



**Preliminary Roadway Soil Survey Report  
for Tradeshow Road Reconstruction  
International Drive Transit Feasibility  
& Alternative Technology Assessment  
Orange County, Florida  
Orange County Project No.: Y18-806  
NADIC Project No.: PR.GEO-RD18016**

*Prepared for:*

**HDR  
315 E. Robinson Street, Suite 400  
Orlando, FL 32801-1949**

*Prepared by:*

**Nadic Engineering Services, Inc.  
601 N. Hart Blvd  
Orlando, Florida 32818  
407-521-4771**

Consultants in: Civil · Environmental · Geotechnical Engineering  
Offices in: Orlando · Miami

May 26, 2020

**HDR**

315 E. Robinson Street, Suite 400  
Orlando, FL 32801-1949

Attention: Mr. Howard H. Newman, P.E.

Re: Preliminary Roadway Soil Survey Report  
Tradeshow Road Reconstruction (Destination Parkway to Universal Boulevard)  
International Drive Transit Feasibility & Alternative Technology Assessment  
Orange County, Florida  
Orange County Project No.: Y18-806  
NADIC Project No. PR.GEO-RD18016

Dear Mr. Newman:

**Nadic Engineering Services, Inc. (NADIC)** is pleased to submit this Soil Survey Report for the above referenced project. The purpose of this exploration was to evaluate soil and groundwater condition along the subject roadway and provide geotechnical recommendations to guide design and construction of the proposed roadway widening and reconstruction.

This report describes our exploration procedures and laboratory testing methods, exhibits the data obtained and presents our conclusions and recommendations for the project.

**NADIC** appreciates the opportunity to be of service to HDR and the Orange County Public Works Department (OCPWD) on this project. We trust that this information is sufficient for the project plans submittal. Please contact us if you have any questions, or if we may be of further assistance to you as this project proceeds.

Sincerely,

**NADIC ENGINEERING SERVICES, INC.**



Maria Bridges, M.Sc.  
Staff Engineer



Godwin N. Nnadi, Ph.D., P.E.  
Principal Engineer  
FL Registration No. 50637

S:\New Z Drive\Engineering\Geotechnical\Orlando\Roadway (RD)\2018\PR.GEO-RD18016 I-Dr. Transit Feasibility Study\Project Working File\Report\Word

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## **1.0 PROJECT LOCATION AND DESCRIPTION**

As part of the proposed Orange County Transit Feasibility study of the International Drive District, Orange County Public Works Department (OCPWD) plans to widen and reconstruct Tradeshow Road from Destination Parkway to Universal Boulevard in Orange County, Florida. Tradeshow Road is planned to be widened to a 4-lane divided urban roadway with additional inside BUS only lanes.

The project area is generally located within Section 6, Township 24 South and Range 29 East in Orange County, Florida. A vicinity map showing the proposed roadway improvements is presented on the attached **Figure 1** in **Appendix A**.

This report presents the findings of our preliminary subsurface exploration program, an evaluation of the encountered soil and groundwater conditions encountered along the roadway corridor.

## **2.0 REVIEW OF AVAILABLE PUBLISHED DATA**

### **2.1 General**

To obtain general information on soil and ground water conditions along the project alignment, **NADIC** reviewed data including aerial maps, United States Geological Survey (USGS), Quadrangle Topographic Maps, and the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey for Orange County, Florida. A summary of this information is presented below in the following report section. An aerial map of the site location is shown on **Figure 1** in **Appendix A**.

### **2.2 USGS Topographic Map**

The "Lake Jessamine, Florida" USGS Topographic Maps issued in 2018, along the project alignment was reviewed. Excerpt of the USGS Topographic Map is presented on **Figure 2** in **Appendix A**. The map shows the ground surface elevation in the project vicinity to range approximately from +85 to +95 feet, North American Vertical Datum of 1988 (NAVD-88).

### **2.3 USDA, NRCS Soil Survey**

The "Soil Survey of Orange County, Florida" published by the United States Department of Agriculture (USDA), National Resources Conservation Service (NRCS) was reviewed. A reproduction of the NRCS map for the project area can be found on **Figure 3** in **Appendix A**. Soils found in the project vicinity are listed below on **Table 1**.

**Table 1:  
USDA/NRCS Soil Survey Summary**

Map Unit Symbol	USDA Soil Name	Description	AASHTO GROUP	Depth to Seasonal High Groundwater Table in Natural Conditions (feet)	Hydrologic Soil Group
3	Basinger fine sand, depression, 0 to 1 percent slopes	Fine sand	A-3, A-2-4	Ponded	A/D
20	Immokalee fine sand	Fine sand	A-3, A-2-4	0-1.0	B/D
37	St. Johns fine sand	Fine sand	A-3, A-2-4	0-1.0	B/D
44	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	Fine sand	A-3, A-2-4	0-1.0	A/D
45	Smyrna fine sand-Urban land complex, 0 to 2 percent slopes	Fine sand	A-3, A-2-4	0-1.0	A/D

Information contained in the NRCS Soil Survey is very general and may be outdated due to recent development in the site vicinity. Therefore, it may not reflect the actual soil and groundwater conditions, particularly where developments may have modified soil conditions or surface and near surface drainage.

### **3.0 FIELD EXPLORATION PROGRAM AND METHODS**

#### **3.1 Field Exploration Program**

To evaluate the subsurface conditions along the proposed roadway improvements Hand Auger borings and Standard Penetration Test (SPT) borings were performed. The SPT borings were performed for boring depths equal to 20 feet.

The subsurface conditions for this preliminary evaluation consisted of a series of 5-foot deep and 20-foot deep borings below existing grade. A total of 10 auger borings and five (5) SPT borings were completed. The location of the borings was determined by NADIC based on information provided by HDR. All borings were staked in the field by a representative of NADIC with the aid of a Global Positioning System (GPS) device. The stations and offsets were provided by HDR.

