

Report
Preliminary Site Assessment
Proposed Elementary School "L"
South of Koa Street
Poinciana, Osceola County, Florida
PSI Project No. 757-65362

February 12, 2007

The School District of Osceola County
817 Bill Beck Boulevard
Kissimmee, Florida 34744

Attention: Ms. Linda Beumel
Facilities Planning Specialist

RE: Report
Preliminary Site Assessment
Proposed Elementary School "L"
South of Koa Street
Poinciana, Osceola County, Florida
PSI Project No.: 757-65362

Dear Ms. Beumel:

In accordance with our proposal (PSI Proposal No. 757-6-463) dated November 9, 2006, Professional Service Industries, Inc. (PSI) has completed a preliminary subsurface exploration program at the site of the referenced project. The subsurface exploration was conducted to provide preliminary geotechnical recommendations for site preparation, stormwater planning, pavement construction and foundation design for the planned school project.

Project Information

The subject site is located on the south side of Koa Street and is to the west of Monterey Road and east of Berkshire Road in Poinciana, Osceola County, Florida. The subject property is located in Section 11, Township 27 South, Range 28 East, as referred to on the USGS "Lake Tohopekaliga, Florida" quadrangle map. The school property consists of approximately 15± acres of undeveloped land generally consisting of cleared land with some scattered trees and underbrush. A low-lying, heavily vegetated area is present in the southwestern portion of the site.

We assume that development of the parcel is conceptually planned to comprise a low-rise elementary school building, asphalt-paved roadways and parking areas, stormwater management ponds, recreation facilities, and associated civil improvements. Specific details relating to the proposed school development were not available to us at the time of this report. The project is currently in a conceptual stage of development.

If any of the noted information is incorrect or has changed, PSI should be notified so appropriate modifications can be made to our report.

Scope of Geotechnical Services

The purpose of this study was to obtain information on the general subsurface conditions at the proposed project site. The subsurface materials encountered were evaluated with respect to the available project characteristics. In this regard, preliminary geotechnical engineering recommendations for the proposed school development were formulated.

The following services were provided in order to achieve the preceding objectives:

1. Reviewed readily available published geologic and topographic information. The published information was obtained from the "Lake Tohopekaliga, Florida" quadrangle map published by the United States Geological Survey (USGS) and the "Soil Survey of Osceola County, Florida" published by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS).
2. Executed a program of subsurface sampling and field testing. PSI performed six (6) Standard Penetration Test (SPT) borings 20 feet in depth and ten (10) auger borings 7 feet in depth across the site. The borings were staked and labeled after completion for survey control.
3. Visually classified and stratified representative soil samples in the laboratory using the Unified Soil Classification System. Identified soil conditions at each boring location and formed an opinion of the site soil stratigraphy.
4. Collected groundwater level measurements and estimated normal wet seasonal high groundwater levels.
5. The results of the field exploration and laboratory tests were used in the engineering analysis and in the formulation of our preliminary geotechnical recommendations. The results of the subsurface exploration, including the recommendations and the data on which they are based, are presented in this report.

PUBLISHED INFORMATION

USGS Quadrangle Map

Based on our review of the USGS quadrangle map entitled "Lake Tohopekaliga, Florida," the natural ground surface elevation in the project vicinity is about +75 feet NGVD. Refer to **Figure 2** for an excerpt of the USGS map of the project area. No site-specific topographic information was provided to us to compare to the USGS data.



SCS Soil Survey

The “Soil Survey of Osceola County, Florida”, published by the USDA Soil Conservation Service (SCS), was reviewed for general near surface (i.e. upper 80 inches) soil information in the project vicinity (refer to **Figure 2**). This information indicates that there are two (2) primary mapping units in the area of the subject project. A brief summary of the surficial soils mapped by the SCS in the project vicinity are as follows.

