I-75 (SR 93) at NW 49th Street PD&E Study

Preliminary Geotechnical Soil Survey

FDOT Office
District Five

Authors
Tierra, Inc.
591 Susan B. Britt Court
Winter Garden, FL 34787
(407) 877-1354

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The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.

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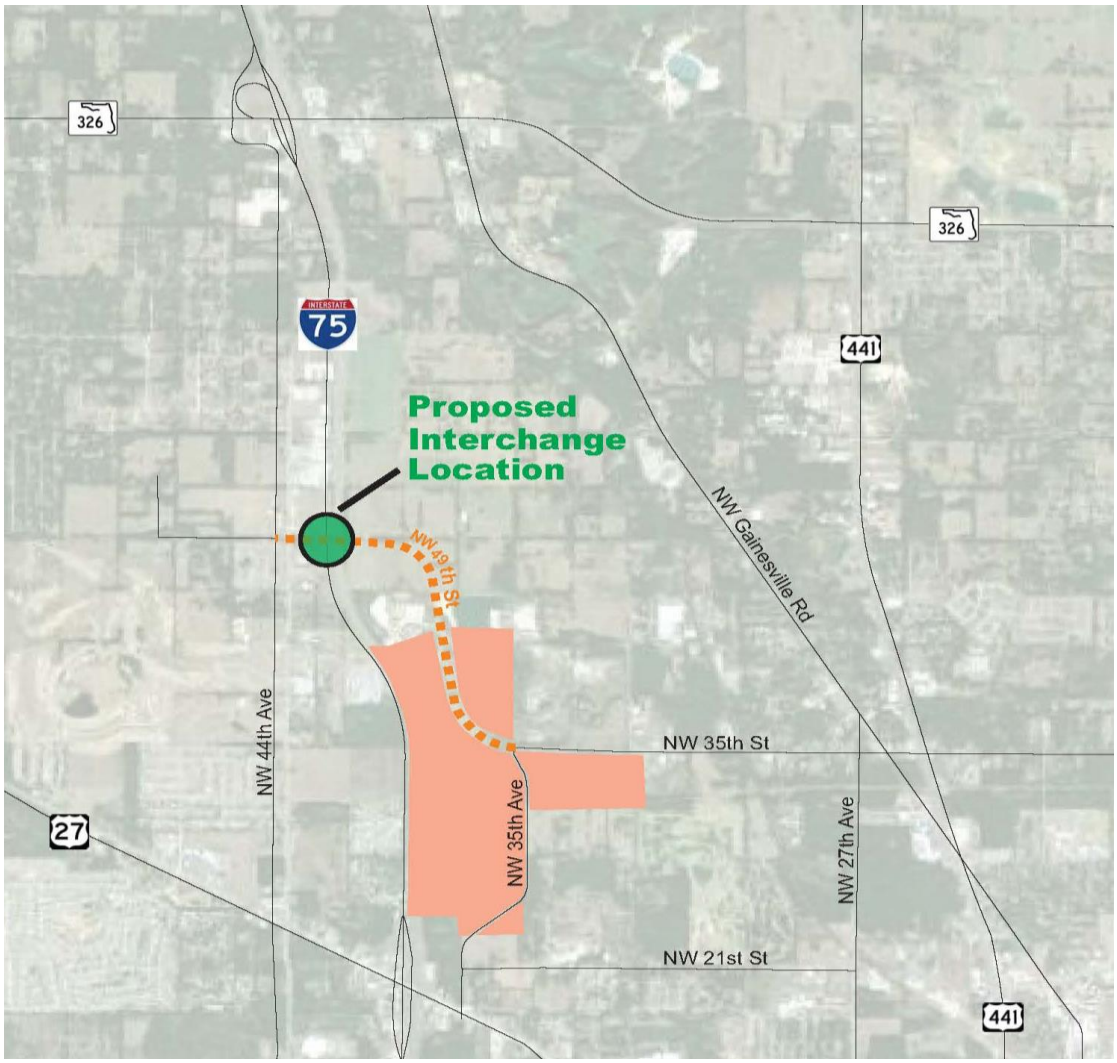
1.0 Project Description

The project entails the investigation of the provision of a new I-75 interchange to be located between the existing I-75/US 27 interchange to the south (2.24 miles) and the existing I-75/SR 326 interchange to the north (2.04 miles) just northwest of Ocala in Marion County, Florida. A recently completed Interchange Justification Report (IJR) concluded that the existing I-75 interchange ramp movements and intersections at US 27 and at SR 326 will operate at failing levels of service. A new I-75 interchange at NW 49th Street (approximately midway between the two existing interchanges) is thus vital to avoid complete gridlock, "traffic stress" and undesirable safety conditions along the local street network. The western limit of this project is NW 44th Avenue (west of I-75) and the eastern limit is the NW 35th Street connection to NW 49th Street just east of the new proposed interchange site. It should be noted that this proposed NW 35th Street/NW 49th Street connection will be constructed by the county and is anticipated to be completed prior to the interchange being constructed.

Figure 1-1 | Project Location Map



2.0 Scope of Services

The purpose of the geotechnical portion of the PD&E study is to obtain information on the existing subsurface conditions along the project alignment to assist in the preparation of the PD&E Report for the project. The following services were provided to achieve the preceding objective:

- Reviewed published soils information. This published information was obtained from the Web Soil Survey of Marion County, Florida published by the United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS).
- Conducted a visual reconnaissance of the project site and located and coordinated utility clearance.
- Performed a geotechnical field study to evaluate the existing subsurface conditions along the roadway alignment consisting of borings, subsurface sampling and field-testing. We performed sixteen (16) Standard Penetration Test (SPT) borings to depths of approximately 20 feet below the existing ground surface along the proposed roadway alignment.
- Performed a geotechnical field study for the proposed pond site alternative locations consisting of borings, subsurface sampling and field-testing. We performed fourty (40) SPT borings within or adjacent to the pond site alternative locations to depths of approximately 20 to 30 feet below the existing ground surface to evaluate the subsurface conditions.
- Performed a total of thirty (30) field permeability tests within or adjacent to the proposed pond site alternative locations.
- Visually classified and stratified the recovered soil samples in the laboratory. Performed laboratory tests on selected representative samples to develop the soil legend for the project in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Soil Classification System.
- Prepared this Preliminary Soil Survey Study for the project.

3.0 Subsurface Conditions

3.1 Marion County Soil Survey

Based on a review of the Marion County Soil Survey published by USDA-NRCS, it appears that there are four (4) soil-mapping units noted within the project limits. A detailed soil survey map is shown on the USDA Vicinity Map Sheet in the attachments. The general soil descriptions are presented in the sub-sections below, as described in the Web Soil Survey.

3.1.1 Arredondo sand, 0 to 5 percent slopes (Unit 9)

The Arredondo component makes up 80 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Non-irrigated land capability classification is 3s. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

3.1.2 Gainesville loamy sand, 0 to 5 percent slopes (Unit 35)

The Gainesville component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Non-irrigated land capability classification is 3s. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

3.1.3 Hague sand, 2 to 5 percent slopes (Unit 37)

The Hague component makes up 85 percent of the map unit. Slopes are 2 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Non-irrigated land capability classification is 2e. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

3.1.4 Pits (Unit 57)

Soil and groundwater properties have not been provided within the USDA-NRCS Soil Survey. The pits complex consists of land which soil material and/or limestone or shell has been removed and consists of dumps where these materials have been piled, and miscellaneous areas where natural soil has been modified for urban development.

3.2 General Soil Properties

Additional information regarding the soils and groundwater conditions for the above soil mapping units was obtained from the Marion County Soil Survey published by USDA-NRCS and the Web Soil Survey and is presented in **Tables 3-1** and **3-2** as follows:

Table 3-1 | Marion County USDA NRCS Soil Survey Hydrologic Information

Map No.	Soil Name	Hydrologic Soil Group	Depth to High Water Table (ft)	Typical Soil Types (Profile from Ground Surface to depth of approximately 80 inches)
9	Arredondo sand, 0 to 5 percent slopes	A	> 6.0	Sand to Loamy Sand to Sandy Loam to Sandy Clay Loam
35	Gainesville loamy sand, 0 to 5 percent slopes	A	> 6.0	Loamy Sand
37	Hague sand, 2 to 5 percent slopes	A	> 6.0	Sand to Sandy Clay Loam to Sandy Loam to Loamy Sand
57	Pits (1)	No Estimates Provided by USDA-NRCS		

Table 3-2 | Marion County USDA NRCS Soil Survey Information

Map No.	Soil Name	Soil Classification			Permeability (in/hr)
		Depth (in)	USCS	AASHTO	
9	Arredondo sand, 0 to 5 percent slopes	0-65	SP-SM, SM	A-3, A-2-4	6.0-20.0
		65-70	SM, SM-SC	A-2-4	2.0-6.0
		70-80	SM-SC, SC	A-2-4, A-2-6, A-4, A-6	2.0-6.0
35	Gainesville loamy sand, 0 to 5 percent slopes	0-80	SM	A-2-4	6.0-20.0
37	Hague sand, 2 to 5 percent slopes	0-24	SP-SM, SM	A-3, A-2-4	6.0-20.0
		24-49	SM, SM-SC, SC	A-2, A-4, A-6	0.6-6.0
		49-74	SM, SM-SC, SC	A-2, A-4, A-6	0.6-2.0
		74-80	SM	A-2-4	2.0-6.0
57	Pits (1)	No Estimates Provided by USDA-NRCS			

(1) No Soil and groundwater properties were provided by the USDA. Soil unit consists of pits from which soil material and/or limestone or shell has been or is being removed and consists of dumps where these materials have been piled, and miscellaneous areas where natural soil has been modified for urban development.

3.3 Groundwater Conditions

According to the USDA-NRSC Soil Survey, much of the project corridor consists of well drained soils. The seasonal high groundwater table is estimated at depths greater than 6.0 feet of the ground surface throughout the corridor.

4.0 Preliminary Subsurface Exploration

4.1 Roadway Borings

To evaluate the subsurface conditions and groundwater table levels along the proposed project limits Standard Penetration Test (SPT) borings were advanced to depths of approximately 20 feet below the existing ground surface along the project corridor.

The borings were performed using a drill rig with bentonite mud drilling procedures. The soil sampling for the borings were performed in general accordance with the American Society for Testing and Materials (ASTM) test designation D-1586. SPT resistance N-values were generally taken continuously to a depth of 10 feet and on intervals of 5 feet thereafter. As each soil type was revealed, representative samples were placed in air-tight containers and returned to our office for confirmation of the field classification by a geotechnical engineer.

The location of the borings performed were determined using the recorded GPS coordinates obtained by Tierra in conjunction with the design files provided by Metric. The locations of these borings should be considered approximate. The station and offset along with the soil profile of each boring performed are shown on the **Roadway Soil Profiles** sheet in the **Appendix**.

4.2 Pond Borings

To evaluate the subsurface conditions and groundwater table levels within the pond site alternatives, SPT borings were advanced to depths of approximately 20 to 30 feet below the existing ground surface within or near the pond site alternative locations.

The location of the borings performed were determined using the recorded GPS coordinates obtained by Tierra in conjunction with the design files provided by Metric. The locations of these borings should be considered approximate. The station and offset along with the soil profile of each boring performed are shown on the **Pond Soil Survey** sheets in the **Appendix.**

4.3 Field Hydraulic Conductivity Tests

A total of thirty (30) field hydraulic conductivity tests were performed at the location of the pond boring locations. These tests were performed at approximately 1 to 3 feet below the ground surface. These tests were performed and the results evaluated in accordance with the methodology presented in the latest FDOT Soils and Foundation Handbook. A summary of the hydraulic conductivity test results is presented **Table 5** of the **Appendix**.

It is important to note that the results provided are the measured hydraulic conductivity rates of the in-situ soil conditions encountered at the time of our field activities. No factors of safety have been applied to these rates. The project drainage engineer should apply an appropriate factor of safety for design purposes.

5.0 Laboratory Testing

5.1 General

Representative soil samples collected from the borings performed along the project alignments were classified and stratified in general accordance with the American Association of State Highway and Transportation Officials (AASHTO) Soil Classification System. Our classification was based on visual observations, using the results from the laboratory testing as confirmation. These tests included grain-size analyses, Atterberg Limits and natural moisture content determination. In addition, environmental corrosion tests were performed on selected soil samples to evaluate the corrosive nature of the subsurface soils encountered.

5.2 Test Designation

The following list summarizes the laboratory tests performed by Tierra and the respective test methods utilized.

- Grain-Size Analyses - The grain-size analyses were conducted in general accordance with the AASHTO test designation T-088 (ASTM test designation D-422).
- Atterberg Limits - The liquid limit and the plastic limit tests ("Atterberg Limits") were conducted in general accordance with the AASHTO test designations T-089 and T-090, respectively (ASTM test designation D-4318).
- Natural Moisture Content - The moisture content tests were conducted in general accordance with the AASHTO test designation T-265 (ASTM test designation D-2216).
- Environmental Corrosion - The environmental corrosion tests were conducted in general accordance with the FDOT test designations FM 5-550, FM 5-551, FM 5-552 and FM 5-553.

A summary of the laboratory test results for each soil stratum encountered along the project alignment is presented on the **Soil Survey** sheet in the **Appendix**. This sheet includes ranges of laboratory test results for different stratum soil samples collected from borings performed along the project alignments. A detailed summary of the laboratory test results performed for this report is presented in **Tables 3** and **4** of the **Appendix**.

6.0 Results of Subsurface Exploration

6.1 General Soil Conditions

Specific information of each boring performed is provided on the **Roadway Soil Profiles and Pond Soil Profiles** sheets in the **Appendix**.

The soil types encountered during this exploration have been assigned a stratum number. The stratum number and soil types associated with this project to date are provided below.

Stratum Number	Typical Soil Description	AASHTO Classification
1	Gray to Light Gray, and Brown to Light Brown SAND to SAND with Silt	A-3
2	Brown to Orange-Brown Silty SAND to Slightly Clayey SAND, Occasionally with Limestone Fragments	A-2-4
3	Gray to Gray-Brown Clayey SAND to Sandy CLAY, Occasionally with Limestone Fragments	A-2-6/A-2-7/A-6 A-7-6
4	Gray Sandy CLAY to CLAY, Occasionally with Limestone Fragments	A-7-5/A-7-6
5	Limestone	--(1)

(1) The USCS does not include a classification for limestone

A geotechnical engineer bases soil stratification on a visual review of the recovered samples, laboratory testing and interpretation of the field boring logs. The boring stratification lines represent the approximate boundaries between soil types of significantly different engineering properties; however, the actual transition may be gradual. In some cases, small variations in properties within the same boring not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The boring profiles represent the conditions at the particular boring location and variations do occur among the borings.

6.2 Groundwater

The groundwater table was not apparent within the borings prior to the commencement of mud-rotary drilling. Groundwater Not Apparent (GNA) is indicated on the boring profiles on the **Roadway Soil Profiles** and **Pond Soil Profiles** sheets in the **Appendix**.

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 (i.e., existing water management canals, swales, drainage ponds, underdrains, and areas of covered soils, such as paved parking lots and sidewalks).

6.3 Seasonal High Groundwater Estimates

The seasonal high groundwater table (SHGWT) levels along the majority of the project alignment are estimated to be in a perched condition ranging in depths from approximately 4 feet to depths greater than 10 feet below existing grades at the boring locations. A summary of these estimates by boring location is presented on the **Roadway Soil Profiles** and **Pond Soil Profiles** sheets and in **Tables 1 and 2** in the **Appendix**.

In general, the seasonal high groundwater table levels estimated along the project alignments were based on soil stratigraphy, measured groundwater levels from the borings, the USDA Soil Survey information for Marion County, Florida, and surrounding topography. In areas where subsurface soil conditions were disturbed, normal indications such as “stain lines” were not evident.

