Andreyev Engineering, Inc.

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▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

Updated: July 18, 2017
Project No.: CPGT-17-077

To: GAI Consultants, Inc.
618 East South Street
Orlando, Florida 32801

Attention: Mr. Frank Bellomo

Subject: Geotechnical Investigation
Proposed South Lake Regional Park
Max Hooks and Cathedral Lane, Clermont, Lake County, Florida

Dear Mr. Bellomo:

Per your request and authorization, Andreyev Engineering, Inc. (AEI) has completed a geotechnical investigation for the above referenced project. We understand that the proposed site improvements will include site grading activities that could cut approximately 20 to 25 feet from the higher ground surface elevations of this site. The purpose of this study was to obtain geotechnical data to assist in the design and permitting of the building structures and stormwater retention systems for the proposed project. This report presents the results of our geotechnical investigation along with an evaluation of the soil and groundwater conditions encountered. In addition, it provides geotechnical engineering recommendations for foundation design for the three proposed Field House Buildings and stormwater retention pond design and site preparation.

SITE LOCATION AND PROJECT DESCRIPTION

The subject site is located at the northwest corner of the intersection of Max Hooks Road and Cathedral Lane, south of State Road 50, in Clermont, Lake County, Florida Sections 21 and 28, Township 22 South, Range 25 East. A quadrangle map U.S.G.S. Topographic map is presented on the attached **Figure 1**, a Soil Survey map on **Figure 2** and Boring Location Plan is presented on **Figure 3**.

Structural load information for the three (3) proposed field houses was not provided to AEI at the time of this study. However, for the purpose of our analyses, we have assumed that maximum column and wall loads will be 50 kips and 3 kips per lineal foot, respectively. Should the actual loads exceed the loads noted herein, please contact AEI so that we may review and possibly revise the recommendations presented in this report.

PURPOSE AND SCOPE OF FIELD EXPLORATION

The scope of our field investigation consisted of the following:

- Mobilized crew and drilling equipment to the site.
- Performed three (3) Standard Penetration Test (SPT) borings to depths of 20 feet, 30 feet and 40 feet below existing grade, one SPT boring within each proposed field house area.
- Performed fifteen (16) auger borings to a depth ranging from 15 to 35 feet below existing grade within the proposed pond areas.
- Performed twenty-four (24) auger borings throughout the property to further assess the variation in depths of the clay soils across the site and to develop a top of clay contour map for preliminary site planning purposes.
- Prepared sixteen (16) remolded laboratory permeability tube samples from soil samples retrieved at each pond location.
- Performed sixteen (16) laboratory permeability tests on the remolded permeability tube samples.
- Performed fifteen (15) moisture content and percent of fines passing the #200 sieve from the soils retrieved at each pond location.

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- Prepared this summary report with results of field investigations, evaluations and geotechnical recommendations.

SOIL AND GROUNDWATER CONDITIONS

The approximate locations of the borings are shown on the attached **Figure 3**. Please note that survey control was not provided for our field investigation. Therefore, the locations of the borings indicated on the attached **Figure 3** should be considered approximate.

Representative portions of each soil strata identified in the borings were packaged and sealed for transportation to our laboratory for further examination and visual classification

Soil Conditions

The soil types encountered at the boring locations are presented in the form of soil profiles on the attached **Figures 4 thru 7**. The stratification presented on **Figures 4 and 7** is based on visual examination of the recovered soil samples and the interpretation of the field logs by a geotechnical engineer.

In general, the borings encountered the following soil types:

Stratum No.	Soil Description	USCS GROUP
1	Dark grayish brown fine sand	(SP)
2	Grayish brown to brown to orange brown fine sand	(SP)
3	Light grayish brown to very light brown fine sand	(SP)
4	Light brown to brown to orange brown slightly clayey to clayey fine sand	(SP-SC)(SC)
5	Light yellowish brown to orange brown to light gray clayey fine sand to sandy clay	(SC)(CL)
6	Light gray to light yellowish brown to light orange brown silty clay	(CL)
7	Light grayish brown to orange brown silty to clayey fine sand	(SP-SM-SC)
8	Green clay	(CH)

Please refer to the soil profiles on the attached **Figures 4 thru 7** for specific boring data. The information presented on the soil profiles represent the subsurface conditions encountered at the noted boring locations. Accordingly, the materials between and away from the boring locations may vary from those encountered at the specific boring locations. The strata boundaries presented on the soil profiles have been approximated. The actual boundaries may be gradual or otherwise not clearly defined.

The results of the moisture content and percent of fines passing the #200 sieve are presented on the soil profiles on the attached **Figures 4 thru 7**.

Standard Penetration Tests (SPT) were carried out in general accordance with ASTM Standard D-1586. Closely spaced SPT tests with split barrel sampling were performed in the upper 10 feet, with successive tests carried out at 5-foot intervals thereafter. The SPT blow counts “N-Values” are shown adjacent to the boring profiles (TB-1, TB-2 and TB-3) on **Figure 4**. The “N” values have been empirically correlated with various soil properties and are considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive material.

The N-values ranged between 3 and 77 blows/foot, indicating the density of the soil to be very loose to very dense. Most of the soils encountered area in the dense to very dense range. The blow counts for the sandy clay to clayey soils of Stratum 5 indicates that this Stratum 5 is in a stiff condition.

General correlations of the SPT N-values with relative density of sands and consistency of clay are provided in the following table:

Sand		Clay	
Penetration Resistance N (blows/ft)	Relative Density of Sand	Penetration Resistance N (blows/ft)	Consistency of Clay
0-4	Very Loose	<2	Very Soft
4-10	Loose	2-4	Soft
10-30	Medium-Dense	4-8	Medium
30-50	Dense	8-15	Stiff
>50	Very Dense	15-30	Very Stiff
		>30	Hard

N.R.C.S. Soil Survey

The N.R.C.S. soil survey map of Lake County was reviewed for the project site and the following table summarizes the soil types mapped by the NRCS and the approximated high groundwater level associated with these soil types:

Soil Unit #	Name	High Water Table Depth (inches)
5	Apopka sand, 0 to 5 percent slopes	>80
6	Apopka sand, 5 to 12 slopes	>80
8	Candler sands, 0 to 5 percent slopes	>80
17	Arents	30 to 60
28	Myakka-Myakka, wet, sands, 0 to 2 percent slopes	6 to 18
40	Placid & Myakka sands, depressional	0
45	Tavares sand, 0 to 5 percent slopes	42 to 72
99	Water	

The USDA/NRCS soil survey of the project site is provided on the attached **Figure 2**.

Groundwater Table

The subsurface investigation was performed between May 24 and May 27, 2017. At the time of the soil borings investigation, groundwater table was encountered in borings PB-1 through PB-5, PB-8 and PB-10 at depths ranging from 10.2 to 32.0 feet below ground surface. Groundwater table was not encountered or was not able to be measured in the other borings within their investigated depths. The difference in the encountered water table levels is attributed to the difference in the ground surface elevation at the boring locations.

Fluctuation of the groundwater table should be anticipated throughout the year due to variations in seasonal rainfall. Due to the presence of the slightly clayey to clayey fine sand, clayey fine sand to sandy clay, silty clay and silty to clayey fine sand layers of Strata 4, 5, 6 and 7, and the poorly permeable characteristics of these soils, we

anticipate temporary perching of groundwater above these soils during periods of heavy or extended rainfall to occur on top of these soils. We anticipate that a temporary perched groundwater table would occur at about 0.5 to 1-foot above the top of Strata 4, 5, 6 and 7, depending on the depth and slope of the underlying clay layers. At boring locations where clayey fine sand was not encountered, we anticipate that the seasonal high groundwater table to remain at more than 7 feet below existing grade. It should also be noted that any areas of cut extending into the poorly permeable Strata 4, 5, 6, and 7 soils, without a positive slope in the top of the clayey soils, could have areas of ponding or standing of groundwater after heavy or extended rainfall.

