Andreyev Engineering, Inc.

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▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

August 1, 2005
AEI Project No. OGGT-05-081

TO: Mr. Bruce Phillips, P.E., P.L.S
City of Ocala Engineering Department
P.O. Box 1270
Ocala, Florida 34478

SUBJECT: Preliminary Geotechnical Engineering Study
Parcel East of Aircraft Rescue & Firefighting Facility at Ocala International Airport
North of Southwest 38th Street
Ocala, Florida

Dear Mr. Phillips:

As requested, Andreyev Engineering, Inc. (AEI) has completed a preliminary geotechnical engineering study on the subject site. The purpose of the study was to determine subsurface conditions at the site in order to develop general geotechnical engineering considerations for development.

The subject parcel is located on the west side of the Ocala International Airport. The parcel is designated as an aviation or non-aviation use property consisting of approximately 23 acres, as shown on **Figure 1**. Four (4) Standard Penetration Test (SPT) borings were drilled to a depth of 25 feet below existing ground surface on the parcel on May 17 and 18, 2005. The approximate boring locations are presented on **Figure 2**. The borings were drilled with an auger in the upper 10 feet and advanced using the rotary method with drilling mud below a depth of 10 feet. Results of the borings are presented in profile form on **Figure 3**. On the profiles, horizontal lines designating the interface between different materials represent approximate boundaries. The transition between layers is typically gradual. The following strata were found in the borings:

STRATUM NO.	DESCRIPTION	PLASTICITY	USCS GROUP
1	Fine sand to fine sand with silt	None	SP, SP-SM
2	Clayey fine sand	Moderate to high	SC
3	Sandy clay to clay	High	CH
4	Limestone	n/a	n/a
Plasticity is based on visual classification of soil samples recovered from the borings. USCS = Unified Soil Classification System.			

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A surface layer of Stratum 1 was found at each boring location. Stratum 1 ranged in thickness from approximately 4 to 13 feet at the boring locations. Stratum 1 was generally underlain by Stratum 2. Stratum 4 was found in the bottom portion of boring B-18 and a second layer of Stratum 1 was found in the bottom of boring B-19. SPT N-values were between 3 and 20 in the shallow Stratum 1 soils. The N-values generally increased with depth. The N-value recorded in the limestone (Stratum 4) was 17. Drilling fluid circulation losses were not observed in any of the borings. A ground water table was not found within the upper 10 feet of the borings. Ground water table measurements were not taken below a depth of 10 feet in the borings due to the presence of drilling mud in the boreholes.

The Stratum 1 sands will be suitable for support of lightly-loaded to moderately-loaded structures using conventional, shallow spread footings. Densification of the shallow sands will be required to limit the amount of settlement of proposed structures. Densification of the sands can generally be accomplished using conventional vibratory compaction techniques. The allowable bearing capacity of the shallow sands is expected to be in the range of 2000 pounds per square foot (psf) to 2500 psf depending on the amount of densification achieved and the amount of allowable settlement of the proposed structures. The Stratum 1 sands will also be suitable for support of conventional pavement sections using a limerock base. The permeability of the Stratum 1 sands is expected to be moderate to high and Stratum 1 will be suitable for construction of dry-bottom storm water ponds. The Stratum 2 clayey sands will not be suitable for support of structures and pavements or for construction of dry-bottom storm water ponds. The Stratum 2 soils are moderately plastic to highly plastic and therefore have the potential to change volume upon changes in water content. The volume changes of the soils can caused distress to overlying structures and pavements. In addition, the Stratum 2 soils are expected to have a very low permeability. A common method used locally to reduce the potential for structure distress caused by plastic soil movement is to provide a buffer of sand between the soils and overlying structures and pavements. The thickness of the buffer will depend on the plasticity of the clay and on existing and proposed site grades. Stratum 2 was found at a shallow depth (less than 6 feet) in two of the borings drilled at the subject site. The borings where Stratum 2 was encountered at a shallow depth (B-19 and B-20) were drilled near the north portion of the property. Stratum 2 may exist at shallow depths between boring locations. A design-level geotechnical engineering study is recommended after proposed improvement locations and details have been determined.