7.0 Preliminary Engineering Evaluations

7.1 General

Based upon the USDA-NRCS Soil Survey for Marion County and the borings performed, sandy soils to depths of 80 inches below the natural ground surface are reported along the majority of the project corridor with areas of plastic soils. In general, these soils are suitable for supporting proposed roadway embankments after proper subgrade preparation and removal of unsuitable materials.

Areas along the project corridor where clay, shallow rock and/or groundwater conditions may impact the project are detailed below.

7.1.1 Shallow Groundwater

The Seasonal High Groundwater Table (SHGWT) for the soil units is reported at depths greater than 6 feet below the predevelopment natural grade within the project limits. The perched SHGWT at the boring locations is estimated to range from at the existing ground surface to depths greater than 10 feet below existing grades at the boring locations.

Roadway base to groundwater clearance will need to be evaluated to ensure minimum separation between the base and the SHGWT is maintained or to determine if additional measures are required (ie, blackbase, underdrains, etc.).

7.1.2 Near Surface Clayey Soils

Near-surface, plastic soils (A-7-5/A-7-6) were noted from the existing ground surface to a depth of 20 feet below existing grade throughout the project corridor. The following soil mapping units noted plastic/clayey soils (A-2-6, A-4, and A-6) between depth ranges of approximately 24 to 80 inches below natural grade:

- Arredondo Sand, 0 to 5 percent slopes (Unit 9)
- Hague Sand, 2 to 5 percent slopes (Unit 37)

Plastic soils have limitations related to base clearance and are also poorly drained. Separation between plastic soils and the roadway pavement sections should be in accordance with FDOT Plans. As the project progresses beyond the PD&E stage, additional geotechnical services should be performed to determine the impact these materials will have to the proposed design.

7.1.3 Shallow Rock/Caprock

Limestone/caprock was encountered at several boring locations at depths ranging from 7 to 20 feet of the natural ground surface in isolated areas of the project corridor. Excavations for utilities, ponds and foundations may be difficult and the Contractor should be prepared for such materials. Near surface limestone is known to be located within the project area. The presence of near surface limestone also creates a higher than normal probability of sinkhole formation during pond excavations.

7.2 Roadway Construction

Site preparation should consist of normal clearing and grubbing followed by compaction of subgrade soils. Subgrade preparation should include the removal of plastic soils, top-soils and organic soils in accordance with FDOT Standard Plans. Backfill embankment materials should consist of materials conforming to FDOT Standard Plans. Clearing and grubbing and compaction should be accomplished in accordance with the latest FDOT Standard Specifications.

The overall site preparation and mechanical densification work for the construction of the proposed roadway improvements should be in accordance with the FDOT Standard Specifications and Standard Plans requirements. In general, the existing subsurface soils appear capable of supporting the construction of the proposed roadway improvements subject to the above geotechnical considerations and after proper subgrade preparation.

8.0 Limitations

Our professional services have been performed, our findings obtained and our preliminary evaluations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. Tierra is not responsible for the conclusions, opinions or recommendations made by others based on this data.

The scope of the geotechnical portion of the PD&E study is to provide information on the existing subsurface conditions along the project alignment based on a review of the Marion County Soil Survey published by the USDA-NRCS and limited subsurface exploration to assist in the preparation of the PD&E Report for the project. The preliminary evaluations submitted in this report are based upon the data obtained from the published information and the limited subsurface exploration. Should subsoil variations become evident during the course of this project, a re-evaluation will be necessary after we have had an opportunity to observe the characteristics of the condition encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed roadway construction.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of Metric Engineering, Inc. and the FDOT.

Tierra appreciates the opportunity to be of service to Metric Engineering, Inc. on this project. If you have any questions or comments regarding this report, please contact our office at your earliest convenience.

Respectfully Submitted,

TIERRA, INC.

Luis A. Almodovar, E.I.
Geotechnical Engineer Intern

Jeremy A. Sewell, P.E.
Senior Geotechnical Engineer
Florida License No. 62951

Appendix

Tables

Table 1 | Summary of Seasonal High Groundwater Table Estimates for Roadway

Table 2 | Summary of Seasonal High Groundwater Table Estimates for Ponds

Table 3 | Summary of Laboratory Test Results for Soil Classification

Table 4 | Summary of Laboratory Test Results for Environmental Classification

Table 5 | Summary of Hydraulic Conductivity Test Results

Figures

FIGURE 2 | USDA Soil Survey & USGS Quadrangle Maps

FIGURE 3 | Soil Survey Sheet for Roadway & Ponds

FIGURES 4 - 9 | Roadway Boring Location Plan Sheets

FIGURE 10 | Roadway Soil Profiles Sheet

FIGURES 11 - 19 | Pond Soil Survey Sheets

TABLE 1
Summary of Seasonal High Groundwater Table Estimates for Roadway
I-75 (SR 93) at NW 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN: 435209-1-22-01
Tierra Project No: 5511-16-033

Boring Number	Boring Location[1] C/L Construction		Boring Depth[2]	Ground Surface Elevation NAVD88[1]	Measured GWT		Date Groundwater Table Recorded	USDA Soil Survey		Estimated SHGWT[4]	
	Station (feet)	Offset (feet)	(feet)	(feet)	Depth Below Ground Surface (feet)	Elevation NAVD88 (feet)		Soil Map Unit	SHGWT Depth[3] (feet)	Depth Below Ground Surface (feet)	Elevation NAVD88 (feet)
Centerline Construction of 49th Street											
B - 121R	120+50	42 RT	20.0	79.3	GNA[5]	< 69.3	04/18/2018	9	> 6.0	9.0	70.3
B - 125R	125+16	6 RT	20.0	85.5	GNA[5]	< 75.5	04/18/2018	9	> 6.0	8.0	77.5
B - 136L	136+38	4 LT	20.0	77.6	GNA[5]	< 67.6	04/16/2018	9	> 6.0	8.0	69.6
B - 141R	140+73	50 RT	20.0	82.2	GNA[5]	< 72.2	04/17/2018	9	> 6.0	6.0	76.2
B - 145L	145+16	11 LT	20.0	83.3	GNA[5]	< 73.3	04/17/2018	9	> 6.0	4.0	79.3
B - 150R	150+33	44 RT	20.0	95.0	GNA[5]	< 85	04/16/2018	9/37	> 6.0	4.0	91.0
B - 155L	154+88	29 LT	20.0	104.2	GNA[5]	< 94.2	04/16/2018	37	> 6.0	4.0	100.2
B - 159L	159+13	30 LT	20.0	110.0	GNA[5]	< 100	04/16/2018	37	> 6.0	12.0	98.0
Centerline Construction of Ramp B											
B - 208R	207+76	28 RT	20.0	86.0	GNA[5]	< 76	04/17/2018	37	> 6.0	8.0	78.0
B - 211L	210+87	11 LT	20.0	82.2	GNA[5]	< 72.2	04/17/2018	37	> 6.0	7.0	75.2
Centerline Construction of Ramp C											
B - 310R	309+76	59 RT	20.0	81.4	GNA[5]	< 71.4	05/05/2018	37	> 6.0	2.0	79.4
B - 313L	313+06	41 LT	20.0	87.6	GNA[5]	< 77.6	04/18/2018	9	> 6.0	8.0	79.6
Centerline Construction of Ramp D											
B - 503L	502+58	27 LT	20.0	85.4	GNA[5]	< 75.4	04/18/2018	37	> 6.0	4.0	81.4
B - 506R	505+86	5 RT	20.0	89.2	GNA[5]	< 79.2	04/18/2018	37	> 6.0	4.0	85.2
Centerline Construction of Ramp A											
B - 603L	602+99	63 LT	20.0	77.0	GNA[5]	< 67	04/16/2018	37	> 6.0	7.0	70.0
B - 606R	605+80	5 RT	20.0	78.5	GNA[5]	< 68.5	04/16/2018	37	> 6.0	4.0	74.5

[1] Boring locations (station and offset) and ground elevations were determined using design files provided by Metric.
[2] Depth below existing grades at time of field services.
[3] Seasonal high groundwater table depth reported in the Soil Survey of Marion County, Florida published by the USDA/NRCS.
[4] Perched seasonal high groundwater table depth estimated based on soil stratigraphy.
[5] GNA: Groundwater not apparent due to introduction of drilling fluid at a depth of 10 feet.

TABLE 2

Summary of Seasonal High Groundwater Table Estimates for Ponds
I-75 (SR 93) at NE 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN: 435209-1-22-01
Tierra Project No: 5511-16-033

Boring Number	Boring Location[1] B/L Survey SR 93		Boring Depth[2]	Ground Surface Elevation NAVD88[1]	Measured GWT		Date Groundwater Table Recorded	USDA Soil Survey		Estimated SHGWT[4]	
	Station (feet)	Offset (feet)	(feet)	(feet)	Depth Below Ground Surface (feet)	Elevation NAVD88 (feet)		Soil Map Unit	SHGWT Depth[3] (feet)	Depth Below Ground Surface (feet)	Elevation NAVD88 (feet)
PBS - 1	2483+57	919 LT	20.0	85.6	GNA[5]	< 75.6	07/31/2018	9	> 6.0	12.0[6]	73.6
PBS - 2	2483+67	482 LT	20.0	86.4	GNA[5]	< 76.4	07/31/2018	37	> 6.0	6.0[6]	80.4
PBS - 3	2488+68	371 LT	20.0	85.5	GNA[5]	< 75.5	07/31/2018	37	> 6.0	> 20.0	< 65.5
PBS - 4	2492+37	276 LT	20.0	83.8	GNA[5]	< 73.8	07/31/2018	37	> 6.0	3.0[6]	80.8
PBS - 5	2490+80	255 RT	20.0	82.9	GNA[5]	< 72.9	08/21/2018	9	> 6.0	4.0[6]	78.9
PBS - 6	2487+62	422 RT	25.0	72.7	GNA[5]	< 62.7	08/21/2018	37	> 6.0	12.0[6]	60.7
PBS - 7	2483+43	347 RT	20.0	75.7	GNA[5]	< 65.7	08/21/2018	37	> 6.0	12.0[6]	63.7
PBS - 8	2485+27	683 RT	30.0	67.6	GNA[5]	< 57.6	08/21/2018	9	> 6.0	6.5[6]	61.1
PBS - 9	2483+63	1018 RT	20.0	74.2	GNA[5]	< 64.2	08/21/2018	9	> 6.0	3.0[6]	71.2
PBS - 10	2486+27	1439 RT	20.0	82.2	GNA[5]	< 72.2	08/22/2018	9	> 6.0	8.0[6]	74.2
PBS - 11	2482+79	1413 RT	20.0	79.4	GNA[5]	< 69.4	08/22/2018	9	> 6.0	7.0[6]	72.4
PBS - 12	2476+28	1509 RT	20.0	95.8	GNA[5]	< 85.8	08/24/2018	9/37	> 6.0	> 20.0	< 75.8
PBS - 13	2479+85	1304 RT	20.0	85.4	GNA[5]	< 75.4	08/22/2018	9	> 6.0	2.5[6]	82.9
PBS - 14	2478+22	870 RT	20.0	89.5	GNA[5]	< 79.5	08/22/2018	9	> 6.0	> 20.0	< 69.5
PBS - 15	2479+53	517 RT	20.0	82.0	GNA[5]	< 72.0	08/22/2018	37	> 6.0	6.5[6]	75.5
PBS - 16	2477+56	202 RT	20.0	83.5	GNA[5]	< 73.5	08/22/2018	37	> 6.0	> 20.0	< 63.5
PBS - 17	2474+18	368 RT	20.0	88.8	GNA[5]	< 78.8	08/24/2018	37	> 6.0	5.0[6]	83.8
PBS - 18	2470+53	190 RT	20.0	88.6	GNA[5]	< 78.6	08/22/2018	35	> 6.0	2.0[6]	86.6
PBS - 19	2476+86	417 LT	20.0	80.9	GNA[5]	< 70.9	08/24/2018	35	> 6.0	1.5[6]	79.4
PBS - 20	2479+41	579 LT	20.0	86.5	GNA[5]	< 76.5	07/31/2018	9	> 6.0	0.5[6]	86.0
PBS - 21	2479+06	894 LT	20.0	81.2	GNA[5]	<71.2	01/24/2019	9	> 6.0	0.0[6]	81.2
PBS - 22	2486+47	934 LT	20.0	85.5	GNA[5]	< 75.5	01/24/2019	9	> 6.0	>20.0	< 65.5
PBS - 23	2485+16	735 LT	20.0	86.2	GNA[5]	< 76.2	01/24/2019	9/37	> 6.0	12.0[6]	74.2
PBS - 24	2486+39	514 LT	20.0	85.2	GNA[5]	< 75.2	01/24/2019	37	> 6.0	12.0[6]	73.2
PBS - 25	2459+54	166 RT	20.0	101.5	GNA[5]	< 91.5	03/22/2019	37	> 6.0	4.0[6]	97.5
PBS - 26	2463+36	171 RT	20.0	98.9	GNA[5]	< 88.9	03/22/2019	37	> 6.0	4.0 [6]	94.9

TABLE 2

Summary of Seasonal High Groundwater Table Estimates for Ponds
I-75 (SR 93) at NE 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN: 435209-1-22-01
Tierra Project No: 5511-16-033

Boring Number	Boring Location[1] B/L Survey SR 93		Boring Depth[2]	Ground Surface Elevation NAVD88[1]	Measured GWT		Date Groundwater Table Recorded	USDA Soil Survey		Estimated SHGWT[4]	
	Station (feet)	Offset (feet)	(feet)	(feet)	Depth Below Ground Surface (feet)	Elevation NAVD88 (feet)		Soil Map Unit	SHGWT Depth[3] (feet)	Depth Below Ground Surface (feet)	Elevation NAVD88 (feet)
PBS - 27	2467+27	189 RT	20.0	93.2	GNA[5]	< 83.2	03/22/2019	37	> 6.0	4.0 [6]	89.2
PBS - 28	2468+30	413 RT	20.0	97.1	GNA[5]	< 87.1	01/23/2019	37	> 6.0	8.0[6]	89.1
PBS - 29	2467+04	752 RT	20.0	108.1	GNA[5]	< 98.1	01/23/2019	37	> 6.0	> 20.0	< 88.1
PBS - 30	2471+64	643 RT	20.0	96.0	GNA[5]	< 86.0	01/23/2019	37	> 6.0	2.0[6]	94.0
PBS - 31	2475+88	612 RT	20.0	90.2	GNA[5]	< 80.2	01/24/2019	37	> 6.0	2.0[6]	88.2
PBS - 32	2473+87	975 RT	20.0	95.9	GNA[5]	< 85.9	01/23/2019	37	> 6.0	2.0[6]	93.9
PBS - 33	2487+86	652 RT	20.0	67.5	GNA[5]	< 57.5	02/19/2019	37	> 6.0	6.0	61.5
PBS - 34	2487+13	955 RT	20.0	67.2	GNA[5]	< 57.2	02/19/2019	9	> 6.0	6.0	61.2
PBS - 35	2490+11	910 RT	20.0	67.2	GNA[5]	< 57.2	02/20/2019	9	> 6.0	6.0	61.2
PBS - 36	2490+95	524 RT	20.0	81.5	GNA[5]	< 71.5	02/20/2019	9	> 6.0	> 20.0	< 61.5
PBS - 37	2493+45	221 RT	20.0	82.0	GNA[5]	< 72.0	02/19/2019	9	> 6.0	4.0[6]	78.0
PBS - 38	2493+66	594 RT	20.0	79.7	GNA[5]	< 69.7	02/20/2019	9	> 6.0	16.0[6]	63.7
PBS - 39	2495+42	361 RT	20.0	79.3	GNA[5]	< 69.3	02/19/2019	9	> 6.0	8.0[6]	71.3
PBS - 40	2498+22	244 RT	20.0	70.8	GNA[5]	< 60.8	02/19/2019	9	> 6.0	8.0[6]	62.8

[1] Boring locations (station and offset) and ground elevations provided by Metric.