Upon completion and after groundwater measurements, all borings were backfilled for safety. Boring approximate locations are shown on **Figure 4** in **Appendix A**. The Roadway Soil Survey is presented on **Sheet 1** in **Appendix B**.

The results of the exploration program in the form of soil profiles are shown on **Sheets 2 and 3 in Appendix B**.

### **3.2 Field Exploration Methods**

#### **3.2.1 Hand Auger Borings**

Hand auger borings were performed to a general depth of five (5) feet below the existing grade by manually twisting and advancing a bucket auger into the ground in four (4) to six (6) inch increments. These borings were performed in general accordance with the American Society of Testing and Materials (ASTM) Test Designation D-1452. As each soil type was revealed, representative samples were placed in air-tight bags and returned to our laboratory for further visual examination and classification by a geotechnical engineer. For safety, these boreholes were backfilled after groundwater level measurement.

#### **3.2.2 Standard Penetration Test Borings**

The Standard Penetration Test (SPT) borings were performed at boring locations with depths equal to 20 feet. The borings were drilled in general accordance with ASTM test designation D-1586. Soil sampling using a 1<sup>3/8</sup> inch diameter (ID) split-barrel sampler was performed at closely spaced intervals from the ground surface to 15 feet below existing grade. After seating the sampler six inches, the number of successive blows required to drive the sampler 12 inches into the soil constitutes the test result commonly referred to as the “N” value. The “N” value has been empirically correlated with various soil properties and is considered indicative of the relative density of non-cohesive soils and the consistency of cohesive soils. The recovered split-barrel samples were described in the field with representative portions of the samples placed in airtight bags and transported to our laboratory for further visual classification and testing by a geotechnical engineer.

Groundwater levels were measured in the borings and upon completion, each borehole was sealed with native soils.

## **4.0 SUBSURFACE CONDITIONS**

### **4.1 General Subsoil Conditions**

The soils encountered along the project alignment are shown on **Sheets 2 and 3 in the Appendix B**. The soil survey encountered three (3) generalized soil strata within the project limits to the maximum depth explored in the boring. The soils encountered in the borings are classified using the AASHTO Soil Classification System (i.e. A-3, A-2-4, etc.). Soil classification and stratification are based on visual examination, interpretation of the boring logs by a geotechnical engineer and laboratory results of selected soil samples. The soil profiles indicate subsurface conditions encountered only at the specific boring locations at the time of the field exploration.

### **4.2 Boring Results**

The soil borings along the roadway alignment encountered three (3) generalized soil strata within the project limits to the maximum depth explored in the borings. The soil strata encountered, soil descriptions, AASHTO classifications and FDOT 120-001 Embankment Soil Utilization designations are summarized below:

<b>Stratum</b>	<b>Soil Description</b>	<b>AASHTO Soil Classification</b>	<b>Embankment Soil Utilization Classification Index 120-001 Classification</b>
1	Dark brown to yellowish brown fine SAND, trace silt/clay to fine SAND with silt and clay (Fill)	A-3	Select (S)
2	Brown silty SAND with clay lumps (Fill)	A-2-4	Select (S)
3	Light brown to dark gray silty SAND	A-2-4	Select (S)

The above subsurface conditions are only general descriptions. For details refer to the boring profiles on **Sheets 2 and 3 in Appendix B**.

### **4.3 Groundwater**

Groundwater was not encountered in the 5-foot borings but was encountered between elevation +80 and +85 feet NAVD in the 20-foot borings. Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as swales, drainage ponds, underdrains, and areas of covered soil (roadways, sidewalks, etc.).

For the purposes of this report, estimated seasonal high groundwater levels are defined as groundwater levels that are anticipated at the end of the wet season of a “normal rainfall year” under current site conditions. “Normal rainfall year” is defined as a year in which rainfall quantity and distribution were at or near historical rainfall averages. The estimated seasonal high groundwater levels presented next to the boring profiles (**Sheets 2 and 3 in Appendix B**) are based on the soil stratigraphy, measured groundwater levels, USDA/NRCS information, review of roadway plans, and experience with similar soil conditions. In general, the estimated seasonal high groundwater level is not intended to define a limit or ensure future seasonal fluctuations in groundwater levels will not exceed the estimated levels. Post-development groundwater levels could exceed the seasonal high groundwater level estimates as a result of a series of rainfall events, changed conditions at the site which alter surface water drainage characteristics, or variations in the duration, intensity, or total volume of rainfall.

## **5.0 LABORATORY TESTING**

Representative soil samples were retrieved from the borings and returned to **NADIC's** laboratory for further visual classification, stratification and selective soil testing. The roadway boring samples were classified and stratified in general accordance with the American Association of State Highway and Transportation officials (AASHTO) Soil Classification System.

Laboratory classification tests consisted of Sieve Analysis, Percent Passing No. 200 Sieve, Moisture Content and Atterberg Limit Tests. Results of all roadway laboratory tests are summarized on the Roadway Soil Survey Sheet (**Sheet 1**) in **Appendix B** and on **Table 2** in **Appendix A**.

## **6.0 PRELIMINARY EVALUATION AND RECOMMENDATIONS**

### **6.1 General**

The evaluation and recommendations contained in this report are based in part on the data obtained from our field exploration and experience with similar subsurface conditions and types. The exploration methods used indicate subsurface conditions at specific boring locations, only at the time they were performed and to the depths penetrated. Borings cannot be relied upon to accurately reflect the variations that usually exist between boring locations and these variations may not become evident until construction. If variations from the conditions described in this report become evident during the course of construction, or project characteristics described in this report change, **NADIC** should be retained to re-evaluate the conclusions and recommendations contained in this report considering such changes.