Below is a summary of the encountered and estimated seasonal high water table levels:

Boring #	Approximate Ground Elevation (Feet)	Approximate Groundwater Depth (May 2017) (feet)	Measured Groundwater Elevation in May 2017 (ft-NAVD)	Estimated Seasonal High Groundwater Table Elevation (ft-NAVD)
TB-1	115.0	NE to 10’	--	114.0 (*)
TB-2	128.0	NE to 10’	--	121.0 (*)
TB-3	139.0	NE to 10’	--	136.0 (*)
PB-1	102.0	10.5	91.5	96.0 (*)
PB-2	100.0	14.5	85.5	97.0 (*)
PB-3	101.0	10.5	90.5	96.0 (*)
PB-4	104.0	10.2	93.8	95.8
PB-5	101.0	11.0	90.0	92.0
PB-6	122.0	NE to 10’	--	115.5 (*)
PB-7	111.0	NE	--	102.0 (*)
PB-8	108.0	14.0	94.0	102.0 (*)
PB-9	116.0	NE	--	114.0 (*)
PB-10	121.0	32.0	89.0	115.0 (*)
PB-11	103.0	NE	--	97.0 (*)
PB-12	110.0	NE	--	101.0 (*)
PB-13	110.0	NE	--	106.0 (*)
PB-14	117.0	NE	--	102.0 (*)
PB-15	107.0	NE	--	99.0 (*)
PB-16	111.0	NE	--	105.0 (*)

(*) Perched Condition

Top of Clay

An approximate elevation of the top of clay (poor permeable to semi-impermeable materials) was estimated from the surveyed elevations and soil profile data. The resulting top of clay elevation was plotted and an approximate contour map was developed. **Figure 8** is a contour map of the top of clay, as interpolated/extrapolated from the soil borings and elevation survey data. Based on this map, the top of clay

elevation appears to generally slope downward and outward in all directions from the central high point near the middle of the site.

EVALUATION AND RECOMMENDATIONS

General

The following conclusions and recommendations are based on the project characteristics previously described, the data obtained from our field exploration and our experience with similar subsurface conditions.

Strata 1, 2 and 3 soils encountered in the foundation areas are acceptable for the support of the proposed structures and can be used as structural fill. Depending upon final grade conditions, isolated areas clayey sand and/or sandy clay soils may be encountered in footing excavations. If these materials are encountered, AEI recommends over excavating the clayey soils to provide minimum buffer of 3 feet between the bottom of the foundations and the unsuitable material. Fill requirements are presented in **Attachment A**.

Provided that the site soils at TB-1 thru TB-3 have been properly prepared and compacted as specified in this report, the structures can be supported on a conventional shallow foundation, sized on the basis of an allowable soil contact pressure of 2,500 pounds per square foot (psf). Settlements for the proposed structures, based on an allowable soil contact pressure of 2,500 psf, are estimated to be about one (1) inch total and one-half (1/2) inch differential. For isolated column spread footings, a minimum footing width of 24 inches should be provided. For continuous wall footings, a minimum footing width of 18 inches should be provided. Exterior footings should bear at least 24 inches below the lowest adjacent final grade. Interior footings can bear at a nominal depth (minimum 12 inches) compatible architectural and structural considerations. Detailed recommendations for site soil preparation and minimum compaction efforts area included in **Attachment A** of this report.

Retention Ponds

Based on the proposed site plan drawing information provided by GAI Consultants, Inc. multiple dry retention ponds are proposed within the proposed development. In an effort to evaluate the soil and groundwater conditions within the proposed pond areas, we performed auger borings to depths ranging from 15 to 35 feet below existing grades within the proposed retention pond areas. Boring depths were adjusted based upon the potential grade changes and cuts of 15 to 25 feet within some proposed retention pond areas. The results of the borings (PB-1 through PB-16) are shown in the form of soil profiles on the attached **Figures 4 and 5.**

In addition, we performed sixteen (16) laboratory permeability tests on permeability soil tube samples remolded from borings PB-1 through PB-16. The laboratory measurements of the coefficient of vertical permeability are presented below:

Boring	Sample Depth (feet)	Stratum	Vertical Permeability (feet/day)
PB-1	20.5	5	0.01
PB-2	19.0	4	0.01
PB-3	10.0	4	0.05
PB-4	11.5	4	1.3
PB-5	10.0	3	18.5
PB-6	28.0	4	1.6
PB-7	18.0	4	1.6
PB-8	9.5	4	0.02
PB-9	18.0	4	0.01
PB-10	25.5	5	0.05
PB-11	9.0	4	1.7
PB-12	11.0	5	0.1
PB-13	9.5	4	0.01
PB-14	19.5	4	0.04
PB-15	6.5	2	12.4
PB-16	5.0	3	20.1

The laboratory test results are presented adjacent to the borings PB-1 through PB-16 soil profiles on the attached **Figures 4 and 5**. The permeability value should not be misconstrued to represent the design exfiltration rate. The exfiltration rate should be lower due to pond bottom siltation and geometry, volume and groundwater mounding effects.

Based on the results of the borings and permeability tests, the proposed stormwater retention areas appear generally suitable for dry stormwater retention system design, with the exception of the areas of PB-6, PB-9, PB-10, and PB-16. The proposed pond bottom elevations at PB-6, PB-9, PB-10, and PB-16 appear to be cut significantly into or near the underlying clay layers and will not operate properly without significant over-excavation and/or installation of an underdrain system. Additional studies will be needed to properly address the issue of poorly permeable clay soils and design of stormwater retention systems in these areas. Further, we also expect that pond locations were the pond bottoms are in close proximity to the underlying clay soil layers will be somewhat limited for infiltration of large pollution abatement runoff volumes within 72 hrs. Stormwater recovery analyses will need to be completed to further assess the infiltration capacity and compliance with regulatory requirements of pond areas where the pond bottoms will be within 2-3 feet of the clayey soils.

All dry stormwater retention ponds should have adequate separation provided between the pond bottoms and the estimated normal seasonal high groundwater table or top of poorly permeable clay layers, whichever is higher. The on-site Strata 1, 2, and 3 sandy soils, excavated from the proposed retention pond areas, should be suitable for general fill purposes. For analysis and design purposes the following aquifer characteristics

should be used. These aquifer characteristics were determined from the results of the field and laboratory investigations, adjusting for depth and soil variability:

RECOMMENDED AQUIFER PARAMETERS						
PARAMETERS	**Pond PB-1 PB-2**	**Pond PB-3**	**Pond PB-4 PB-5**	**Pond PB-6**	**Pond PB-7**	**Pond PB-8**
Proposed Pond Bottom Elevation (feet)	104.0	102.0	102.0	106.0	105.0	105.0
Bottom of Aquifer Elevation (feet)	95.5	95.0	89.5	--	101.0	101.0
Estimated SHGWT Elevation (feet)	96.5*	96.0*	93.9	--	102.0*	102.0*
Weighted Average Horizontal Hydraulic Conductivity	28.6 ft./day	20.8 ft./day	24.5 ft./day	--	18.6 ft./day	18.6 ft./day
Weighted Average Unsaturated Vertical Hydraulic Conductivity	11.5 ft./day	8.7 ft./day	10.1 ft./day	--	8.3 ft./day	8.3 ft./day
Storage Coefficient	0.20	0.20	0.20	--	0.20	0.20

