



1310 Neptune Drive
 Boynton Beach, FL, 33426
 Telephone: [REDACTED]
 Fax: [REDACTED]

BORING NUMBER B-1

PAGE 1 OF 1

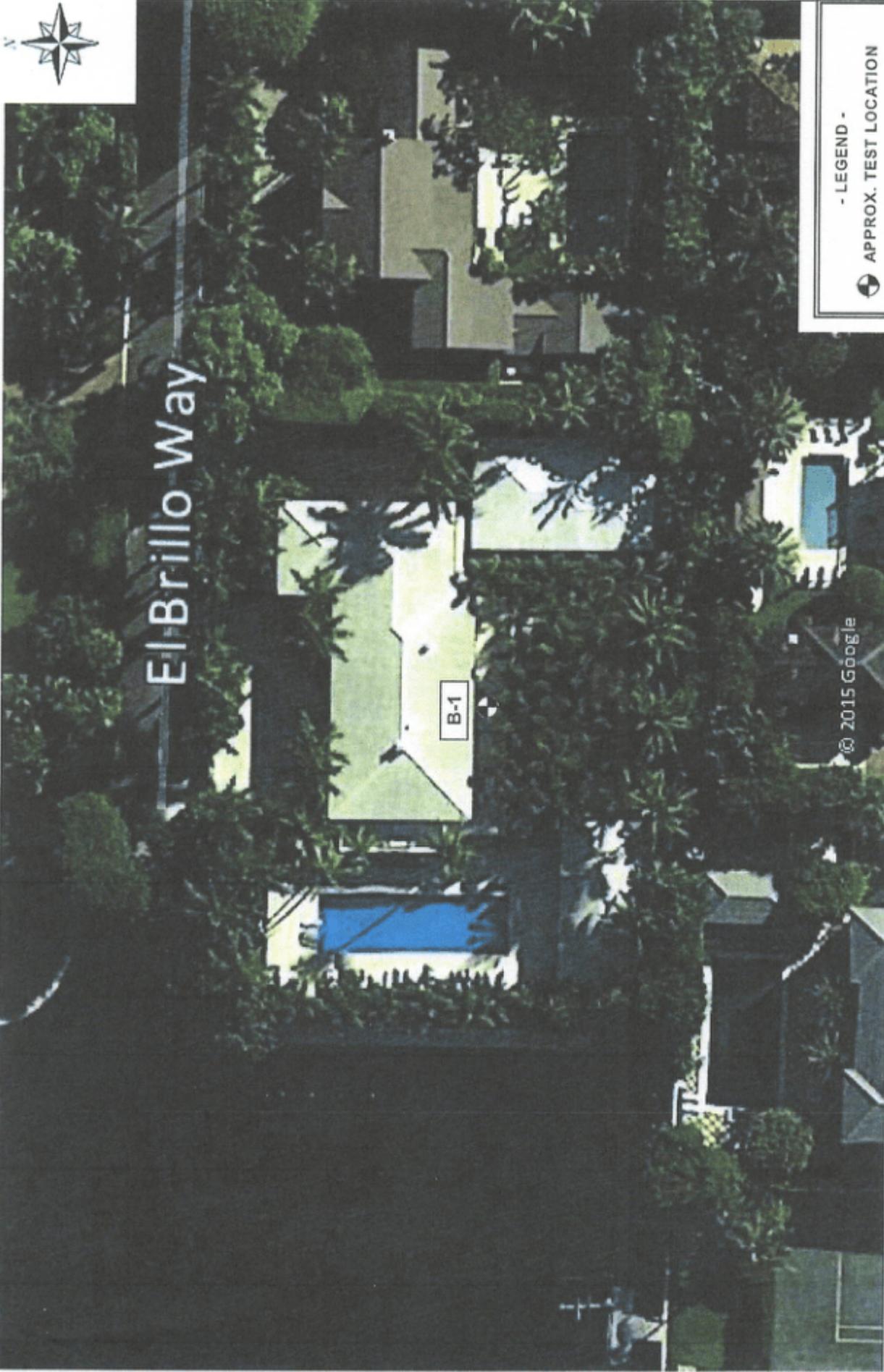
CLIENT Labonte Construction
 PROJECT LOCATION 358 El Brillo Way, Palm Beach, Florida