### **7.2 Roadway Construction**

The results of our geotechnical exploration indicate that the near-surface soils encountered along Tradeshow Road alignment are generally suitable for support of the proposed roadway widening and reconstruction. Any non-select soils, muck, clay or debris, if encountered within project limits, should be removed and replaced with select soils in accordance with FDOT Index Nos. 120-002 and 120-001. Site preparation and roadway construction should be in accordance with the latest version of the FDOT Standard Specifications for Road and Bridge Construction and FDOT Standard Specification and Index Nos. 120-002 and 120-001.

## **7.0 REPORT LIMITATIONS**

This data report presents a preliminary assessment of the encountered subsurface conditions on the basis of generally accepted geotechnical engineering principles and practices. **NADIC** is not responsible for the conclusions, opinions or recommendations made by others based on these data.



The scope of the investigation was intended to evaluate soil conditions within the influence of the proposed roadway improvements. This preliminary investigation did not address the potential of surface expression of deep geologic activity such as sinkholes. That type of evaluation requires a more extensive scope of services than those provided for this study.

The scope of services included herein, did not include any environmental assessment for the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, and air, on the site, below and around the site. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items and conditions are strictly for the information of the client.

# APPENDIX A

<b>Figure 1</b>	<b>Vicinity Map</b>
<b>Figure 2</b>	<b>USGS Topographic Map</b>
<b>Figure 3</b>	<b>USDA/NRCS Soils Map</b>
<b>Figure 4</b>	<b>Boring Location Map</b>
<b>Table 2</b>	<b>Summary of Laboratory Test Results</b>



QUADRANGLE: LAKE JESSAMINE, FL  
 SECTION: 6  
 TOWNSHIP: T24S  
 RANGE: R29E  
 (ISSUED 2018)  
 REFERENCE: Google Earth Aerial Maps (2018)

NOT TO SCALE

Approximate Project Location

REVISIONS			NAMES	DATES
DATES	BY	DESCRIPTION	DRAWN BY: DH	05-15-2020
			CHECKED BY: GNN	05-15-2020
			DESIGNED BY: N/A	N/A
			CHECKED BY: N/A	N/A
			APPROVED BY:	

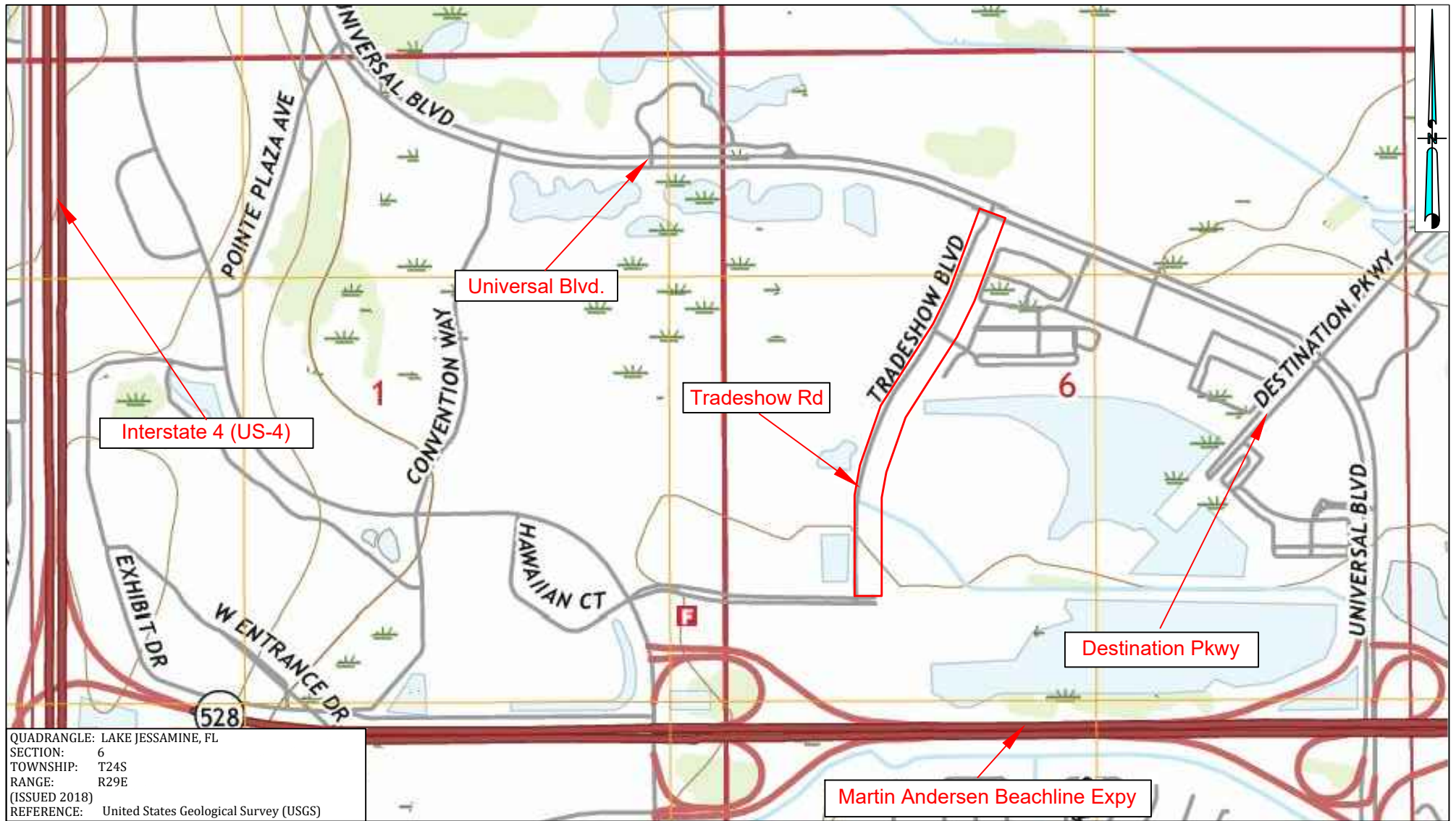
**NADIC**  
 GODWIN N. NNADI, Ph.D., P.E.  
 FL REGISTRATION NO. 50637  
 NADIC ENGINEERING SERVICES, INC.  
 601 N. HART BOULEVARD  
 ORLANDO, FL 32818  
 PH (407) 521-4771 FAX (407) 521-4772  
 CERTIFICATE OF AUTHORIZATION NO. 8214