AEI appreciates the opportunity to provide services to the City of Ocala and trusts that the information herein is sufficient for your immediate needs. If you have any questions or comments regarding the contents of this report, please do not hesitate to contact the undersigned.

Sincerely,

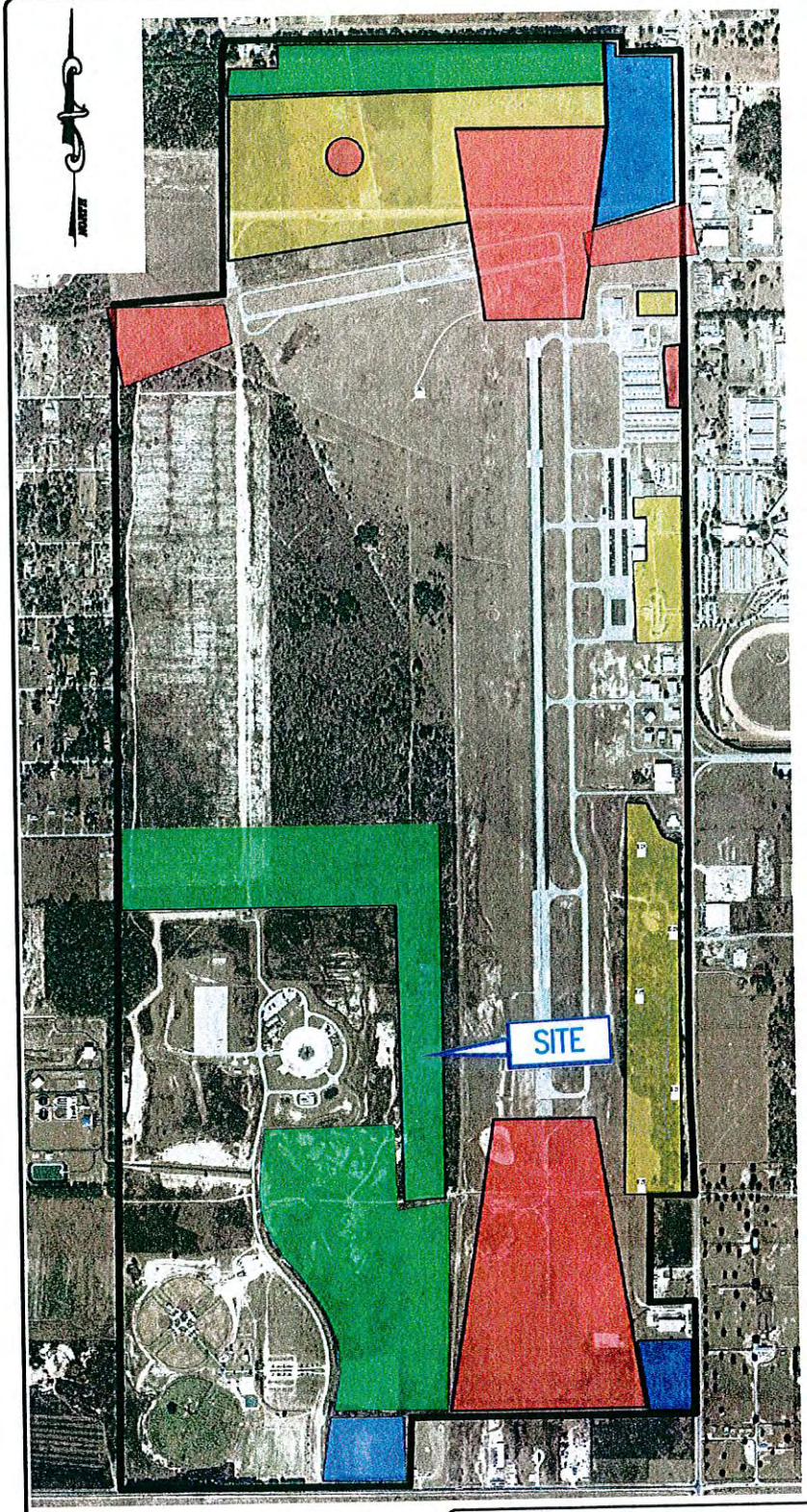
ANDREYEV ENGINEERING, INC.