PROJECT NUMBER 17025.2
 PROJECT NAME 358 El Brillo Way

DATE STARTED 8/19/15 COMPLETED 8/19/15 SURFACE ELEVATION REFERENCE ~2' above Road Crown
 DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:
 LOGGED BY T. Lovett CHECKED BY C. Gworek AT TIME OF DRILLING 5.0 ft
 APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL MC LL 20 40 60 80			
						□ FINES CONTENT (%) □			
						20	40	60	80
0		TOPSOIL 3"							
		Gray fine SAND, trace root	AU 1						
		Tan fine SAND	AU 2						
5	▽		SS 3	11-2-19-19	21				
			SS 4	13-13-8-8	21				
		Gray fine SAND	SS 5	5-6-4-5	10				
10		Brown PEAT	SS 6	4-5-8-13	13				
		Gray fine SAND	SS 7	9-11-10-12	21				
15									
20			SS 8	10-12-12-15	24				
		Bottom of hole at 20.0 feet.							

Disclaimer: Nutting Engineers of Florida, Inc. accepts no liability for the consequences of the independent interpretation of drilling logs by others.



- LEGEND -
 APPROX. TEST LOCATION



Labonte Construction
 358 El Brillo Way
 358 El Brillo Way
 Palm Beach, Florida

PROJECT NO. 17352.1

APPROXIMATE
 TEST LOCATION
 PLAN

GEOTECHNICAL EXPLORATION

FIG. 1

**REPORT OF
GEOTECHNICAL EXPLORATION**

**PROPOSED RESIDENCE ADDITIONS AND RENOVATIONS
358 EL BRILLO WAY
PALM BEACH, FLORIDA**

FOR

**LABONTE CONSTRUCTION
4165 LINDEN AVENUE
PALM BEACH GARDENS, FLORIDA 33410**

PREPARED BY

**NUTTING ENGINEERS OF FLORIDA, INC.
1310 NEPTUNE DRIVE
BOYNTON BEACH, FLORIDA 33426**

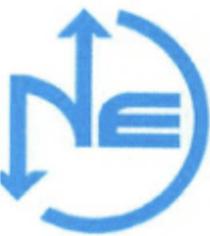
ORDER NO. 17025.2

AUGUST 2015



*Geotechnical & Construction Materials
Engineering, Testing & Inspection
Environmental Services*

Offices throughout the state of Florida



Nutting Engineers

of Florida Inc. | Established 1967

Your Project is Our Commitment

1310 Neptune Drive
Boynton Beach, Florida 33426

Toll Free: [REDACTED]
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Broward [REDACTED]
St. Lucie [REDACTED]
Miami-Dade [REDACTED]
[REDACTED]

Geotechnical and Construction Materials | Engineering, Testing and Inspections | Environmental Services

August 21, 2015

Mr. Daniel Labonte
Labonte Construction
4165 Linden Avenue
Palm Beach Gardens, Florida 33410
Phone: [REDACTED] Email: [REDACTED]

Subject: Report of Geotechnical Exploration
Proposed Residence Additions and Renovations
358 El Brillo Way
Palm Beach, Florida

Dear Mr. Labonte:

Nutting Engineers of Florida, Inc. (NE), has performed a Geotechnical Exploration for the proposed residence additions and renovations at the above referenced site in Palm Beach, Florida. This exploration was performed in accordance with the verbal authorization to proceed provided by Labonte Construction dated August 13, 2015. This evaluation was performed to develop information regarding subsurface conditions at specific test locations which along with proposed construction information provided was used to develop opinions regarding earthwork procedures and foundations for support of the proposed construction. This report presents our findings and recommendations based upon the information examined at the time of this evaluation.

PROJECT INFORMATION

We understand that plans include the construction of various additions and renovations to the existing residence. These may include some new interior and exterior footings along with some load increases on some existing foundations. We also understand that some settlement has been observed on some existing foundations; therefore some remediation to existing foundations will also be performed. We understand that other engineers have reviewed this condition to provide remediation recommendations. Plans pertaining to the proposed construction were not provided at the time of this report. It is not known the type of foundation system that was used to support the existing residence; however it has been brought to our attention that recent construction in the area has required deep foundation support.

NE should be notified in writing by the client of any changes in the proposed construction along with a request to amend our foundation analysis and/or recommendations within this report as appropriate.

GENERAL SUBSURFACE CONDITIONS

Soil Survey Maps

As part of the geotechnical exploration, we have reviewed available Soil Conservation Service (SCS) survey maps for Palm Beach County. These SCS maps provide qualitative information about potential general shallow soil conditions in the project vicinity. This information was derived from approximately 6 ft. deep manual auger borings, aerial photo and surface feature interpretation at some point in the past (mid 1980's to early 1970's). The SCS data may or may not reflect actual current site conditions. A review of the Soil Survey for Palm Beach County revealed that at the time the survey was conducted, the soils at the site were described as Arents-Urban land complex. These soils are described as nearly level, somewhat poorly drained sandy soils that were either dredged from nearby waterways or imported from other areas and used for fill material. The areas could have possibly been previous organic marshes and swamps that were filled with a heterogeneous overburden material for urban land use. We note that the soil surveys were typically penetrated to a depth of approximately six feet.