ORANGE COUNTY,  
FLORIDA

COUNTY	PROJECT No.
ORANGE	Y18-806

FIGURE 1  
 VICINITY MAP  
 TRADESHOW ROAD  
 PROJECT NAME:  
 I- DRIVE TRANSIT FEASIBILITY AND  
 ALTERNATIVE ASSESSMENT STUDY



QUADRANGLE: LAKE JESSAMINE, FL  
 SECTION: 6  
 TOWNSHIP: T24S  
 RANGE: R29E  
 (ISSUED 2018)  
 REFERENCE: United States Geological Survey (USGS)

NOT TO SCALE

Approximate Project Location

REVISIONS			NAMES	DATES
DATES	BY	DESCRIPTION	DRAWN BY:	DH 05-15-2020
			CHECKED BY:	GNN 05-15-2020
			DESIGNED BY:	N/A N/A
			CHECKED BY:	N/A N/A
			APPROVED BY:	



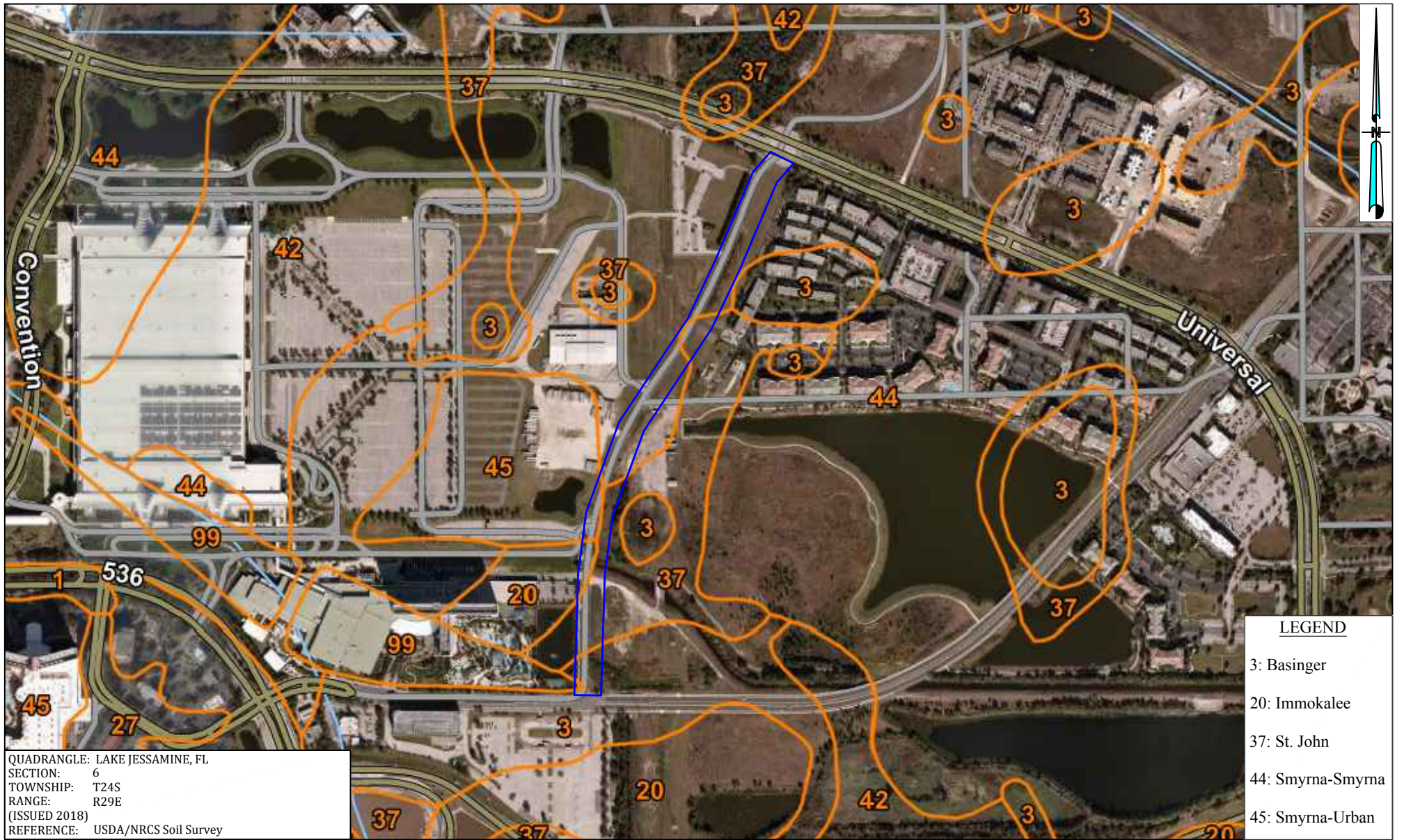
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ORANGE COUNTY, FLORIDA

COUNTY	PROJECT No.
ORANGE	Y18-806

FIGURE 2  
 TOPOGRAPHIC MAP  
 TRADESHOW ROAD  
 PROJECT NAME:  
 I- DRIVE TRANSIT FEASIBILITY AND  
 ALTERNATIVE ASSESSMENT STUDY



QUADRANGLE: LAKE JESSAMINE, FL  
 SECTION: 6  
 TOWNSHIP: T24S  
 RANGE: R29E  
 (ISSUED 2018)  
 REFERENCE: USDA/NRCS Soil Survey

**LEGEND**

- 3: Basinger
- 20: Immokalee
- 37: St. John
- 44: Smyrna-Smyrna
- 45: Smyrna-Urban