Soil Map Unit	USCS Soil Types	USDA High Water Table
		Depth (feet)
5 – Basinger Fine Sand	SP, SP-SM	0 to 1.0
42 – Smyrna Fine Sand	SP, SP-SM, SM	0 to 1.0

FIELD EXPLORATION

General

The approximate locations of the borings are shown on **Sheet 1** in the **Appendix**. The borings were performed in general accordance with the procedures of ASTM D-1452 and ASTM D-1586. The soil types encountered at the specific boring locations are presented in the form of soil profiles on **Sheets 2** and **3**. Included with the boring profiles is a legend describing the encountered soils in USCS format and the measured stabilized groundwater levels recorded in the borings at the time of our fieldwork. The stratification presented is based on visual observation of the recovered soil samples and the interpretation of field logs by a geotechnical engineer.

Soil Conditions

In general, the borings disclosed reasonably consistent subsurface conditions at the site. The borings typically encountered a series of fine sands grading relatively clean to slightly silty and silty in composition (i.e. SP, SP-SM, and SM materials) to the boring termination depths. Based on the SPT blow counts recorded during our field exploration, the sands grade very loose to medium dense. The very loose soils, where encountered, were present in the upper 5 feet of the borings. A detailed description of the individual borings is shown on the soil profiles on **Sheets 2** and **3** in the **Appendix**.

Groundwater

The measured groundwater table in the borings ranged from about 3 to 5.5 feet below the existing ground surface at the time of our fieldwork. Based on a review of the SCS data, the borings completed for the study, and our past experience, we estimate the normal seasonal high groundwater table to be at or slightly below the natural ground surface.



It should be noted the estimated normal seasonal high groundwater level is not intended to define a limit or ensure that future seasonal fluctuations in groundwater levels will not exceed the estimated levels. Post-development groundwater levels could exceed the estimated normal seasonal high groundwater levels as a result of a series of rainfall events; changed conditions at the site that alter surface water drainage characteristics; and/or variations in duration, intensity, or total volume of rainfall.

PRELIMINARY DESIGN RECOMMENDATIONS

General

Based on the results of our preliminary subsurface evaluation it appears the site is generally suitable for the proposed school development from a geotechnical perspective provided the site is properly prepared as provided herein. Shallow spread foundations can be used for building support. These footings should be based in densified native sands and/or compacted engineered fill.

The following preliminary recommendations have been developed on the basis of the previously described project characteristics and the subsurface conditions encountered. A design level geotechnical exploration will be necessary once detailed development plans are available.

Site Preparation

Prior to construction, the location of any existing underground utility lines within construction areas should be established. Provisions should be made to relocate any interfering utility lines within the construction area. The site should also be cleared and grubbed with care taken to remove surficial organic soils, topsoil and/or vegetation, including root systems. At a minimum, it is recommended the clearing operations extend at least five feet beyond the development perimeters.

After the site is cleared and grubbed, the development area should be densified with a large, self-propelled vibratory compactor. Densification should be performed such that the upper one foot of the exposed subgrade soils are compacted to at least 95 percent of the soil's modified Proctor (ASTM-1557) maximum dry density.

Given the anticipated shallow groundwater conditions, some filling is anticipated to achieve design grades. Fill should be placed and compacted in one foot lifts with each lift being compacted to at least 95 percent of the material's ASTM D-1557 maximum dry density prior to the next lift being placed.



Foundation Design Considerations

It is our opinion that with proper subgrade preparation and densification, the subgrade soils will be capable of supporting the proposed school structures on shallow foundations. For preliminary design, these foundations may be sized for a net maximum allowable bearing pressure of 3,000 psf. The foundation bottoms should be placed at least 18 inches below the adjacent finished grades. Continuous wall foundations should be a minimum of 18 inches wide while column foundations should be a minimum of 3 feet in width.

The soils should also be suitable for slab-on-grade construction provided the existing subgrade is properly cleared and the sands densified. Soils below floor slabs should be compacted to a minimum of 95 percent of the soil's modified Proctor maximum dry density per ASTM D-1557 to a depth of one foot.

