Exhibit 12

June 25, 2021

HDR Inc.
2601 Cattlemen Road, Suite 400
Sarasota, FL 34232

Attn: Mr. Jason Starr

RE: Roadway Soil Survey Report
44th Avenue East – Phase II
From West of I-75 to Lakewood Ranch Blvd
Manatee County, Florida
Tierra Project No. 6511-14-222

Mr. Starr:

Tierra, Inc. (Tierra) has completed a preliminary Roadway Soil Survey Report for the above referenced project. This report is provided as part of documents needed for the current Roadway Plans submittal. The results of our field exploration program and subsequent geotechnical recommendations are presented in this report.

Tierra appreciates the opportunity to be of service to HDR Inc. (HDR) and Manatee County on this project. If you have any questions or comments regarding this report, please contact our office at your earliest convenience.

Sincerely,

TIERRA, INC.

Kevin H. Scott, P.E.
Senior Geotechnical Engineer
Florida License No. 65514

Daniel R. Ruel, P.E.
Geotechnical Engineer
Florida License No. 82404

Tierra, Inc.
7351 Temple Terrace Highway • Tampa, Florida 33637
Phone (813) 989-1354 • Fax (813) 989-1355
Florida Certificate No. 6486

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1.0 PROJECT INFORMATION

1.1 Project Authorization

Authorization to proceed with this project was issued by HDR in accordance with the Subconsultant Agreement.

1.2 Project Description

The project consists of extending 44th Avenue from west of I-75 to 44th Avenue East in Manatee County. This project has undergone multiple alignment studies and changes since its inception. Tierra issued geotechnical reports supporting the Phase I design from 44th Avenue Plaza East to West of I-75 dated August 14, 2019. This report is provided to support the current Phase II project submittal and will be updated as the project progresses.

1.3 General Site Conditions

The project area is undeveloped and the current alignment traverses lowlands and the existing South Lake.

2.0 PURPOSE AND SCOPE OF SERVICES

The geotechnical study was performed to obtain information on the existing subsurface conditions along the limits of the proposed roadway and drainage improvements to assist in developing the design plans for the proposed improvements. The following services were provided:

1. Reviewed soil information from the “Soil Survey of Manatee County, Florida” published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Reviewed topographic and potentiometric information obtained from the “Lorraine, Florida” Quadrangle Map and the “Potentiometric Surface of the Upper Floridan Aquifer, West-Central Florida” maps published by the USGS.

2. Conducted a visual reconnaissance of the project site and coordinated utility clearance via Sunshine State One Call.

3. Performed a geotechnical field study for the proposed improvements consisting of borings, subsurface sampling, and field testing.

4. Coordinated with the project surveyor to provide survey data (location and elevation) for selected borings performed along the project alignment.

5. Visually examined the recovered soil samples in the laboratory. Performed laboratory tests on selected representative samples to develop the soil legend for the project using the American Association of State Highway and Transportation Officials (AASHTO) soil classification system.

6. Prepared this Roadway Soil Survey Report for the project.

3.0 REVIEW OF PUBLISHED DATA

3.1 Regional Geology of Manatee County

Manatee County Geology was paraphrased from the Florida Geological Survey, Open-File Report 80, 2001 and other geologic references.

The near surface geologic deposits and formations from youngest to oldest in Manatee County include: Undifferentiated sediments (Qu, TQu), Shelly sediments (TQsu), the Hawthorn Group Peace River Formation (Thp), the Hawthorn Group Peace River Formation Bone Valley Member (Thpb), the Hawthorn Group Arcadia Formation (Tha), and the Hawthorn Group Arcadia Formation Tampa Member (That).

The Undifferentiated sediments and Beach and Ridge dunes are siliciclastics that are light gray, tan, brown to black, unconsolidated to poorly consolidated, clean to clayey silty, unfossiliferous, variably organic-bearing sands to blue green to olive green, poorly to moderately consolidated, sandy, silty clays. The Shelly sediments are variably calcareous and fossiliferous quartz sands to well indurated, sandy, fossiliferous limestones with clayey sands and sandy clays present.

The Peace River Formation is primarily found near the surface in northwestern Manatee County and is composed of interbedded sands, clays and carbonates. The sands are generally light gray to olive gray, poorly consolidated, clayey, variably dolomitic, very fine to medium grained and phosphatic. The clays are yellowish gray to olive gray, poorly to moderately consolidated sandy, silty, phosphatic and dolomitic. The carbonates are light gray to yellowish gray, poorly to well indurated, variably sandy and clayey, and phosphatic. The carbonates often include opaline chert. The Bone Valley Member is a clastic unit consisting of sand-sized and larger phosphate grains in a matrix of quartz sand, silt and clay. The lithology is highly variable ranging from sandy, silty, phosphatic clays and relatively pure clays to clayey, phosphatic sand to sandy, clayey phosphorites and is found within 50 feet of the surface in eastern Manatee County. The Peace River Formation is a semi-confining unit and forms an intermediate aquifer system in eastern Manatee County.

The Arcadia Formation is predominantly a carbonate unit with variable siliciclastic component. Arcadia Formation is composed of yellowish gray to light olive gray to light brown, micro to finely crystalline, variably sandy, clayey and phosphatic, fossiliferous limestones and dolostones. Thin beds of sand and clay are common. The sands are yellowish gray, very fine to medium grained, poorly to moderately indurated, clayey, dolomitic and phosphatic. The clays are yellowish gray to light olive gray, poorly to moderately indurated, sandy, silty, phosphatic and dolomitic.

The Tampa member of the Arcadia Formation is white to yellowish gray, fossiliferous and variably sandy and clayey mudstones, wackestone and packstone with minor to no phosphate grains. In Manatee County the Tampa member is found about 300 feet BLS and is approximately 100 to 150 feet thick and is part of the Floridan Aquifer System.

3.2 USGS Quadrangle Map

Based on a review of the "Lorraine, Florida" Quadrangle Map, as well as survey information provided by the project surveyor, it appears that the project site elevations are on the order of approximately +20 to +40 feet, National Geodetic Vertical Datum of 1929 (NGVD). A reproduction of the **USGS Quadrangle Map** is illustrated in **Appendix A**.

3.3 USDA Soil Survey

The USDA Soil Survey along the roadway alignment was reviewed for information regarding near surface soil and groundwater information. A reproduction of the **USDA Soil Survey Map** of the project area within Manatee County is illustrated in **Appendix A**. The Manatee County Soil Survey identifies five (5) soil-mapping units within the project footprint. The general descriptions of the mapping units encountered are summarized in **Appendix B**.

3.4 Review of Potentiometric Surface Information

Based on a review of the "Potentiometric surface elevation of the upper Floridan Aquifer, West-Central Florida" maps published by the USGS, the potentiometric surface elevation of the upper Floridan Aquifer along the project alignment is on the order of approximately +20 feet, NGVD.

As indicated in **Section 3.2**, the project site elevations range from approximately +20 to +40 feet, NGVD. Artesian flow conditions were not encountered during the field exploration. However, the Contractor's tools and construction methods should be prepared to handle a potentiometric surface condition of up to +20 feet, NGVD, at no additional cost to the County.

4.0 SUBSURFACE EXPLORATION

4.1 Boring Location Plan and Utility Clearance

Prior to commencing our subsurface explorations, a boring location plan for the proposed improvements was developed based on project information provided by HDR, our engineering judgment, and guidelines provided in the "Soils and Foundations Handbook" published by the FDOT. The borings were located and staked in the field using hand-held Garmin eTrex™ Global Positioning System (GPS) equipment with a reported accuracy of ±10 feet. Generally, the borings were performed at the proposed boring locations. When not possible due to access or utility constraints, the boring locations were offset and the GPS coordinates of the relocated positions were recorded on the field boring logs.

The locations of selected borings where the SHGWT depths were estimated were survey located by the project surveyor. The project surveyor provided State Plane coordinates and elevations. The State Plane coordinates were then converted by Tierra to station and offset using project Microstation files provided by HDR. The remaining boring locations and elevations were determined using the project Microstation design files provided by HDR in conjunction with the GPS coordinates obtained by Tierra in the field. The boring locations for the project are presented in **Appendix A**.

Utility clearances were coordinated by Tierra and updated as required prior to performing the soil borings in order to reduce the potential for damage to the underground utilities during the boring process.

4.2 Roadway Borings

To evaluate the subsurface conditions along the project alignment, Tierra performed one hundred eight (108) auger borings and forty-one (41) SPT borings. The results of the auger and SPT borings performed are provided in **Appendix A**.

The hand auger borings were performed by manually twisting and advancing a bucket auger into the ground, typically in 6-inch increments. 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 SPT borings were performed in general accordance with ASTM D-1586. In some SPT borings, the initial 4 to 6 feet were manually augered to verify utility clearance. SPT resistance N-values were then recorded continuously to a depth of 10 feet and on intervals of 5 feet thereafter. In SPT borings performed within South Lake, the SPT borings began at the mudline. 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.

5.0 LABORATORY TESTING

5.1 General

Representative soil samples collected from the borings were classified and stratified in general accordance with the AASHTO soil classification system. Our classifications were based on visual observations using the results from the laboratory testing as confirmation. These tests included fines content (percentage passing No. 200 mesh sieve), grain size analyses, Atterberg Limits, and natural moisture content determination. In addition, Environmental Corrosion tests were performed to evaluate the corrosive nature of the soil encountered along the project alignment.

5.2 Test Designation

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

- Fines Content Analyses - The fines content tests were conducted in general accordance with the AASHTO test designation T-088 (ASTM test designation D-1140).

- 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 laboratory moisture content tests were performed in general accordance with the AASHTO test designation T-265 (ASTM test designation D-2216).

- Environmental Corrosion – Environmental corrosion tests were conducted in 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 is presented on the **Roadway Soil Survey** sheet in **Appendix A**. This sheet includes ranges of laboratory test results for different stratum soil samples collected from borings included in this report.

6.0 RESULTS OF SUBSURFACE EXPLORATION

6.1 General Soil Condition

The soil types encountered during exploration have been assigned a stratum number. The stratum numbers and soil types associated with this project are listed in the following table.

Stratum Number	Typical Soil Description	AASHTO Classification
1	Gray to Brown Sand to Sand With Silt	A-3
2	Gray Silty Sand	A-2-4
3	Light Brown to Gray Clayey Sand	A-2-4/A-2-6
4	Pale Brown to Gray Clayey Sand to Sandy Clay	A-6/A-7-5/A-7-6
5	Light Brown to Green Clay	A-7-5/A-7-6

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 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.

The results of the borings performed for this project along with the boring location plans are presented in **Appendix A**.

6.2 Groundwater

The groundwater table, when encountered, was measured at the boring locations during our field explorations. The depths to the encountered groundwater table are depicted adjacent to the soil profiles in **Appendix A**. In some of the borings performed, the groundwater table was not encountered prior to the boring termination depth. As a result, GNE (Groundwater Not Encountered) is shown adjacent to these soil profiles. In addition, the groundwater table was not apparent prior to the introduction of drilling fluids (a depth of 10 feet) within some of the SPT borings performed; therefore, GNA (Groundwater Not Apparent) is indicated on the soil profiles of these 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 (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

Seasonal high groundwater table levels were estimated at selected boring locations along the proposed roadway extension and within the proposed stormwater improvement areas. Estimated SHGWT levels for the project are presented on the **Roadway Soil Profiles** sheets and **Pond Soil Survey** sheets in **Appendix A.** Additionally, the results are summarized in the **Summary of Seasonal High Groundwater Table Estimates** tables in **Appendix B**.

The SHGWT levels were estimated based on a review of the soil samples, measured groundwater levels in the borings, the Manatee County Florida USDA Soil Survey information, and the surrounding topography.

7.0 ENGINEERING EVALUATIONS AND RECOMMENDATIONS

7.1 General

In general, the existing shallow subsurface soils encountered in the borings performed are suitable for supporting the proposed roadway construction after proper subgrade preparation. If buried organic soils, debris or unsuitable fills are encountered during construction, they should be removed and replaced with clean, compacted, sandy (SELECT) soils in accordance with the FDOT Specifications.

Similarly, plastic soils encountered within the embankment section should be removed and placed in areas not affecting pavement performance. The removal of top-soils and other surficial organic soils should be accomplished in accordance with the FDOT Specifications. Site preparation should consist of normal clearing and grubbing followed by compaction of subgrade soils. Backfill should consist of materials conforming to FDOT Standard Plans Index 120-001 and compacted in accordance with Section 120 of the FDOT Standard Specifications.

7.2 Embankment Settlement

Cross-sections depicting the proposed roadway geometry are still being evaluated at the time of this report. Settlement analyses will be performed, if necessary, for representative critical embankment heights.

7.3 Slope Stability

Cross-sections depicting the proposed roadway geometry are still being evaluated at the time of this report. Once cross-sections become available, slope stability analyses will be performed for representative critical slopes.

7.4 Cut and Fill Slopes

It is recommended that all proposed embankment side slopes above the groundwater table be constructed on 2H:1V or flatter. Cuts or slopes below the groundwater table, or that maybe proposed for pond berm slopes, should be constructed at 3H:1V or flatter. If cuts extend within Strata 3, 4 or 5 groundwater and/or surface water may “perch” above these confining strata. Water will flow along the top of these strata through the more permeable overburden sands (Strata 1 and 2). It is imperative that the drains, swales, ditches, etc. have constant downward slope (positive draining) and positive outfall.

Within South Lake, Tierra has recommended placing fill soils at a 6H:1V slopes below the highest water levels. Above the high water levels, Tierra has recommended a 2H:1V slope. Tierra will continue to coordinate with HDR and update this geotechnical report with regards to the proposed embankment slope design.

7.5 Excavations and Temporary Side Slopes

Excavations and temporary side slopes should comply with the Occupational Safety and Health Administration’s (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, all subsequent revisions or updates of OSHA’s referenced standard adopted by the Department of Labor and Employment Security and Florida’s Trench Safety Act, Section 553.62, Florida Statutes.

We are providing this information solely as a service to our client. Tierra does not assume responsibility for construction site safety or the Contractor’s or other party’s compliance with local, state, and federal safety or other regulations.

7.6 Groundwater Control

Depending upon groundwater levels at the time of construction, some form of dewatering may be required to achieve the required compaction. The Contractor should determine the groundwater table level at the time of the construction and determine the proper means and methods to control groundwater for the construction.

Due to groundwater levels during the wet season of the year, seepage may enter the bottom and sides of excavated areas. Such seepage will act to loosen soils and create difficult working conditions. Groundwater levels should be determined immediately prior to construction. Shallow groundwater should be kept below the lowest working area to facilitate proper material placement and compaction in accordance with FDOT Specifications.

7.7 General Roadway Construction

The overall site preparation and mechanical densification work for the construction of the proposed roadway should be in accordance with County and/or FDOT Standards and Specifications as described in the Governing Design Standards in the contract documents.

7.8 Drainage Design

The drainage improvements for the project include two (2) stormwater ponds and one (1) mitigation area. Tierra has included a **Summary of Seasonal High Groundwater Table Estimates** in **Appendix B**. The drainage engineer should utilize the SHGWT estimates and the depths of Strata 3, 4, and 5 as the confining layer as depicted on the **Pond Soil Survey** sheets in **Appendix A**.

8.0 REPORT LIMITATIONS

Our services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. Our geotechnical engineering evaluation of the site and subsurface conditions with respect to the planned improvements, and our recommendations for site preparation and foundation construction are based upon the following: (1) site observations, (2) the field exploratory test data obtained during the geotechnical study, and (3) our understanding of the project information and anticipated grades as presented in this report. This company is not responsible for the conclusions, opinions or recommendations made by others based on these data.

The scope of the exploration was intended to evaluate soil conditions within the influence of the proposed improvements. The analyses and recommendations submitted in this report are based upon the anticipated location and type of construction and data obtained from the soil borings performed at the locations indicated and does not reflect any variations which may occur among these borings. If any variations become evident during the course of construction, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered.

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, and groundwater, 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 HDR and Manatee County.