NOT TO SCALE

Approximate Project Location

REVISIONS			NAMES	DATES
DATES	BY	DESCRIPTION	DRAWN BY:	DH 05-15-2020
			CHECKED BY:	GNN 05-15-2020
			DESIGNED BY:	N/A N/A
			CHECKED BY:	N/A N/A
			APPROVED BY:	

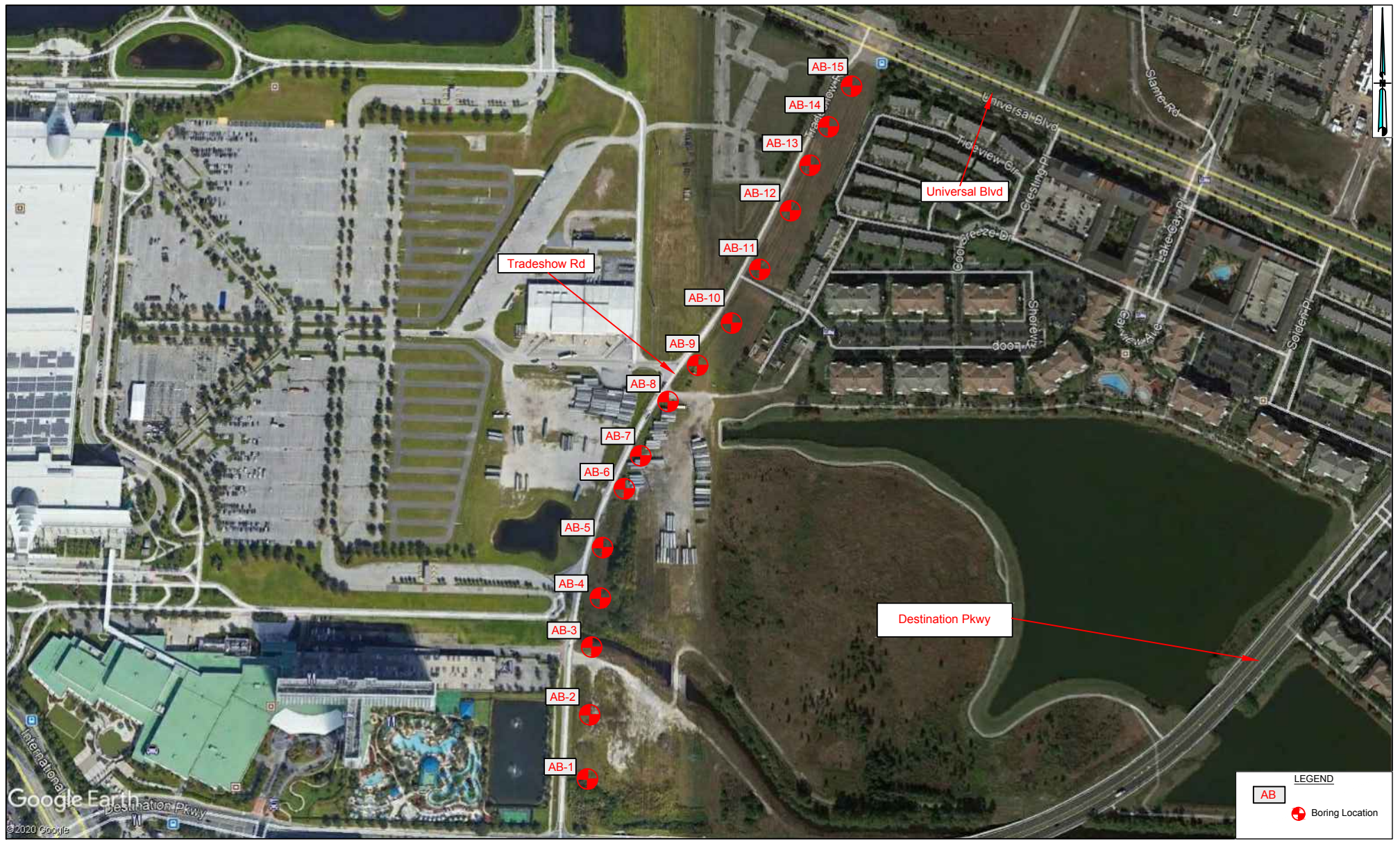
**NADIC**  
INCORPORATED  
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ORANGE COUNTY, FLORIDA	
COUNTY	PROJECT No.
ORANGE	Y18-806

FIGURE 3  
 SOIL SURVEY MAP  
 TRADESHOW ROAD  
 PROJECT NAME:  
 I- DRIVE TRANSIT FEASIBILITY AND  
 ALTERNATIVE ASSESSMENT STUDY

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

NAMES	DATES
Drawn by: DH	05-15-2020
Checked by: GNN	05-15-2020
Designed by: N/A	N/A
Checked by: N/A	N/A
Approved by: GNN	

**NADIC** ENGINEER OF RECORD:  
 NADIC ENGINEERING SERVICES, INC.  
 601 N. HART BOULEVARD  
 ORLANDO FL, 32818  
 CERTIFICATE OF AUTHORIZATION NO. 00008214  
 GODWIN N. NNADI, P.E. NO. 50637



ORANGE COUNTY, FLORIDA	
COUNTY	PROJECT NO.
ORANGE	Y18-806

TITLE: BORING LOCATION MAP - TRADESHOW ROAD	
PROJECT NAME: I-DRIVE TRANSIT FEASIBILITY AND ALTERNATIVE ASSESSMENT STUDY	
FIGURE NO.	4

**HDR**

Tradeshow Road Reconstruction (Destination Parkway to Universal Boulevard)