** Perched Water Table*

RECOMMENDED AQUIFER PARAMETERS							
PARAMETERS	**Pond PB-9**	**Pond PB-10**	**Pond PB-11**	**Pond PB-12 PB-13**	**Pond PB-14**	**Pond PB-15**	**Pond PB-16**
Proposed Pond Bottom Elevation (feet)	105.0	105.0	103.0	105.0	105.0	104.0	105.0
Bottom of Aquifer Elevation (feet)	--	--	96.0	102.5	101.0	98.0	104.0
Estimated SHGWT Elevation (feet)	--	--	97.0*	103.5*	102.0*	99.0*	105.0*
Weighted Average Horizontal Hydraulic Conductivity	--	--	27.8 ft./day	13.9 ft./day	27.8 ft./day	18.6 ft./day	10.5 ft./day
Weighted Average Unsaturated Vertical Hydraulic Conductivity	--	--	12.3 ft./day	6.2 ft./day	12.3 ft./day	8.3 ft./day	25.8 ft./day
Storage Coefficient	-	-	0.20	0.20	0.20	0.20	0.20

** Perched Water Table*

The permeability values presented in the above tables are based on a weighted average of the soil profile above the bottom of aquifer using the tested saturated permeability value for Strata 2 and 3, and estimated values for Stratum 1 encountered in borings PB-1 through PB-16. The weighted average of the unsaturated vertical permeability was calculated by multiplying the weighted average saturated vertical permeability of the unsaturated zone by 2/3. The saturated horizontal permeability was calculated by multiplying the saturated vertical permeability by 1.5, where appropriate. A saturated vertical permeability of 10 feet per day (ft/day) was estimated for Stratum 1 and a saturated vertical permeability of 25 feet per day (ft/day) was estimated for fill material used raise the pond bottom above ground elevation on Ponds PB-1/PB-2, PB-3, PB-4 and PB-5. The following formulas were used in the calculation of both the weighted average horizontal and weighted average vertical permeabilities:

$$\text{Weighted Average Vertical Permeability} = \frac{\sum L}{\frac{L_1}{Kv_1} + \frac{L_2}{Kv_2} + \frac{L_3}{Kv_3} + \ldots\ldots\ldots \frac{L_n}{Kv_n}}$$

$$\text{Weighted Average Horizontal Permeability} = \frac{Kh_1.L_1 + Kh_2.L_2 + Kh_3.L_3 + \ldots . Kh_n.L_n}{\sum L}$$

Excavations

All excavations should be constructed in accordance with applicable local, state and federal regulations including those outlined by the Occupational Safety and Health Administration (OSHA). It is the contractor's responsibility for designing and constructing safe and stable excavations. Excavation should be sloped, benched or braced as required to maintain stability of the excavation sides and bottoms. Excavations should take into account loads resulting from equipment, fill stockpile and existing construction. Any shoring needed to maintain a safe excavation should be designed by a professional engineer registered in the State of Florida in accordance with local, state and federal guidelines.

LIMITATIONS OF REPORT

The analyses and recommendations submitted in this report are based on the anticipated location and type of construction discussed herein and the data obtained from the soil borings performed at the locations indicated, and does not reflect any variations which may occur beyond these borings. The top of clay contour map is based on the data obtained and the borings and is for preliminary planning of site grades. Please note, Figure 8 is based on interpolation of data from the soil boring results, and it is possible that the top of clay elevation may vary between borings. This approximation should not be relied upon by contractors for any cost-estimation purpose. Inspections to verify the depth of the top clay should be made during mass grading and construction operations to

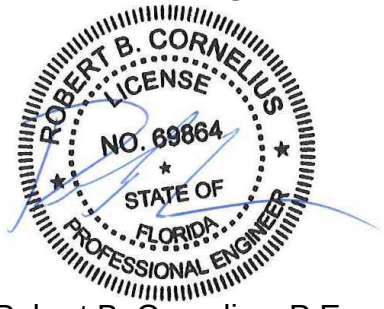
ensure that sufficient separation from these materials is provided, and that recommendations provided here-in have been followed.

CLOSURE

AEI appreciates the opportunity to participate in this project and we trust that the information provided herein is sufficient for your immediate needs. If you have any questions or comments concerning the contents of this report, please do not hesitate to contact the undersigned.

Sincerely,

ANDREYEV ENGINEERING, INC.



Robert B. Cornelius, P.E.
Project Engineer
Florida Registration No.: 69864

ATTACHMENT A

Preparation of the site soil should proceed in a conventional manner, consisting of excavation and/or filling to the final grade elevation and densification of the soils. The following recommendations are for overall site preparation work and mechanical densification. The recommendations, parts of which may be incorporated in the project general specifications, are made as a guide for the design engineer. **Excavation of any encountered unsuitable materials should follow the recommendations previously set forth in this report.**

1. All structure and pavement areas plus a 5-foot margin beyond the edge of these areas should be stripped and cleared of all surface vegetation and root laden top soils. The encounter of any clayey soils within building or pavement areas should be brought to the attention of the AEI inspector. All building foundations and pavement base areas should be sufficiently separated from the top of clay layer as described in our report.

2. After stripping, the structure and pavement areas should be leveled sufficiently to permit equipment traffic, and then proof-rolled using a loaded front end loader or equivalent. Careful observations should be made during proof rolling of the stripped subgrade area to identify any areas of soft yielding soils that may require over-excavation and replacement.

3. A minimum of 10 overlapping passes in a criss-cross pattern should be made by the loaded front end loader across the entire stripped areas prior to placing any fill. Compaction should continue until a minimum density of 95 percent of the Maximum Modified Proctor Dry Density, as established in accordance with ASTM D-1557, is achieved for a minimum depth of 1 foot below the subgrade surface. This should be determined by a series of field density (compaction) tests conducted during proof rolling operations.