APPENDIX A

USDA/USGS Maps

Roadway Soil Survey

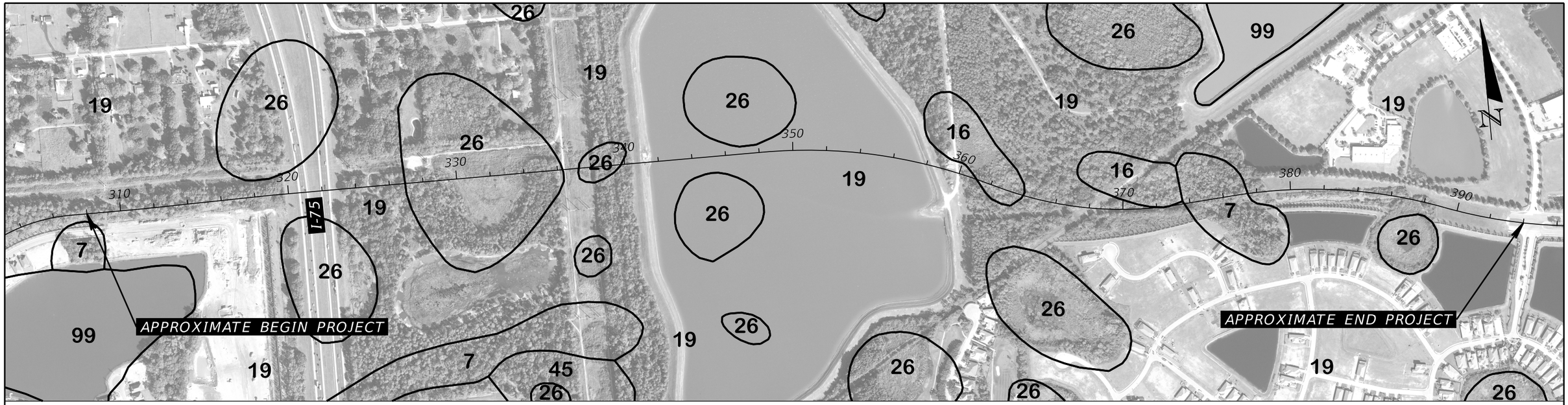
Roadway Boring Location Plan

Roadway Soil Profiles

South Lake and Stock Pile – Boring Location Plan

South Lake and Stock Pile – Soil Profiles

Pond Soil Survey



REFERENCE: USDA SOIL SURVEY OF MANATEE COUNTY, FLORIDA

0 150 600
Feet

REFERENCE: USGS QUADRANGLE MAP OF "LORRAINE, FLORIDA"

0 300 1200
Feet

TOWNSHIP:	35S 35S
RANGE:	19E 18E
SECTION:	7 11, 12

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

USDA SOIL SURVEY & USGS QUADRANGLE MAP

SHEET NO.:

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DATE OF SURVEY: JUNE 2017-JUNE 2021
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: DANIEL R. RUEL, P.E.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

ROAD NO.: 44TH AVENUE
COUNTY: MANATEE

MANATEE COUNTY PROJECT NO. 6045662
PROJECT NAME: 44TH AVENUE EAST PHASE II FROM I-75 TO LAKEWOOD RANCH BOULEVARD

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA. : 260+00.00 SURVEY ENDS STA. : 418+98.86 REFERENCE: CENTERLINE CONSTRUCTION OF 44TH AVENUE EAST

	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	--	--	--	--	37	100	85-98	59-80	17-45	3-8	--	--	--	A-3	GRAY TO BROWN SAND TO SAND WITH SILT	19	4,600-43,000	15-145	<5-75	4.1-7.0
2	--	--	2	24-25	10	90-100	59-92	32-74	22-41	12-23	2	NP	NP	A-2-4	GRAY SILTY SAND	1	3,800	30	42	7.5
3	--	--	5	13-29	5	64-100	57-100	46-97	28-49	15-30	5	20-29	2-7	A-2-4/A-2-6	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND	--	--	--	--	--
4	--	--	4	6-51	5	100	99	95-96	83-87	37-66	4	25-49	8-27	A-4/A-6/ A-7-5/A-7-6	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY	--	--	--	--	--
5	--	--	4	27-67	4	100	99	96	77	65-96	4	53-77	34-55	A-7-5/A-7-6	GRAY TO GREEN CLAY	--	--	--	--	--

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 STRATA 3 AND 4 (A-2-4/A-2-6/A-6/A-7-5/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 5 IS HIGH PLASTIC (A-7-5/A-7-6) MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

∇^{+} - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE GRADE
∇ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
$\blacktriangledown^{+}$ - GROUNDWATER LEVEL ENCOUNTERED ABOVE GRADE DURING FIELD EXPLORATIONS
$\blacktriangledown$ - GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
GNE - GROUNDWATER NOT ENCOUNTERED
GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID
NP - NON-PLASTIC

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

ROADWAY SOIL SURVEY

SHEET NO.: GR-1

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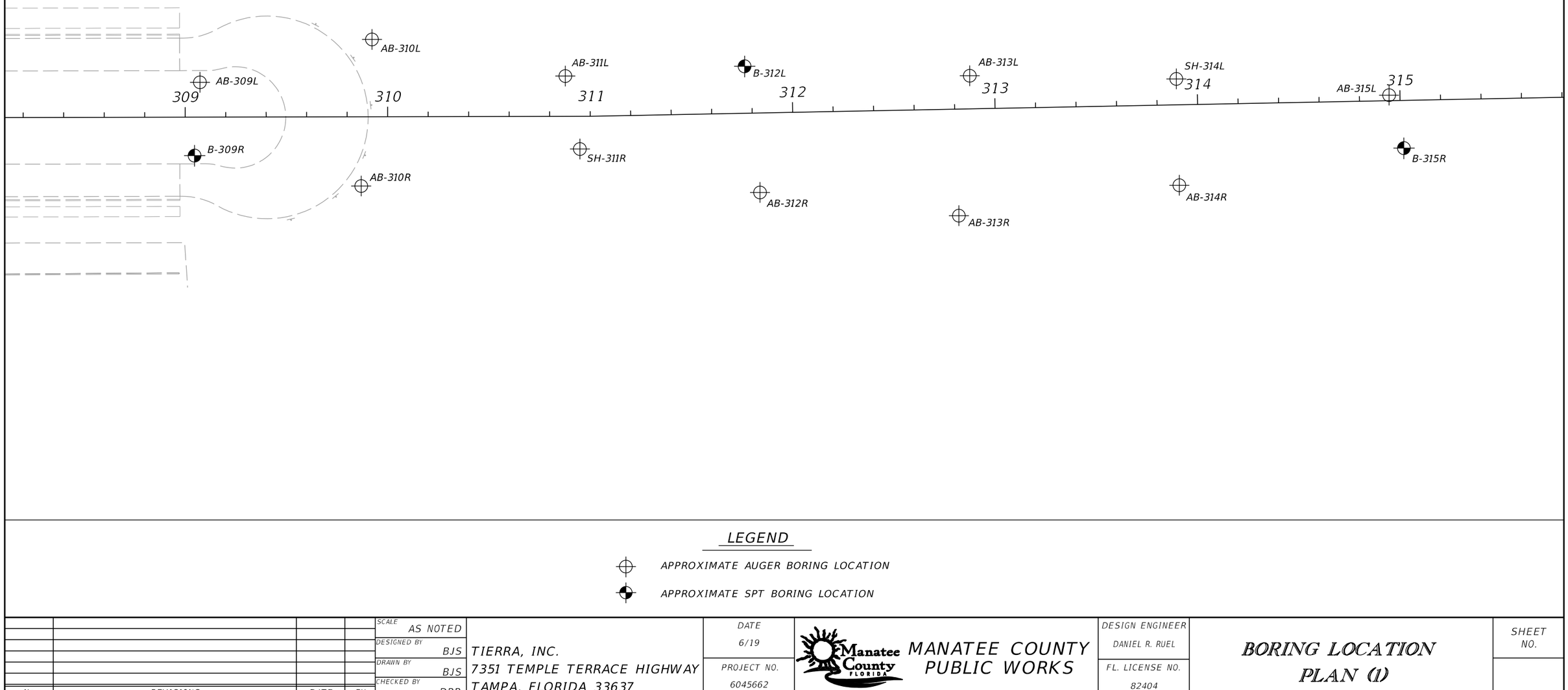

LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BJS
DRAWN BY: BJS
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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19
PROJECT NO.: 6045662

Manatee County FLORIDA

MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (1)

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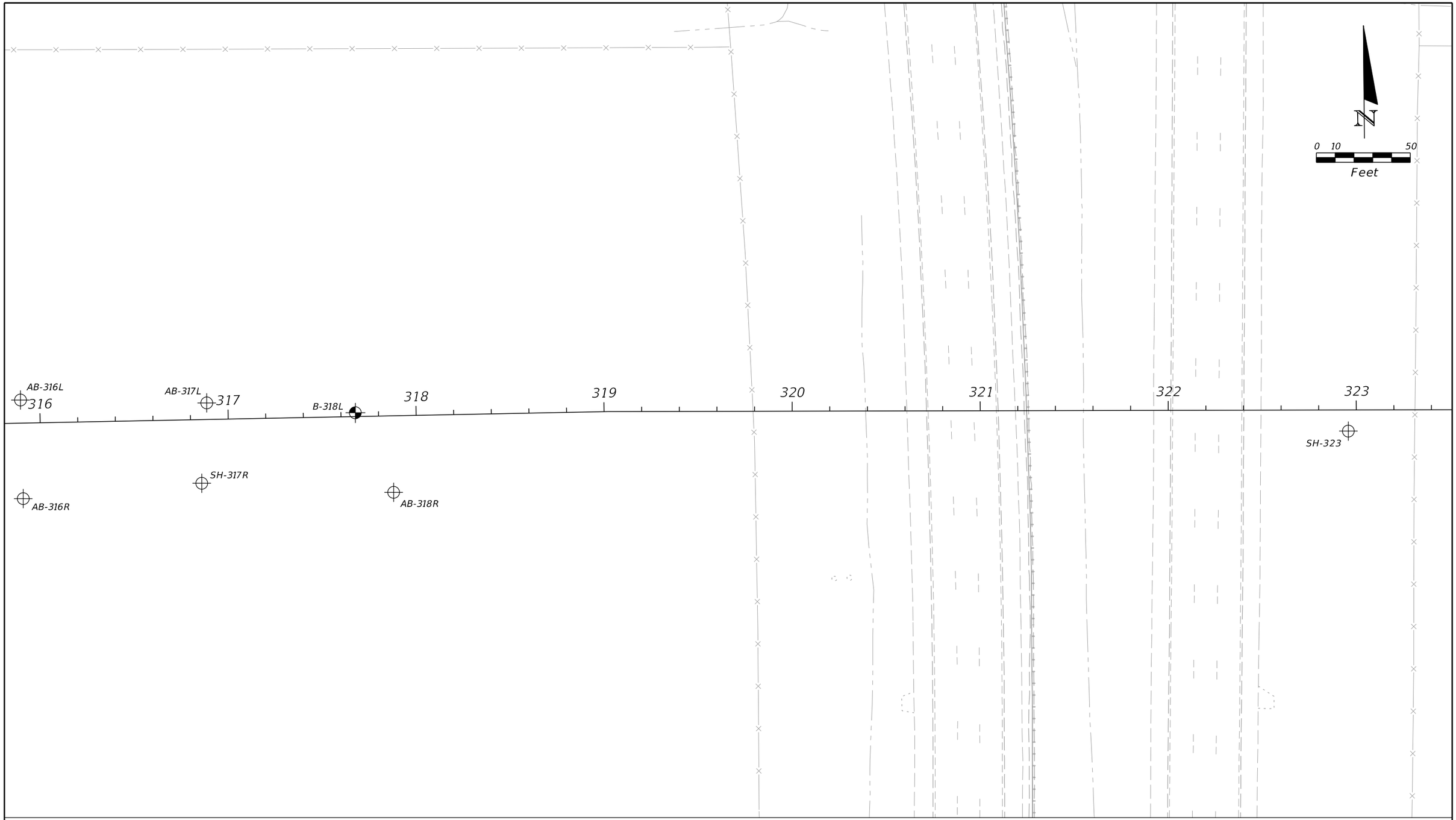

LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19

PROJECT NO.: 6045662

Manatee County FLORIDA

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL

FL. LICENSE NO.: 82404

BORING LOCATION PLAN (2)

SHEET NO.:

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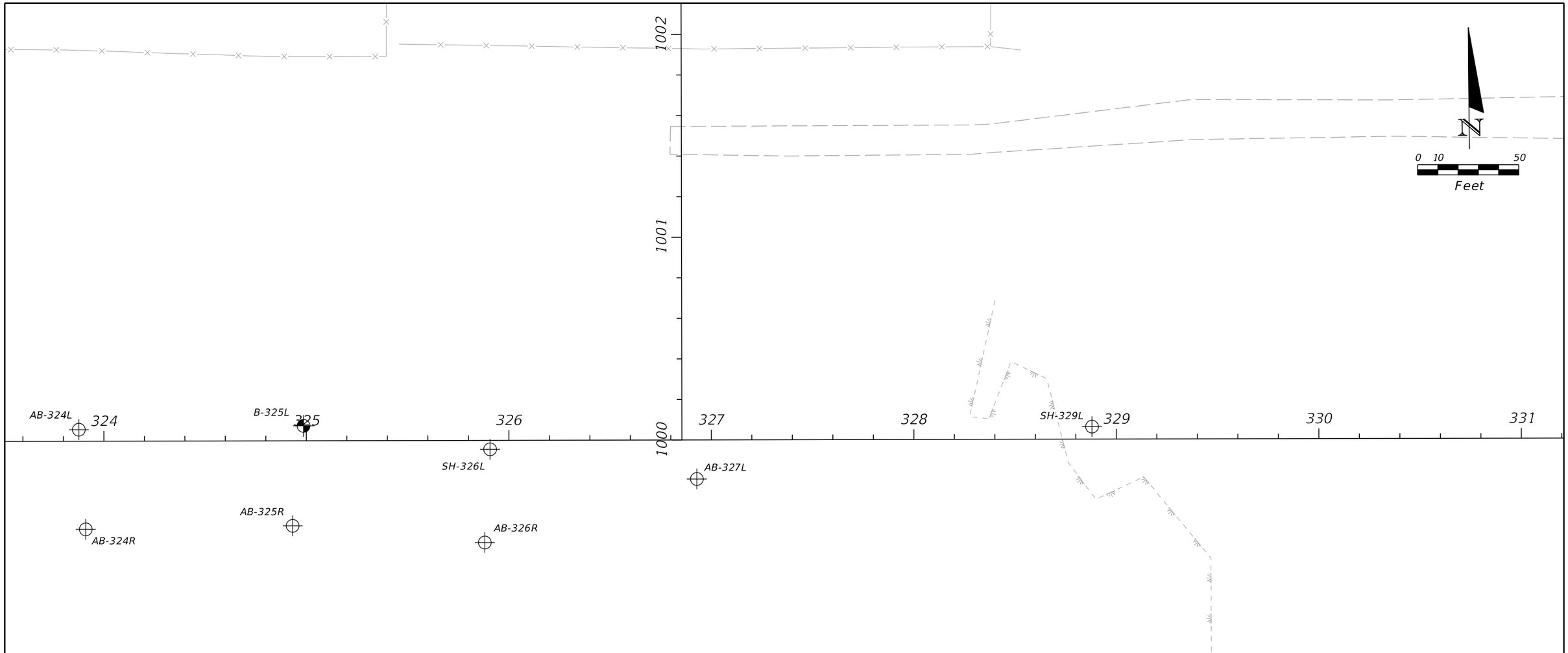

LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

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Manatee County FLORIDA
MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (3)

SHEET NO.:

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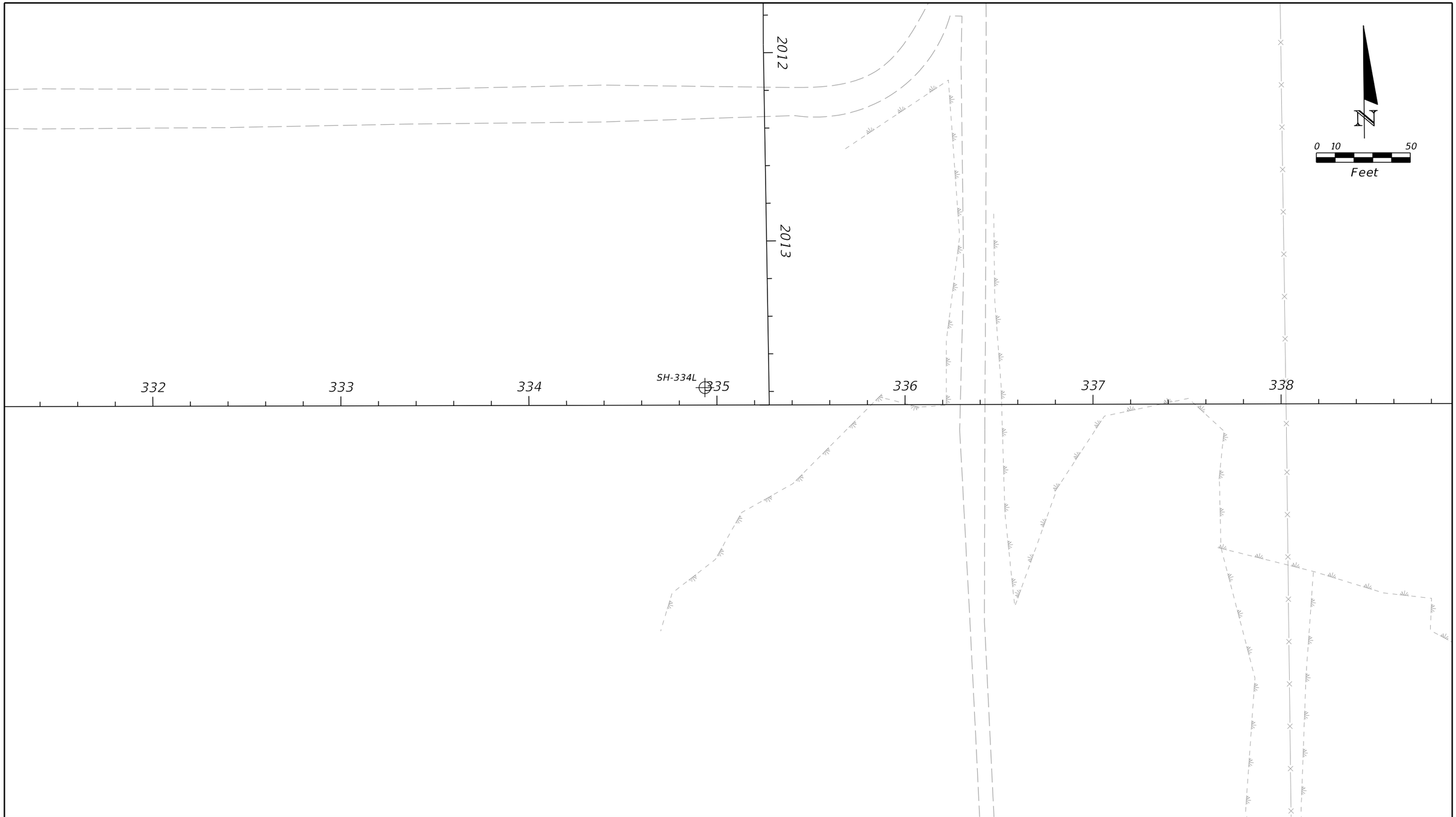

LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

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CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19
PROJECT NO.: 6045662

Manatee County FLORIDA

MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (4)

SHEET NO.:

3:09:09 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\ABORRD04.dgn

N

0 10 50

Feet

366

367

368

369

370

371

372

373

AB-369R

AB-370R

AB-371

AB-371R

AB-372L

AB-372R

AB-373L

SH-373R

LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BJS
DRAWN BY: BJS
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19
PROJECT NO.: 6045662

Manatee County FLORIDA

MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (5)

SHEET NO.:

3:09:10 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\ABORRD05.dgn

N

0 10 50

Feet

374 375 376 377 378 379 380

AB-374L
AB-375L
SH-376L
AB-377L
AB-378L
AB-379L
AB-380L
SH-379
B-380R

AB-375R
AB-376R
AB-377R
AB-378R
AB-379R
SH-375R

LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BJS
DRAWN BY: BJS
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19
PROJECT NO.: 6045662

Manatee County FLORIDA

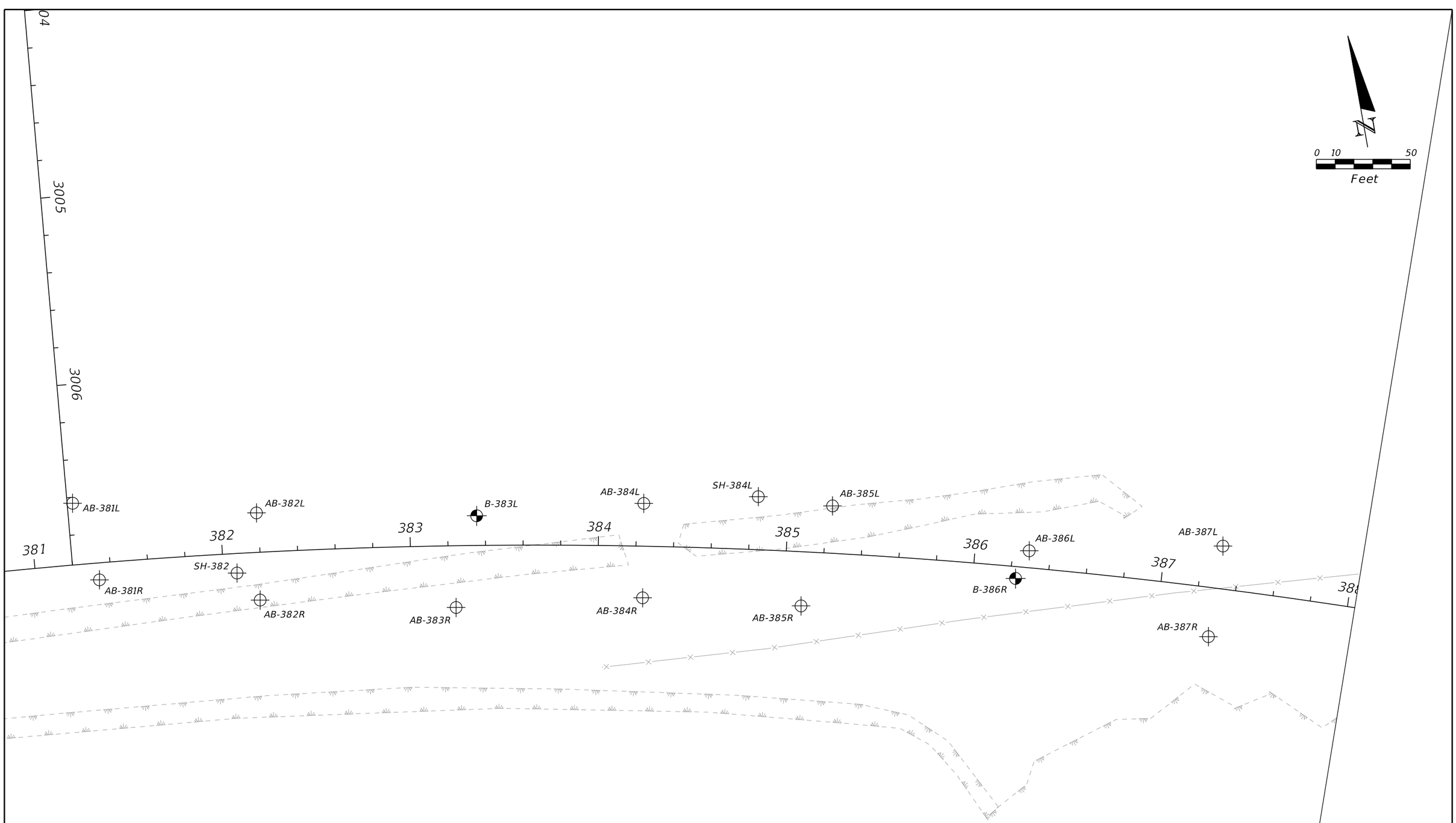
MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (6)

SHEET NO.

3:09:11 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\ABORRD06.dgn



LEGEND

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BJS
DRAWN BY: BJS
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19
PROJECT NO.: 6045662

Manatee County FLORIDA

MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (7)

SHEET NO.:

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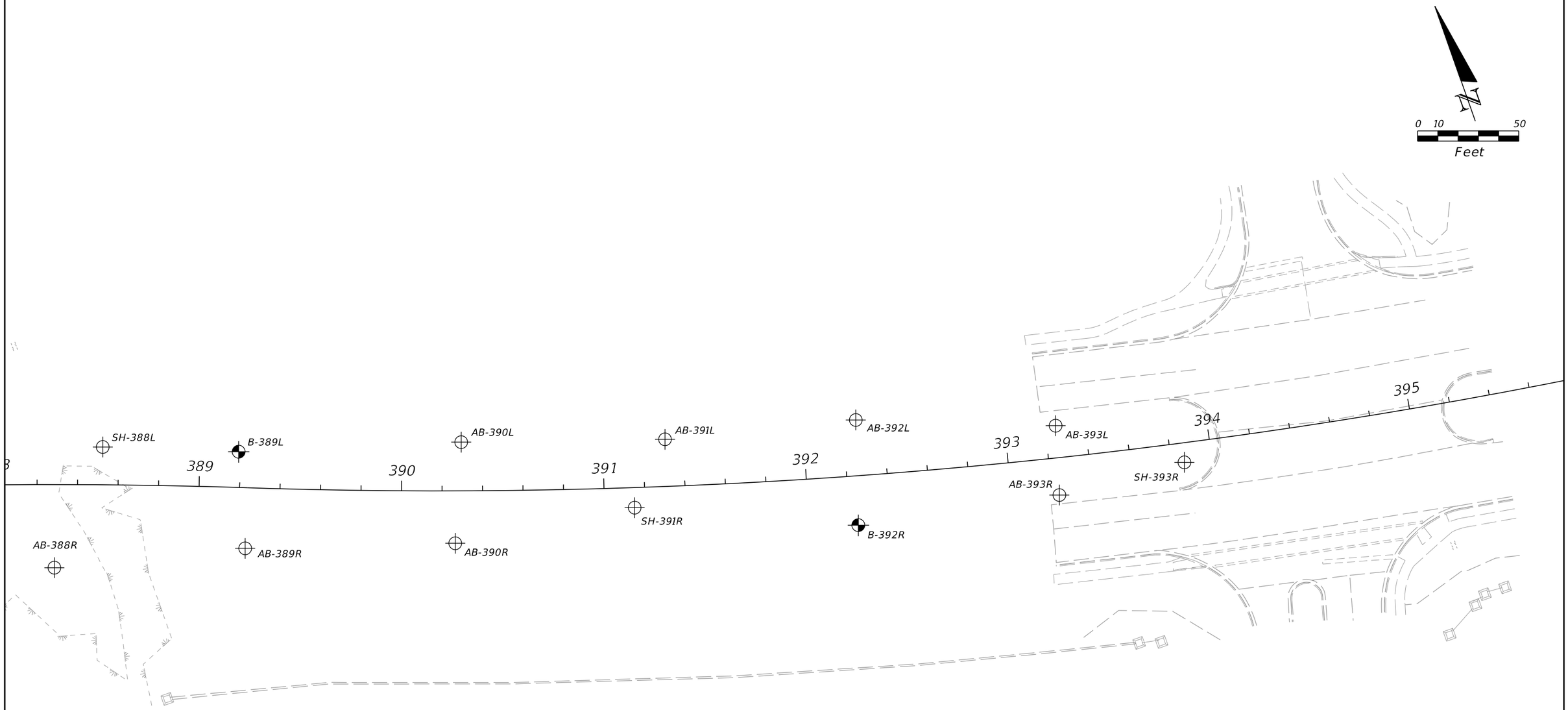


LEGEND

- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BJS
DRAWN BY: BJS
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/19
PROJECT NO.: 6045662

Manatee County FLORIDA

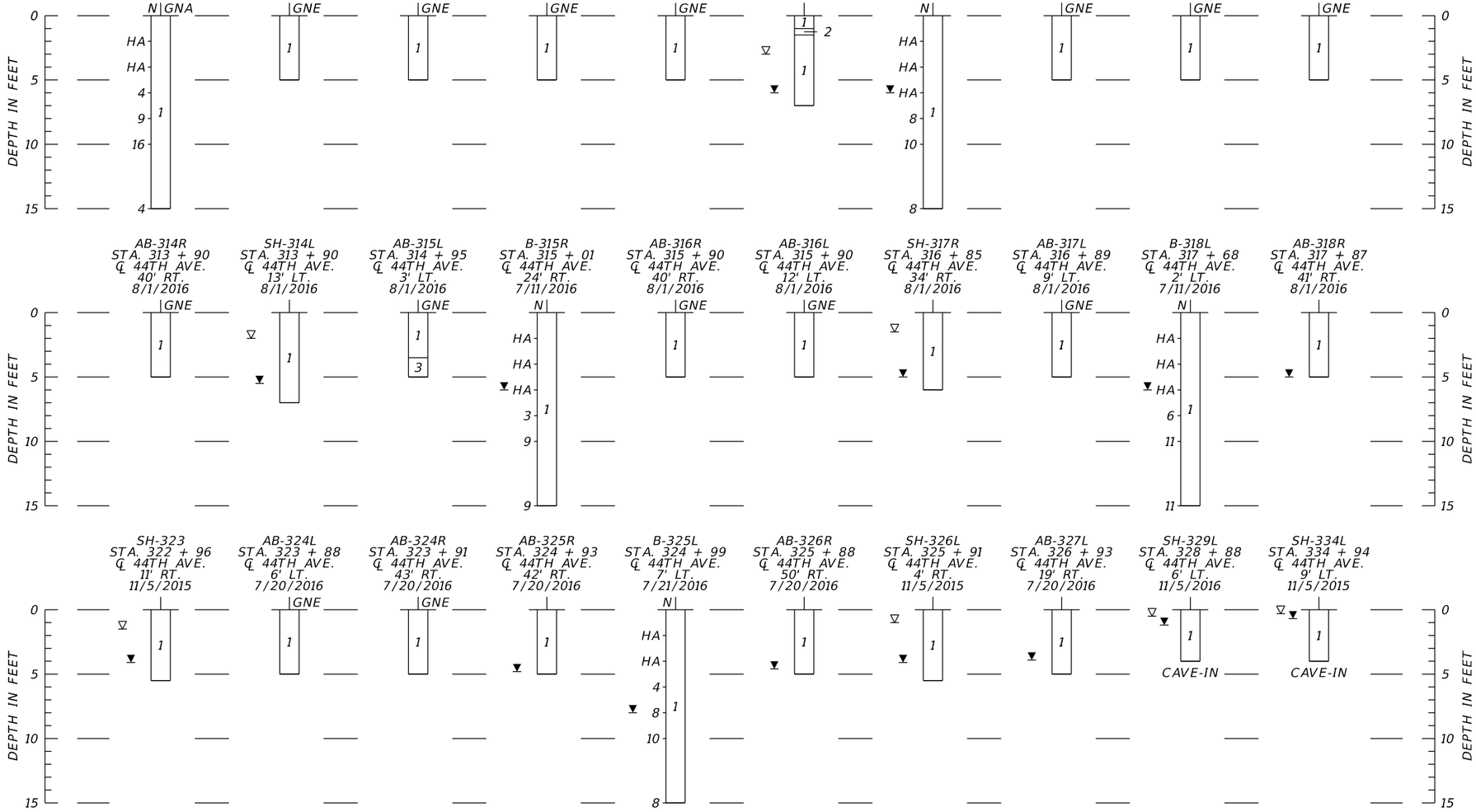
MANATEE COUNTY
PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

BORING LOCATION PLAN (8)

SHEET NO.:

3:09:13 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\ABORRD08.dgn



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT
2.	GRAY SILTY SAND
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND
4.	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY (A-4/A-6/A-7-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD AND HAMMER
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE GRADE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE GRADE DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
CAVE-IN	CAVE-IN DUE TO SHALLOW GROUNDWATER INTRUSION

AUTOMATIC HAMMER

GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 3
LOOSE	3 to 8
MEDIUM DENSE	8 to 24
DENSE	24 to 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 1
SOFT	1 to 3
FIRM	3 to 6
STIFF	6 to 12
VERY STIFF	12 to 24
HARD	GREATER THAN 24