Roadway Soil Survey Report

NADIC Project No. PR.GEO-RD18016

May 26, 2020

**TABLE 2**  
**SUMMARY OF LABORATORY TEST RESULTS**

Boring No.	Approx. Station	Approx. Offset (ft.)	Sample Elevation (ft.)	Stratum No.	Natural Moisture Content (%)	Organic Content (%)	Sieve Analysis (Cumulative Percent Passing)						Atterberg Limits (%)		AASHTO Classification	
							#4	#10	#20	#40	#60	#100	#200	Liquid Limit		Plasticity Index
AB-1	12+70	4 LT	78	1	23	-	100	100	100	99	95	60	5	-	-	A-3
AB-6	22+50	37 LT	98	2	9	-	100	100	100	99	95	63	13	-	-	A-2-4
AB-4	18+80	15 LT	78	3	17	-	100	100	100	99	95	66	18	-	-	A-2-4
AB-7	24+30	36 LT	73	3	22	-	100	100	100	100	96	64	17	18	NP	A-2-4
AB-10	30+20	24 LT	75	3	23	-	100	100	100	100	97	68	12	-	-	A-2-4
AB-13	36+36	37 LT	71	3	24	-	100	100	100	100	94	50	17	22	2	A-2-4

# **APPENDIX B**

**Sheet 1**

**Roadway Soil Survey**

**Sheets 2 and 3**

**Report of Roadway Borings -  
Tradeshaw Road**



PROJECT NO.: PR.GEO-RD18016  
 PROJECT DESCRIPTION: I- DRIVE TRANSIT FEASIBILITY STUDY AND ALTERNATE TECHNOLOGY ASSESSMENT

SUBMITTED BY: NADIC

**STATE OF FLORIDA**  
**DEPARTMENT OF TRANSPORTATION**  
**ROADWAY CROSS SECTION OF SOIL SURVEY**  
**REPORT OF TESTS**



QUADRANGLE: LAKE JESSAMINE, FL  
 SECTION: 6  
 TOWNSHIP: 24 SOUTH  
 RANGE: 29 EAST

APPROX. SURVEY BEGINS: 12+70  
 APPROX. SURVEY ENDS: 40+40

DATE REPORTED: MAY, 2020

STRATUM NO.	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS % PASSING						ATTERBERG LIMITS (%)			DESCRIPTION	CORROSION TEST RESULTS					SUBSTRUCTURE ENVIRONMENTAL CLASSIFICATION		
	No. OF TESTS	% ORGANIC	No. OF TESTS	% MOISTURE CONTENT	No. OF TESTS	% PASSING 10 MESH	% PASSING 40 MESH	% PASSING 60 MESH	% PASSING 100 MESH	% PASSING 200 MESH	No. OF TESTS	LIQUID LIMIT	PLASTICITY INDEX		AASHTO GROUP	No. OF TESTS	RESISTIVITY OHM-CM	CHLORIDES PPM	SULFATE PPM	pH	CONCRETE	STEEL
1	-	-	1	23	1 (FULL)	100	99	95	60	5	-	-	-	A-3	DARK BROWN TO YELLOWISH BROWN FINE SAND, TRACE SILT/CLAY TO FINE SAND WITH SILT AND CLAY, (FILL)	-	-	-	-	-	-	-
2	-	-	1	9	1 (FULL)	100	99	95	63	13	-	-	-	A-2-4	BROWN SILTY SAND WITH CLAY LUMPS, (FILL)	-	-	-	-	-	-	-
3	-	-	4	17-24	4 (FULL)	100	99-100	94-97	50-68	12-18	2	18-22	0-2	A-2-4	LIGHT BROWN TO DARK GRAY SILTY SAND	-	-	-	-	-	-	-

NOTES:

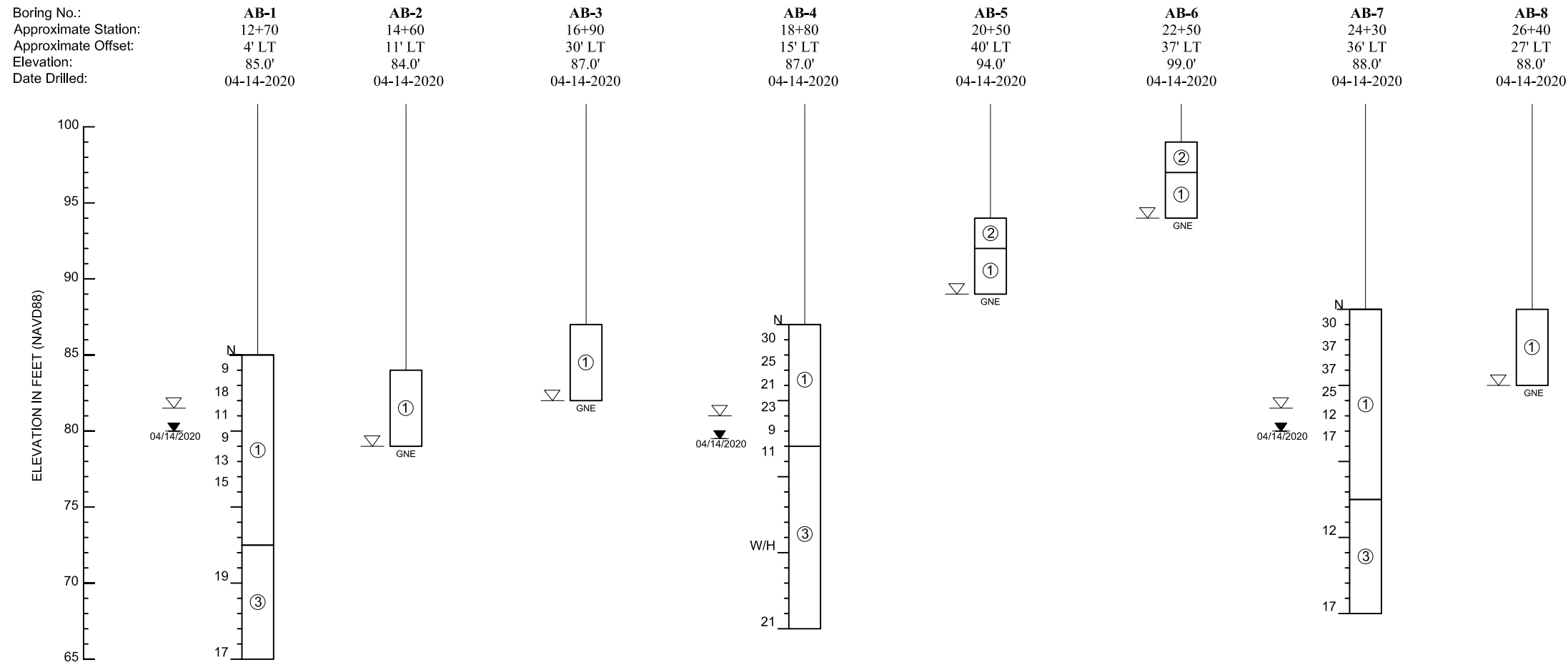
- (1) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. ANY STRATUM CONNECTING LINES SHOWN ARE FOR ESTIMATING EARTHWORK ONLY AND DO NOT INDICATE ACTUAL STRATUM LIMITS. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED AS INDICATED IN FDOT SECTION 2-4. FOR FURTHER DETAILS SEE FDOT STANDARD SPECIFICATIONS SECTION 120-3.
- (2) SOIL PARAMETER NOT TESTED DENOTED AS "-" ABOVE.
- (3)  INDICATES WATER TABLE ENCOUNTERED AT THE TIME OF SURVEY.  
 INDICATES ESTIMATED SEASONAL HIGH WATER LEVEL.
- (4) REMOVAL OF PLASTIC MATERIAL OCCURRING WITHIN THE ROADWAY SHALL BE ACCOMPLISHED IN ACCORDANCE WITH FDOT STANDARD PLANS INDEX No. 120-001 UNLESS OTHERWISE STATED IN THE PLANS. THE MATERIAL UTILIZED IN EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDOT STANDARD PLANS INDEX No. 120-002.
- (5) STRATA 1,2 AND 3 SHALL BE TREATED AS SELECT (S) MATERIALS PER FDOT STANDARD PLAN INDEX No. 120-001.
- (6) STRATUM 4 SHALL BE TREATED AS PLASTIC (P) MATERIAL PER FDOT STANDARD PLAN INDEX Nos. 120-001 AND 120-002.