[2] Depth below existing grades at time of field services.

[3] Seasonal high groundwater table depth reported in the Soil Survey of Marion County, Florida published by the USDA/NRCS.

[4] Seasonal high groundwater table depth estimated based on soil stratigraphy, measured groundwater levels from the borings, the USDA NRCS Soil Survey information, and surrounding topography.

[5] GNA: Groundwater not apparent to a depth of approximately 10 feet due to the introduction of drilling fluid.

[6] Perched seasonal high groundwater table depth estimated based on soil stratigraphy.

Table 3
Summary of Laboratory Test Results for Soil Classification
I-75 (SR 91) at NW 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN No. 435209-1-22-01
Tierra Project No: 5511-16-033

Boring Number	Sample Depth (ft)	Stratum Number	AASHTO Symbol	Sieve Analysis					Atterberg Limits			Organic Content (%)	Natural Moisture Content (%)
				#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
PBS-6	8.0 - 10.0	A-3	1	100	82	47	21	10	-	-	-	-	-
B-121R	4.0 - 6.0	A-3	1	100	84	54	23	9	-	-	-	-	-
B-125R	4.0 - 6.0	A-3	1	100	89	63	31	10	-	-	-	-	-
B-136L	0.0 - 2.0	A-3	1	-	-	-	-	10	-	-	-	-	-
B-503L	0.0 - 2.0	A-3	1	-	-	-	-	10	-	-	-	-	-
B-603L	0.0 - 2.0	A-3	1	-	-	-	-	10	-	-	-	-	-
B-606R	0.0 - 2.0	A-3	1	-	-	-	-	10	-	-	-	-	-
PBS-1	6.0 - 8.0	A-2-4	2	100	88	64	35	21	-	-	-	-	-
PBS-7	4.0 - 6.0	A-2-4	2	100	91	66	38	22	-	-	-	-	-
PBS-8	0.0 - 2.0	A-2-4	2	100	88	58	26	11	-	-	-	-	-
PBS-9	2.0 - 3.0	A-2-4	2	100	92	70	40	21	-	-	-	-	-
PBS-12	13.5 - 15.0	A-2-4	2	100	84	57	31	18	-	-	-	-	-
PBS-14	2.0 - 4.0	A-2-4	2	100	87	59	28	13	-	-	-	-	-
PBS-14	18.5 - 20.0	A-2-4	2	100	91	64	34	17	-	-	-	-	-
PBS-16	6.0 - 8.0	A-2-4	2	100	85	58	32	18	-	-	-	-	-
PBS-16	13.5 - 15.0	A-2-4	2	100	92	66	35	19	-	-	-	-	-
PBS-20	2.0 - 4.0	A-2-4	2	100	87	65	39	25	-	-	-	-	13
B-136L	2.0 - 4.0	A-2-4	2	100	91	66	35	20	NP	NP	NP	-	10
B-136L	6.0 - 8.0	A-2-4	2	100	91	64	34	20	-	-	-	-	-
B-141R	0.0 - 2.0	A-2-4	2	100	91	66	33	16	-	-	-	-	-
B-141R	4.0 - 6.0	A-2-4	2	100	92	71	43	23	-	-	-	-	-
B-145L	2.0 - 4.0	A-2-4	2	100	89	67	39	24	-	-	-	-	-
B-155L	0.0 - 2.0	A-2-4	2	100	91	64	34	14	-	-	-	-	-

Table 3
Summary of Laboratory Test Results for Soil Classification
I-75 (SR 91) at NW 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN No. 435209-1-22-01
Tierra Project No: 5511-16-033

Boring Number	Sample Depth (ft)	Stratum Number	AASHTO Symbol	Sieve Analysis					Atterberg Limits			Organic Content (%)	Natural Moisture Content (%)
				#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-155L	2.0 - 4.0	A-2-4	2	100	93	72	44	27	NP	NP	NP	-	38
B-159L	8.0 - 10.0	A-2-4	2	100	89	61	37	23	NP	NP	NP	-	13
B-313L	4.0 - 6.0	A-2-4	2	100	88	65	39	26	NP	NP	NP	-	14
B-603L	4.0 - 6.0	A-2-4	2	100	89	63	34	17	-	-	-	-	-
PBS-5	6.0 - 8.0	A-2-6	3	100	86	61	43	34	-	-	-	-	-
PBS-18	6.0 - 8.0	A-2-6	3	100	92	73	51	32	24	12	12	-	18
PBS-37	4.0 - 8.0	A-2-7	3	-	-	-	-	28	44	20	24	-	14
PBS-29	4.0 - 6.0	A-6	3	-	-	-	-	47	37	24	13	-	32
PBS-15	8.0 - 10.0	A-7-6	3	100	97	92	88	44	45	18	27	-	24
PBS-30	2.0 - 4.0	A-7-6	3	-	-	-	-	58	49	25	24	-	37
PBS-28	8.0 - 10.0	A-7-5	4	-	-	-	-	85	83	33	50	-	50
B-310R	13.5 - 15.0	A-7-5	4	-	-	-	-	72	60	37	23	-	42
B-603L	7.0 - 8.0	A-7-5	4	100	98	95	91	89	101	31	70	-	47
PBS-4	6.0 - 8.0	A-7-6	4	100	92	85	77	70	-	-	-	-	40
PBS-10	8.0 - 10.0	A-7-6	4	100	99	96	92	90	-	-	-	-	46
PBS-17	6.0 - 8.0	A-7-6	4	100	94	89	85	86	93	23	70	-	49
PBS-23	13.5 - 15.0	A-7-6	4	-	-	-	-	51	53	19	34	-	28
PBS-24	13.5 - 15.0	A-7-6	4	-	-	-	-	57	56	20	36	-	32
PBS-39	13.5 - 20.0	A-7-6	4	-	-	-	-	71	96	27	69	-	47
B-150R	4.0 - 6.0	A-7-6	4	100	95	81	66	54	50	26	24	-	19
B-503L	8.0 - 10.0	A-7-6	4	100	99	98	96	91	92	24	68	-	43
B-606R	4.0 - 6.0	A-7-6	4	100	97	90	85	76	65	22	43	-	36

Table 4
Summary of Laboratory Test Results for Environmental Classification
I-75 (SR 91) at NW 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN No. 435209-1-22-01
Tierra Project No: 5511-16-033

Boring Name	Depth (ft)	Stratum No./ AASHTO Symbol	pH (FM 5-550)	Resistivity (ohm-cm) (FM 5-551)	Chlorides (ppm) (FM 5-552)	Sulfates (ppm) (FM 5-553)	Environmental Classification (Soil)	
							Steel	Concrete
B-125R	2.0 - 4.0	1/A-3	6.0*	15,000	45	24	Moderately Aggressive	Moderately Aggressive
B-503L	2.0 - 4.0	1/A-3	6.3*	36,000	30	< 5	Moderately Aggressive	Slightly Aggressive
PBS-4	0.0 - 3.0	1/A-3	7.2	19,000	15	15	Slightly Aggressive	Slightly Aggressive
PBS-6	4.0 - 6.0	1/A-3	5.7*	17,000	15	47	Extremely Aggressive	Moderately Aggressive
PBS-12	2.0 - 4.0	1/A-3	6.0*	39,000	15	15	Moderately Aggressive	Moderately Aggressive
B-211L	2.0 - 4.0	2/A-2-4	6.2*	16,000	45	24	Moderately Aggressive	Slightly Aggressive
PBS-11	2.0 - 4.0	2/A-2-4	6.0*	9,900	15	114	Moderately Aggressive	Moderately Aggressive
PBS-19	4.0 - 6.0	2/A-2-4	5.8*	25,000	15	12	Extremely Aggressive	Moderately Aggressive

* Indicates governing factor(s) for environmental classification.

TABLE 5
SUMMARY OF HYDRAULIC CONDUCTIVITY TEST RESULTS
I-75 (SR 93) at NW 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN: 435209-1-22-01
Tierra Project No.: 5511-16-033

Boring Number	Boring/Test Location[1] Baseline Survey SR 93 (I-75)		Ground Surface Elevation[1] (feet, NAVD 88)	Test Elevation (feet, NAVD 88)	Estimated SHGW Elevation (feet, NAVD 88)	Vertical Hydraulic Conductivity[3] (feet/day)	Horizontal Hydraulic Conductivity[3] (feet/day)	Confining Layer Elevation (feet, NAVD 88)	Effective Porosity (%)
	Station	Offset							
PBS-1	2483+57	919 LT	85.6	84.1	73.6[2]	3	5	81.6	20
PBS-2	2483+67	482 LT	86.4	84.9	80.4[2]	5	8	80.4	20
PBS-3	2488+68	371 LT	85.5	84.0	< 65.5	16	24	75.8	25
PBS-4	2492+37	276 LT	83.8	82.3	80.8[2]	2	3	79.3	20
PBS-5	2490+80	255 RT	82.9	81.4	78.9[2]	5	8	78.9	20
PBS-6	2487+62	422 RT	72.7	71.2	60.7[2]	34	40	60.7	25
PBS-7	2483+43	347 RT	75.7	74.2	63.7[2]	3	5	71.7	20
PBS-8	2485+27	683 RT	67.6	66.1	61.1[2]	4	6	61.1	20
PBS-9	2483+63	1018 RT	74.2	72.7	71.2[2]	2	3	71.2	20
PBS-10	2486+27	1439 RT	82.2	80.7	74.2[2]	2	3	74.2	20
PBS-11	2482+79	1413 RT	79.4	77.9	72.4[2]	4	6	72.4	20
PBS-12	2476+28	1509 RT	95.8	94.3	< 75.8	6	9	91.8	20
PBS-13	2479+85	1304 RT	85.4	83.9	82.9[2]	2	3	83.9	20
PBS-14	2478+22	870 RT	89.5	88.0	< 69.5	4	6	< 69.5	20
PBS-15	2479+53	517 RT	82.0	80.5	75.5[2]	1	2	75.5	20
PBS-16	2477+56	202 RT	83.5	82.0	< 63.5	7	11	< 63.5	25
PBS-17	2474+18	368 RT	88.8	87.3	83.8[2]	2	3	83.8	20
PBS-18	2470+53	190 RT	88.6	87.1	86.6[2]	1	2	87.1	20
PBS-19	2476+86	417 LT	80.9	79.4	79.4[2]	1	2	79.4	20
PBS-20	2479+41	579 LT	86.5	85.0	86.0[2]	3	5	85.0	20
PBS-22	2486+47	934 LT	85.5	80.5	< 65.5	24	36	72.5	25
PBS-24	2486+39	514 LT	85.2	80.2	73.2[2]	40	40	77.2	25
PBS-26	2463+36	171 RT	98.9	93.9	94.9[2]	8	13	93.9	25

TABLE 5
SUMMARY OF HYDRAULIC CONDUCTIVITY TEST RESULTS
I-75 (SR 93) at NW 49th Street PD&E Study from End of NW 49th Street to End of NW 35th Street
Marion County, Florida
FPN: 435209-1-22-01
Tierra Project No.: 5511-16-033

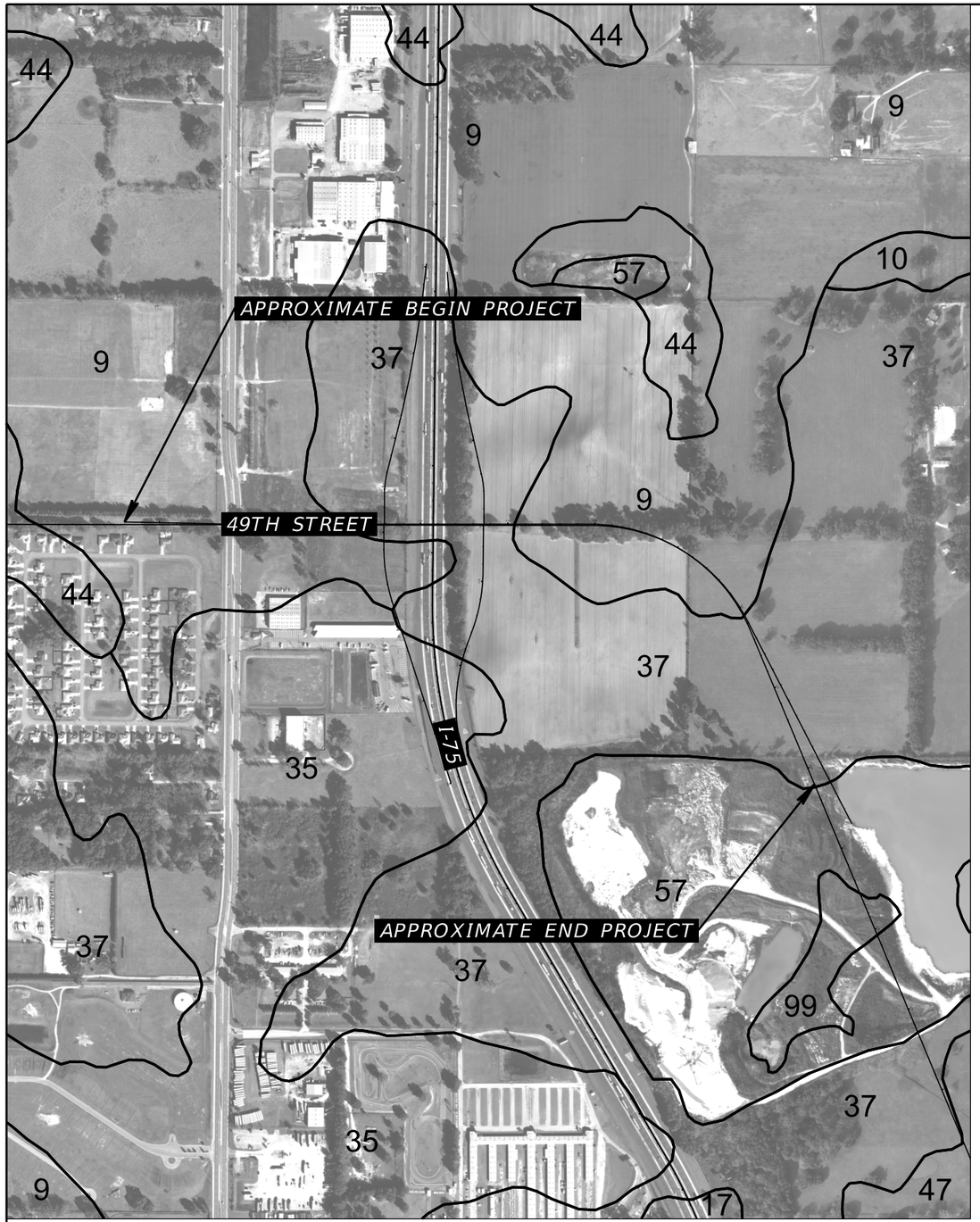
Boring Number	Boring/Test Location[1] Baseline Survey SR 93 (I-75)		Ground Surface Elevation[1] (feet, NAVD 88)	Test Elevation (feet, NAVD 88)	Estimated SHGW Elevation (feet, NAVD 88)	Vertical Hydraulic Conductivity[3] (feet/day)	Horizontal Hydraulic Conductivity[3] (feet/day)	Confining Layer Elevation (feet, NAVD 88)	Effective Porosity (%)
	Station	Offset							
PBS-28	2468+30	413 RT	97.1	95.6	89.1[2]	1	2	95.6	20
PBS-30	2471+64	643 RT	96.0	94.0	94.0[2]	12	18	94.0	25
PBS-32	2473+87	975 RT	95.9	92.9	93.9[2]	1	2	92.9	20
PBS-34	2487+13	955 RT	67.2	62.2	61.2	5	8	55.2	20
PBS-36	2490+95	524 RT	81.5	78.5	< 61.5	15	23	78.5	25
PBS-38	2493+66	594 RT	79.7	75.7	63.7[2]	5	8	73.7	20
PBS-40	2498+22	244 RT	70.8	65.8	62.8[2]	5	8	62.8	20