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/21
PROJECT NO.: 6045662

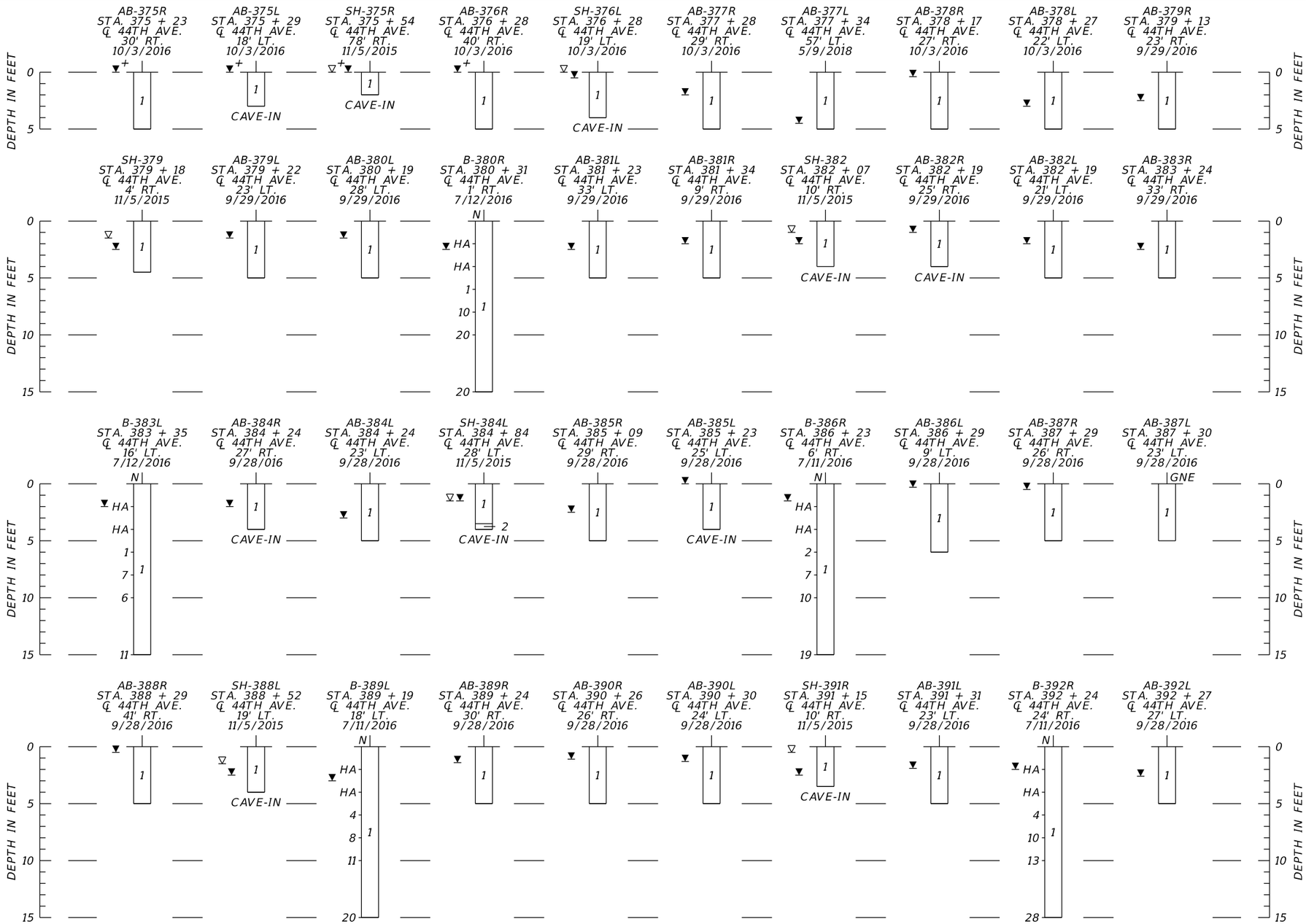
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

ROADWAY SOIL PROFILES (1)

SHEET NO.

3:09:13 PM 6/25/2021J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\ABORRDProf01.dgn



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT
2.	GRAY SILTY SAND
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND
4.	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY (A-4/A-6/A-7-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD AND HAMMER
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE GRADE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE GRADE DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
CAVE-IN	CAVE-IN DUE TO SHALLOW GROUNDWATER INTRUSION

AUTOMATIC HAMMER

GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 3
LOOSE	3 to 8
MEDIUM DENSE	8 to 24
DENSE	24 to 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 1
SOFT	1 to 3
FIRM	3 to 6
STIFF	6 to 12
VERY STIFF	12 to 24
HARD	GREATER THAN 24

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

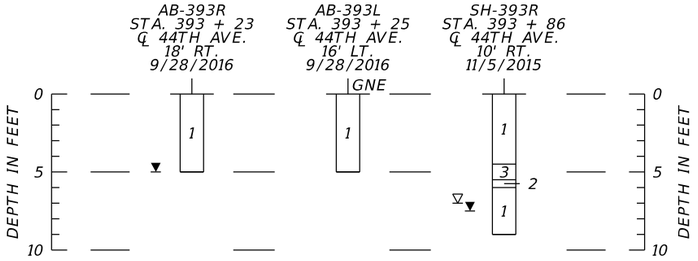
DATE: 6/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

ROADWAY SOIL PROFILES (2)

SHEET NO.



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT
2.	GRAY SILTY SAND
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND
4.	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY (A-4/A-6/A-7-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
WH	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD AND HAMMER
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE GRADE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE GRADE DURING FIELD EXPLORATIONS
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
CAVE-IN	CAVE-IN DUE TO SHALLOW GROUNDWATER INTRUSION

AUTOMATIC HAMMER

GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 3
LOOSE	3 to 8
MEDIUM DENSE	8 to 24
DENSE	24 to 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 1
SOFT	1 to 3
FIRM	3 to 6
STIFF	6 to 12
VERY STIFF	12 to 24
HARD	GREATER THAN 24

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/21
PROJECT NO.: 6045662

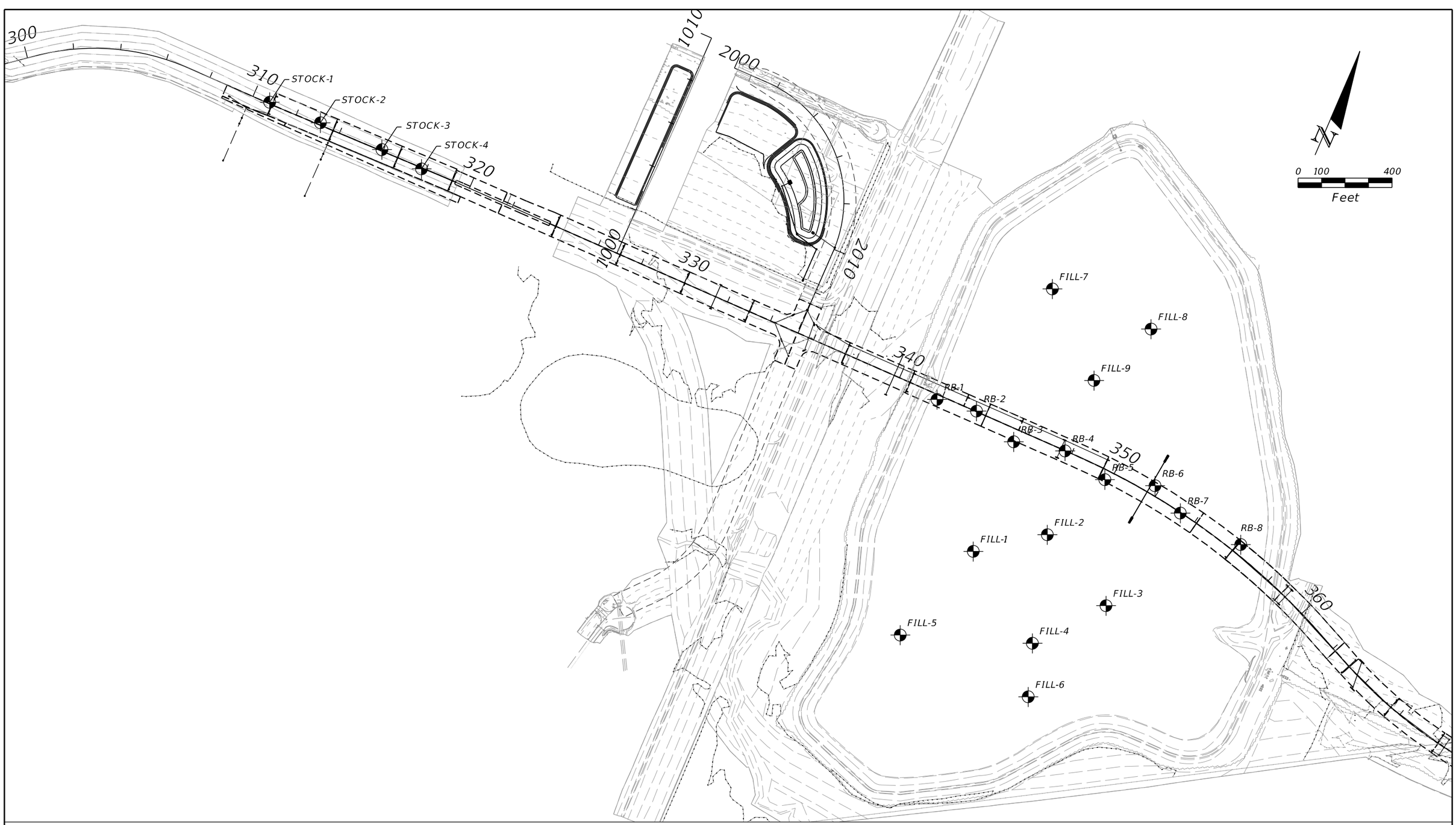
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

ROADWAY SOIL PROFILES (3)

SHEET NO.

3:09:14 PM 6/25/2021J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\ABORRDProf01.dgn



LEGEND

APPROXIMATE SPT BORING LOCATION

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/21
PROJECT NO.: 6045662

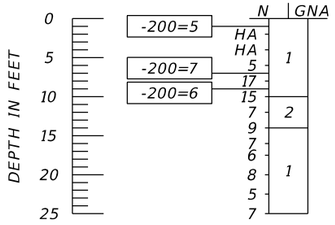
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

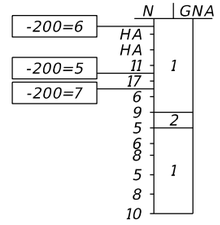
BORING LOCATION PLAN

SHEET NO.:

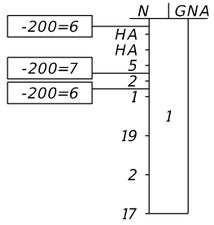
BOR # STOCK-1
EASTING 506904
NORTHING 1137053
DATE 6/18/2019
DRILLER D. STAKELIN
HAMMER AUTOMATIC
RIG CME 55



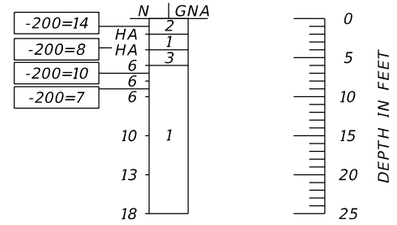
BOR # STOCK-2
EASTING 506431
NORTHING 1137062
DATE 6/18/2019
DRILLER D. STAKELIN
HAMMER AUTOMATIC
RIG CME 55



BOR # STOCK-3
EASTING 506198
NORTHING 1137057
DATE 6/24/2019
DRILLER I. POORAN
HAMMER AUTOMATIC
RIG D-25



BOR # STOCK-4
EASTING 506717
NORTHING 1137061
DATE 624/2019
DRILLER I. POORAN
HAMMER AUTOMATIC
RIG D-25



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY (A-6/A-7-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
W	WATER
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
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
W	WATER
	CASING

	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

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BJS
DRAWN BY: BJS
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 6/21
PROJECT NO.: 6045662

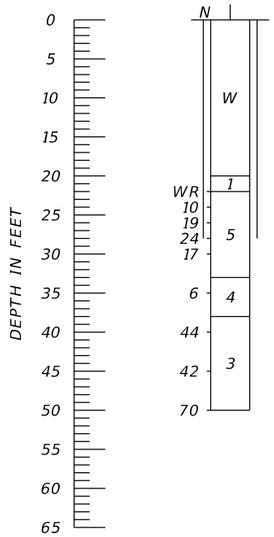
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

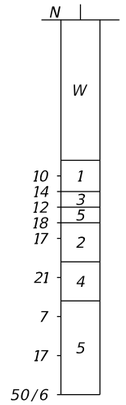
SOIL PROFILES (1)

SHEET NO.

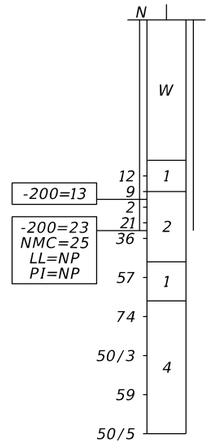
BOR # RB-1
EASTING 509306
NORTHING 1137023
DATE 4/1/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



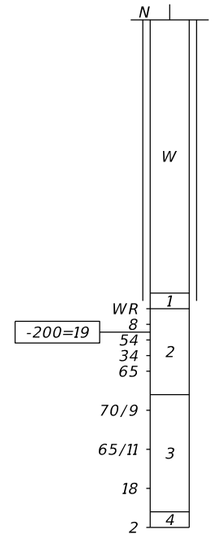
BOR # RB-2
EASTING 509480
NORTHING 1137044
DATE 4/2/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



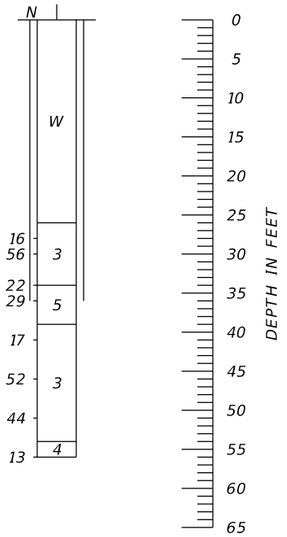
BOR # RB-3
EASTING 509677
NORTHING 1136987
DATE 3/27/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BOR # RB-4
EASTING 509893
NORTHING 1137038
DATE 4/2/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



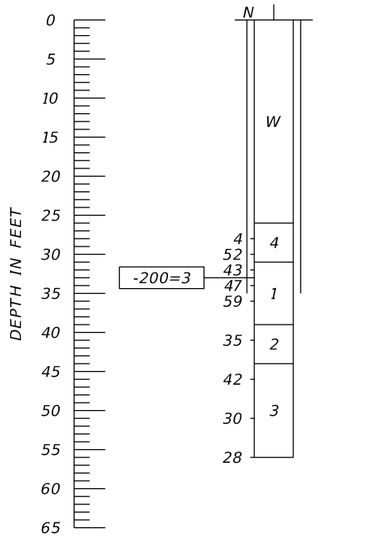
BOR # RB-5
EASTING 510097
NORTHING 1136993
DATE 4/2/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



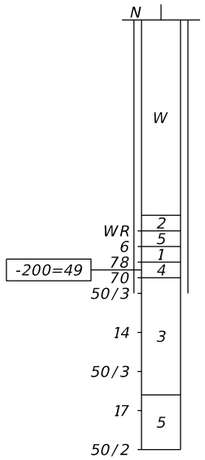
LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY (A-6/A-7-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
W	WATER
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
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
W	WATER
	CASING

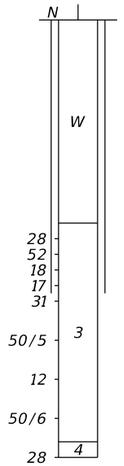
BOR # RB-6
EASTING 510303
NORTHING 1137054
DATE 4/3/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



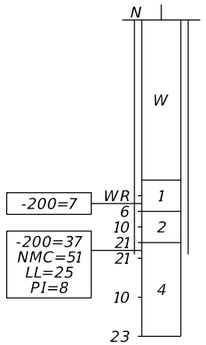
BOR # RB-7
EASTING 510448
NORTHING 1136990
DATE 4/3/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



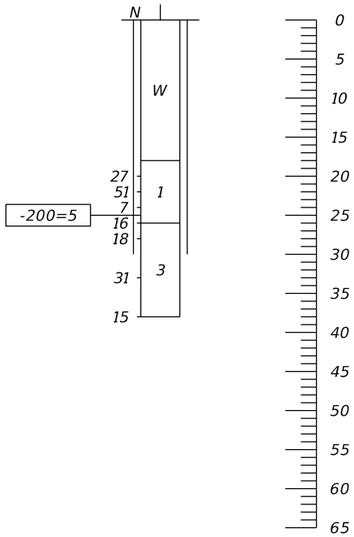
BOR # RB-8
EASTING 510737
NORTHING 1136969
DATE 4/2/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BOR # FILL-1
EASTING 509704
NORTHING 1136491
DATE 4/1/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BOR # FILL-2
EASTING 509965
NORTHING 1136681
DATE 4/1/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



	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

No.	REVISIONS	DATE	BY

SCALE AS NOTED
DESIGNED BY BJS
DRAWN BY BJS
CHECKED BY DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE 6/21
PROJECT NO. 6045662

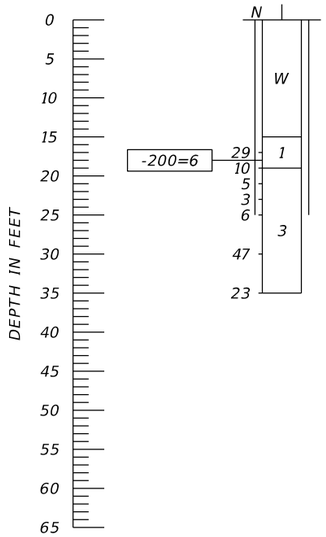
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER DANIEL R. RUEL
FL. LICENSE NO. 82404

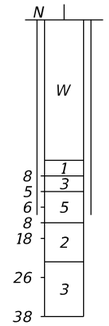
SOIL PROFILES (2)

SHEET NO.