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REVISIONS						NAMES		DATES		ENGINEER OF RECORD:		ORANGE COUNTY, FLORIDA		SHEET TITLE:	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	Drawn by:	DH/MB	05-13-2020	NADIC ENGINEERING SERVICES, INC.		ORANGE COUNTY, FLORIDA		ROADWAY SOIL SURVEY - TRADESHOW ROAD		
						Checked by:	GNN	05-13-2020	601 N. HART BOULEVARD		PROJECT NO.		PROJECT NAME:		
						Designed by:	N/A	N/A	ORLANDO FL, 32818		ORANGE		I- DRIVE TRANSIT FEASIBILITY STUDY AND ALTERNATE TECHNOLOGY ASSESSMENT		
						Checked by:	N/A	N/A	CERTIFICATE OF AUTHORIZATION NO. 00008214		Y18-806		SHEET NO.		
						Approved by:	GNN		GODWIN N. NNADI, P.E. NO. 50637				NADIC Project No. PR.GEO-RD18016		

NADIC SHEET NO. 1

\\NADICSERVER\Shared\Folders\New Z Drive\Engineering\Geotechnical\Orlando\Roadway (RD)\2018\PR.GEO-RD18016 I-Dr. Transit Feasibility Study\Project Working File\Autocad



### LEGEND

- ① Dark brown to yellowish brown fine SAND, trace silt/clay/ to fine SAND with silt and clay, (A-3) (FILL)
- ② Brown silty SAND with clay lumps, (A-2-4) (FILL)
- ③ Light brown to dark gray silty SAND, (A-2-4)
- (A-3) A.A.S.H.T.O.: Soil classification group symbol as determined by visual examination
- ▼ 04/14/20 Groundwater level encountered on date shown
- ▽ Estimated seasonal high groundwater level
- GNE Groundwater not encountered within top 10 feet during time of field exploration
- W/H Weight of Hammer
- ⊕ Boring Location

Standard Penetration Test Data

- N Standard penetration resistance in blows per foot (18" spoon ASTM D-1586)
- Spoon Inside Diameter 1 3/8 in.
- Spoon Outside Diameter 2 in.
- ASTM Standard Automatic Hammer
- Hammer Weight 140 lbs.

- NOTES
- Standard Penetration Test borings were performed in accordance with ASTM D-1586. Standard Penetration Resistance are shown on the borings at the test depths in blows per foot unless otherwise noticed
  - Subsurface conditions shown on the boring do not represent conditions between boring locations. Actual conditions between the borings may vary from those shown.
  - Unified Soil Classifications shown on the boring are based on visual examination and limited laboratory testing



USGS QUAD MAP: LAKE JESSAMINE, FL  
SECTION: 6  
TOWNSHIP: 24 South  
RANGE: 29 East  
Photo Issued: 2018

GRANULAR MATERIALS

RELATIVE DENSITY	SPT (BLOWS/FT.)
Very loose	Less than 3
Loose	3-7
Medium Dense	7-21
Dense	21-35
Very Dense	Greater than 35

SILTS AND CLAYS

CONSISTENCY	SPT (BLOWS/FT.)
Very soft	Less than 1
Soft	1-3
Firm	3-6
Stiff	6-11
Very Stiff	11-21
Hard	Greater than 21

NOT TO SCALE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

NAMES	DATES
Drawn by: DH/MB	05-13-2020
Checked by: GNN	05-13-2020
Designed by: N/A	N/A
Checked by: N/A	N/A
Approved by: GNN	