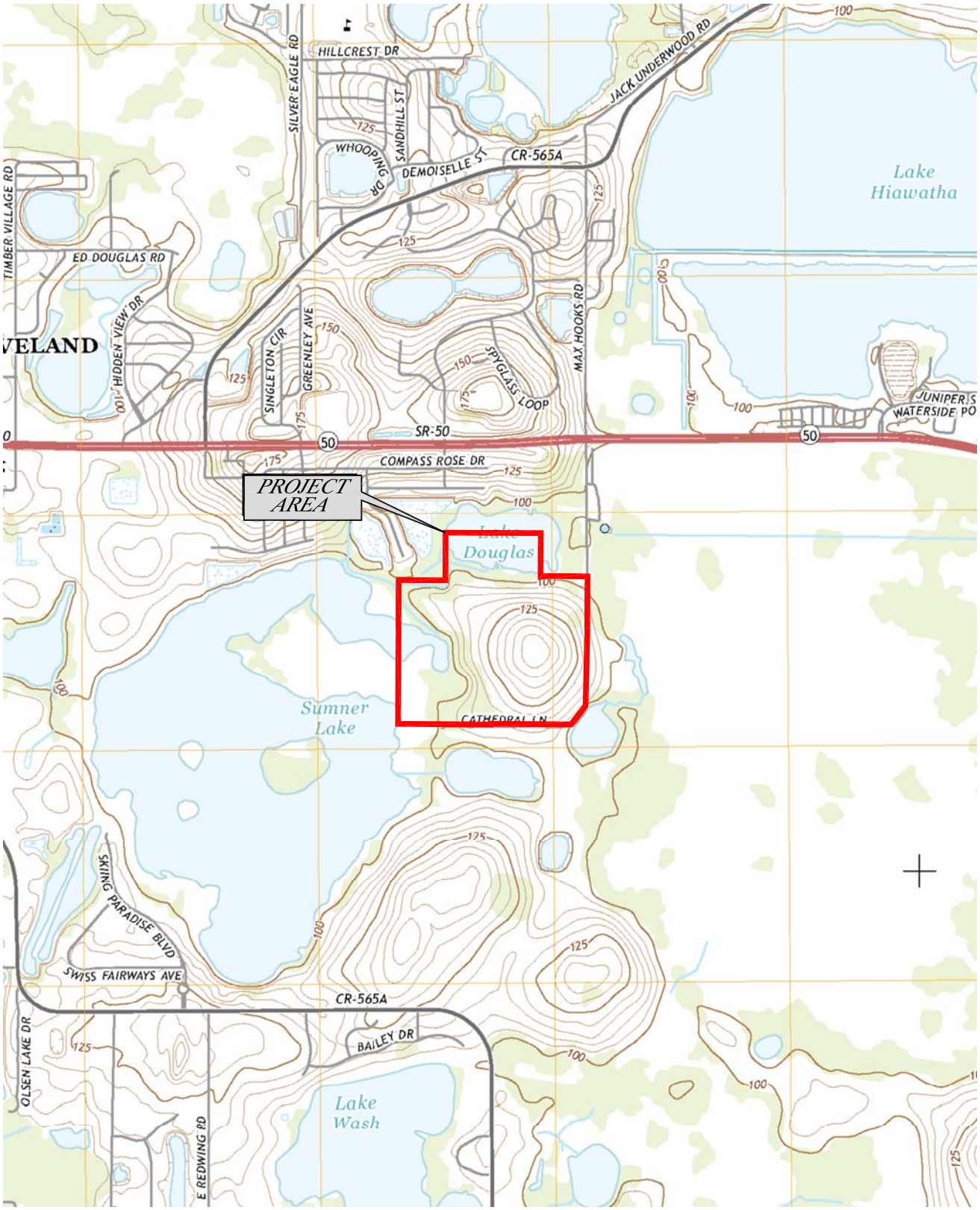
4. Following satisfactory proof rolling of the stripped subgrade, the structure and pavement areas may be brought up to finished subgrade levels. Any required fill should consist of fine sand with less than 15 percent passing the No. 200 sieve and should be free of rubble, organics, clay, debris and other unsuitable materials. Fill materials should be tested and approved prior to placement. Stratum 1 materials over-excavated on the site are suitable for re-use as fill in structure and pavement areas. Approved sand fill should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum of 95 percent of the Maximum Modified Proctor Dry Density (ASTM D-1557). Density tests to confirm compaction should be performed in each lift before the next lift is placed.

5. Individual footing areas (i.e. excavations) should be re-compacted with hand tampers (plate tampers or jumping jacks) to achieve 95 percent of the Maximum Modified Proctor Dry Density.

6. Backfill soils placed adjacent to footings or walls below grade should be carefully compacted with a light rubber-tired roller or vibratory plate compactor to avoid damaging the footings or walls. Approved sand fills placed in pipeline excavations should be placed in loose lifts not exceeding 12 inches and should be compacted to a minimum of 95 percent of the Maximum Modified Proctor Dry Density (ASTM D-1557).

7. Earthwork operations should take place under the observation of a field technician from AEI's office.

FIGURES



REFERENCE:
U.S.G.S. CLERMONT WEST, FLA.
QUADRANGLE MAP
DATED 2015
SECTIONS 21 & 28
TOWNSHIP 22 SOUTH
RANGE 25 EAST

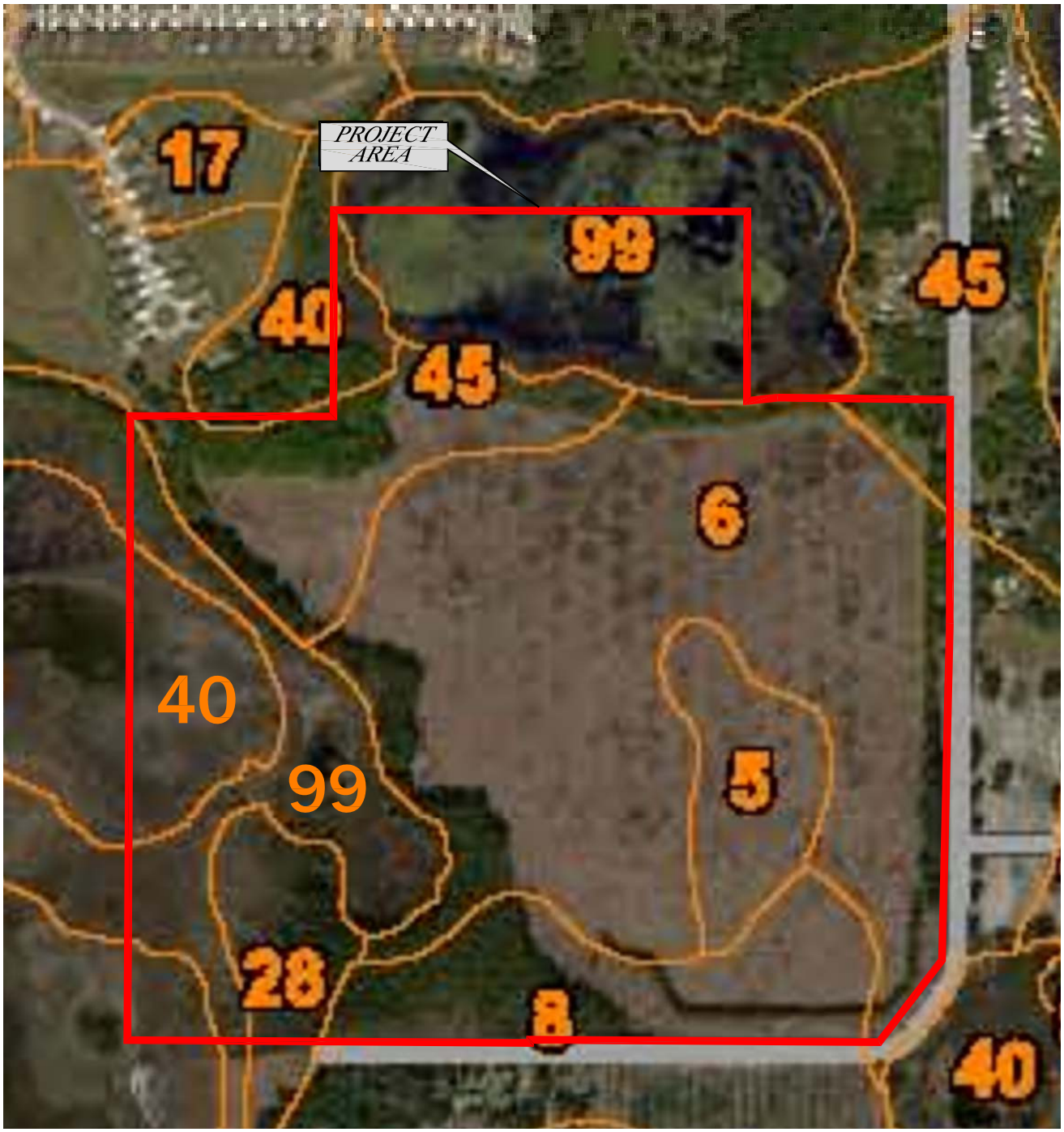
Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=2000'	DATE: 06/01/17	ENGINEER: RC
	PN: CPGT-17-077	DRAWN BY: DLS