Subsurface Exploration

NUTTING ENGINEERS OF FLORIDA, INC. performed one Standard Penetration Test (SPT) boring (ASTM D-1586) to a depth of twenty feet, the limits of portable tripod equipment. We note that additional test borings were proposed; however per the homeowner's specification and to greatly limit the potential for damage to the existing landscaping, our office could only complete one test boring. We note that this can affect our recommendations; therefore additional borings are recommended. The location of the test boring is indicated on the boring location plan presented in the Appendix of this report. The boring location was identified in the field using approximate methods; namely, a measuring wheel and available surface controls. As such the soil boring location should be considered to be approximate.

We note that due to the potential for underground utilities at the test boring location the upper four feet of the soil profile was manually cleared. Because of this, the relative density (N-Value) of the upper four feet was not obtained.

Test Boring Results

In general, the test borings recorded a surface layer of topsoil underlain by loose to medium dense gray to tan sand to a depth of ten feet. From ten to thirteen feet soft brown peat was encountered. Below thirteen feet medium dense gray sand was encountered to a depth of twenty feet, the maximum depth explored.

Note: Substantially different subsurface conditions may exist at other areas of the site. Buried debris may or may not be identified or adequately delineated by soil borings. Test pit excavation can provide more insight into such conditions and rock lithology if present. Such conditions may be revealed during site development activities (e.g. proof rolling, utility & foundation excavation activities) or other related activities. Should additional assurance be desired by the client, further subsurface investigation could be performed.

Groundwater Information

The immediate groundwater level was measured at the boring locations at the time of drilling. The groundwater level was encountered at approximately five feet below the existing ground surface.

The immediate depth to groundwater measurements presented in this report may not provide a reliable indication of stabilized or a more long term depth to groundwater at this site. Water table elevations can vary dramatically with time through rainfall, droughts, storm events, flood control activities, nearby surface water bodies, tidal activity, pumping and many other factors. For these reasons, this immediate depth to water data **should not** be relied upon alone for project design considerations.

ANALYSIS AND RECOMMENDATIONS

The limited test boring performed for the project suggests that a three foot stratum of soft peat soils is present at depths of ten to thirteen feet below the existing ground surface. Due to the high compressive nature of the organic soils and limited information pertaining to the existing residence and new construction, it is our recommendation that the new addition, and any other new foundation construction be supported upon a deep foundation system.

Demucking/refilling was considered however, due to the depth of removal, the location of the addition to existing foundations, and the level of the water table, this method does not appear to be economically feasible. Driven, precast concrete piles were also considered however, the vibrations transmitted during the installation of this type of pile could distress the existing residence and nearby structures.

Due to the limited space available for construction equipment to access the areas, we have provided recommendations for helical piers for support of the proposed construction. Other alternatives are available including augercast piles or pin piles; however it is our opinion that helical piers are the best alternative for this project.

The decision as to which foundation type will be best for this project will depend on accessibility, cost, structural loading conditions, and other factors. We recommend that discussions be held with us and other interested parties to determine the best alternative for this project. The following sections present our recommendations for the foundation.

Helical Piers: Helical Piers consist of a galvanized steel shaft with an eight-inch (can be variable) plate on the bottom, called a helix. The shaft and helix are hydraulically augured into the ground with a measured amount of torque. The torque used to install the helix can be converted to the amount of weight that the pier can hold. Helical anchors can provide an allowable compressive capacity of up to 15 tons when installed to competent material. Based on the test boring performed and due to the soft peat layer, helical piers will need to be installed to depths of approximately **twenty feet or more** below the existing ground surface. Due to the limited amount and depth of test borings performed at the site, more accurate pier depth estimates cannot be provided at this time. If more accurate estimates are needed than our office needs to be allowed to perform a test boring with truck mounted drilling equipment to a depth of thirty to thirty-five feet.

This type of pile is generally used where accessibility is limited, and in small addition areas, where only a few piles are needed. The shaft size and number of helices are variable and are designed to meet the needs of each individual project, therefore, the structural loads, and preliminary layout will need to be accomplished prior to determining the helical pier configuration.