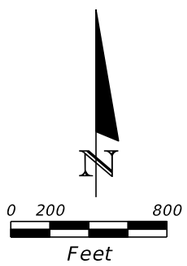
Notes:

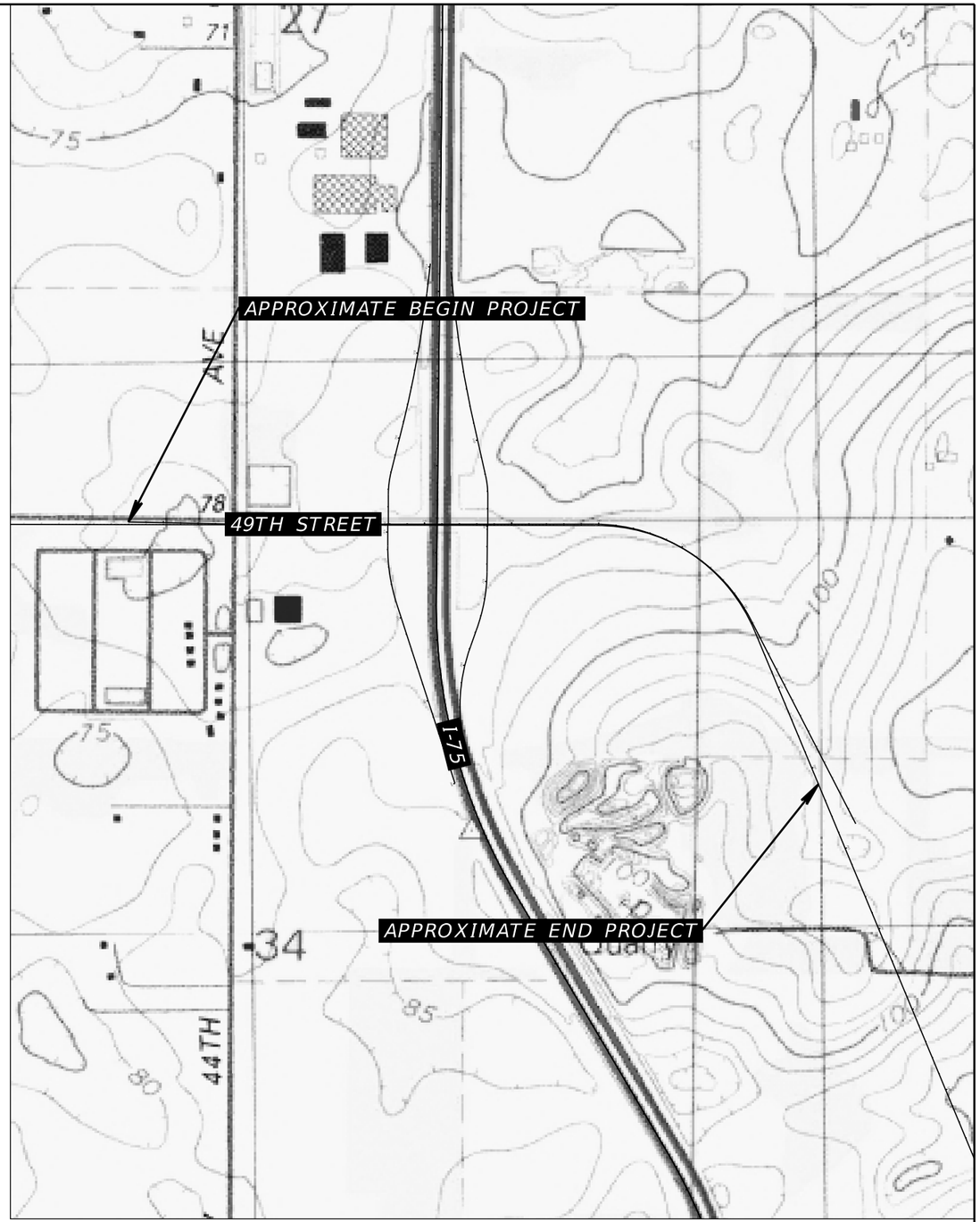
[1] Station, offset, and elevation of the test borings were determined using the design files provided by Metric, Inc. and GPS coordinates obtained by Tierra, Inc. at the time of fieldwork.

[2] Perched seasonal high groundwater table estimated based on soil stratigraphy.

[3] Measured hydraulic conductivity rates of soils encountered at the time of testing. No reduction or safety factors have been applied to the values. We recommend the pond designer apply the appropriate safety factors to these values.







REFERENCE: USDA SOIL SURVEY OF MARION COUNTY, FLORIDA

REFERENCE: USGS QUADRANGLE MAP OF "OCALA WEST, FLORIDA"

TOWNSHIP: 14 S
RANGE: 21E
SECTIONS: 27, 34 & 35

FIGURE 2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

USDA SOIL SURVEY & USGS QUADRANGLE MAPS

SHEET NO.

DATE OF SURVEY: APRIL 2018 TO MARCH 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: JEREMY A. SEWELL, P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: 5
ROAD NO.: 93
COUNTY: MARION

FINANCIAL PROJECT ID : 435209-1-22-01
PROJECT NAME: I-75 (SR 91) AT NW 49TH STREET PD&E STUDY

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS AND PONDS

SURVEY BEGINS STA. : 113+00 SURVEY ENDS STA. : 161+00 REFERENCE: CENTERLINE CONSTRUCTION OF 49TH STREET
SURVEY BEGINS STA. : 2453+00 SURVEY ENDS STA. : 2503+00 REFERENCE: BASELINE SURVEY OF SR 93 (I-75)

	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENT PASS (%)						ATTERBERG LIMITS					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	NO. OF TESTS	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
1	--	--	--	--	7	100	82-89	47-63	21-31	9-10	--	--	--	A-3	GRAY TO LIGHT GRAY AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT	5	15,000-39,000	15-45	<5-47	5.7-7.2
2	--	--	5	10-38	20	100	84-93	57-72	26-44	11-27	4	NP	NP	A-2-4	BROWN TO ORANGE BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS	3	9,900-25,000	15-45	12-114	5.8-6.2
3	--	--	5	14-37	6	100	86-97	61-92	43-88	28-44	5	24-49	12-27	A-2-6/A-2-7/ A-6/A-7-6	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS	--	--	--	--	--
4	--	--	12	19-50	12	100	92-99	81-98	66-96	51-91	10	53-101	23-70	A-7-5/A-7-6	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	LIMESTONE	--	--	--	--	--

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▽ - PERCHED SEASONAL HIGH GROUNDWATER TABLE

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

NP - NON-PLASTIC

NOTES:

1. THE MATERIAL FROM STRATUM 1 (A-3) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
2. THE MATERIAL FROM STRATUM 2 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.
3. THE MATERIAL FROM STRATUM 3 (A-2-6/A-2-7/A-6/A-7-6) IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
4. THE MATERIAL FROM STRATUM 4 (A-7-5/A-7-6) IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
5. THE MATERIAL FROM STRATUM NUMBER 5 IS A NATURAL LIMESTONE FORMATION. SPECIAL TOOLS AND EQUIPMENT WILL BE REQUIRED TO EXCAVATE AND/OR DEWATER THIS MATERIAL.
6. WEATHERED LIMESTONE/CAPROCK WAS ENCOUNTERED WITHIN THE BORINGS. THIS MATERIAL IS ROCK AND IS LOCATED AT SHALLOW DEPTHS. EXCAVATIONS INTO AND/OR THROUGH LIMESTONE/CAPROCK WILL BE DIFFICULT AND WILL REQUIRE NON CONVENTIONAL CONSTRUCTION TECHNIQUES AND SPECIALIZED EQUIPMENT. LIMESTONE/CAPROCK IS POROUS AND WILL BE DIFFICULT TO DEWATER.

FIGURE 3

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

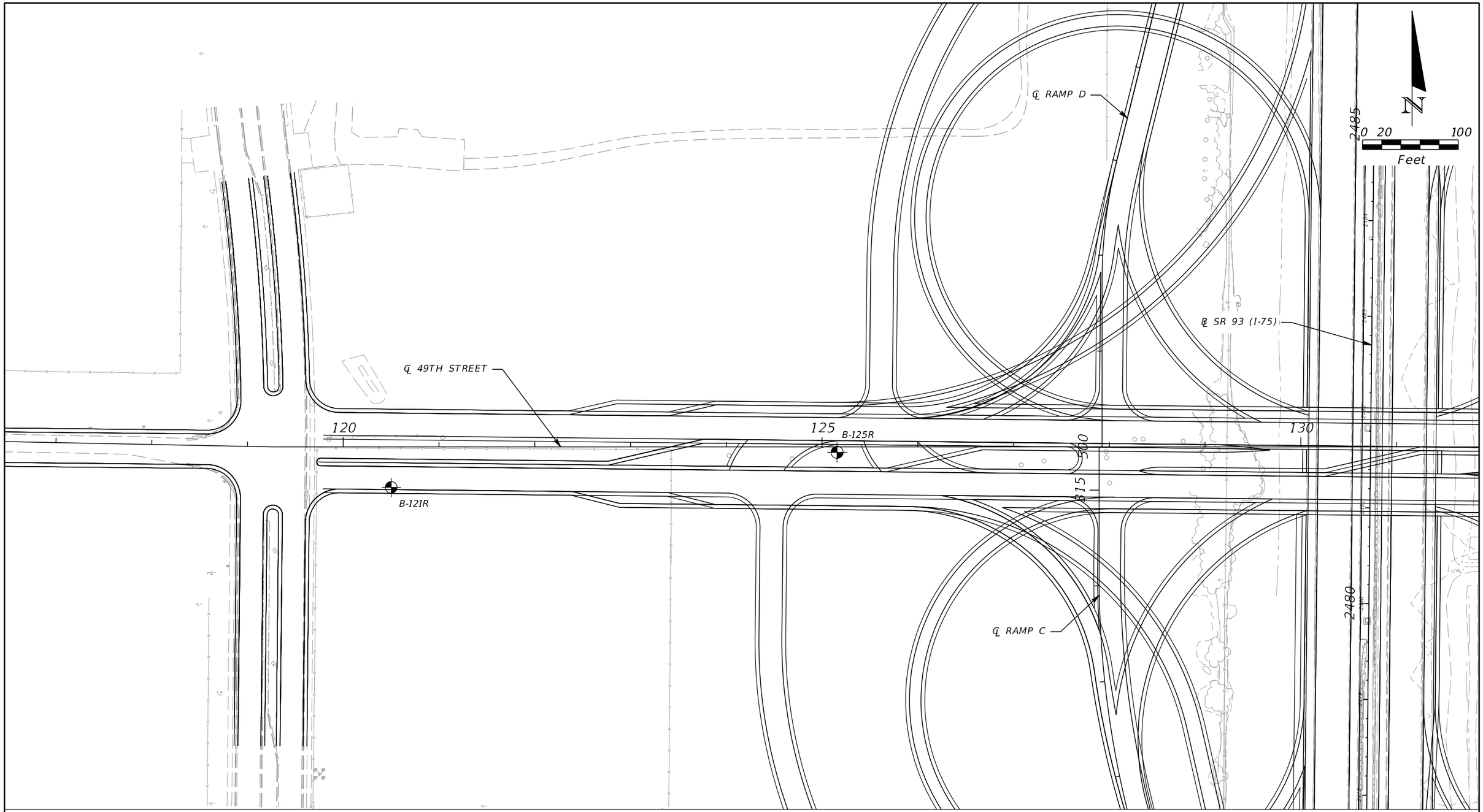
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

ROADWAY SOIL SURVEY

SHEET NO.



LEGEND

APPROXIMATE SPT BORING LOCATION

FIGURE 4

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

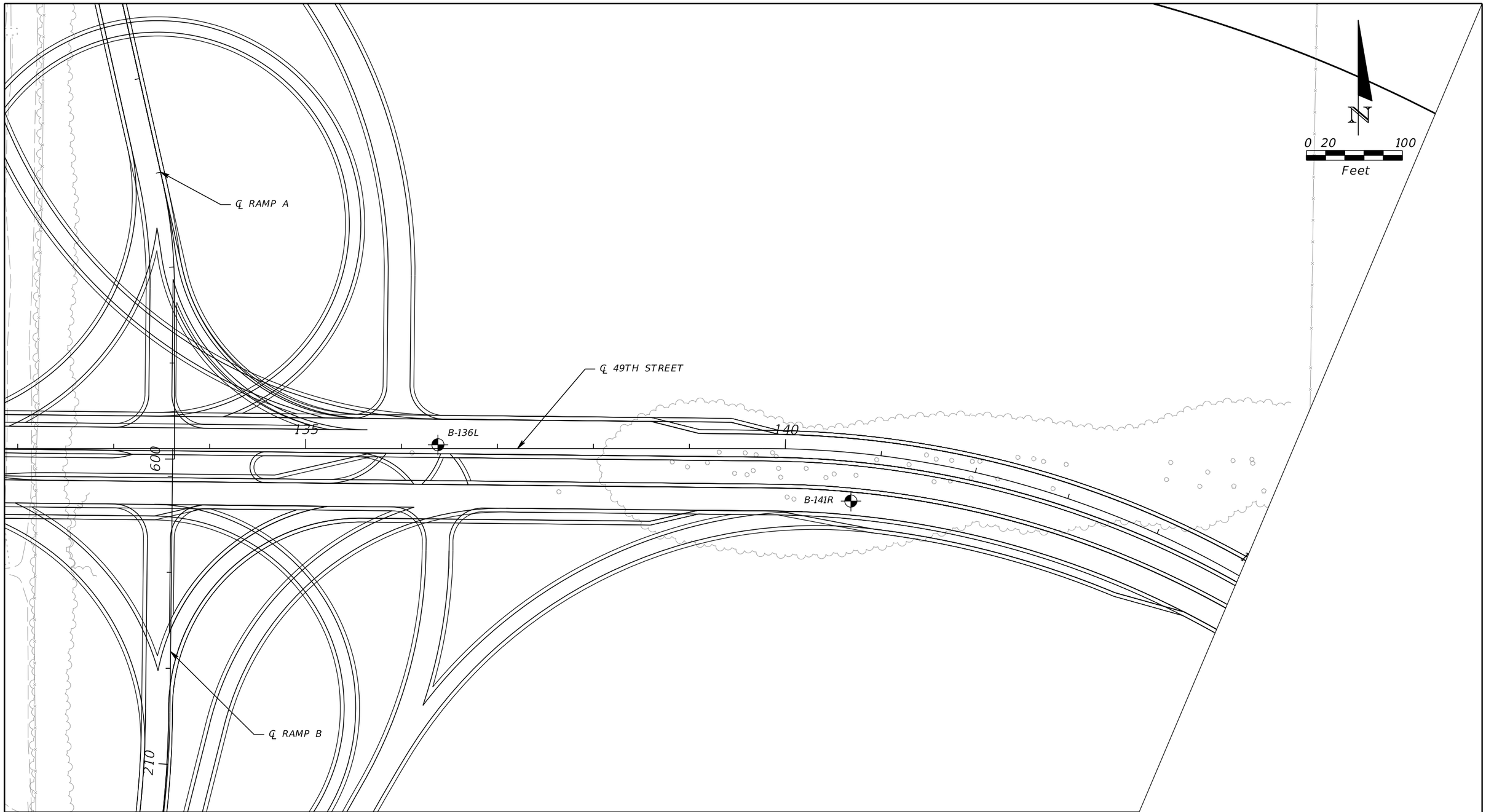
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

BORING LOCATION PLAN (1)

SHEET NO.