GEOTECHNICAL INVESTIGATION
SOUTH LAKE REGIONAL PARK
MAX HOOKS RD & CATHEDRAL LN
CLERMONT, LAKE COUNTY, FL

U.S.G.S. TOPOGRAPHIC MAP

FIGURE 1



LEGEND:

5	APOPKA SAND 0 TO 5% SLOPES
6	APOPKA SAND 5 TO 12% SLOPES
8	CANDLER SAND
17	ARENTS
28	MYAKKA–MYAKKA, WET, SANDS
40	PLACID AND MYAKKA SANDS, DEPRESSIONAL
45	TAVARES SAND
99	WATER

REFERENCE:
U.S.D.A. N.R.C.S. WEB SOIL SURVEY

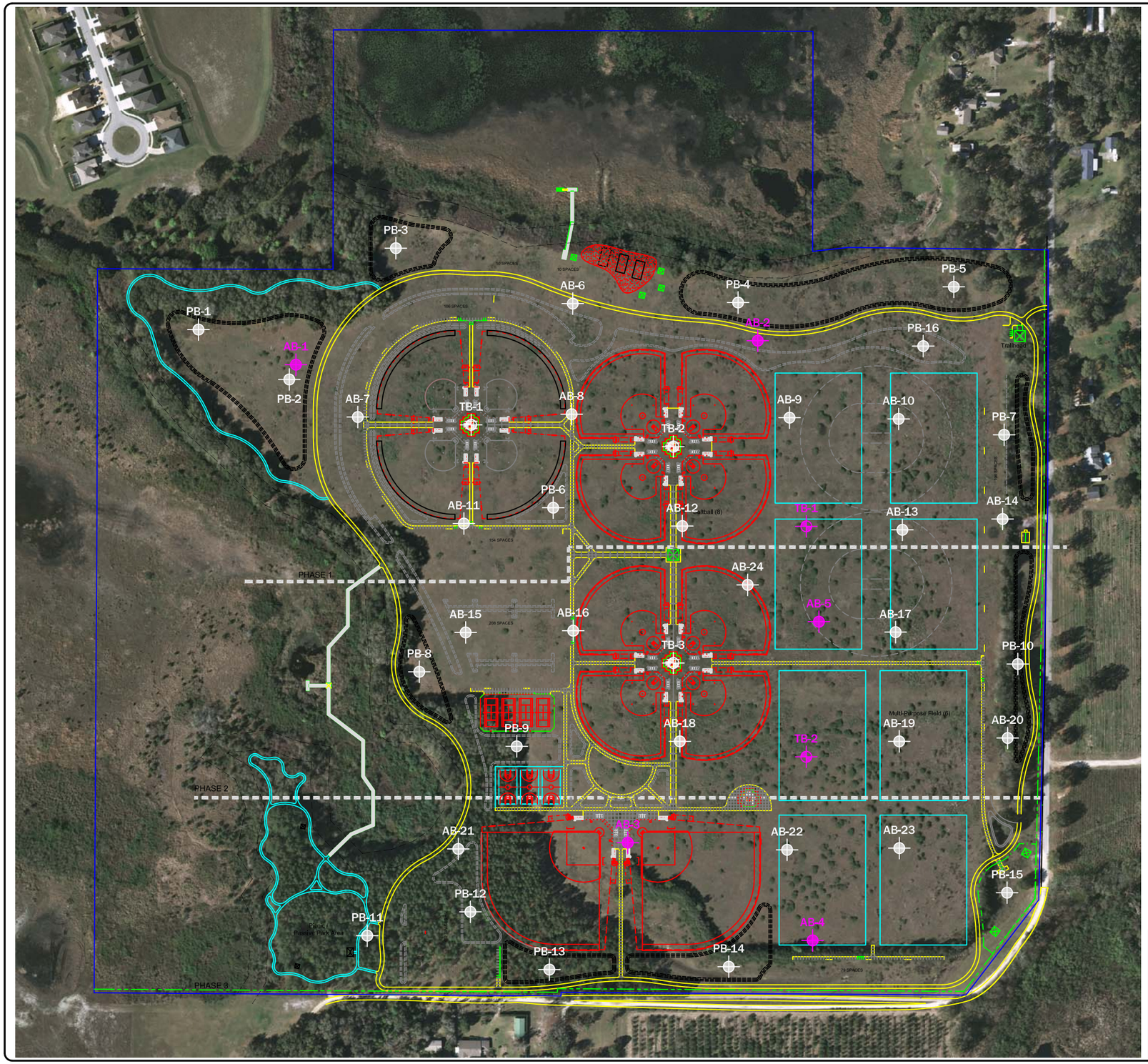
Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=500'	DATE: 06/01/17	ENGINEER: RC
	PN: CPGT–17–077	DRAWN BY: DLS

GEOTECHNICAL INVESTIGATION
SOUTH LAKE REGIONAL PARK
MAX HOOKS RD & CATHEDRAL LN
CLERMONT, LAKE COUNTY, FL

N.R.C.S. SOIL SURVEY MAP

FIGURE 2



LEGEND:

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF POWER AUGER BORING
- APPROXIMATE LOCATION OF PREVIOUSLY CONDUCTED SPT BORING
- APPROXIMATE LOCATION OF PREVIOUSLY CONDUCTED POWER AUGER BORING

HERON

0 150 300 600

GRAPHIC SCALE: 1"=300'

Andreyev Engineering, Inc.

