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Cal-Tech Testing, Inc.
- Engineering
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September 26, 2007

Sparks Construction Company
P.O. Box 1479
Lake City, Florida 32056

Attention: Mr. Josh Sparks

Reference: Subsurface Exploration
Earl and Barbara Fulton's Residence
149 SW Blanton Road
Lake City, Columbia County, Florida
Cal-Tech Project No. 07-00482

Dear Mr. Sparks:

Cal-Tech Testing, Inc. (CTI) has completed the subsurface exploration and engineering evaluation for the proposed residence located at 149 SW Blanton Road in Lake City, Columbia County, Florida. Our work was performed in conjunction with and authorized by you.

Introduction

The purpose of this exploration was to develop information concerning the site and subsurface conditions in order to evaluate site preparation requirements and foundation support alternatives for the proposed residence. This report briefly describes the field activities and presents our findings.

We understand, the proposed construction will include a one-story building with attached garage and associated driveway and landscaped areas. The construction will consist of a combination siding or stucco veneer, exterior with wood framed walls, and wood-truss roofing system. Detailed structural loading information has not been provided; however, we assume that bearing wall and individual column loads will not exceed 3 kips per lineal foot and 25 kips, respectively. We assume that soil-supported floor loads (dead load plus live load) will not exceed 125 psf.

We understand approximately 2 to 4 feet of new fill will be needed at the site to achieve finished subgrade elevations. In addition, we understand the concrete floor slab will be supported by about 2 feet of newly placed fill (stem wall footing).

Site Conditions

The existing site conditions were observed by our drill crew on September 25, 2007. At the time of our site visit, the ground surface within the construction area was stripped of topsoil and was relatively level.

Field Program

Our field program consisted of performing two (2) Standard Penetration Test (SPT) borings extending to a depth of 15 feet below the existing ground surface. The borings were performed at the approximate locations indicated on the attached Field Exploration Plan (Figure No. 1).

The sampling and penetration procedures of the Standard Penetration Test (SPT) boring was accomplished in general accordance with ASTM D-1586, using a power rotary drill rig. The SPT boring was performed by driving a standard 1-3/8'' I.D. and 2.0'' O.D. split spoon sampler with a 140 pound hammer falling 30 inches. The number of hammer blows required to drive the sampler a total of 18 inches, in 6 inch increments, were recorded. The penetration resistance or "*N*" value is the summation of the last two 6 inch increments and is illustrated on the attached boring log adjacent to their corresponding depths. The penetration resistance is used as an index to derive soil parameters from various empirical correlations.

Subsurface Conditions

In general, the soil profile as disclosed by SPT borings B-1 and B-2 consisted of about 12 inches of light gray silty fine sand (SP-SM) underlain by about 1½ to 4½ feet of reddish tan silty fine sand (SP). This stratum was underlain by light gray and reddish tan to yellowish tan, mottled, sandy clay (CL) or reddish tan and light gray, clayey fine sand (SC). The sandy soils have a very loose to dense relative density with Standard penetration resistance or "*N*" values ranging from 4 to 44 Blows Per Foot (BPF). The clayey soils range from stiff to very stiff in consistency with "*N*" values ranging from 14 to 28 BPF.

For a more detailed description of the subsurface conditions encountered, please refer to the attached Generalized Subsurface Profile (Figure No. 1). Note that the transition between soil types may be gradual and not abrupt as indicated by the boring logs; therefore, the thickness of soil layers should be considered approximate.

Groundwater

The depth to the groundwater was measured at the boring locations at the time of completion of drilling. The groundwater table was not encountered in any of the SPT borings. Due to the relatively short time frame of the field program, the groundwater may not have had sufficient time to stabilize. For a true "stabilized" groundwater level reading, monitoring wells would be required. Fluctuation in groundwater levels in this area should be anticipated due to seasonal climatic conditions, construction activities, rainfall variations, surface water runoff, and other site-specific

factors. Since groundwater level variations are anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based on the assumption that variations will occur.

Discussion and Recommendations

The subject site is considered acceptable for the support of the proposed residence on a conventional shallow foundation system. Provided individual column footings and continuous wall footings bear on compacted acceptable existing soils or newly placed structural fill soils, the shallow foundation may be designed using an allowable net soil bearing pressure of 2,000 psf.

Due to the varying density of the upper soils, it is recommended the exposed subgrade be proofrolled and proof compacted to a depth of 2 feet below the existing ground surface prior to concrete placement (including bottom of footings and slab areas). This may require the overexcavation and recompaction of the upper 2 feet of the existing soils. Soils should be proof compacted to a minimum of 95% of the modified Proctor maximum dry density (ASTM D 1557). All properly compacted structural fill should consist of non-plastic, inorganic, granular soil containing less than 10 percent material passing the 200 mesh sieve (i.e., relatively clean sand).

We note that clayey soils were encountered within the upper 4 feet of the existing ground surface, and at the approximate footing bearing elevations (see boring B-1). These clayey soils have a moderate potential for volume change (shrink/swell). This change in volume can be the result of fluctuation in the water content of these soils. Typically, clayey soils shrink with the decrease in water content and swell with the increase in the water content. This change in volume of the supporting soils beneath the foundation and slab-on-grade may result in structural deformation. To alleviate adverse effects of volume changes of the supporting soils, we recommend all shallow foundation, footings, slabs-on-grade be supported on a minimum of 2 feet of non-expansive soils. This may require the over excavation of the existing soils from within the building "footprint" and replacement with well-compacted suitable fill (only if the bottom of the concrete slab is within 24 inches of this type soils). The over excavation and replacement should extend a minimum horizontal margin of 5 feet beyond all building perimeters. Well compacted fill should be placed in thin loose lifts not exceeding 12 inches in thickness and compacted to a minimum of 95 percent of the modified Proctor maximum dry density (ASTM D 1557).

The exploration and recommendations are based upon subsurface conditions encountered at a specific locations and time as presented within this report. However, subsurface conditions may exist that differ from our findings. We request that we be notified if dissimilar subsurface conditions are encountered.

We appreciate the opportunity to be of service on this project and look forward to a continued association. Should you have questions concerning this report or if we may be further service, please contact this office.

Respectfully submitted,
Cal-Tech Testing, Inc.

Linda Creamer, CEO, DBE

Linda Creamer
President / CEO

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