Pavements

In general, the existing subsurface soils should be acceptable for construction and support of an asphalt pavement section with a flexible (limerock base) or semi-flexible (soil-cement base) type pavement section following typical subgrade preparation and densification activities. Pavements should be designed to provide a minimum separation between the estimated seasonal high groundwater table and the bottom of pavement base of 18 inches. Rigid (concrete) pavements are recommended in heavily loaded areas such as bus loops, dumpster approaches, main driveways, and truck service areas.

All pavement materials should conform to FDOT specifications and be placed in accordance with local regulatory guidelines.

Stormwater Ponds

Based on the results of the soil borings performed and the estimated seasonal high groundwater levels, it is our opinion the site would be best suited for wet-bottom pond design. The proposed ponds should be designed and constructed in accordance with South Florida Water Management District (SFWMD) criteria.

Fill Suitability

Based on the borings performed, it is our opinion that the majority of the on-site sandy soils (Stratum 1) will be suitable for use as fill material for the project, provided the soil is free of organics, clay, debris, rubble and other unsuitable materials. The Stratum 2 soils are silty in nature and will tend to hold excess moisture making it difficult to dry and compact. The Stratum 2 soils will not likely be suitable for fill material, unless blended with cleaner sands to form a hybrid material meeting the USCS classification of SP or SP-SM.



LIMITATIONS

Our professional services have been performed, our findings obtained, and our preliminary recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This company is not responsible for the conclusions, opinions or recommendations made by others based on this data. No other warranties are implied or expressed.

The scope of this investigation was intended to evaluate in a preliminary manner the relatively shallow soil conditions and does not include an evaluation of potential deep soil problems such as sinkholes. The analysis and preliminary recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. Once plans for the proposed school are more developed, additional structure specific borings will be required to provide design level recommendations.


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


CLOSURE

PSI appreciates the opportunity to provide our services to the School District of Osceola County on this project. If you have any questions, or if we may be of further service, please contact the undersigned.

