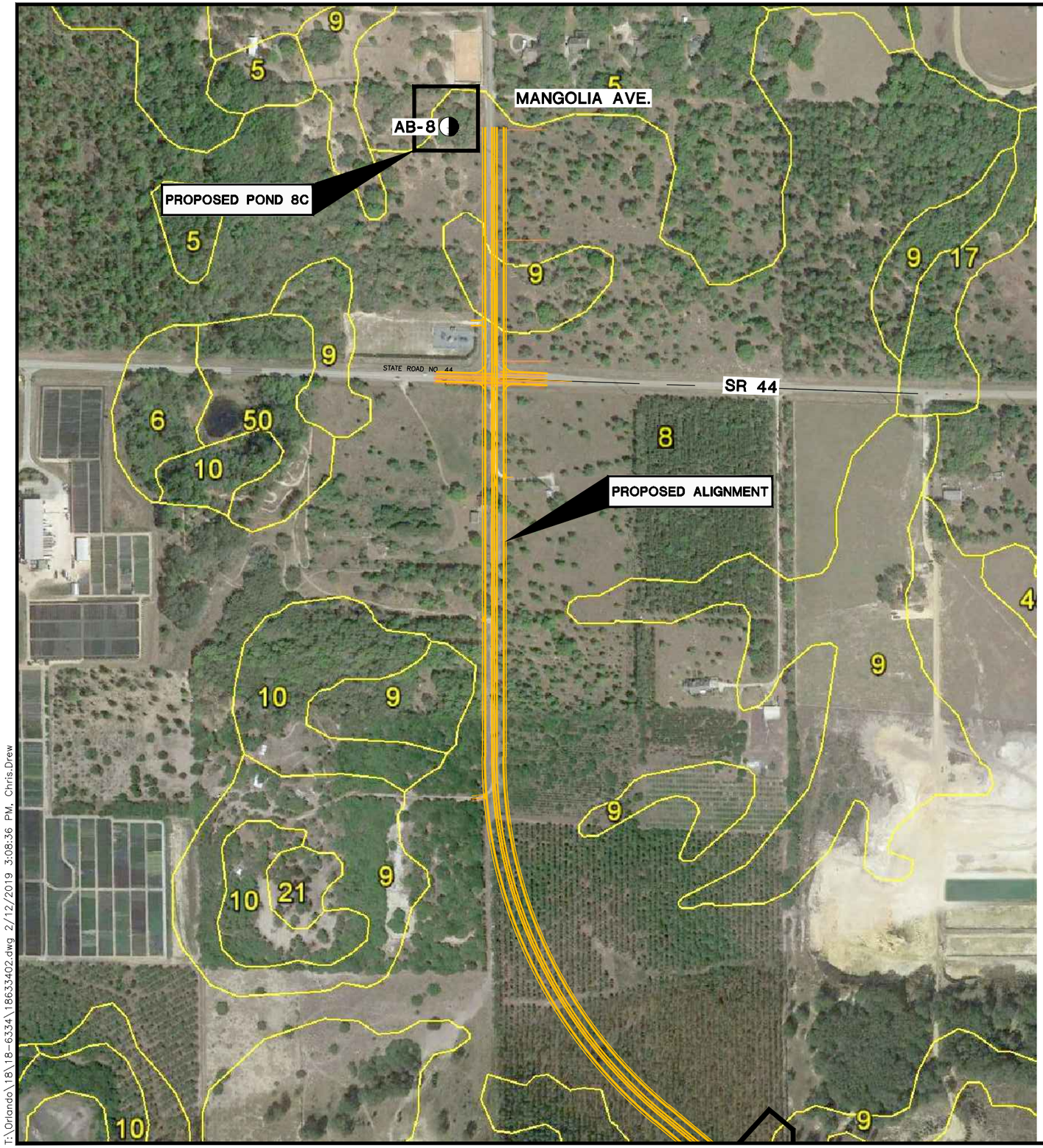

LEGEND

◑ AB — AUGER BORING LOCATION

SOIL LEGEND

5 - APOPKA SAND, 0 TO 5 PERCENT SLOPES
8 - CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
9 - CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES

NOTES:
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2. SOIL SURVEY OBTAINED FROM SOILWEB.