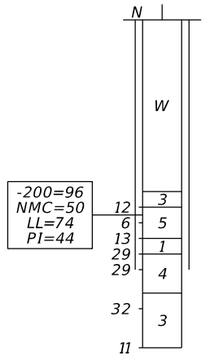
BOR # FILL-3
EASTING 510314
NORTHING 1136503
DATE 4/1/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



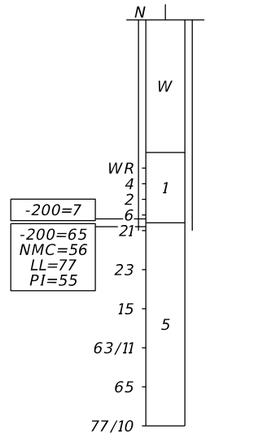
BOR # FILL-4
EASTING 510090
NORTHING 1136232
DATE 4/1/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



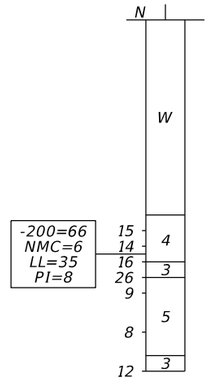
BOR # FILL-5
EASTING 509560
NORTHING 1136041
DATE 3/28/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25

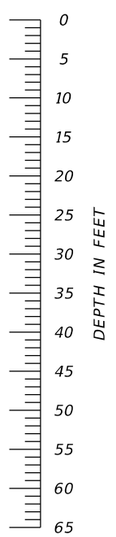


BOR # FILL-6
EASTING 510164
NORTHING 1136016
DATE 3/27/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BOR # FILL-7
EASTING 509570
NORTHING 1137649
DATE 12:00:00 AM
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25

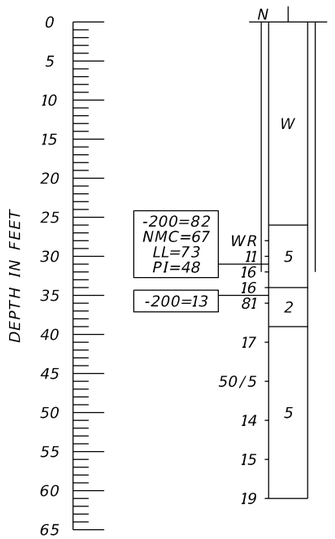




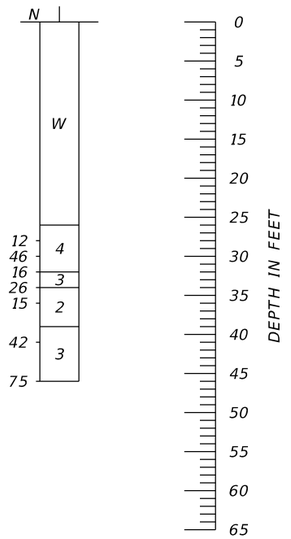
LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY CLAYEY SAND TO SANDY CLAY (A-6/A-7-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
W	WATER
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
WR	SPLIT-SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
W	WATER
	CASING

BOR # FILL-8
EASTING 510023
NORTHING 1137659
DATE 3/27/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BOR # FILL-9
EASTING 509887
NORTHING 1137362
DATE 4/3/2019
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



	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

No.	REVISIONS	DATE	BY

SCALE AS NOTED
DESIGNED BY BJS
DRAWN BY BJS
CHECKED BY DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

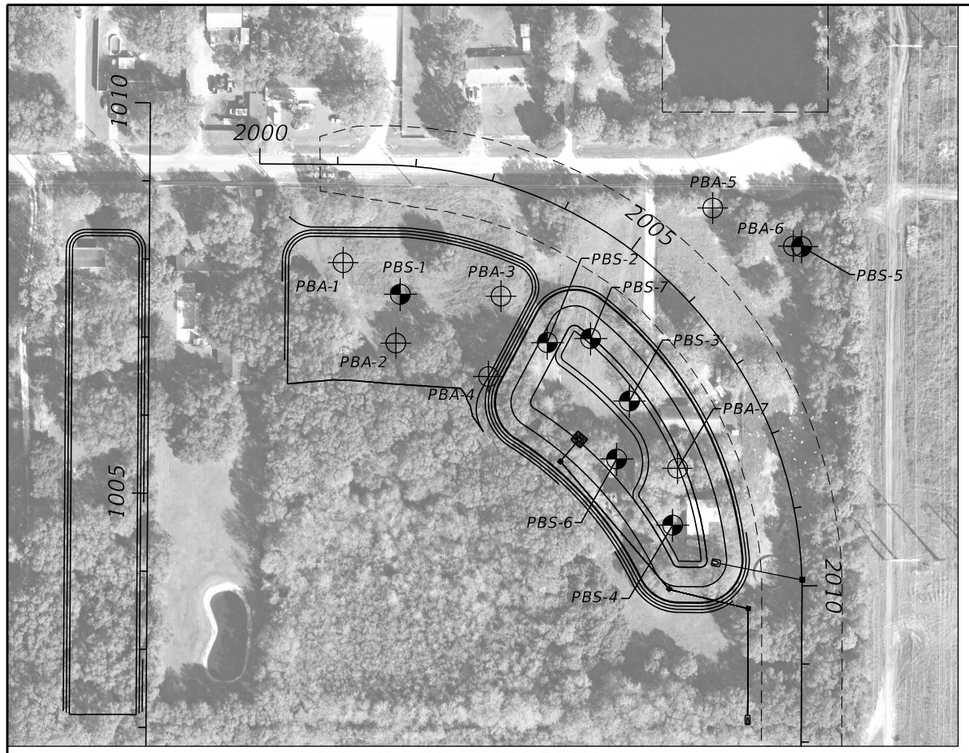
DATE 6/21
PROJECT NO. 6045662

MANATEE COUNTY PUBLIC WORKS

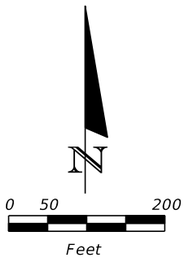
DESIGN ENGINEER DANIEL R. RUEL
FL. LICENSE NO. 82404

SOIL PROFILES (3)

SHEET NO.



BORING LOCATION PLAN

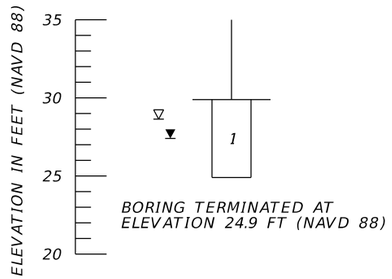


LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

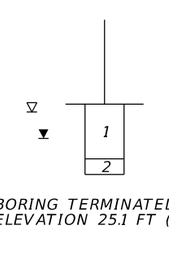
NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

BOR # PBA-1
EASTING 508063
NORTHING 1137848
ELEV. 29.9
DATE 2/4/2021



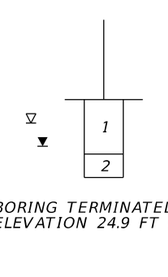
BORING TERMINATED AT ELEVATION 24.9 FT (NAVD 88)

BOR # PBA-2
EASTING 508130
NORTHING 1137746
ELEV. 29.6
DATE 2/4/2021



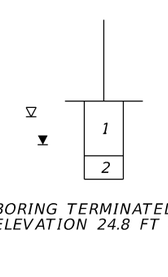
BORING TERMINATED AT ELEVATION 25.1 FT (NAVD 88)

BOR # PBA-3
EASTING 508265
NORTHING 1137806
ELEV. 29.9
DATE 2/4/2021



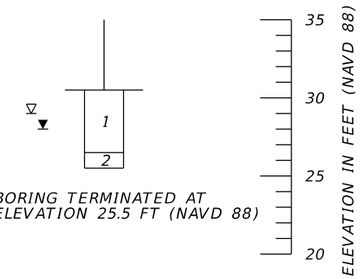
BORING TERMINATED AT ELEVATION 24.9 FT (NAVD 88)

BOR # PBA-4
EASTING 508249
NORTHING 1137703
ELEV. 29.8
DATE 2/4/2021



BORING TERMINATED AT ELEVATION 24.8 FT (NAVD 88)

BOR # PBA-5
EASTING 508536
NORTHING 1137919
ELEV. 30.5
DATE 2/4/2021



BORING TERMINATED AT ELEVATION 25.5 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

POND

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

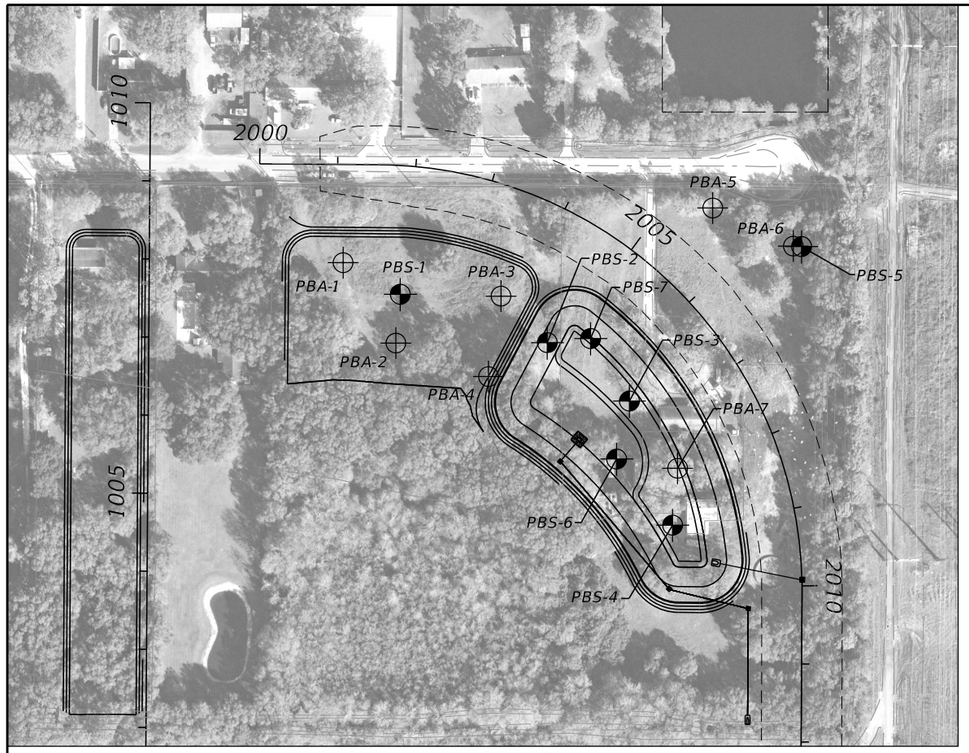
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

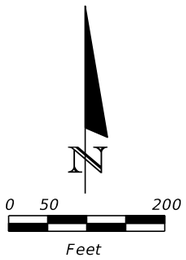
POND SOIL SURVEY (1)

SHEET NO.

3:09:21 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\PBORRD01_01.dgn



BORING LOCATION PLAN

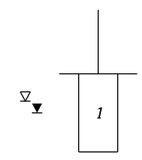


LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

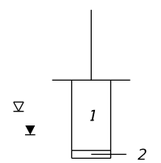
NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

BOR # PBA-6
EASTING 508640
NORTHING 1137870
ELEV. 30.9
DATE 2/4/2021



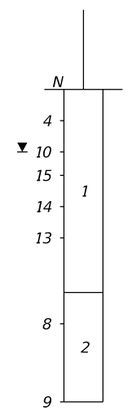
BORING TERMINATED AT ELEVATION 25.9 FT (NAVD 88)

BOR # PBA-7
EASTING 508491
NORTHING 1137585
ELEV. 30.5
DATE 2/4/2021



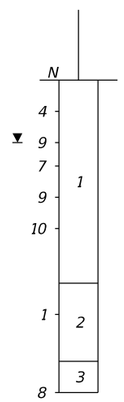
BORING TERMINATED AT ELEVATION 25.5 FT (NAVD 88)

BOR # PBS-1
EASTING 508136
NORTHING 1137808
ELEV. 29.9
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



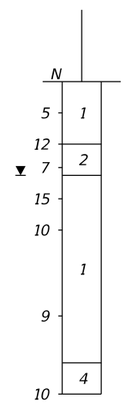
BORING TERMINATED AT ELEVATION 9.9 FT (NAVD 88)

BOR # PBS-2
EASTING 508324
NORTHING 1137746
ELEV. 30.5
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 10.5 FT (NAVD 88)

BOR # PBS-3
EASTING 508430
NORTHING 1137671
ELEV. 30.4
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 10.4 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

POND

No.	REVISIONS	DATE	BY

SCALE AS NOTED
DESIGNED BY BMG
DRAWN BY BMG
CHECKED BY DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE 06/21
PROJECT NO. 6045662

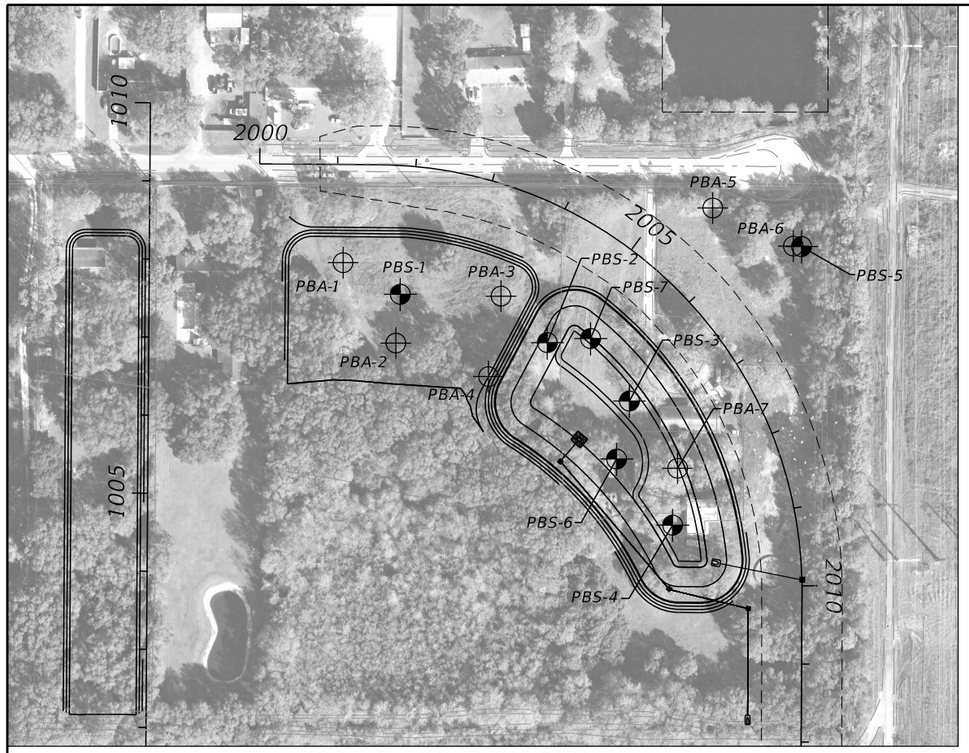
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER DANIEL R. RUEL
FL. LICENSE NO. 82404

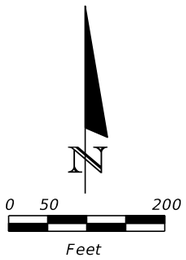
POND SOIL SURVEY (2)

SHEET NO.