GEOTECHNICAL INVESTIGATION

SOUTH LAKE REGIONAL PARK

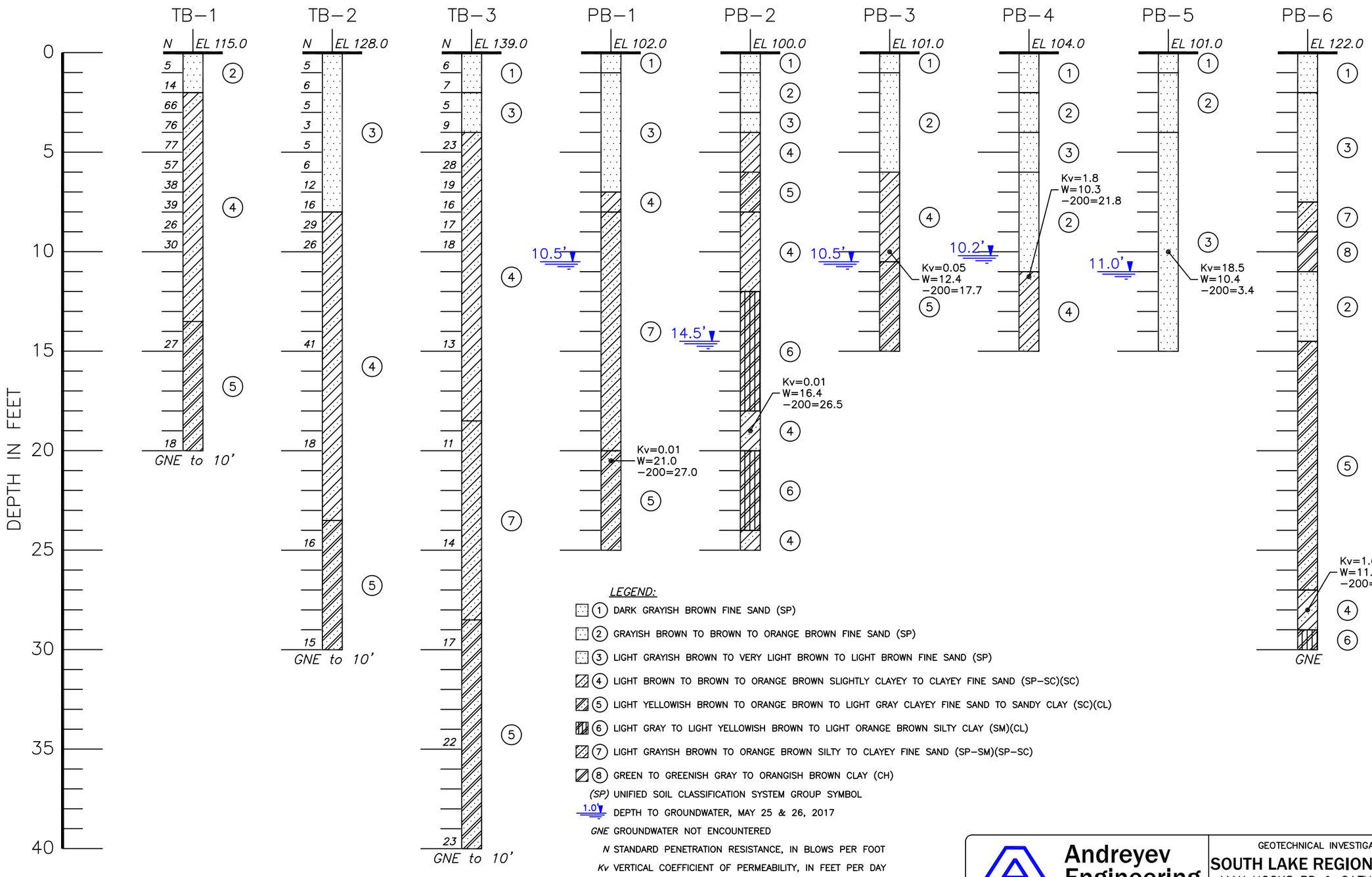
MAX HOOKS RD & CATHEDRAL LN

CLERMONT, LAKE COUNTY, FL

APPROXIMATE SCALE:	DATE: 07/13/17	ENGINEER: RC
1"=300'	PN: CPGT-17-077	DRAWN BY: DLS

BORING LOCATION PLAN

FIGURE 3



LEGEND:

1. DARK GRAYISH BROWN FINE SAND (SP)
2. GRAYISH BROWN TO BROWN TO ORANGE BROWN FINE SAND (SP)
3. LIGHT GRAYISH BROWN TO VERY LIGHT BROWN TO LIGHT BROWN FINE SAND (SP)
4. LIGHT BROWN TO BROWN TO ORANGE BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND (SP–SC)(SC)
5. LIGHT YELLOWISH BROWN TO ORANGE BROWN TO LIGHT GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
6. LIGHT GRAY TO LIGHT YELLOWISH BROWN TO LIGHT ORANGE BROWN SILTY CLAY (SM)(CL)
7. LIGHT GRAYISH BROWN TO ORANGE BROWN SILTY TO CLAYEY FINE SAND (SP–SM)(SP–SC)
8. GREEN TO GREENISH GRAY TO ORANGISH BROWN CLAY (CH)

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER, MAY 25 & 26, 2017

GNE GROUNDWATER NOT ENCOUNTERED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

EL GROUND ELEVATION AT BORING LOCATION (FT)

Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=5'

DATE: 06/08/17 | ENGINEER: RC

PN: CPGT–17–077 | DRAWN BY: DLS

GEOTECHNICAL INVESTIGATION

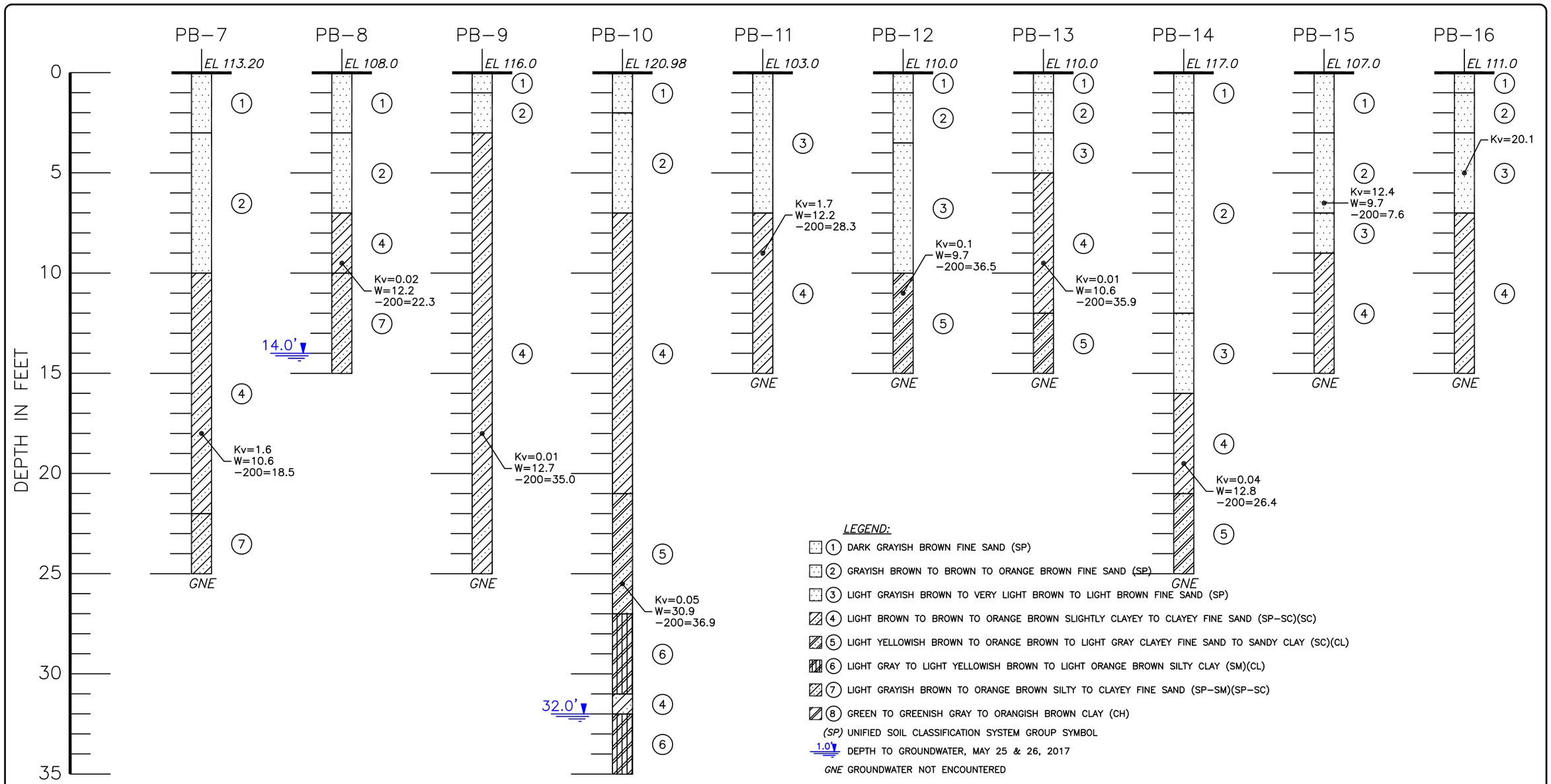
SOUTH LAKE REGIONAL PARK

MAX HOOKS RD & CATHEDRAL LN

CLERMONT, LAKE COUNTY, FL

SOIL PROFILES

FIGURE 4



LEGEND:

1. DARK GRAYISH BROWN FINE SAND (SP)
2. GRAYISH BROWN TO BROWN TO ORANGE BROWN FINE SAND (SP)
3. LIGHT GRAYISH BROWN TO VERY LIGHT BROWN TO LIGHT BROWN FINE SAND (SP)
4. LIGHT BROWN TO BROWN TO ORANGE BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND (SP–SC)(SC)
5. LIGHT YELLOWISH BROWN TO ORANGE BROWN TO LIGHT GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
6. LIGHT GRAY TO LIGHT YELLOWISH BROWN TO LIGHT ORANGE BROWN SILTY CLAY (SM)(CL)
7. LIGHT GRAYISH BROWN TO ORANGE BROWN SILTY TO CLAYEY FINE SAND (SP–SM)(SP–SC)
8. GREEN TO GREENISH GRAY TO ORANGISH BROWN CLAY (CH)

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER, MAY 25 & 26, 2017

GNE GROUNDWATER NOT ENCOUNTERED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

EL GROUND ELEVATION AT BORING LOCATION (FT)

Andreyev Engineering, Inc.