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SCALE: (FEET)

SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PD&E STUDY
ROUND LAKE ROAD
LAKE COUNTY, FLORIDA

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FIGURE 3

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

RSQ NUMBER: 17-0015
PROJECT NAME: ROUND LAKE ROAD PD&E
CROSS SECTION OF SOIL SURVEY

DATE OF SURVEY: 01/19
SURVEY MADE BY: ROSE
SUBMITTED BY: ZAN C. BATES, P.E. 49917

ROAD NO.: N/A
COUNTY: LAKE

	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENTAGE PASSING						ATTERBERG LIMITS (%)			SOIL CLASSIFICATION		CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	NO. OF TESTS	% MOISTURE	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTICITY INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohms cm	CHLORIDE ppm	SULFATES ppm	pH
1	--	--	--	--	5	100	92-99	58-96	16-34	1-7	--	--	--	A-3	LIGHT BROWN TO BROWN, GRAY BROWN, AND ORANGE BROWN FINE SAND AND FINE SAND WITH SILT	--	--	--	--	--
2	--	--	1	15	2	100	97-99	87-98	60-96	24-33	1	24	6	A-2-4	GRAY BROWN AND ORANGE BROWN SILTY FINE SAND	--	--	--	--	--
3	--	--	2	14-15	2	100	94-99	79-94	59-79	32-38	2	34-49	18-30	A-2-6 A-7-5	BROWN AND ORANGE BROWN CLAYEY FINE SAND AND SILTY CLAYEY FINE SAND	--	--	--	--	--

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE, MAKE FINAL CHECK AFTER GRADING

1. SOIL BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH BORING LOCATION ONLY. ANY SUBSOIL CONNECTING LINES SHOWN ARE FOR ESTIMATING EARTHWORK ONLY AND DO NOT INDICATE ACTUAL STRATUM LIMITS. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED AS INDICATED IN SECTION 2-4 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. FOR FURTHER DETAILS SEE SECTION 120-3.
2. WATER TABLE SHOWN AS ▼ WHERE ENCOUNTERED AT TIME OF SURVEY. GNE DENOTES GROUNDWATER NOT ENCOUNTERED.
3. REMOVAL OF MUCK PLASTIC MATERIAL OCCURRING WITHIN THE ROADWAY SHALL BE ACCOMPLISHED IN ACCORDANCE WITH INDEX NO. 120-001, UNLESS OTHERWISE SHOWN ON THE PLANS. THE MATERIAL USED IN EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDOT INDEX NO. 120-002.
4. SOIL PARAMETER NOT TESTED DENOTED AS "--" ABOVE.
5. STRATA NOS. 1 AND 2 SHALL BE TREATED AS SELECT (S) MATERIAL IN ACCORDANCE WITH FDOT INDEX 120-001 AND INDEX 120-002.
6. STRATUM NO. 2 MAY RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT.
7. STRATUM NO. 3 SHALL BE TREATED AS PLASTIC (P) IN ACCORDANCE WITH FDOT INDEX 120-001 AND INDEX 120-002.
8. 'NP' DENOTES NON-PLASTIC.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
E.O.R.-Zan C. Bates, P.E. NO. 49917
Certificate of Authorization: 5950