3:10:36 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\PB0RRD01_02.dgn



BORING LOCATION PLAN

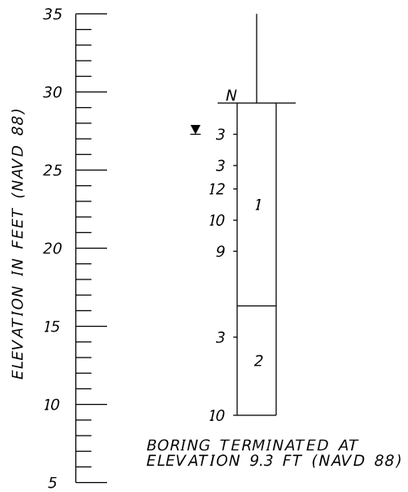


LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

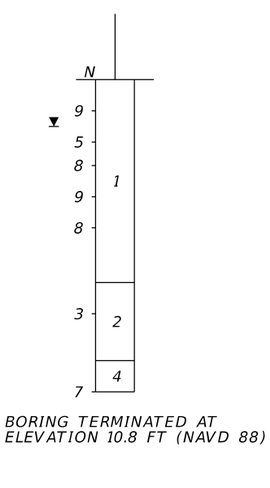
NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

BOR # PBS-4
EASTING 508485
NORTHING 1137512
ELEV. 29.3
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



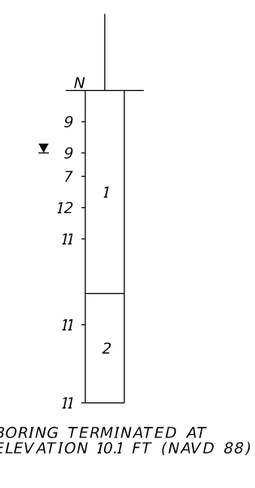
BORING TERMINATED AT ELEVATION 9.3 FT (NAVD 88)

BOR # PBS-5
EASTING 508650
NORTHING 1137869
ELEV. 30.8
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



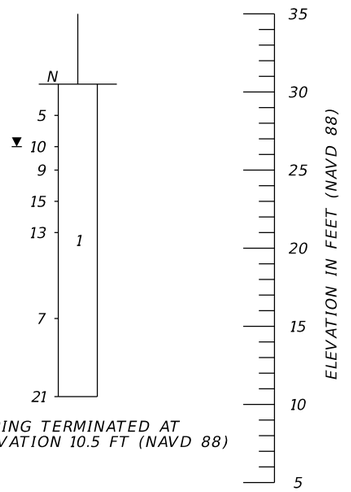
BORING TERMINATED AT ELEVATION 10.8 FT (NAVD 88)

BOR # PBS-6
EASTING 508413
NORTHING 1137597
ELEV. 30.1
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 10.1 FT (NAVD 88)

BOR # PBS-7
EASTING 508380
NORTHING 1137751
ELEV. 30.5
DATE 2/1/2021
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 10.5 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

POND

No.	REVISIONS	DATE	BY

SCALE AS NOTED
DESIGNED BY BMG
DRAWN BY BMG
CHECKED BY DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE 06/21
PROJECT NO. 6045662

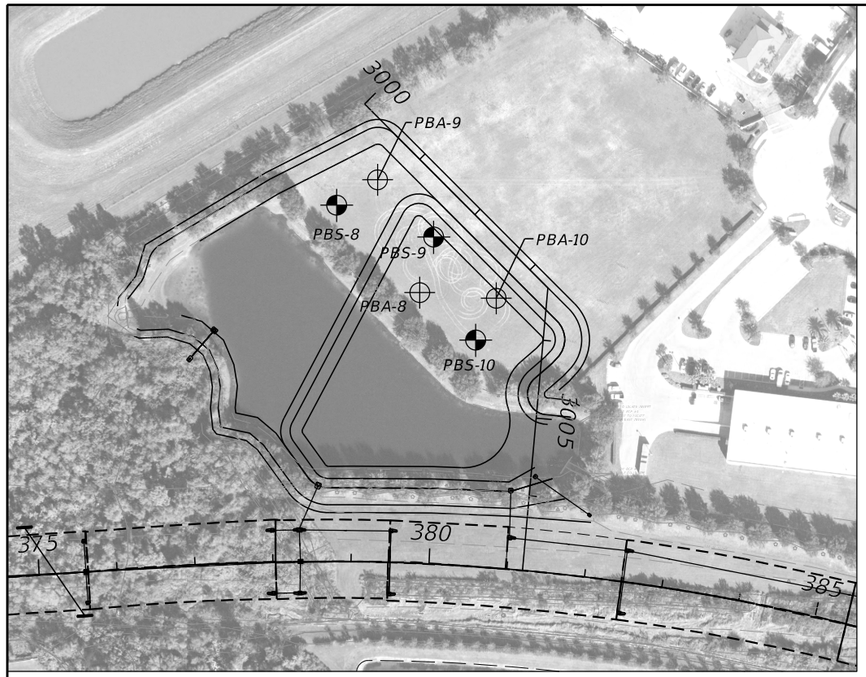
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER DANIEL R. RUEL
FL. LICENSE NO. 82404

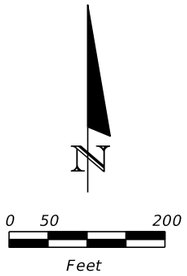
POND SOIL SURVEY (3)

SHEET NO.

3:11:04 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\PBORRD01_03.dgn



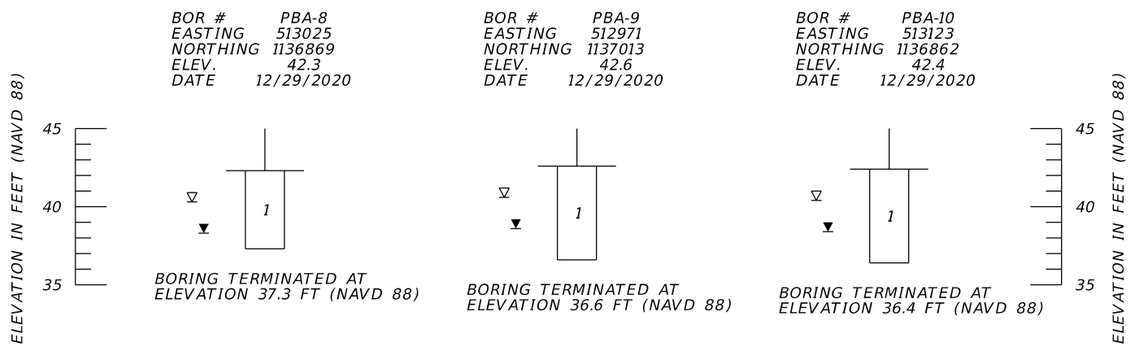
BORING LOCATION PLAN



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.



	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

POND

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

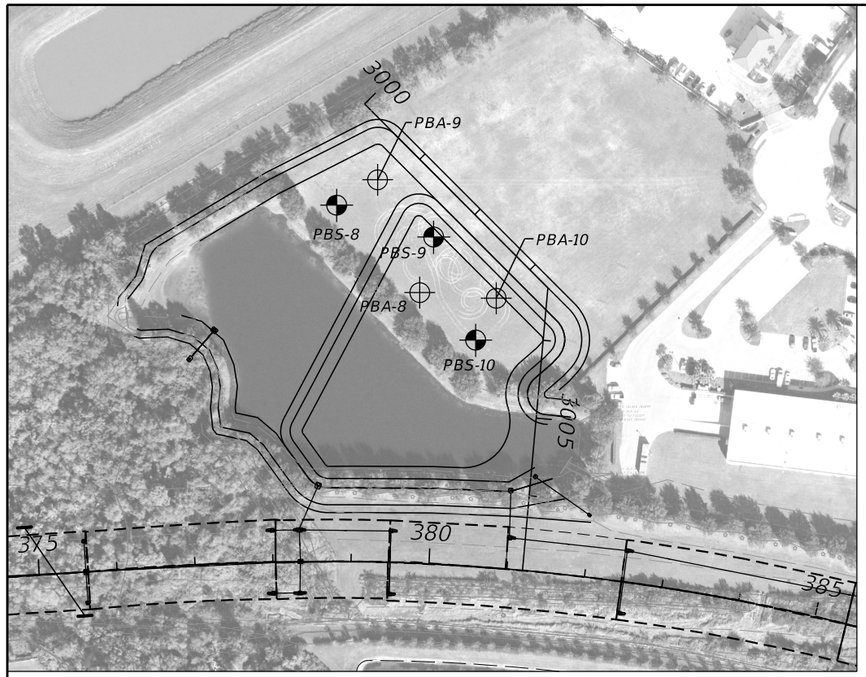
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

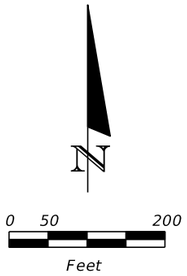
POND SOIL SURVEY (1)

SHEET NO.

3:12:11 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\PBORRD02_01.dgn



BORING LOCATION PLAN

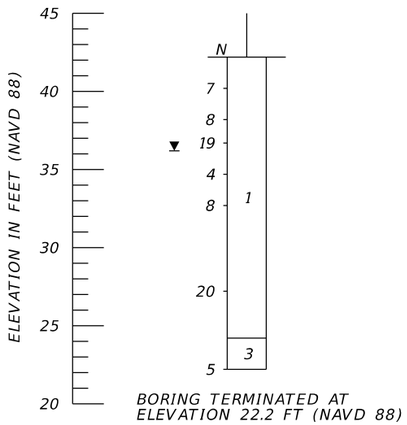


LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

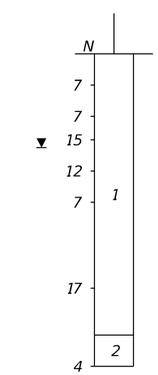
NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

BOR # PBS-8
EASTING 512918
NORTHING 1136981
ELEV. 42.2
DATE 12/2/2020
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



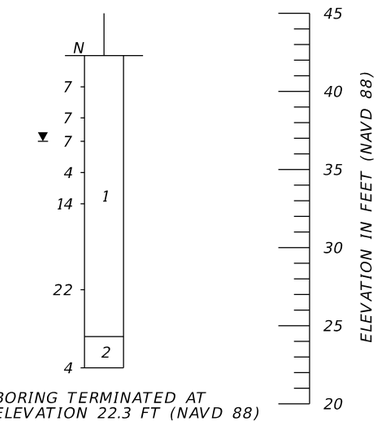
BORING TERMINATED AT ELEVATION 22.2 FT (NAVD 88)

BOR # PBS-9
EASTING 513042
NORTHING 1136940
ELEV. 42.4
DATE 12/2/2020
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 22.4 FT (NAVD 88)

BOR # PBS-10
EASTING 513096
NORTHING 1136808
ELEV. 42.3
DATE 12/2/2020
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 22.3 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

POND

No.	REVISIONS	DATE	BY

SCALE AS NOTED
DESIGNED BY BMG
DRAWN BY BMG
CHECKED BY DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE 06/21
PROJECT NO. 6045662

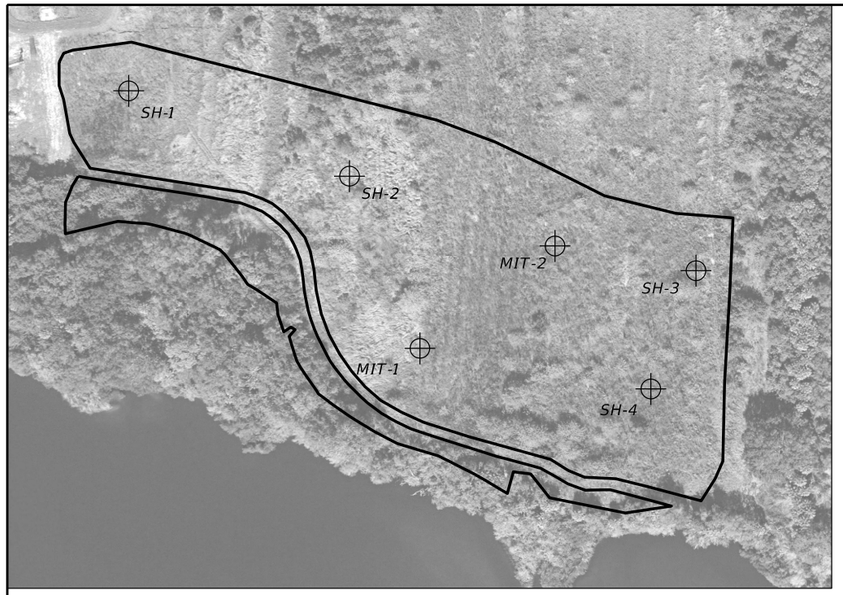
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

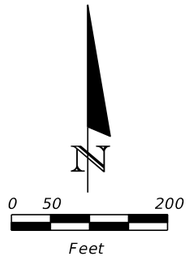
DESIGN ENGINEER DANIEL R. RUEL
FL. LICENSE NO. 82404

POND SOIL SURVEY (2)

SHEET NO.

3:12:46 PM 6/25/2021 J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\PBORRD02_02.dgn



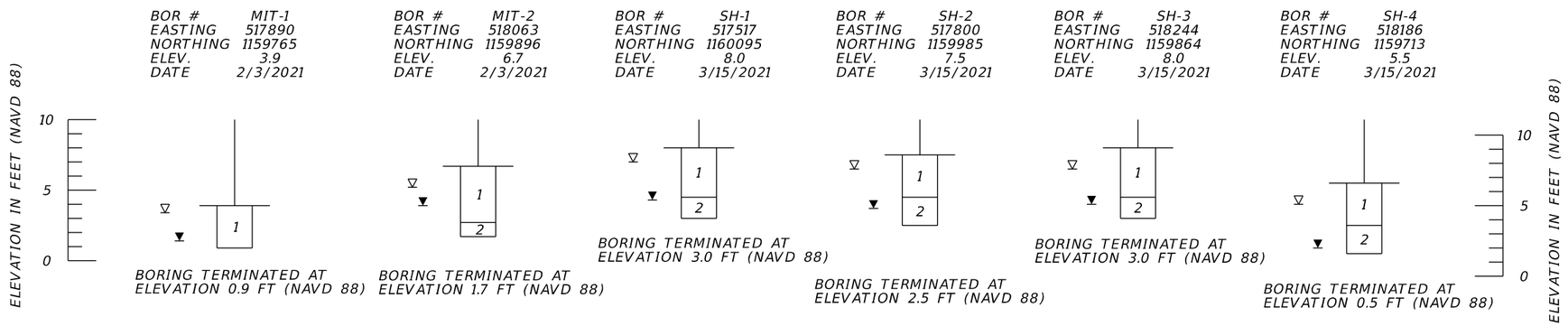


BORING LOCATION PLAN

LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.



	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

MITIGATION AREA

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

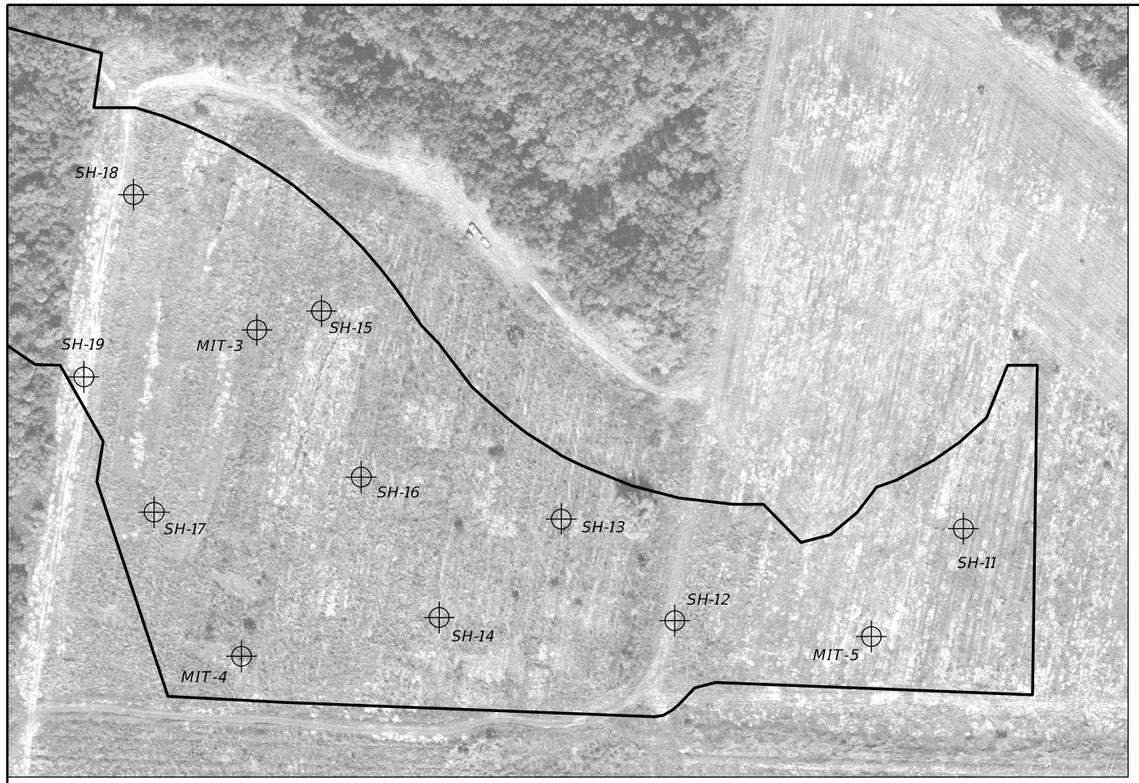
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

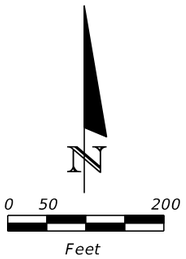
DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

POND SOIL SURVEY (1)

SHEET NO.