bsawaska 6/20/2018 12:03:19 PM L:\5511\2016\2016 Projects\5511-16-033 I75 at 49th PD&E\Microstation\rdgeo01.dgn



LEGEND

APPROXIMATE SPT BORING LOCATION

FIGURE 5

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

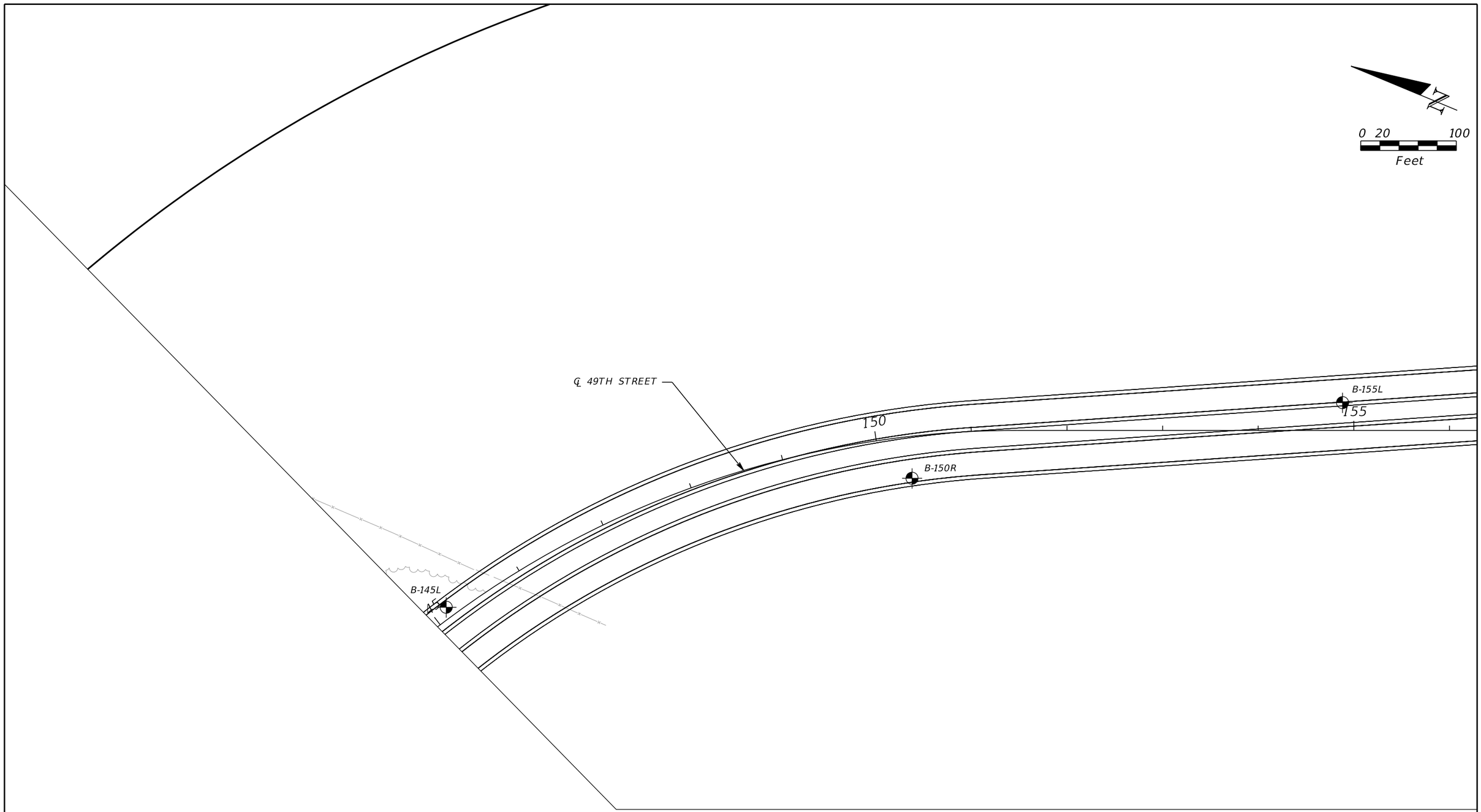
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

BORING LOCATION PLAN (2)

SHEET NO.

bsawaska 6/11/2018 2:44:33 PM L:\5511\2016\2016 Projects\5511-16-033 I75 at 49th PD&E\Microstation\rdgeo02.dgn



LEGEND

APPROXIMATE SPT BORING LOCATION

FIGURE 6

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

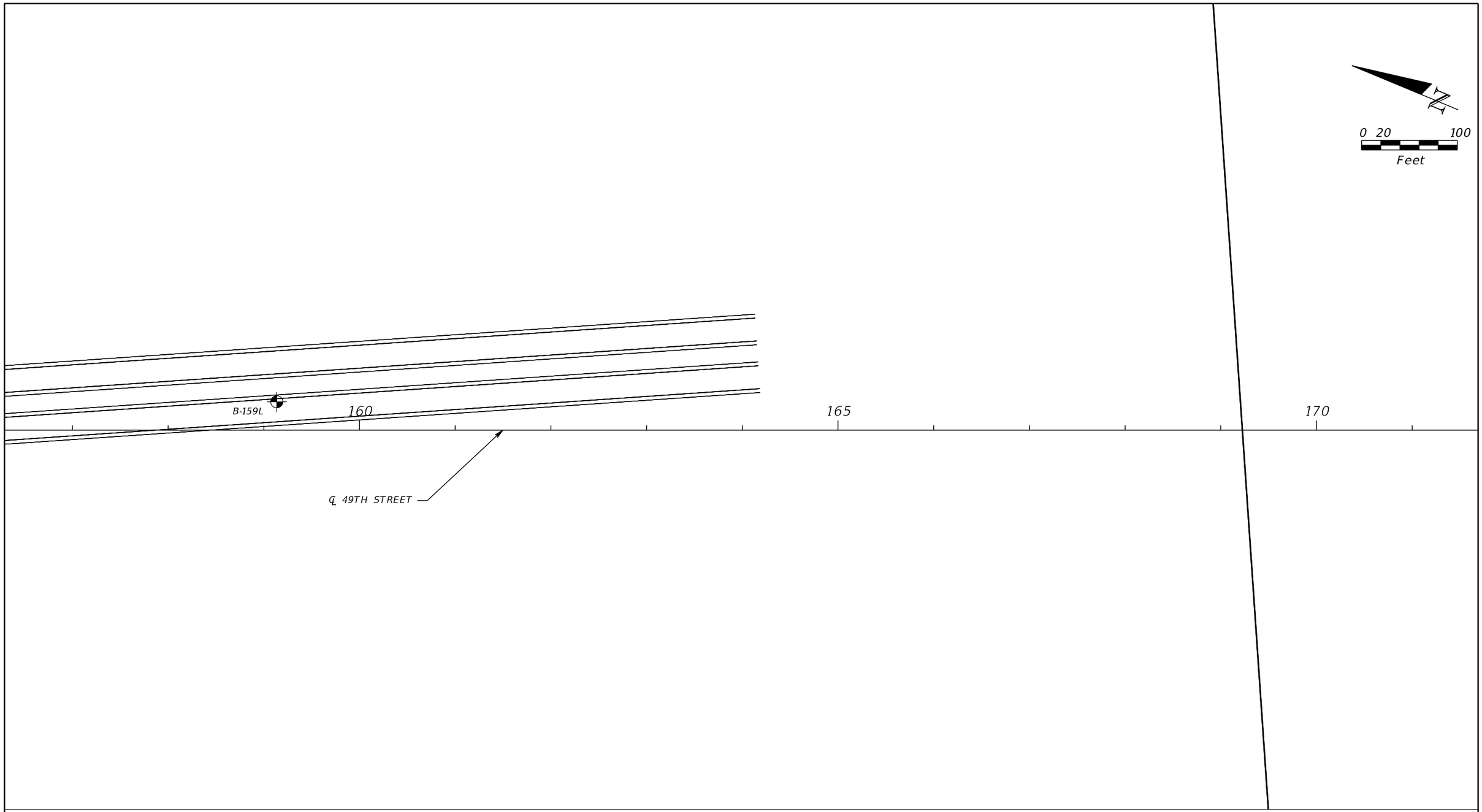
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

BORING LOCATION PLAN (3)

SHEET NO.

bsawaska 6/11/2018 2:44:34 PM L:\5511\2016\2016 Projects\5511-16-033 I75 at 49th PD&E\Microstation\rdgeo03.dgn



LEGEND

APPROXIMATE SPT BORING LOCATION

FIGURE 7

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

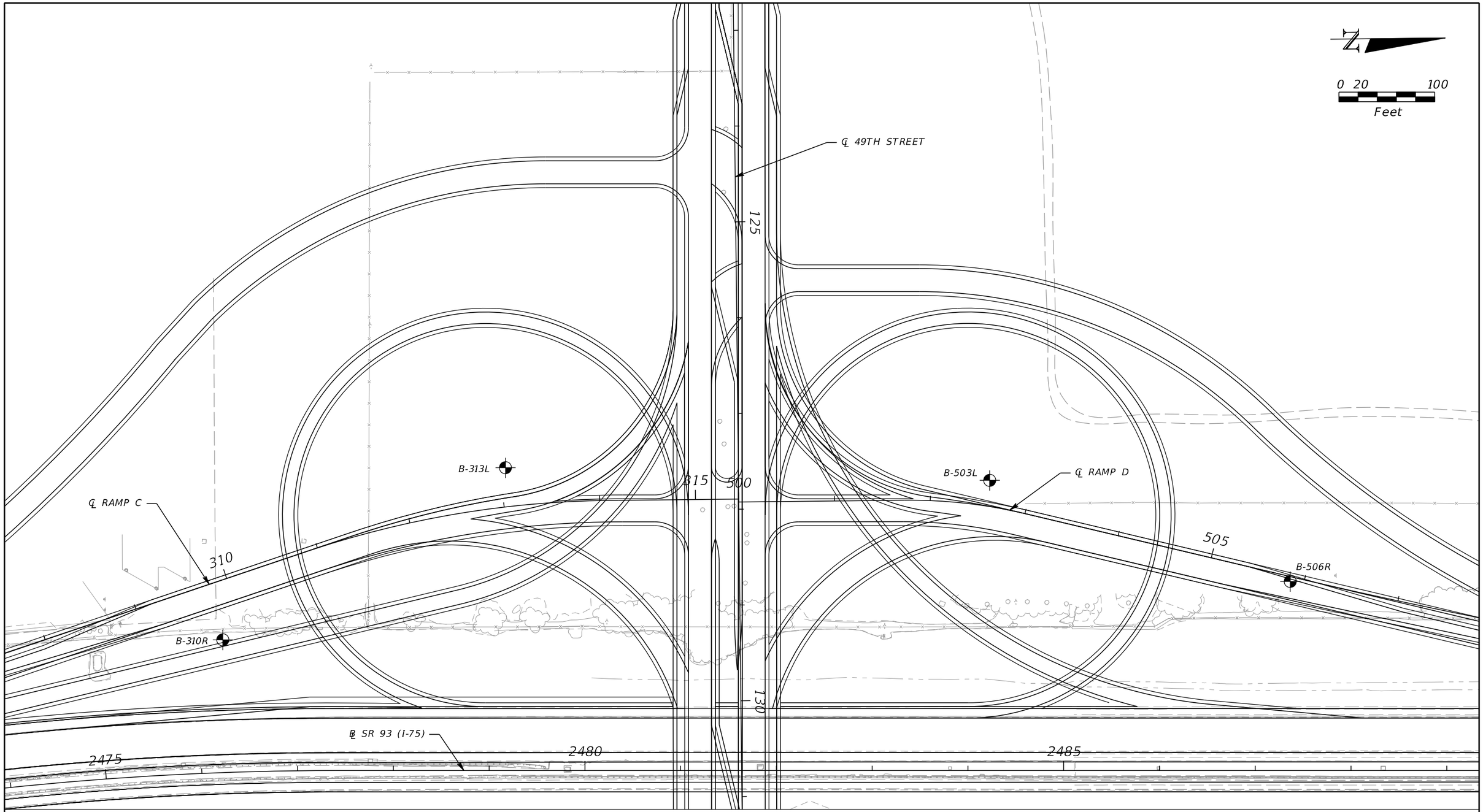
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

BORING LOCATION PLAN (4)

SHEET NO.



LEGEND

APPROXIMATE SPT BORING LOCATION

FIGURE 8

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

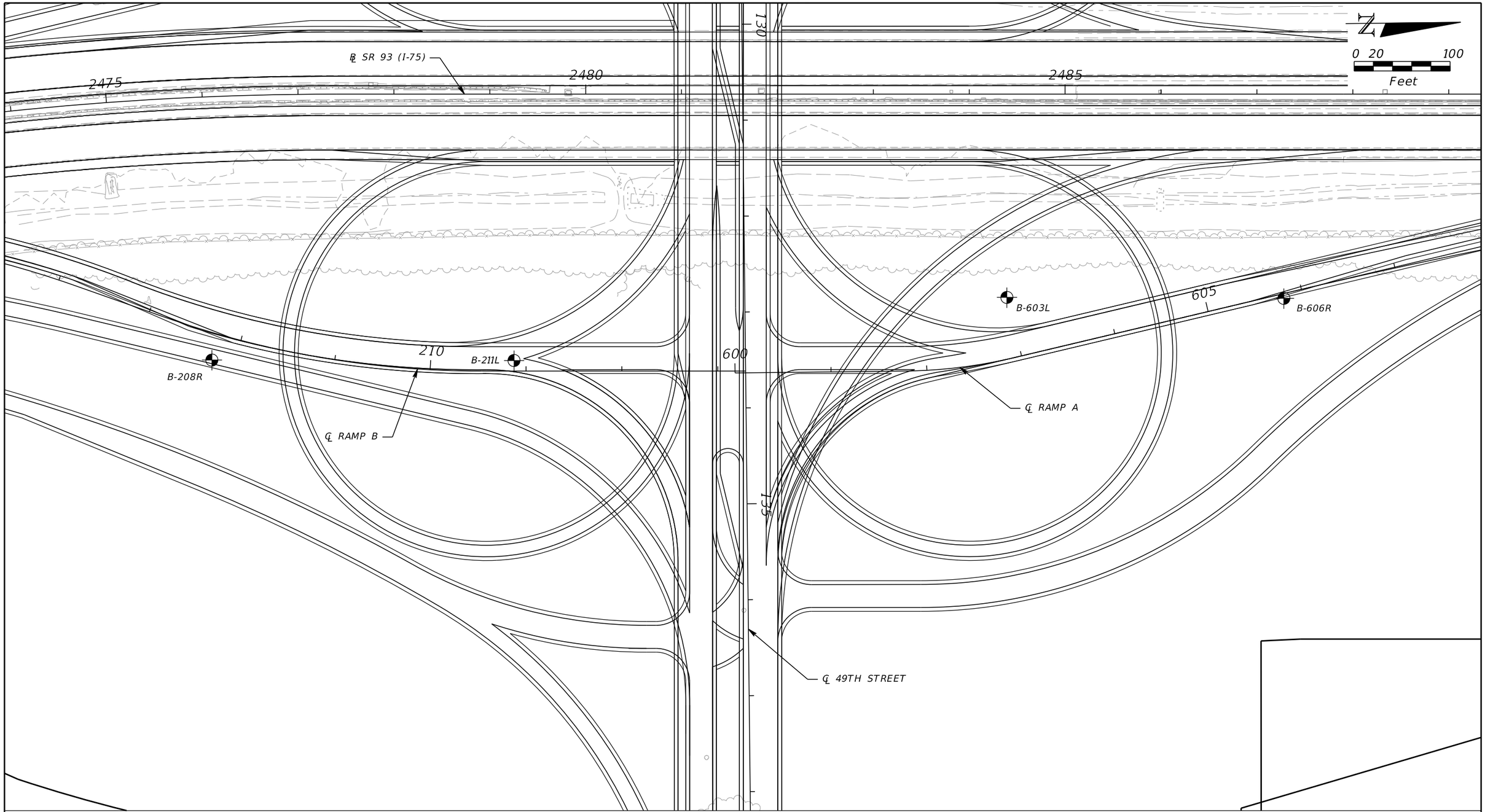
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

BORING LOCATION PLAN (5)

SHEET NO.