DRAWN BY: CD
CHECKED BY: ZCB
DESIGNED BY: ZCB
CHECKED BY: CC

LAKE COUNTY FLORIDA

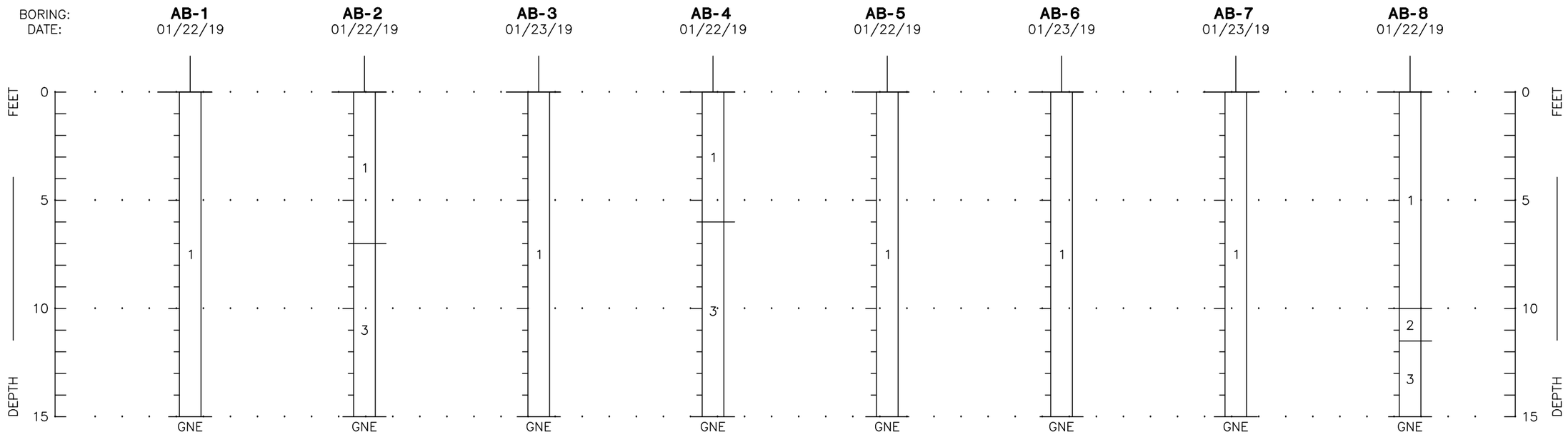
ROAD NO.	COUNTY	RSQ NUMBER
	LAKE	17-0015

SHEET TITLE: SOIL SURVEY SHEET

REF. DWG. NO.

SHEET NO.

T:\Orlando\18\18-6334\18633403.dwg 2/12/2019 3:09:39 PM, Chris.Drew



STRATUM NO.	AASHTO GROUP	GENERAL DESCRIPTION
1	A–3	LIGHT BROWN TO BROWN, GRAY BROWN, AND ORANGE BROWN FINE SAND AND FINE SAND WITH SILT
2	A–2–4	GRAY BROWN AND ORANGE BROWN SILTY FINE SAND
3	A–2–4	BROWN AND ORANGE BROWN CLAYEY FINE SAND AND SILTY CLAYEY FINE SAND

LEGEND

GNE GROUNDWATER NOT ENCOUNTERED ON DATE DRILLED

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, Fl. 32809
E.O.R.-Zan C. Bates, P.E. NO. 49917
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DRAWN BY:	CHECKED BY:	DESIGNED BY:	CHECKED BY:
CD	ZCB	ZCB	CC

LAKE COUNTY FLORIDA

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	LAKE	422570-3-32-01

SHEET TITLE: *SOIL BORING PROFILES*

REF. DWG. NO.

SHEET NO.

APPENDIX

Auger Boring Procedure

AUGER BORINGS

Auger borings are used when continuous sampling of soil strata close to ground surface is desired. A 4-inch diameter, continuous flite, helical auger with a cutting head at its end is screwed into the ground in 5-foot sections. It is powered by the rotating action of the Kelly bar of a rotary drill rig. The sample is recovered by withdrawing the auger out of the ground without rotating it. The soil sample so obtained, is classified and representative samples put in bags or jars and brought back to the laboratory for classification testing.