3:13:45 PM 6/25/2021J:\6511\2014 Files\6511-14-222 44th Ave Extension\Microstation\Phase II\Microstation\PBORRD03A_01.dgn





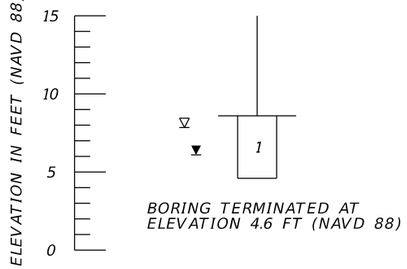
BORING LOCATION PLAN

LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

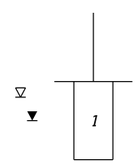
NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

BOR # MIT-3
EASTING 518816
NORTHING 1161243
ELEV. 8.6
DATE 2/3/2021



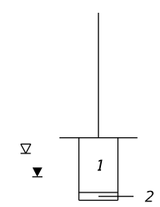
BORING TERMINATED AT ELEVATION 4.6 FT (NAVD 88)

BOR # MIT-4
EASTING 518796
NORTHING 1160825
ELEV. 10.6
DATE 2/3/2021



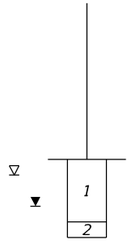
BORING TERMINATED AT ELEVATION 5.6 FT (NAVD 88)

BOR # MIT-5
EASTING 519603
NORTHING 1160850
ELEV. 7.0
DATE 2/3/2021



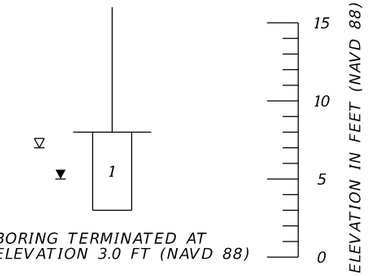
BORING TERMINATED AT ELEVATION 3.0 FT (NAVD 88)

BOR # SH-11
EASTING 519721
NORTHING 1160988
ELEV. 6.0
DATE 3/15/2021



BORING TERMINATED AT ELEVATION 1.0 FT (NAVD 88)

BOR # SH-12
EASTING 519351
NORTHING 1160871
ELEV. 8.0
DATE 3/15/2021



BORING TERMINATED AT ELEVATION 3.0 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

MITIGATION AREA

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

POND SOIL SURVEY (2)

SHEET NO.

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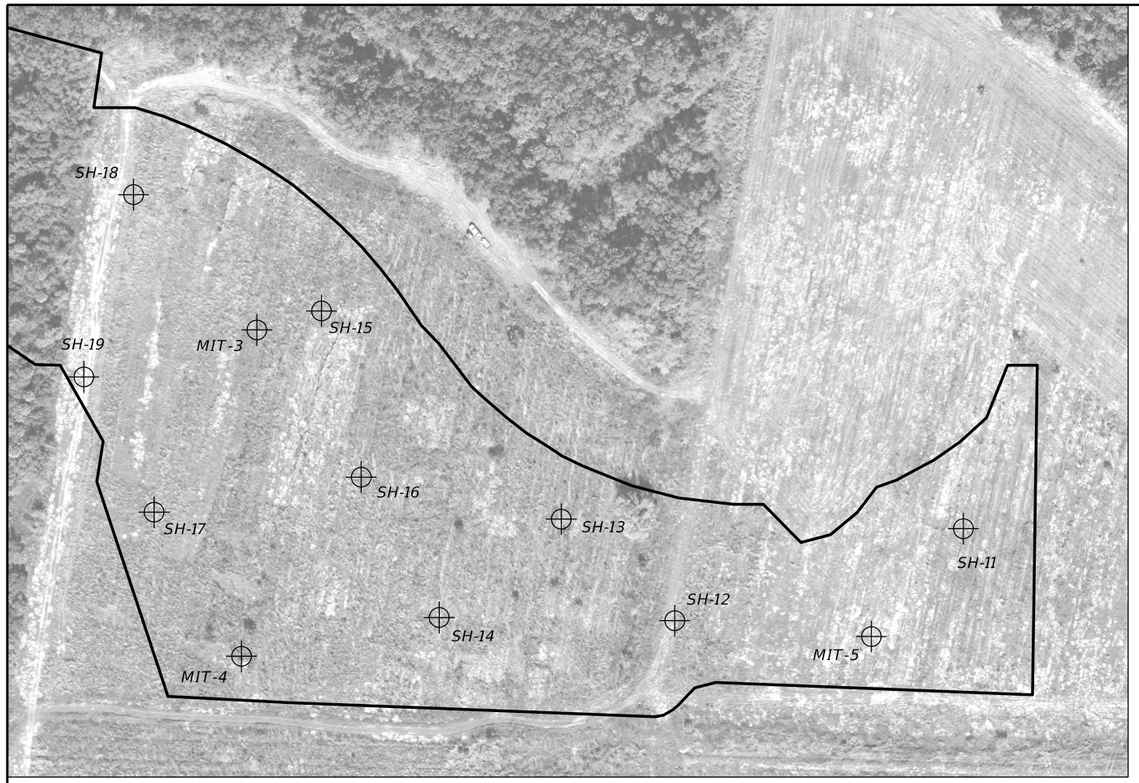

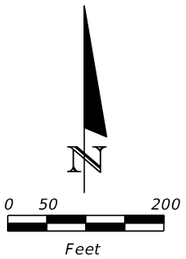

BORING LOCATION PLAN

LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

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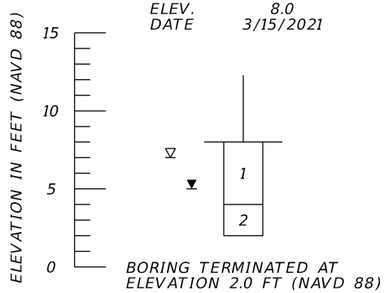
NORTHING 1161001
ELEV. 8.0
DATE 3/15/2021



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BOR # SH-14
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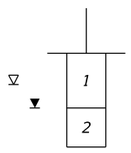
NORTHING 1160875
ELEV. 9.4
DATE 3/15/2021



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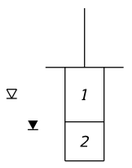
NORTHING 1161267
ELEV. 8.5
DATE 3/15/2021



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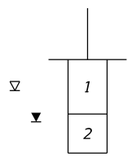
ELEV. 9.0
DATE 3/15/2021



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NORTHING 1161010
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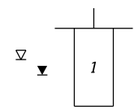
DATE 3/15/2021



BORING TERMINATED AT ELEVATION 6.0 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

MITIGATION AREA

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

POND SOIL SURVEY (3)

SHEET NO.

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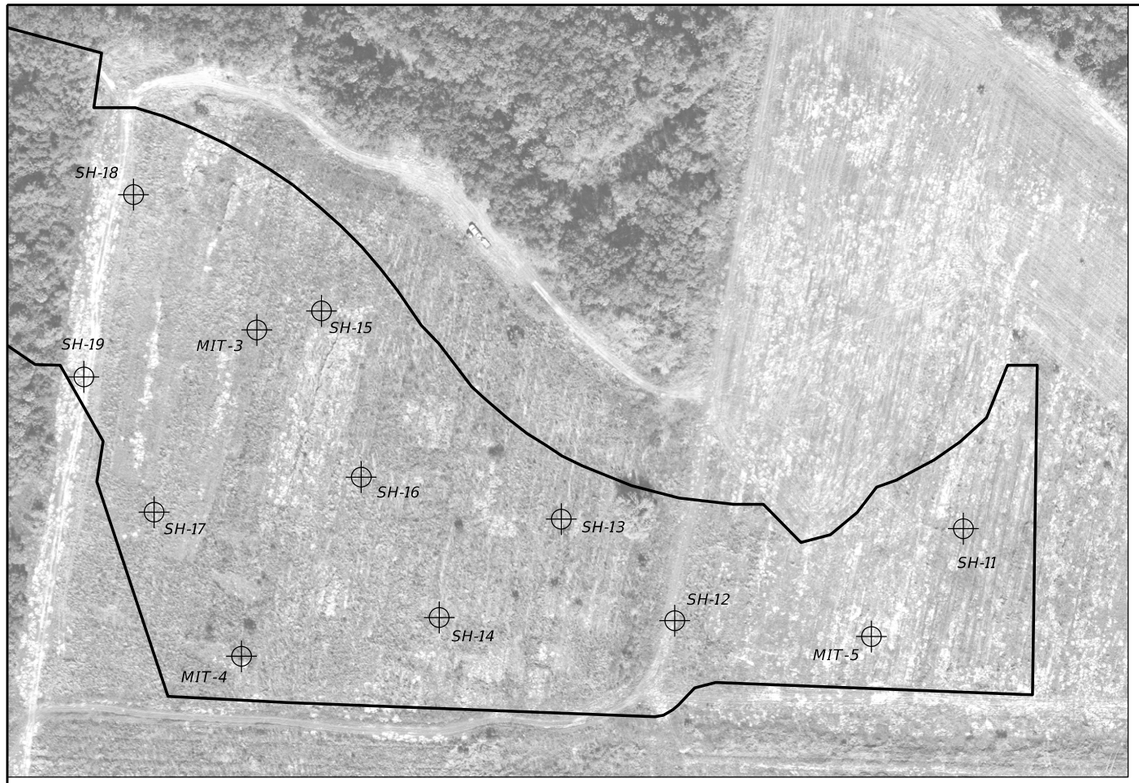
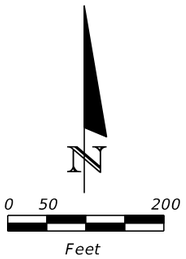




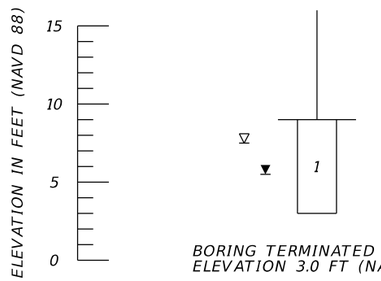
LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.

BORING LOCATION PLAN

BOR # SH-18
EASTING 518658
NORTHING 1161416
ELEV. 9.0
DATE 3/15/2021



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BOR # SH-19
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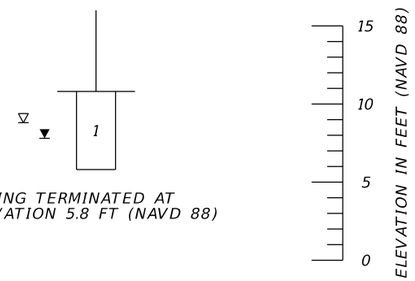
NORTHING 1161183
ELEV. 10.8
DATE 3/15/2021



BORING TERMINATED AT ELEVATION 5.8 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

MITIGATION AREA

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

POND SOIL SURVEY (4)

SHEET NO.

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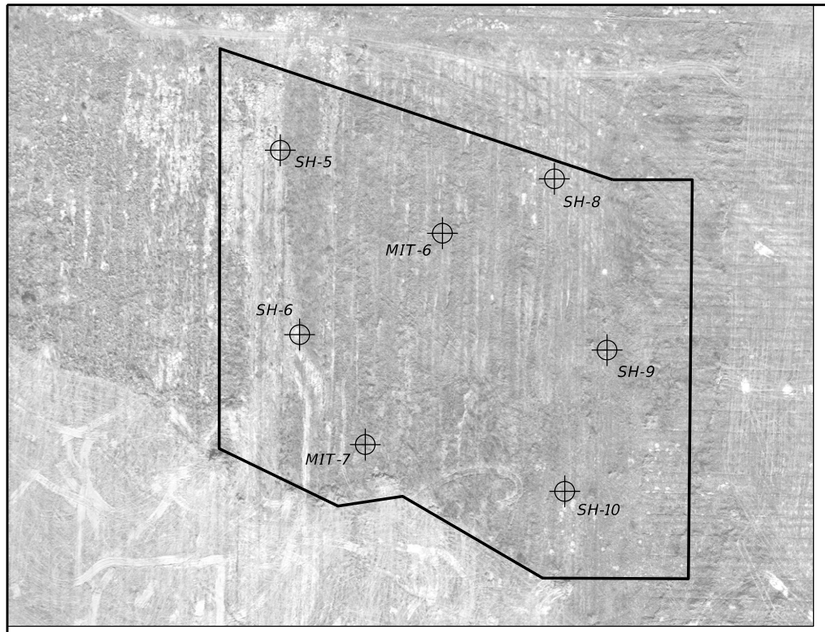
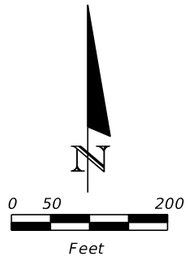


BORING LOCATION PLAN



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
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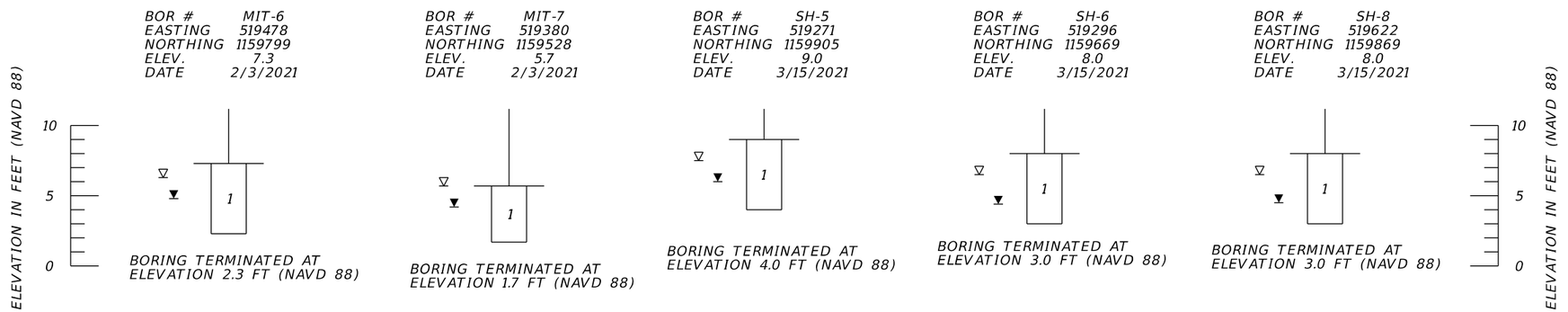
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.



	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

MITIGATION AREA

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

POND SOIL SURVEY (5)

SHEET NO.