GEOTECHNICAL INVESTIGATION

SOUTH LAKE REGIONAL PARK

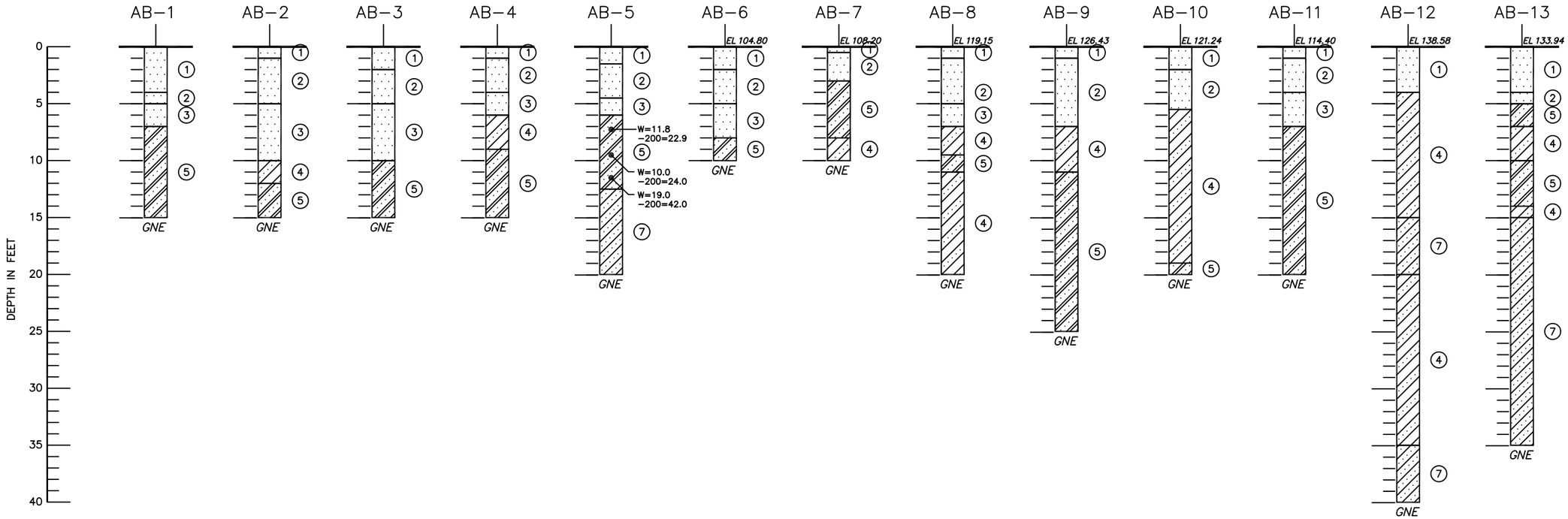
MAX HOOKS RD & CATHEDRAL LN

CLERMONT, LAKE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 07/17/17	ENGINEER: RC
1"=5'	PN: CPGT–17–077	DRAWN BY: DLS

FIGURE 5



LEGEND:

1. DARK GRAYISH BROWN FINE SAND (SP)
2. GRAYISH BROWN TO BROWN TO ORANGE BROWN FINE SAND (SP)
3. LIGHT GRAYISH BROWN TO VERY LIGHT BROWN TO LIGHT BROWN FINE SAND (SP)
4. LIGHT BROWN TO BROWN TO ORANGE BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND (SP–SC)(SC)
5. LIGHT YELLOWISH BROWN TO ORANGE BROWN TO LIGHT GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
6. LIGHT GRAY TO LIGHT YELLOWISH BROWN TO LIGHT ORANGE BROWN SILTY CLAY (SM)(CL)
7. LIGHT GRAYISH BROWN TO ORANGE BROWN SILTY TO CLAYEY FINE SAND (SP–SM)(SP–SC)
8. GREEN TO GREENISH GRAY TO ORANGISH BROWN CLAY (CH)

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

GNE GROUNDWATER NOT ENCOUNTERED

EL GROUND ELEVATION AT BORING LOCATION (FT)

Andreyev Engineering, Inc.