ENGINEER OF RECORD:  
NADIC ENGINEERING SERVICES, INC.  
601 N. HART BOULEVARD  
ORLANDO FL, 32818  
CERTIFICATE OF AUTHORIZATION NO. 00008214  
GODWIN N. NNADI, P.E. NO. 50637

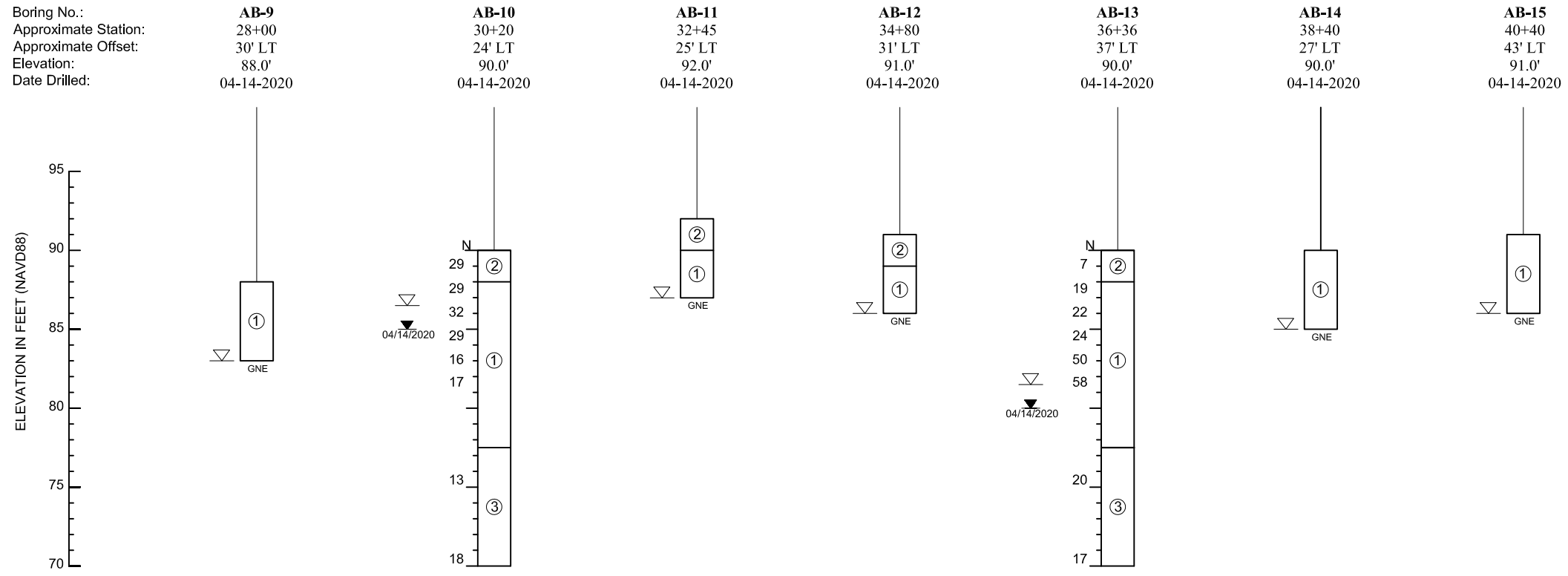


ORANGE COUNTY, FLORIDA	
COUNTY	PROJECT NO.
ORANGE	Y18-806

SHEET TITLE: REPORT OF SOIL BORINGS - TRADESHOW ROAD	
PROJECT NAME: I- DRIVE TRANSIT FEASIBILITY STUDY AND ALTERNATE TECHNOLOGY ASSESSMENT	SHEET NO.

NADIC SHEET NO. 2

I:\NADICSERVER\Shared Folders\New Z Drive\Engineering\Geotechnical\Orlando\Roadway (RD)\2018\PR.GEO-RD18016 I-Dr. Transit Feasibility Study\Project Working File\Autocad



**LEGEND**

- ① Dark brown to yellowish brown fine SAND, trace silt/clay/ to fine SAND with silt and clay, (A-3) (FILL)
- ② Brown silty SAND with clay lumps, (A-2-4) (FILL)
- ③ Light brown to dark gray silty SAND, (A-2-4)
- (A-3) A.A.S.H.T.O.: Soil classification group symbol as determined by visual examination
- ▼ 04/14/2020 Groundwater level encountered on date shown
- ▽ Estimated seasonal high groundwater level
- GNE Groundwater not encountered within top 10 feet during time of field exploration
- W/H Weight of Hammer
- AB Boring Location

Standard Penetration Test Data

- N Standard penetration resistance in blows per foot (18" spoon ASTM D-1586)
- Spoon Inside Diameter 1 3/8 in.
- Spoon Outside Diameter 2 in.
- ASTM Standard Automatic Hammer
- Hammer Weight 140 lbs.

- NOTES**
- Standard Penetration Test borings were performed in accordance with ASTM D-1586. Standard Penetration Resistance are shown on the borings at the test depths in blows per foot unless otherwise noticed
  - Subsurface conditions shown on the boring do not represent conditions between boring locations. Actual conditions between the borings may vary from those shown.
  - Unified Soil Classifications shown on the boring are based on visual examination and limited laboratory testing



USGS QUAD MAP: LAKE JESSAMINE, FL  
SECTION: 6  
TOWNSHIP: 24 South  
RANGE: 29 East  
Photo Issued: 2018

**GRANULAR MATERIALS**

RELATIVE DENSITY	SPT (BLOWS/FT.)
Very loose	Less than 3
Loose	3-7
Medium Dense	7-21
Dense	21-35
Very Dense	Greater than 35

**SILTS AND CLAYS**

CONSISTENCY	SPT (BLOWS/FT.)
Very soft	Less than 1
Soft	1-3
Firm	3-6
Stiff	6-11
Very Stiff	11-21
Hard	Greater than 21

NOT TO SCALE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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NADIC SHEET NO. 3