Very truly yours,

PROFESSIONAL SERVICE INDUSTRIES, INC.
Certificate of Authorization No. 3684


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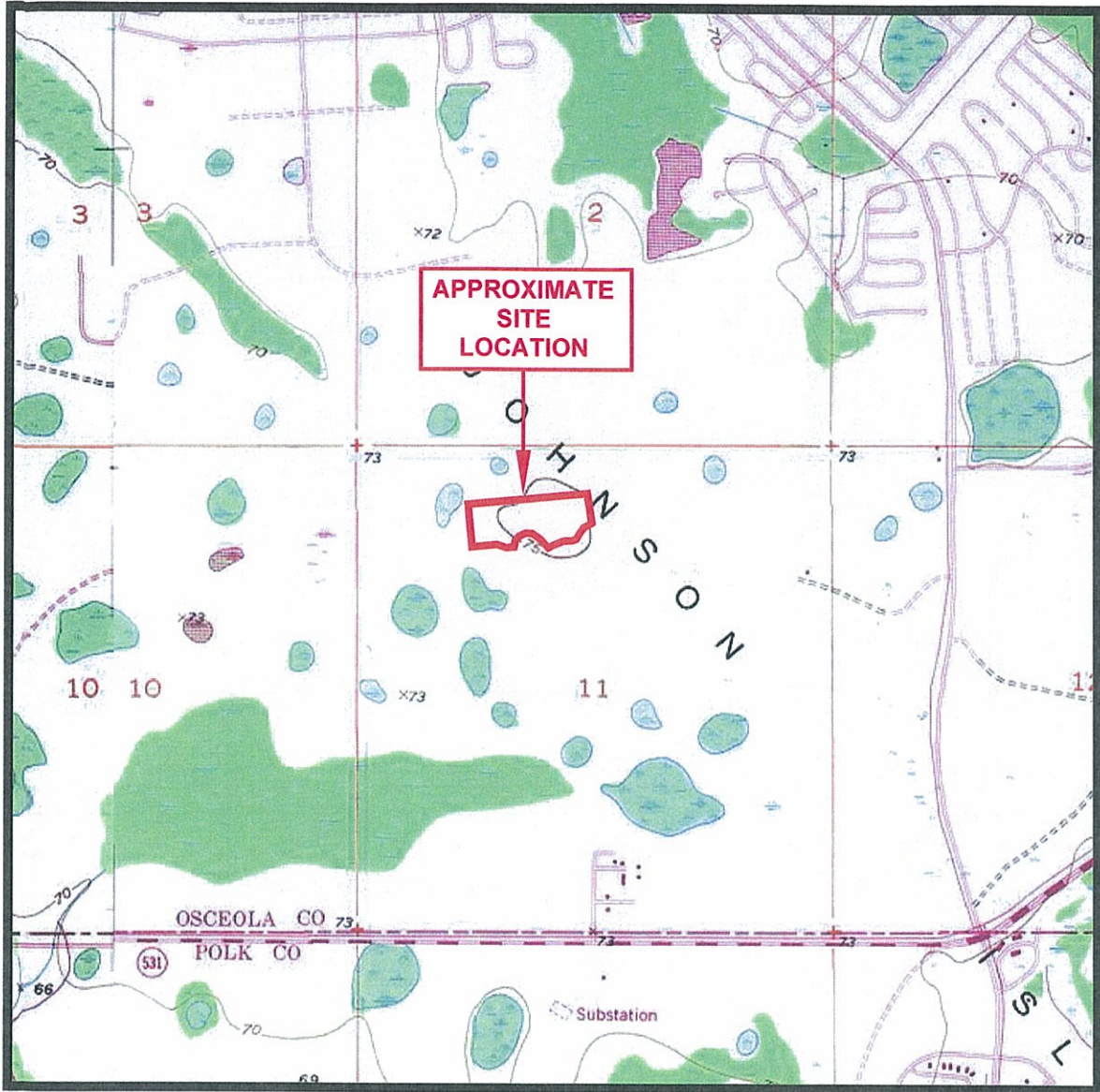
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Attachment

- Figure 1 – USGS Map
- Figure 2 – SCS Map
- Sheet 1 – Boring Location Plan
- Sheets 2 and 3 – Boring Profiles