Bradley T. Reddick
Project Geologist

8-5-05
David J. Rathbun, P.E.
Vice President
Florida Registration No. 40494

Attachments: Figures 1 through 3

xc: Mr. Matt Grow - City of Ocala Airport Division



AVIATION USE ONLY

AVIATION OR NON AVIATION USE ONLY

NON AVIATION ONLY

NO STRUCTURES

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL ENGINEERING STUDY

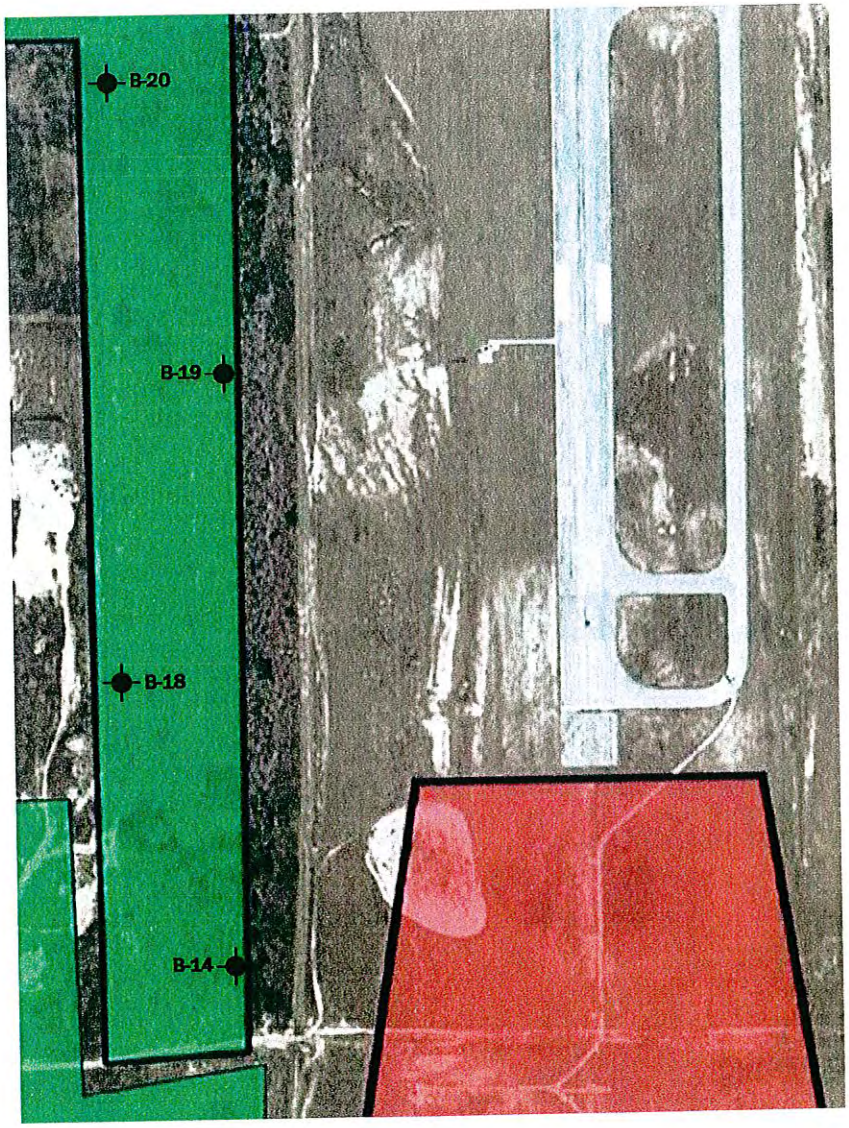
OCALA INTERNATIONAL AIRPORT
SR 40 & SW 60th AVE

OCALA, MARION COUNTY, FL.