LEGEND

APPROXIMATE SPT BORING LOCATION

FIGURE 9

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

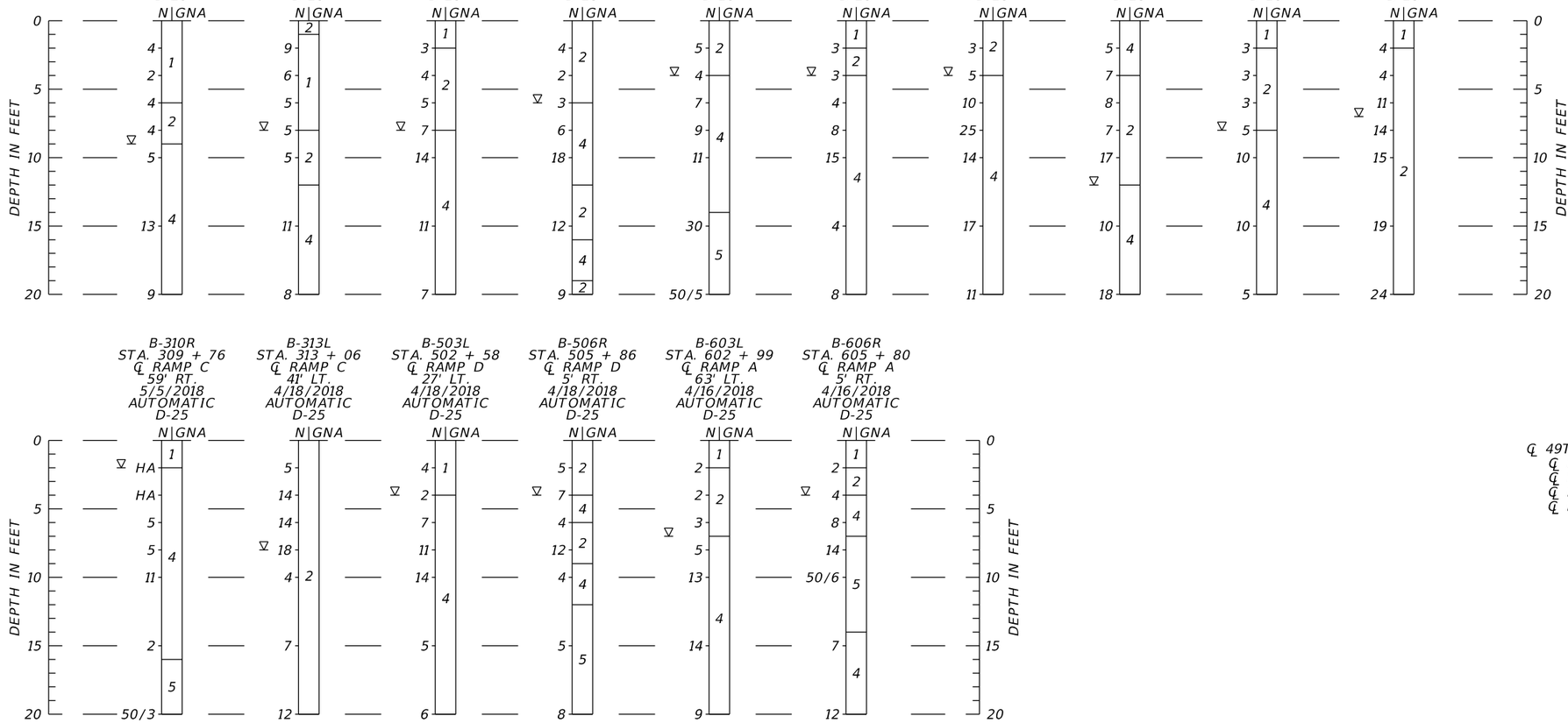
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

BORING LOCATION PLAN (6)

SHEET NO.

bsawaska 6/11/2018 2:44:38 PM L:\5511\2016\2016 Projects\5511-16-033 I75 at 49th PD&E\Microstation\rdgeo06.dgn



LEGEND

1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▽	PERCHED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.

℄ 49TH STREET	CENTERLINE CONSTRUCTION OF 49TH STREET
℄ RAMP A	CENTERLINE CONSTRUCTION OF RAMP A
℄ RAMP B	CENTERLINE CONSTRUCTION OF RAMP B
℄ RAMP C	CENTERLINE CONSTRUCTION OF RAMP C
℄ RAMP D	CENTERLINE CONSTRUCTION OF RAMP D

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 10

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

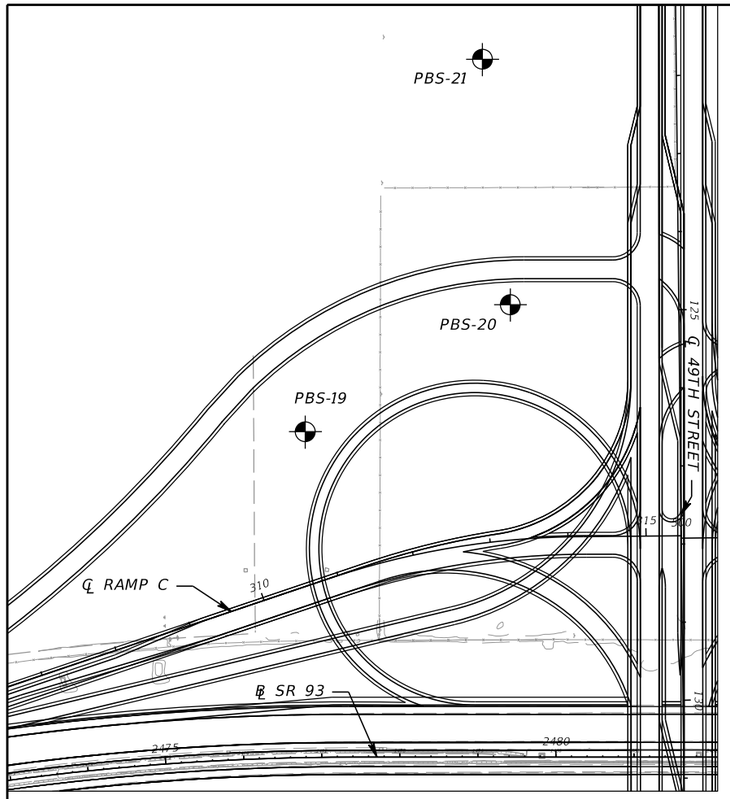
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

ROADWAY SOIL PROFILES

SHEET NO.



0 50 200

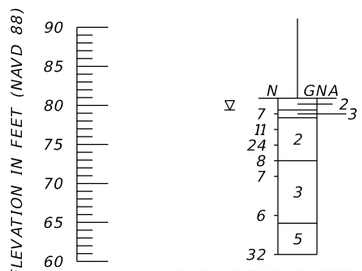
Feet

BORING LOCATION PLAN

LEGEND

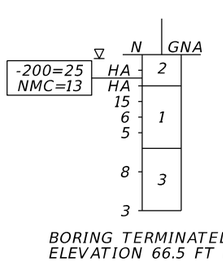
1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)

BOR # PBS-19
STA. 2476+86
REF. ℄ SR 93
OFF. 417 LT
ELEV. 80.9
DATE 8/24/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



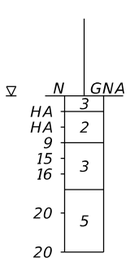
BORING TERMINATED AT ELEVATION 60.9 FT (NAVD 88)

BOR # PBS-20
STA. 2479+41
REF. ℄ SR 93
OFF. 579 LT
ELEV. 86.5
DATE 7/31/2018
DRILLER A.JACKSON
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 66.5 FT (NAVD 88)

BOR # PBS-21
STA. 2479+06
REF. ℄ SR 93
OFF. 894 LT
ELEV. 81.2
DATE 1/24/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 61.2 FT (NAVD 88)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 11

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

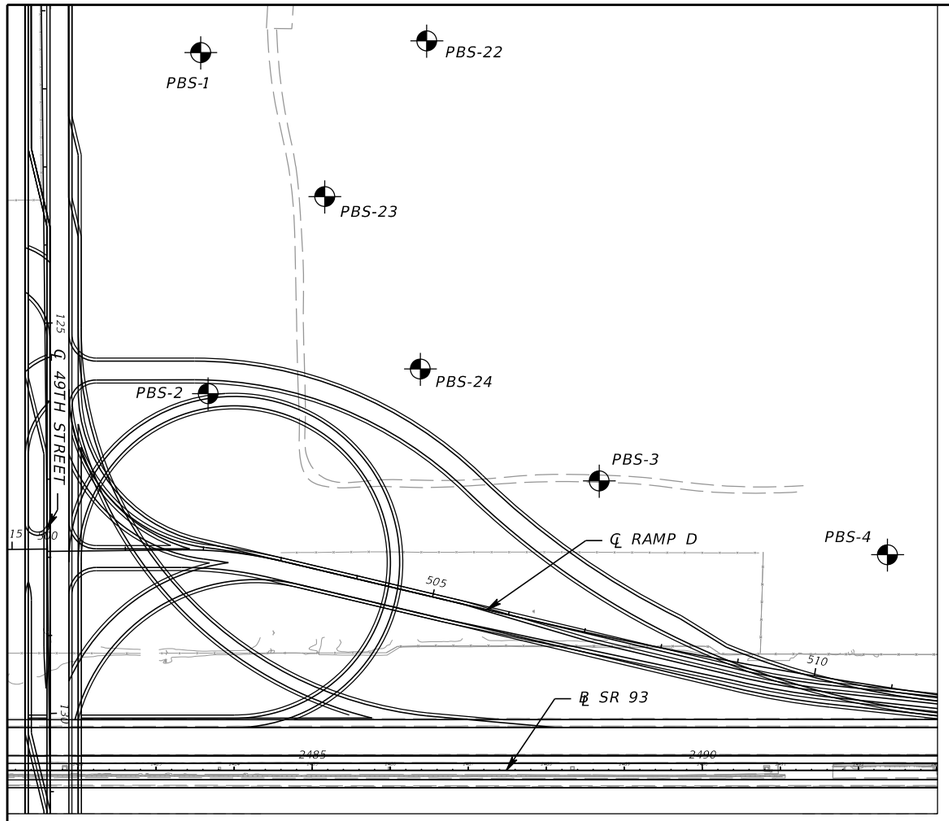
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

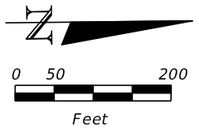
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (1)

SHEET NO.



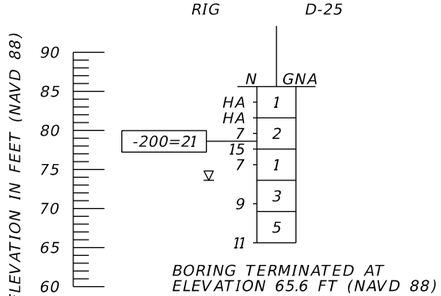


BORING LOCATION PLAN

LEGEND

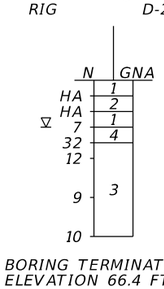
1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)

BOR # PBS-1
STA. 2483+57
REF. ℄ SR 93
OFF. 919 LT
ELEV. 85.6
DATE 7/31/2018
DRILLER A.JACKSON
HAMMER AUTOMATIC
RIG D-25



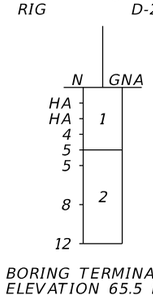
BORING TERMINATED AT ELEVATION 65.6 FT (NAVD 88)

BOR # PBS-2
STA. 2483+67
REF. ℄ SR 93
OFF. 482 LT
ELEV. 86.4
DATE 7/31/2018
DRILLER A.JACKSON
HAMMER AUTOMATIC
RIG D-25



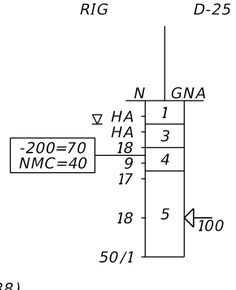
BORING TERMINATED AT ELEVATION 66.4 FT (NAVD 88)

BOR # PBS-3
STA. 2488+68
REF. ℄ SR 93
OFF. 371 LT
ELEV. 85.5
DATE 7/31/2018
DRILLER A.JACKSON
HAMMER AUTOMATIC
RIG D-25



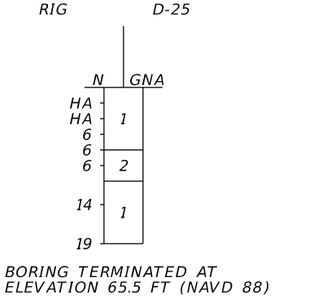
BORING TERMINATED AT ELEVATION 65.5 FT (NAVD 88)

BOR # PBS-4
STA. 2492+37
REF. ℄ SR 93
OFF. 276 LT
ELEV. 83.8
DATE 7/31/2018
DRILLER A.JACKSON
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 63.8 FT (NAVD 88)

BOR # PBS-22
STA. 2486+47
REF. ℄ SR 93
OFF. 934 LT
ELEV. 85.5
DATE 1/24/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 65.5 FT (NAVD 88)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 12

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

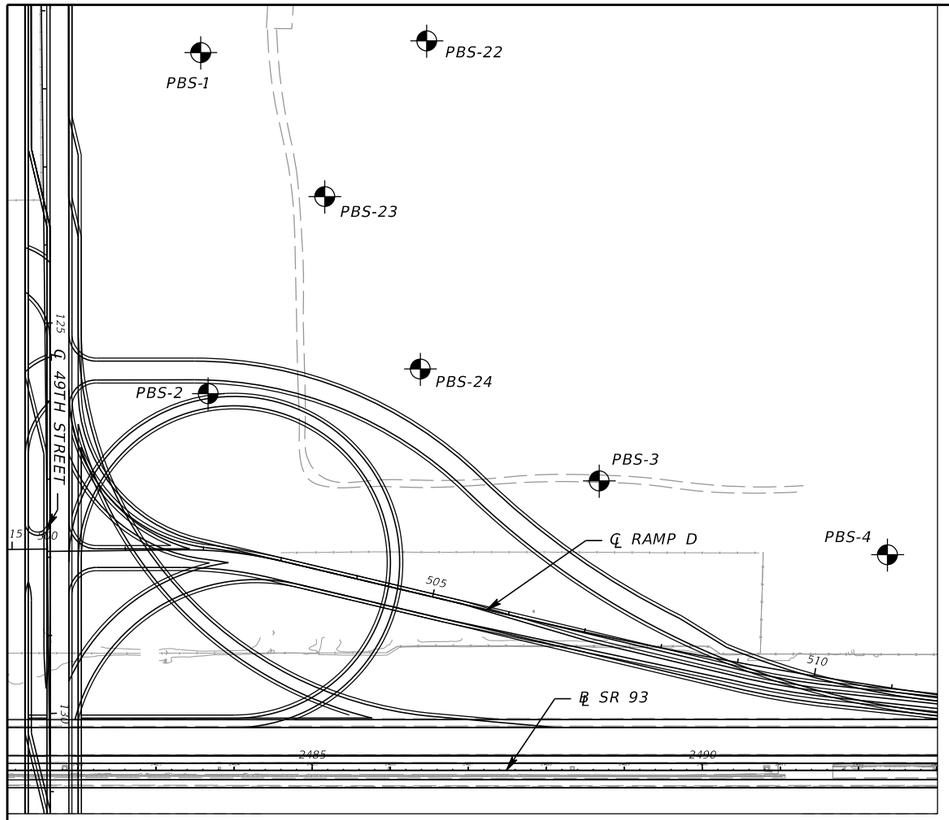
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

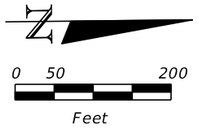
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (2)

SHEET NO.