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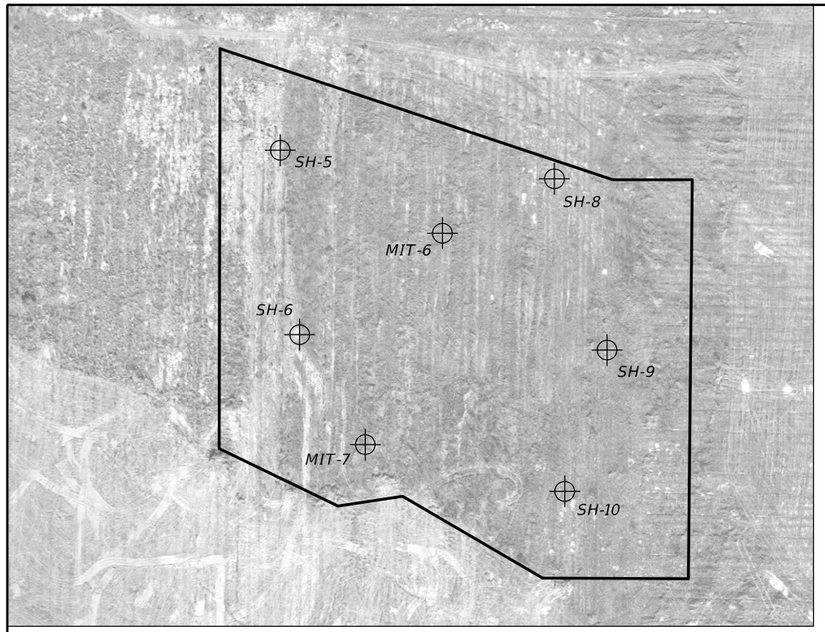
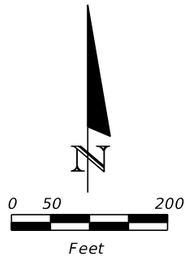


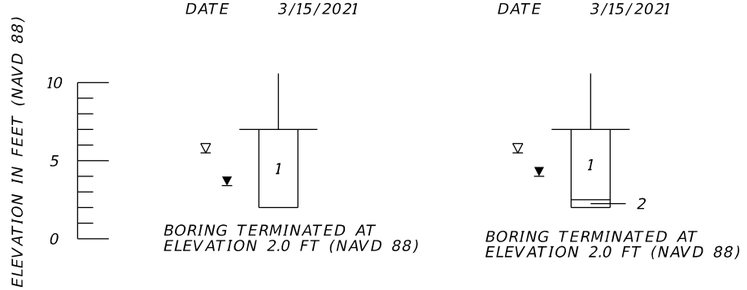
BORING LOCATION PLAN



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT (A-3)
2.	GRAY SILTY SAND (A-2-4)
3.	LIGHT BROWN TO GRAY SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-4/A-2-6)
4.	PALE BROWN TO GRAY SAND TO SANDY CLAY (A-4/A-6/A-4-5/A-7-6)
5.	GRAY TO GREEN CLAY (A-7-5/A-7-6)
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).
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83.

NOTE: THE EASTING COORDINATES, NORTHING COORIDINATES AND ELEVATIONS WERE PROVIDED BY THE PROJECT SURVEYOR.



	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

MITIGATION AREA

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: BMG
DRAWN BY: BMG
CHECKED BY: DRR

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

DATE: 06/21
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: DANIEL R. RUEL
FL. LICENSE NO.: 82404

POND SOIL SURVEY (6)

SHEET NO.

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APPENDIX B

Summary of USDA Soil Survey

Summary of Seasonal High Groundwater Table Estimates

Summary of USDA Soil Survey Information

Canova, Anclote, and Okeelanta Soils, 0 to 2 Percent Slopes (Map Unit 7) - The Canova component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly 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 frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 55 percent.

The Anclote component makes up 25 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions 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 very poorly 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 frequently ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 6 percent.

The Okeelanta component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 80 percent.

Delray Complex, 0 to 2 Percent Slopes (Map Unit 16) - The Delray component makes up 75 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainage ways on marine terraces on coastal plains, flats 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 very poorly drained. Water movement in the most restrictive layer is moderately 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. A seasonal zone of water saturation is at 3 inches during January, February, March, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 4 percent.

EauGallie Fine Sand 0 to 2 Percent Slopes (Map Unit 20) - The EauGallie, non-hydric component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods 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 poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October. Organic matter content in the surface horizon is about 5 percent.

Summary of USDA Soil Survey Information

The EauGallie, hydric component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats 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 poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October. Organic matter content in the surface horizon is about 5 percent.

Floridana-Immokalee-Okeelanta Association, 0 to 2 Percent Slopes (Map Unit 26) - The Floridana, depressional component makes up 35 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions 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 very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 10 percent.

The Immokalee component makes up 30 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions 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 poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 2 percent.

The Okeelanta component makes up 20 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, and October. Organic matter content in the surface horizon is about 80 percent.

Tavares Fine Sand, 0 to 5 Percent Slopes (Map Unit 45) - The Tavares 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 eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 1 percent.

Summary of USDA Soil Survey Information

SUMMARY OF USDA SOIL SURVEY MANATEE COUNTY, FLORIDA							
USDA Map Symbol and Soil Name	**Soil Classification**				**pH**	**Seasonal High Water Table**	
	Depth (in)	**USCS**	**AASHTO**	**Permeability (in/hr)**		**Depth (feet)**	**Months**
(7) Canova	0-8	PT	A-8	6.0 - 20.0	3.5-6.0	0.0	Jan-Dec
	8-24	SP, SP-SM	A-3	6.0 - 20.0	6.1-8.4		
	24-68	SC, SC-SM, SM	A-2-4, A-2-6	0.6 - 6.0	7.4-8.4		
Anclote	0-16	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-8.4	0.0-0.5	June-Dec
	16-80	SM, SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-8.4		
Okelanta	0-20	PT	A-8	6.0 - 20.0	4.5-6.5	0.0	Jan, June-Dec
	20-54	SM, SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.1-7.8		
(16) Delray	0-15	SC-SM, SM, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.3	0.0-0.5	Jan-Mar, June-Dec
	15-55	SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.3		
	55-80	SC, SC-SM, SM	A-2-4, A-2-6	0.6 - 6.0	6.6-7.8		
(20) EauGallie, non-hydric	0-5	SP, SP-SM	A-3	6.0 - 20.0	4.5-6.0	0.5-1.5	June-Oct
	5-28	SP, SP-SM	A-3	6.0 - 20.0	4.5-6.0		
	28-42	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	4.5-6.5		
	42-50	SC, SC-SM, SM	A-2-4, A-2-6	0.1 - 2.0	5.6-7.8		
	50-65	SM, SP-SM	A-2-4, A-3	2.0 - 6.0	5.6-7.8		
EauGallie, hydric	0-5	SP, SP-SM	A-3	6.0 - 20.0	4.5-6.0	0.0-1.0	June-Oct
	5-28	SP, SP-SM	A-3	6.0 - 20.0	4.5-6.0		
	28-42	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	4.5-6.5		
	42-50	SC, SC-SM, SM	A-2-4, A-2-6	0.1 - 2.0	5.6-7.8		
	50-65	SM, SP-SM	A-2-4, A-3	2.0 - 6.0	5.6-7.8		
(26) Floridana, depressional	0-19	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.8	0.0	Jan-Feb, June-Dec
	19-36	SP, SP-SM	A-3	6.0 - 20.0	5.6-7.8		
	36-63	SC, SC-SM	A-2-4, A-2-6	0.1 - 0.2	5.6-7.8		
	63-80	SM, SP-SM	A-2-4, A-3	6.0- 20.0	5.6-7.8		
Immokalee	0-10	SP, SP-SM	A-3	6.0 - 20.0	4.5-5.5	0.0	Jan-Feb, June-Dec
	10-34	SP, SP-SM	A-3	6.0 - 20.0	4.5-5.5		
	34-43	SM, SP-SM	A-2-4, A-3	0.6 - 2.0	4.5-5.5		
	43-80	SP, SP-SM	A-3	6.0 - 20.0	4.5-5.5		
Okeelanta	0-20	PT	A-8	6.0 - 20.0	5.6-8.4	0.0	June-Oct
	20-54	SM, SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-8.4		
(45) Tavares	0-6	SP, SP-SM	A-3	20.0 - 50.0	4.5-6.0	3.5->6.0	June-Dec
	6-80	SP, SP-SM	A-3	20.0 - 50.0	4.5-6.0		

SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES
44TH AVENUE FROM WEST OF I-75 TO 44TH AVENUE EAST
SARASOTA COUNTY, FLORIDA
TIERRA PROJECT NO: 6511-14-222

Boring Name	Boring Location[1]		Boring Depth	Approximate Ground Elevation[2]	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[5]	
	Station (ft)	Offset (ft)	(ft)	(ft, NGVD29)	Date Recorded	Depth[3] (ft)	Elevation (ft, NGVD29)	Map Symbol	Estimated SHGWT[4] Depth (ft)	Depth (ft)	Elevation (ft, NGVD29)
Phase II											
SH-311R	310+95	16' RT.	7	30.2	7/28/2016	6.0	24.2	20	0.5-1.5	3.0	27.2
SH-314L	313+90	13' LT.	7	29.9	8/1/2016	5.5	24.4	20	0.5-1.5	2.0	27.9
SH-317R	316+85	34' RT.	6	29.7	8/1/2016	5.0	24.7	20	0.5-1.5	1.5	28.2
SH-323	322+96	11' RT.	5.5	30.2	11/5/2015	4.1	26.1	20	0.5-1.5	1.5	28.7
SH-326L	325+91	04' RT.	5.5	29.8	11/5/2015	4.1	25.7	20	0.5-1.5	1.0	28.8
SH-329L	328+88	06' LT.	4	28.3	7/20/2016	2.0	26.3	26	0.0	0.0	28.3
SH-334L	334+94	09' LT.	4	27.6	11/5/2015	0.7	26.9	26	0.0	0.3	27.3
SH-373R	373+15	45' RT.	4	36.6	11/5/2015	1.4	35.2	20	0.5-1.5	0.5	36.1
SH-375R	375+54	78' RT.	2	36.6	11/5/2015	0.0	36.6	7	0.0	0.0	36.6
SH-376L	376+28	19' LT.	4	37.3	10/3/2016	0.5	36.8	7	0.0	0.0	37.3
SH-379	379+18	4' RT.	4.5	39.7	11/5/2015	2.5	37.2	20	0.5-1.5	1.5	38.2
SH-382	382+07	10' RT.	4	40.7	11/5/2015	1.0	39.7	20	0.5-1.5	1.0	39.7
SH-384L	384+84	28' LT.	4	41.5	11/5/2015	1.5	40.0	20	0.5-1.5	1.5	40.0
SH-388L	388+52	19' LT.	4	42.3	9/28/2016	1.5	40.8	20	0.5-1.5	1.5	40.8
SH-391R	391+15	10' RT.	3.5	42.1	9/28/2016	0.5	41.6	20	0.5-1.5	0.5	41.6
SH-393R	393+86	10' RT.	9	48.2	11/5/2015	7.5	40.7	20	0.5-1.5	7.0	41.2

[1] State Plane Coordinates of each boring location were provided by the project surveyor and converted by Tierra to station and offset using project design files provided by HDR Engineering, Inc.

[2] Ground elevations were provided by the project surveyor.

[3] Depth below existing grades at time of augering.

[4] Seasonal high groundwater table depth based on the Manatee County, Florida USDA Soil Survey information

[5] Seasonal high groundwater table depth estimated based on soil stratigraphy, measured groundwater levels from the borings, the Manatee County, Florida USDA Soil Survey information and past experience with similar soil conditions.

ND - Not able to Determine

SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES
MANATEE COUNTY, FLORIDA
44th AVENUE EAST TO 44th AVENUE WEST
TIERRA PROJECT NO: 6511-14-222

Boring Name	Boring Location[1]		Boring Depth[3]	Approximate Ground Elevation[2]	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[5]	
	Easting	Northing			Date Recorded	Depth[3]	Elevation	Map Symbol	Estimated SHGWT[4] Depth	Depth[3]	Elevation
	(ft)	(ft)	(ft)	(ft, NAVD88)		(ft)	(ft, NAVD88)		(ft)	(ft)	(ft, NAVD88)
Western Pond											
PBA-1	508063.00	1137848	5	29.9	2/4/2021	2.5	27.4	20	0.3-1.5	1.3	28.6
PBA-2	508130.00	1137746	4.5	29.6	2/4/2021	2.2	27.4	20	0.3-1.5	0.5	29.1
PBA-3	508265.00	1137806	5	29.9	2/4/2021	3.0	26.9	20	0.3-1.5	1.5	28.4
PBA-4	508249.00	1137703	5	29.8	2/4/2021	2.8	27.0	20	0.3-1.5	1.0	28.8
PBA-5	508536.00	1137919	5	30.5	2/4/2021	2.5	28.0	20	0.3-1.5	2.5	28.0
PBA-6	508640.00	1137870	5	30.9	2/4/2021	2.5	28.4	20	0.3-1.5	1.8	29.1
PBA-7	508491.00	1137585	5	30.5	2/4/2021	3.5	27.0	20	0.3-1.5	2.0	28.5
Eastern Pond (Expansion)											
PBA-8	513025.00	1136869	5	42.3	12/29/2020	4.0	38.3	20	0.3-1.5	2.0	40.3
PBA-9	512971.00	1137013	6	42.6	12/29/2020	4.0	38.6	20	0.3-1.5	2.0	40.6
PBA-10	513123.00	1136862	6	42.4	12/29/2020	4.0	38.4	20	0.3-1.5	2.0	40.4
Mitigation Area - Southwest											
MIT-1	517890.00	1159765	3	3.9	2/3/2021	2.5	1.4	20	0.3-1.5	0.5	3.4
MIT-2	518063.00	1159896	5	6.7	2/3/2021	2.8	3.9	20	0.3-1.5	1.5	5.2
SH-1	517517.00	1160095	5	8.0	3/15/2021	3.7	4.3	20	0.3-1.5	1.0	7.0
SH-2	517800.00	1159985	5	7.5	3/15/2021	3.8	3.7	20	0.3-1.5	1.0	6.5
SH-3	518244.00	1159864	5	8.0	3/15/2021	4.0	4.0	20	0.3-1.5	1.5	6.5
SH-4	518186.00	1159713	5	5.5	3/15/2021	4.6	0.9	20	0.3-1.5	1.5	4.0
Mitigation Area - Northern											
MIT-3	518816.00	1161243	4	8.6	1/18/2021	2.5	6.1	20	0.3-1.5	0.8	7.9
MIT-4	518796.00	1160825	5	10.6	1/18/2021	2.5	8.1	20	0.3-1.5	1.0	9.6
MIT-5	519603.00	1160850	4	7.0	1/18/2021	2.5	4.5	20	0.3-1.5	1.0	6.0
SH-11	519721.00	1160988	5	6.0	3/15/2021	3.0	3.0	20	0.3-1.5	1.0	5.0
SH-12	519351.00	1160871	5	8.0	3/15/2021	3.0	5.0	20	0.3-1.5	1.0	7.0
SH-13	519206.00	1161001	6	8.0	3/15/2021	3.0	5.0	20	0.3-1.5	1.0	7.0
SH-14	519050.00	1160875	6	9.4	3/15/2021	3.5	5.9	20	0.3-1.5	2.0	7.4
SH-15	518899.00	1161267	6	8.5	3/15/2021	4.0	4.5	20	0.3-1.5	2.0	6.5
SH-16	518950.00	1161054	6	9.0	3/15/2021	4.0	5.0	20	0.3-1.5	2.0	7.0
SH-17	518684.00	1161010	5	11.0	3/15/2021	3.0	8.0	20	0.3-1.5	2.0	9.0
SH-18	518658.00	1161416	6	9.0	3/15/2021	3.5	5.5	20	0.3-1.5	1.5	7.5
SH-19	518594.00	1161183	5	10.8	3/15/2021	3.0	7.8	20	0.3-1.5	2.0	8.8
Mitigation Area - Southeast											
MIT-6	519478.00	1159799	5	7.3	1/18/2021	2.5	4.8	20	0.3-1.5	1.0	6.3
MIT-7	519380.00	1159528	4	5.7	1/18/2021	1.5	4.2	20	0.3-1.5	0.0	5.7
SH-5	519271.00	1159905	5	9.0	3/15/2021	3.0	6.0	20	0.3-1.5	1.5	7.5
SH-6	519296.00	1159669	5	8.0	3/15/2021	3.6	4.4	20	0.3-1.5	1.5	6.5
SH-8	519622.00	1159869	5	8.0	3/15/2021	3.5	4.5	20	0.3-1.5	1.5	6.5
SH-9	519689.00	1159649	5	7.0	3/15/2021	3.6	3.4	20	0.3-1.5	1.5	5.5
SH-10	519635.00	1159468	5	7.0	3/15/2021	3.0	4.0	20	0.3-1.5	1.5	5.5

[1] State Plane Coordinates of each "MIT-X" boring location were provided by the project surveyor. The "SH-X" boring locatons were estimated using hand-held GPS equimpment (10-foot accuracy)

[2] Ground elevations for "MIT-X" borings were provided by the project surveyor. The "SH-X" boring elevations were estimated using LiDAR data.

[3] Depth below existing grades at time of augering.

[4] Seasonal high groundwater table depth based on the Manatee County, Florida USDA Soil Survey information

[5] Seasonal high groundwater table depth estimated based on soil stratigraphy, measured groundwater levels from the borings, the Manatee County, Florida USDA Soil Survey information and past experience with similar soil conditions.