SITE MAP

APPROXIMATE SCALE:	DATE: 08/01/05	ENGINEER: BR
N.T.S.	PN: OPGT-05-081	DRAWN BY: DS

FIGURE 1



AVIATION USE ONLY

AVIATION OR NON AVIATION USE ONLY

NON AVIATION ONLY

NO STRUCTURES

LEGEND:

LOCATION OF BORING

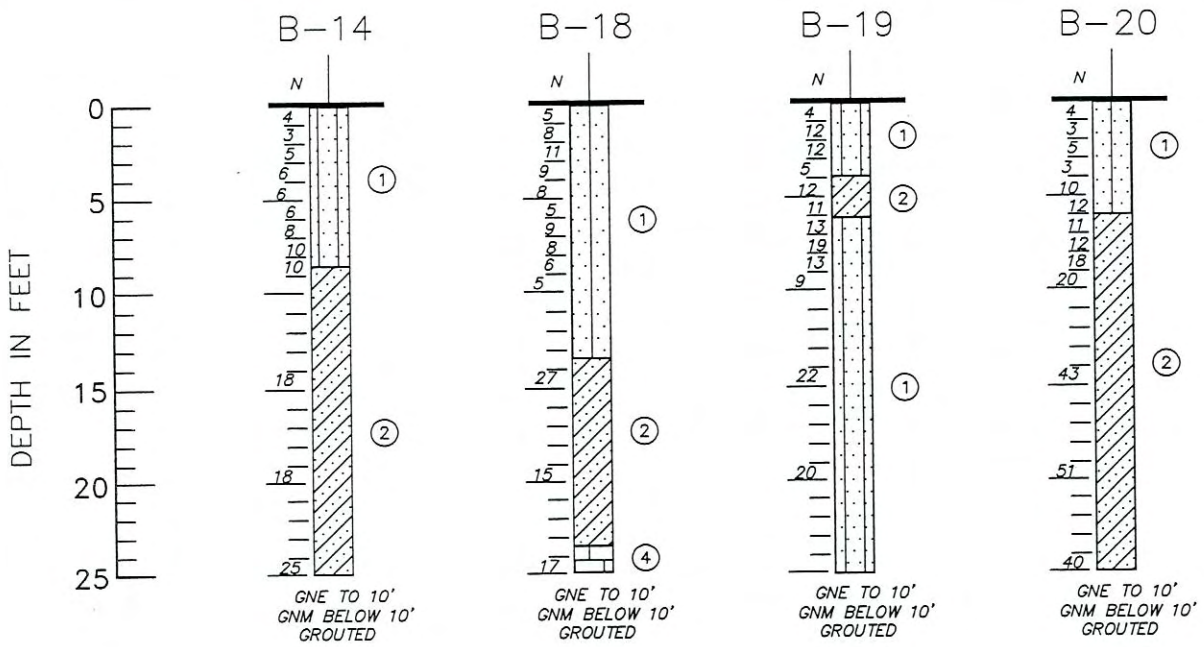
Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL ENGINEERING STUDY
OCALA INTERNATIONAL AIRPORT
PARCEL S OF AIRCRAFT & RESCUE FIREFIGHTING FAC. @ OIA
N OF SW 38th AVE
OCALA, MARION COUNTY, FL.

BORING LOCATION MAP

APPROXIMATE SCALE:	DATE: 08/01/05	ENGINEER: BR
N.T.S.	PN: OPGT-05-081	DRAWN BY: DS

FIGURE 2



LEGEND

①	DARK TO LIGHT BROWN FINE SAND TO FINE SAND WITH SILT (SP) (SP-SM)
②	ORANGE BROWN TO GRAY CLAYEY FINE SAND (SC)
③	LIGHT GRAY SANDY CLAY TO CLAY (CH)
④	LIMESTONE

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
HA	HAND AUGERED
50/5"	NUMBER OF BLOWS (50) REQUIRED TO ADVANCE THE SAMPLER 5 INCHES
GNE	GROUNDWATER NOT ENCOUNTERED
GNM	GROUNDWATER NOT MEASURED

ANDREYEV ENGINEERING, INC.

PRELIMINARY
GEOTECHNICAL ENGINEERING STUDY
OCALA INTERNATIONAL AIRPORT
SR 40 & SW 60TH AVENUE
OCALA, MARION COUNTY, FL

SCALE: 1"=10'	DATE: 8-2-05	ENGINEER: DJR	SUBSURFACE PROFILES
	PN: OPGT-05-081	DRAWN BY: KRW	FIGURE 3