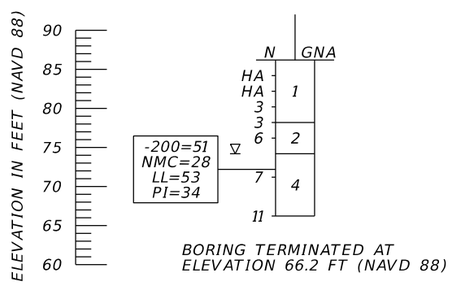
BORING LOCATION PLAN



LEGEND

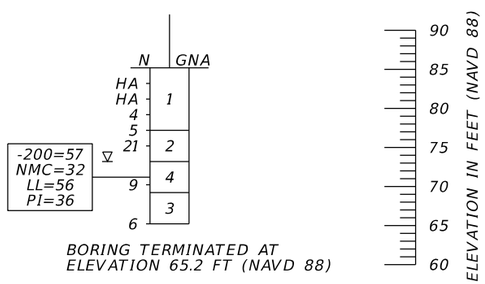
1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)

BOR # PBS-23
STA. 2485+16
REF. ℄ SR 93
OFF. 735 LT
ELEV. 86.2
DATE 1/24/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 66.2 FT (NAVD 88)

BOR # PBS-24
STA. 2486+39
REF. ℄ SR 93
OFF. 514 LT
ELEV. 85.2
DATE 1/24/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 65.2 FT (NAVD 88)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 13

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

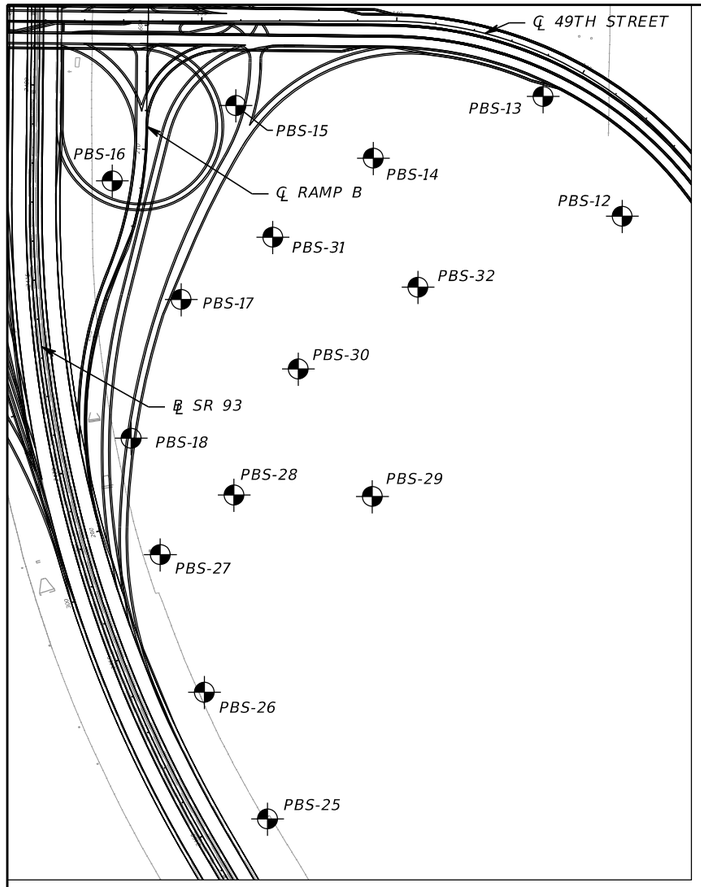
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

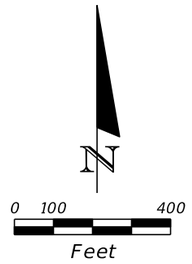
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (3)

SHEET NO.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



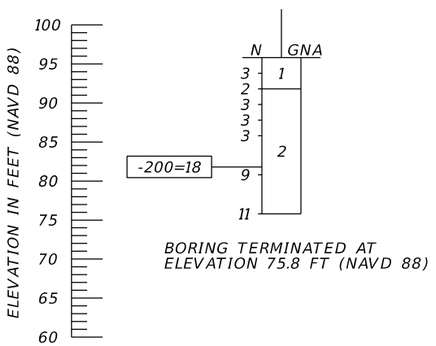


BORING LOCATION PLAN

LEGEND

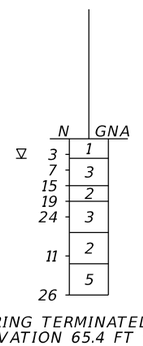
1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)

BOR # PBS-12
STA. 2476+28
REF. ℄ SR 93
OFF. 1509 RT
ELEV. 95.8
DATE 8/24/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



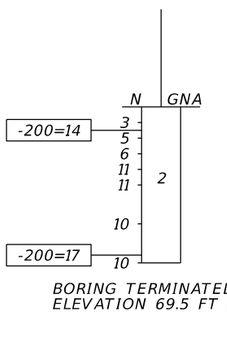
BORING TERMINATED AT ELEVATION 75.8 FT (NAVD 88)

BOR # PBS-13
STA. 2479+85
REF. ℄ SR 93
OFF. 1304 RT
ELEV. 85.4
DATE 8/22/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



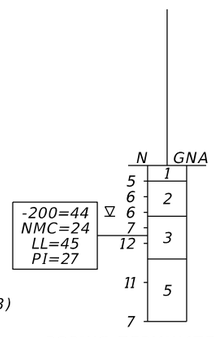
BORING TERMINATED AT ELEVATION 65.4 FT (NAVD 88)

BOR # PBS-14
STA. 2478+22
REF. ℄ SR 93
OFF. 870 RT
ELEV. 89.5
DATE 8/22/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



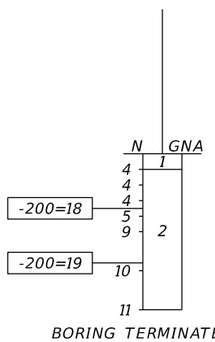
BORING TERMINATED AT ELEVATION 69.5 FT (NAVD 88)

BOR # PBS-15
STA. 2479+53
REF. ℄ SR 93
OFF. 517 RT
ELEV. 82.0
DATE 8/22/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25

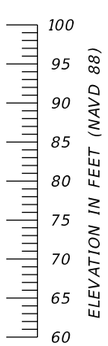


BORING TERMINATED AT ELEVATION 62.0 FT (NAVD 88)

BOR # PBS-16
STA. 2477+56
REF. ℄ SR 93
OFF. 202 RT
ELEV. 83.5
DATE 8/22/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 63.5 FT (NAVD 88)



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 14

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

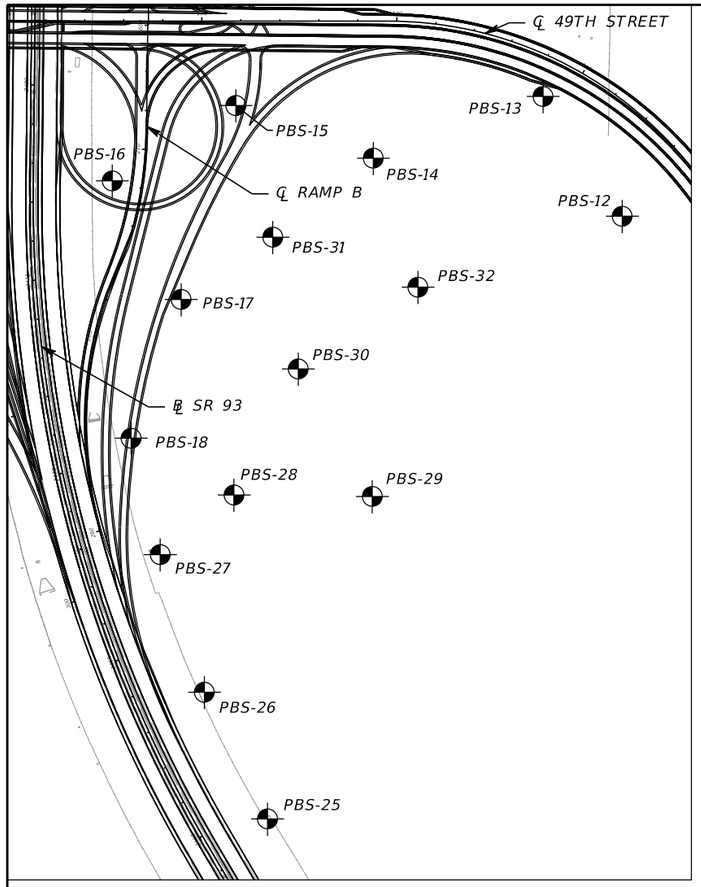
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

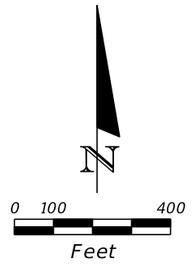
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (4)

SHEET NO.

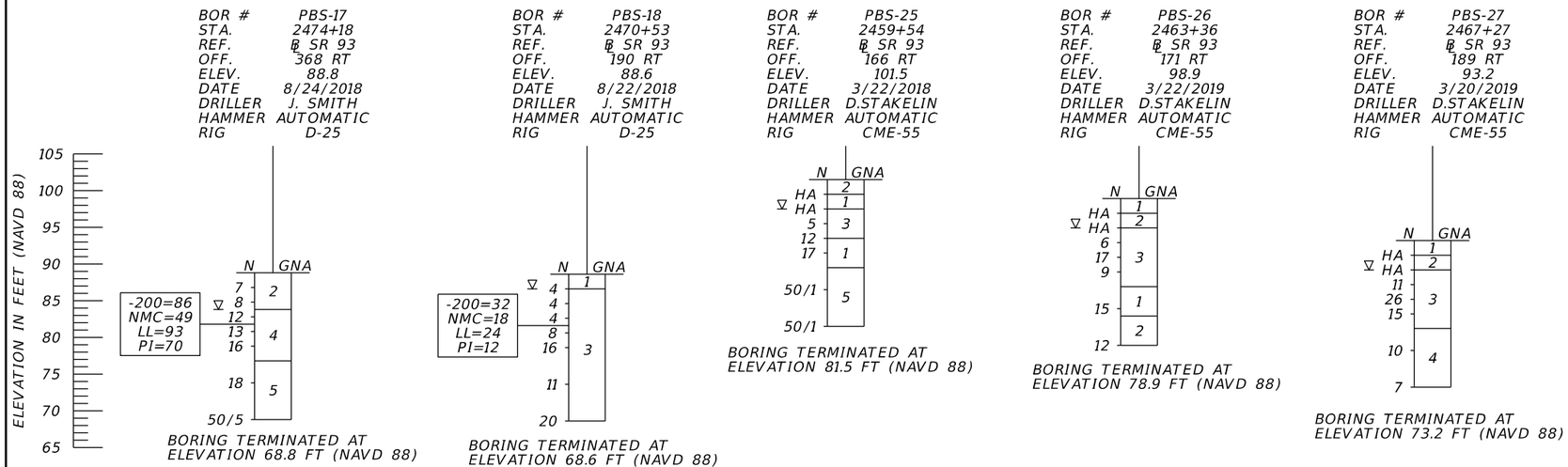




BORING LOCATION PLAN

LEGEND

1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 15

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

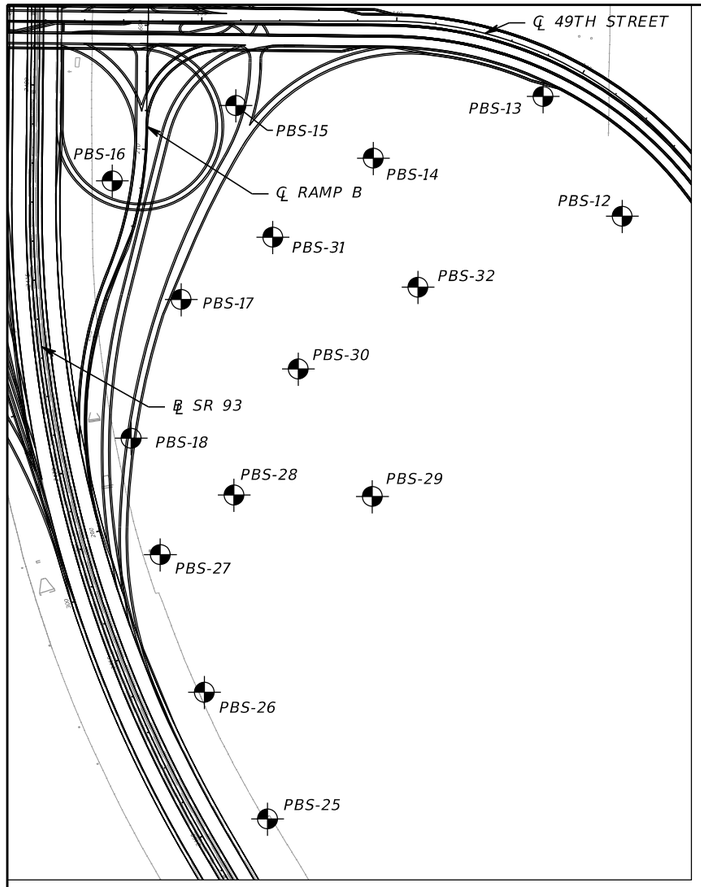
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

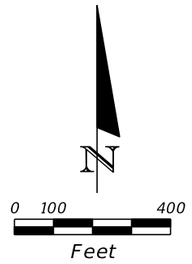
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (5)

SHEET NO.