GEOTECHNICAL INVESTIGATION

SOUTH LAKE REGIONAL PARK

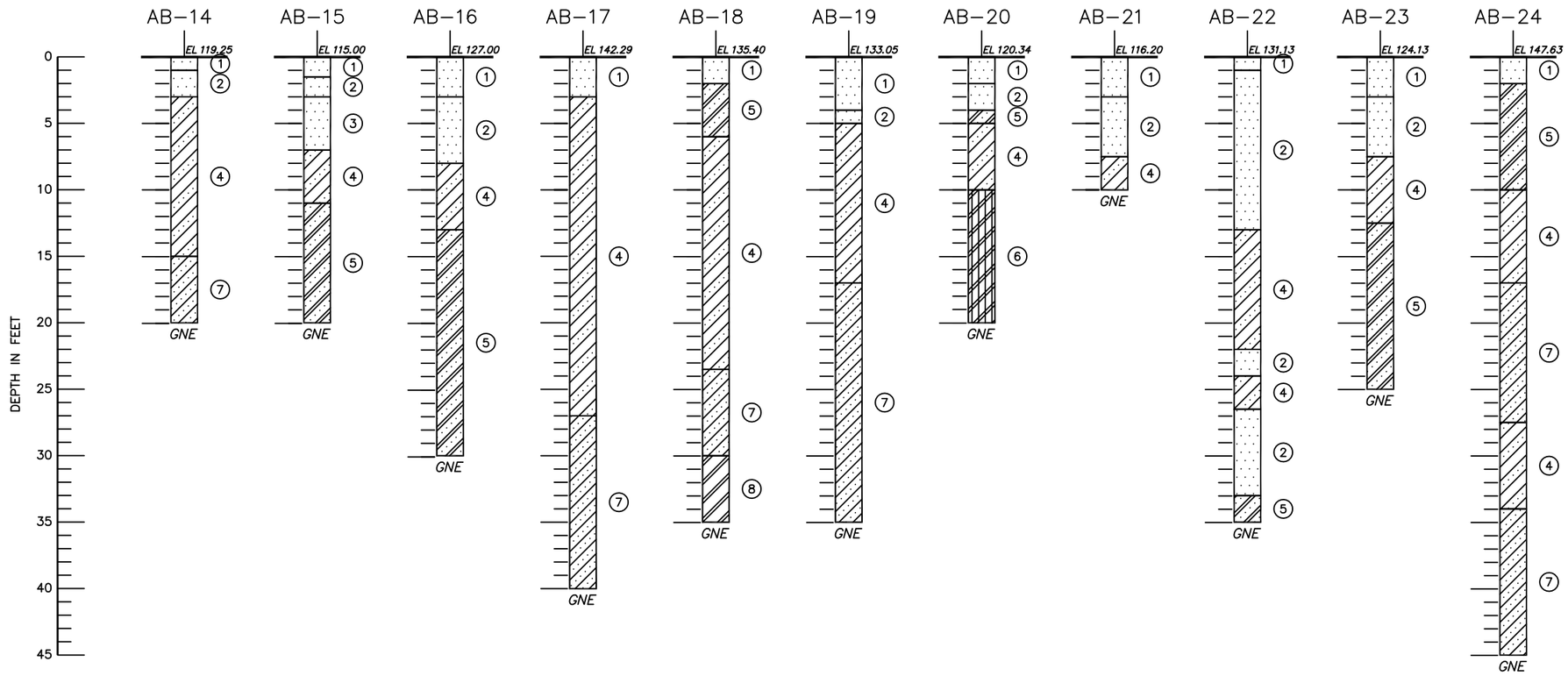
MAX HOOKS RD & CATHEDRAL LN

CLERMONT, LAKE COUNTY, FL

SOIL PROFILES

FIGURE 6

APPROXIMATE SCALE:	DATE: 07/13/17	ENGINEER: RC
1"=10'	PN: CPGT–17–077	DRAWN BY: DLS



LEGEND:

1. DARK GRAYISH BROWN FINE SAND (SP)
2. GRAYISH BROWN TO BROWN TO ORANGE BROWN FINE SAND (SP)
3. LIGHT GRAYISH BROWN TO VERY LIGHT BROWN TO LIGHT BROWN FINE SAND (SP)
4. LIGHT BROWN TO BROWN TO ORANGE BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND (SP–SC)(SC)
5. LIGHT YELLOWISH BROWN TO ORANGE BROWN TO LIGHT GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
6. LIGHT GRAY TO LIGHT YELLOWISH BROWN TO LIGHT ORANGE BROWN SILTY CLAY (SM)(CL)
7. LIGHT GRAYISH BROWN TO ORANGE BROWN SILTY TO CLAYEY FINE SAND (SP–SM)(SP–SC)
8. GREEN TO GREENISH GRAY TO ORANGISH BROWN CLAY (CH)

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

GNE GROUNDWATER NOT ENCOUNTERED

EL GROUND ELEVATION AT BORING LOCATION (FT)

Andreyev Engineering, Inc.

GEOTECHNICAL INVESTIGATION

SOUTH LAKE REGIONAL PARK

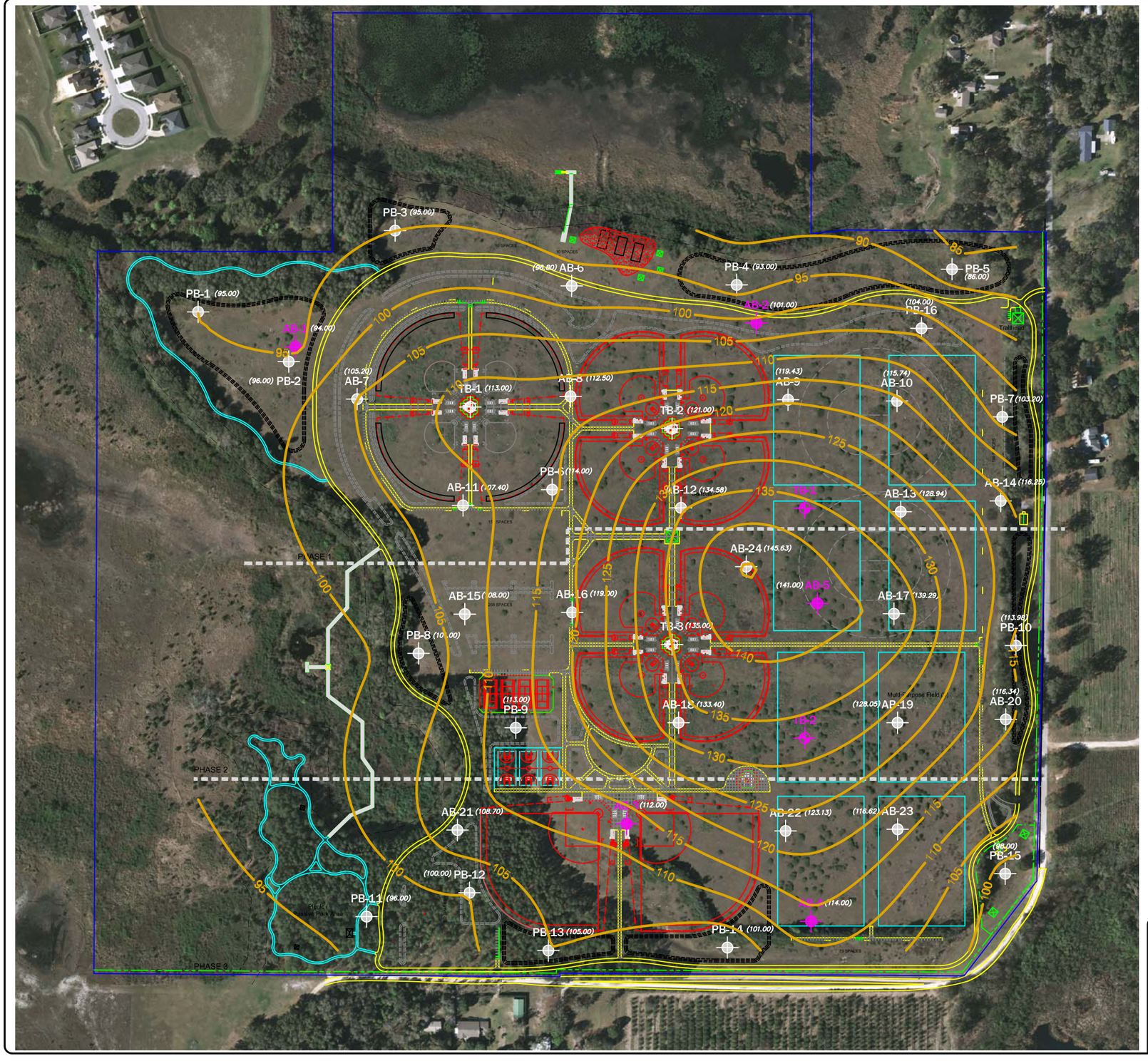
MAX HOOKS RD & CATHEDRAL LN

CLERMONT, LAKE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 06/23/17	ENGINEER: RC
1"=10'	PN: CPGT–17–077	DRAWN BY: DLS

FIGURE 7



LEGEND:

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF POWER AUGER BORING
- APPROXIMATE LOCATION OF PREVIOUSLY CONDUCTED SPT BORING
- APPROXIMATE LOCATION OF PREVIOUSLY CONDUCTED POWER AUGER BORING

(112.00) CLAY ELEVATION (FT)

CLAY ELEVATION CONTOUR (FT)

0 150 300 600

GRAPHIC SCALE: 1"=300'

Andreyev Engineering, Inc.

GEOTECHNICAL INVESTIGATION

SOUTH LAKE REGIONAL PARK

MAX HOOKS RD & CATHEDRAL LN

CLERMONT, LAKE COUNTY, FL

CLAY ELEVATION CONTOUR MAP

APPROXIMATE SCALE:	DATE: 07/13/17	ENGINEER: RC
1"=300'	PN: CPGT-17-077	DRAWN BY: DLS

FIGURE 8