APPENDIX



REFERENCE: U.S.G.S. "LAKE TOHOPEKALIGA, FLORIDA" QUADRANGLE MAP

SECTION: 11

TOWNSHIP: 27 SOUTH

RANGE: 28 EAST

ISSUED: 1956

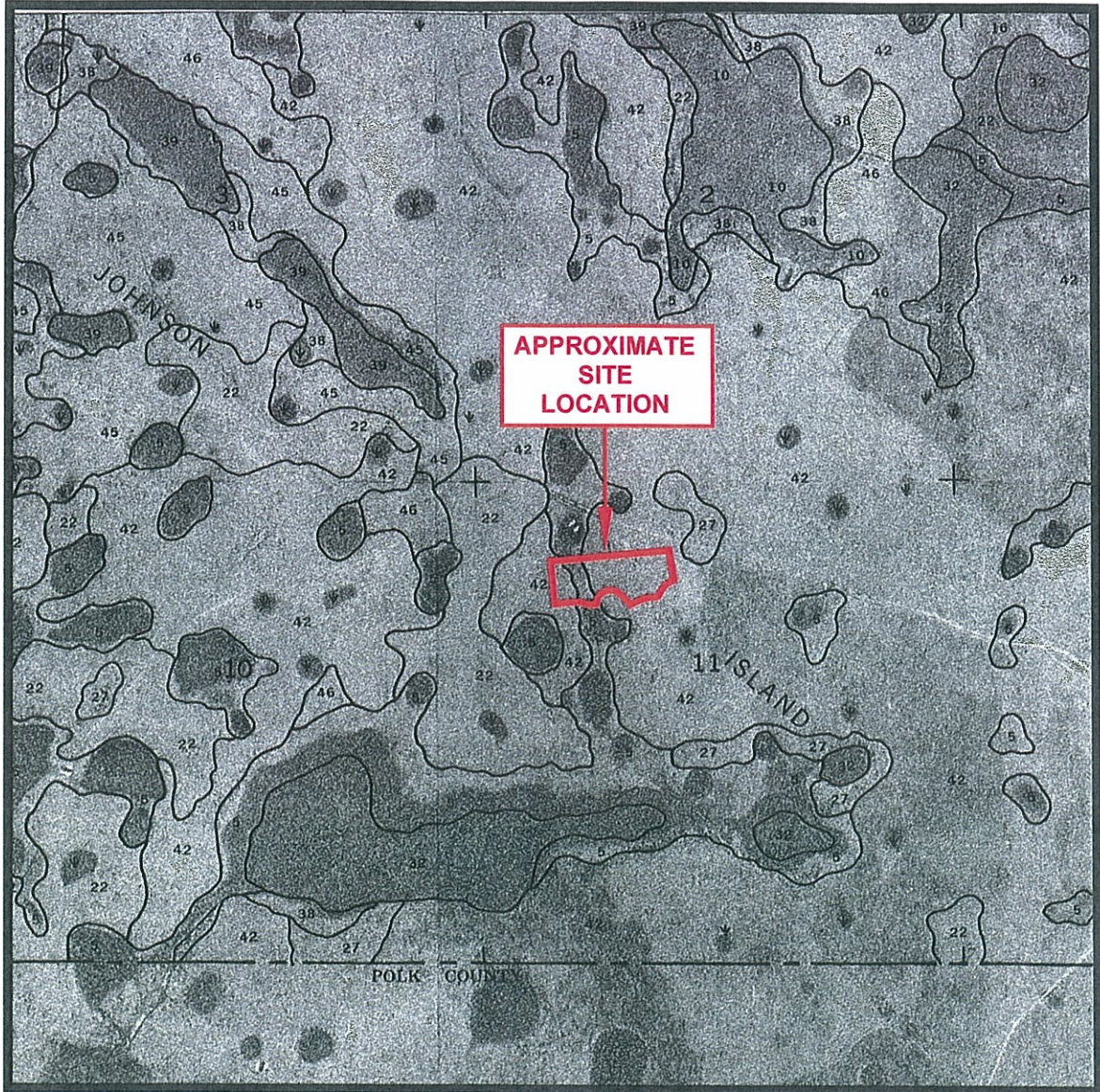
PHOTOREVISED: 1980

SCALE: 1" = 2000'

VICINITY MAP
PROPOSED ELEMENTARY SCHOOL "L"
SOUTH OF KOA STREET
 POINCIANA, OSCEOLA COUNTY, FLORIDA

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DRAWN: DJW	SCALE: NOTED	PROJ. NO: 757-65362
CHKD: JAS	DATE: 2-2-07	FIGURE: 1



REFERENCE: U.S.D.A.-S.C.S. "OSCEOLA COUNTY, FLORIDA" SOILS MAP

SECTION: 11

TOWNSHIP: 27 SOUTH

RANGE: 28 EAST

ISSUED: APRIL 1979

SCALE: 1"=2000'

SOILS LEGEND

- 5 BASINGER FINE SAND
- 42 SMYRNA FINE SAND

SOILS MAP

PROPOSED ELEMENTARY SCHOOL "L"
SOUTH OF KOA STREET

POINCIANA, OSCEOLA COUNTY, FLORIDA

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DRAWN: DJW	SCALE: NOTED	PROJ. NO: 757-65362
CHKD: JAS	DATE: 1-30-07	FIGURE: 2