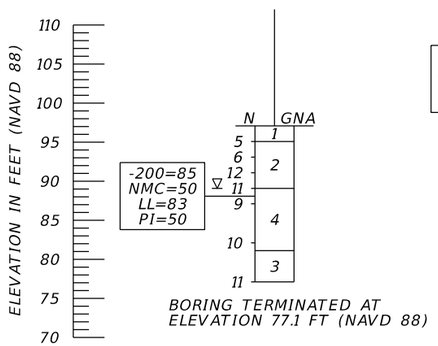


BORING LOCATION PLAN

LEGEND

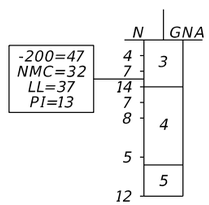
1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)

BOR # PBS-28
STA. 2468+30
REF. ℄ SR 93
OFF. 413 RT
ELEV. 97.1
DATE 1/23/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



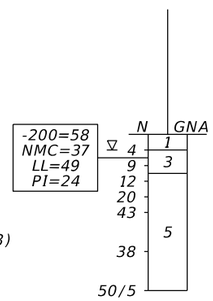
BORING TERMINATED AT ELEVATION 77.1 FT (NAVD 88)

BOR # PBS-29
STA. 2467+04
REF. ℄ SR 93
OFF. 752 RT
ELEV. 108.1
DATE 1/23/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



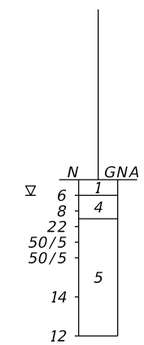
BORING TERMINATED AT ELEVATION 88.1 FT (NAVD 88)

BOR # PBS-30
STA. 2471+64
REF. ℄ SR 93
OFF. 643 RT
ELEV. 96.0
DATE 1/23/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



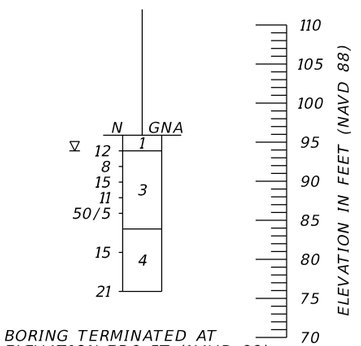
BORING TERMINATED AT ELEVATION 76.0 FT (NAVD 88)

BOR # PBS-31
STA. 2475+88
REF. ℄ SR 93
OFF. 612 RT
ELEV. 90.2
DATE 1/24/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 70.2 FT (NAVD 88)

BOR # PBS-32
STA. 2473+87
REF. ℄ SR 93
OFF. 975 RT
ELEV. 95.9
DATE 1/23/2019
DRILLER J.SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 75.9 FT (NAVD 88)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 16

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

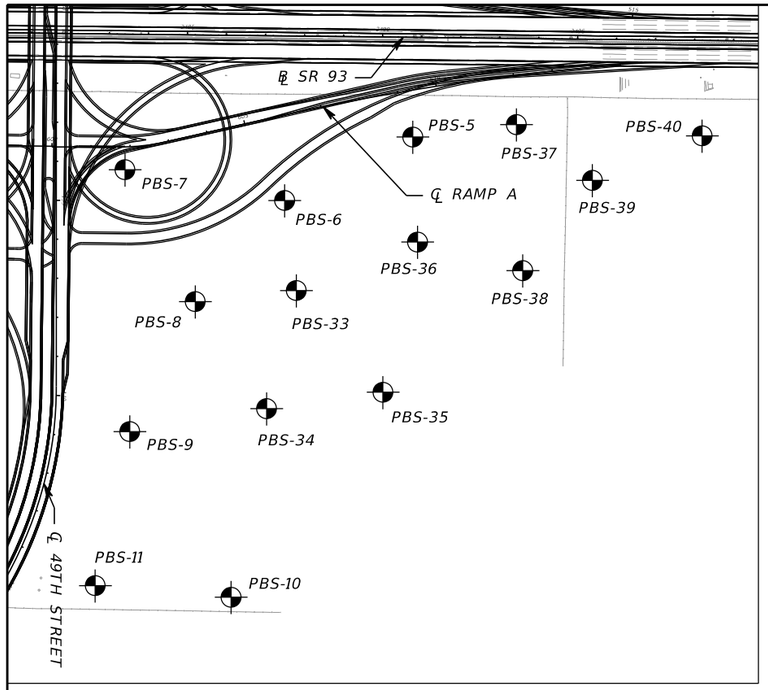
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

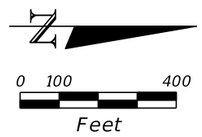
POND SOIL SURVEY (6)

SHEET NO.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

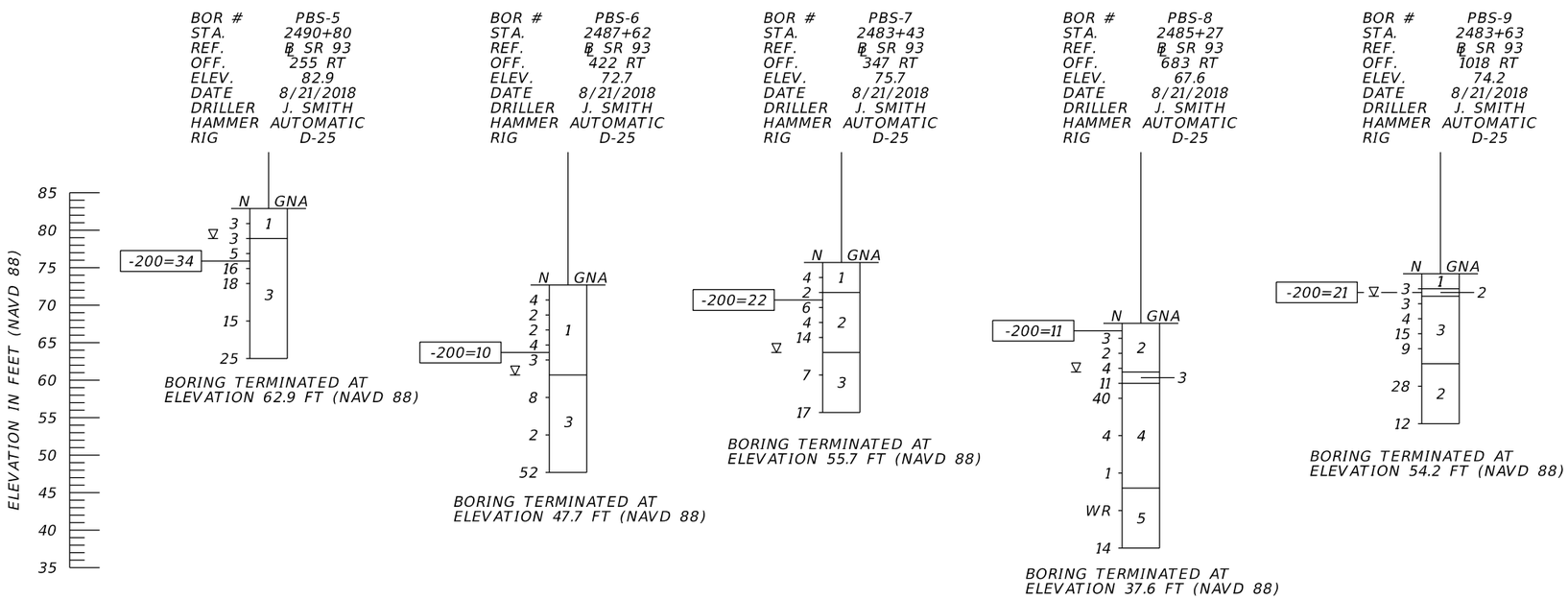


BORING LOCATION PLAN



LEGEND

1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 17

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

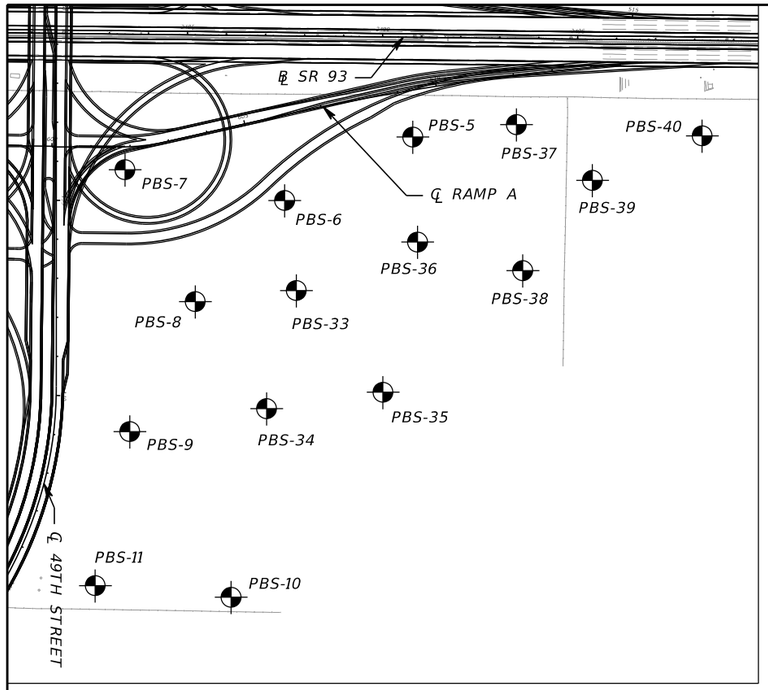
JEREMY A. SEWELL, P.E.
P.E. LICENSE NUMBER 62951
TIERRA, INC.
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

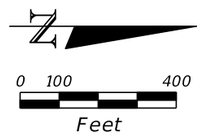
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (7)

SHEET NO.



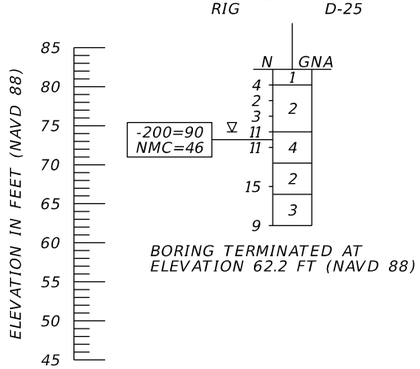
BORING LOCATION PLAN



LEGEND

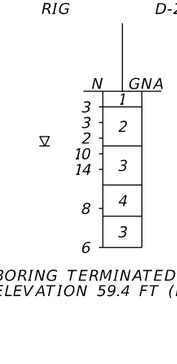
1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
2.	BROWN TO ORANGE-BROWN SILTY SAND TO SLIGHTLY CLAYEY SAND, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-4)
3.	GRAY TO GRAY-BROWN CLAYEY SAND TO SANDY CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-2-6/A-2-7/A-6/A-7-6)
4.	GRAY SANDY CLAY TO CLAY, OCCASIONALLY WITH LIMESTONE FRAGMENTS (A-7-5/A-7-6)
5.	LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)

BOR # PBS-10
STA. 2486+27
REF. ℄ SR 93
OFF. 1439 RT
ELEV. 82.2
DATE 8/22/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



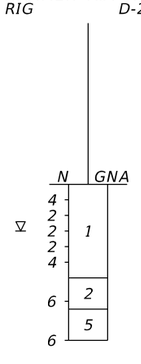
BORING TERMINATED AT ELEVATION 62.2 FT (NAVD 88)

BOR # PBS-11
STA. 2482+79
REF. ℄ SR 93
OFF. 1413 RT
ELEV. 79.4
DATE 8/22/2018
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



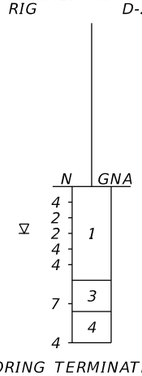
BORING TERMINATED AT ELEVATION 59.4 FT (NAVD 88)

BOR # PBS-33
STA. 2487+86
REF. ℄ SR 93
OFF. 652 RT
ELEV. 67.5
DATE 2/19/2019
DRILLER J.ERICKSON
HAMMER AUTOMATIC
RIG D-25



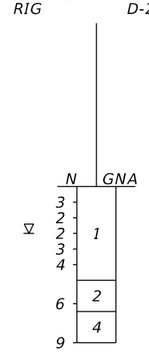
BORING TERMINATED AT ELEVATION 47.5 FT (NAVD 88)

BOR # PBS-34
STA. 2487+13
REF. ℄ SR 93
OFF. 955 RT
ELEV. 67.2
DATE 2/19/2019
DRILLER J.ERICKSON
HAMMER AUTOMATIC
RIG D-25

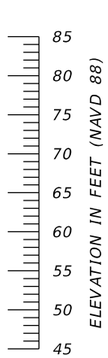


BORING TERMINATED AT ELEVATION 47.2 FT (NAVD 88)

BOR # PBS-35
STA. 2490+11
REF. ℄ SR 93
OFF. 910 RT
ELEV. 67.2
DATE 2/20/2019
DRILLER J.ERICKSON
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 47.2 FT (NAVD 88)



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 18

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JEREMY A. SEWELL, P.E.
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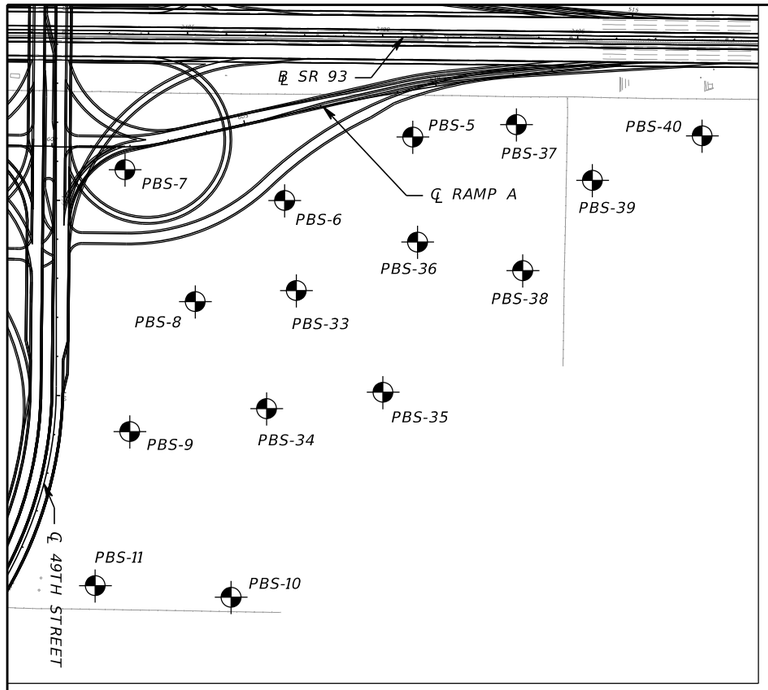
591 SUSAN B. BRITT COURT
WINTER GARDEN, FLORIDA 34787
CERTIFICATE OF AUTHORIZATION NO. 6486

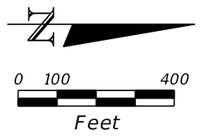
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (8)

SHEET NO.





BORING LOCATION PLAN

LEGEND

1.	GRAY TO LIGHT GRAY, AND BROWN TO LIGHT BROWN SAND TO SAND WITH SILT (A-3)
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-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
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PI	PLASTICITY INDEX (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
	APPROXIMATE SPT BORING LOCATION
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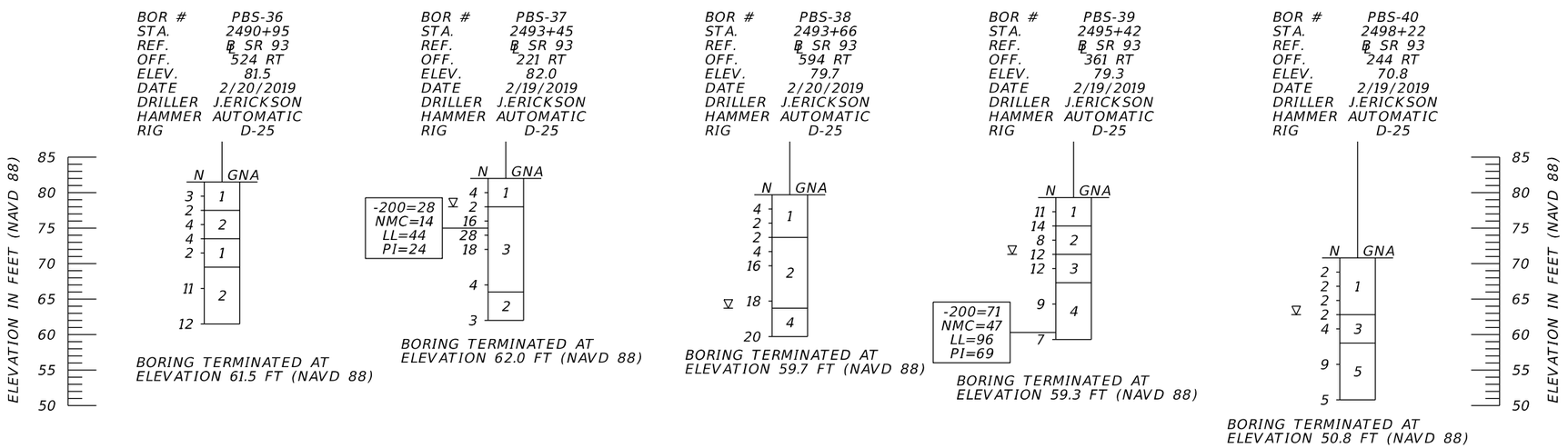
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
℄ SR 93	BASELINE SURVEY OF SR 93 (I-75)



	SAFETY HAMMER	AUTOMATIC HAMMER
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STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FIGURE 19

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MARION	435209-1-22-01

POND SOIL SURVEY (9)

SHEET NO.