The installation of the pile system **must** be monitored by a representative of Nutting Engineers on a full-time basis to verify that the engineering intent is accomplished.

GENERAL INFORMATION

Our client for this geotechnical evaluation was:

Mr. Daniel Labonte
Labonte Construction
4165 Linden Avenue
Palm Beach Gardens, Florida 33410

The contents of this report are for the exclusive use of the client and the client's design team for this specific project exclusively. Information conveyed in this report shall not be used or relied upon by other parties or for other projects without the expressed written consent of Nutting Engineers of Florida, Inc. This report discusses geotechnical considerations for this site based upon observed conditions and our understanding of proposed construction for foundation support. Environmental issues including (but not limited to), soil and/or groundwater contamination are beyond our scope of service for this project. As such, this report should not be used or relied upon for evaluation of environmental issues.

No pile shall have a tip elevation higher than the recommended elevation without first contacting Nutting Engineers of Florida, Inc. in writing so that they may analyze any proposed changes. If Nutting Engineers of Florida, Inc. is not contacted regarding a change in pile tip elevations (or pile diameters) as indicated in this report, the geotechnical engineer/ piling contractor initiating this change will be responsible for the redesigned pile capacity and performance.

Furthermore, if the tip elevation is raised, a pile load test shall be performed at that location where the test borings indicate the least favorable conditions. If the pile design is changed without our knowledge, Nutting Engineers of Florida, Inc. is no longer the geotechnical engineer of record.

If conditions are encountered which are not consistent with the findings presented in this report, or if proposed construction is moved from the location investigated, this office shall be notified immediately so that the condition or change can be evaluated and appropriate action taken.

Excavations of five feet or more in depth should be sloped or shored in accordance with OSHA and State of Florida requirements.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been prepared after being prepared in accordance with general accepted professional practice in the field of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

We appreciate the opportunity to be of service on this project. If we can be of any further assistance, or if you need additional information, please contact us at your convenience.

Sincerely,
NUTTING ENGINEERS OF FLORIDA, INC.



Christopher E. Gworek, P.E.
Senior Engineer



Richard C. Wohlfarth, P.E. #50858
Director of Engineering

Appendix: Boring Location Plan
 Test Boring Result
 Limitations of Liability
 Soil Classification Criteria

REP LABONTE CONSTRUCTION 358 EL BRILLO WAY PB PIERS CEG



LIMITATIONS OF LIABILITY

WARRANTY

We warrant that the services performed by Nutting Engineers of Florida, Inc. are conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession in our area currently practicing under similar conditions at the time our services were performed. **No other warranties, expressed or implied, are made.** While the services of Nutting Engineers of Florida, Inc. are a valuable and integral part of the design and construction teams, we do not warrant, guarantee or insure the quality, completeness, or satisfactory performance of designs, construction plans, specifications we have not prepared, nor the ultimate performance of building site materials or assembly/construction.

SUBSURFACE EXPLORATION

Subsurface exploration is normally accomplished by test borings; test pits are sometimes employed. The method of determining the boring location and the surface elevation at the boring is noted in the report. This information is represented in the soil boring logs and/or a drawing. The location and elevation of the borings should be considered accurate only to the degree inherent with the method used and may be approximate.

The soil boring log includes sampling information, description of the materials recovered, approximate depths of boundaries between soil and rock strata as encountered and immediate depth to water data. The log represents conditions recorded specifically at the location where and when the boring was made. Site conditions may vary through time as will subsurface conditions. The boundaries between different soil strata as encountered are indicated at specific depths; however, these depths are in fact approximate and dependent upon the frequency of sampling, nature and consistency of the respective strata. Substantial variation between soil borings may commonly exist in subsurface conditions. Water level readings are made at the time and under conditions stated on the boring logs. Water levels change with time, precipitation, canal level, local well drawdown and other factors. Water level data provided on soil boring logs shall not be relied upon for groundwater based design or construction considerations.

LABORATORY AND FIELD TESTS

Tests are performed in *general* accordance with specific ASTM Standards unless otherwise indicated. All criteria included in a given ASTM Standard are not always required and performed. Each test boring report indicates the measurements and data developed at each specific test location.

ANALYSIS AND RECOMMENDATIONS

The geotechnical report is prepared primarily to aid in the design of site work and structural foundations. Although the information in the report is expected to be sufficient for these purposes, it shall not be utilized to determine the cost of construction nor to stand alone as a construction specification. Contractors shall verify subsurface conditions as may be appropriate prior to undertaking subsurface work.

Report recommendations are based primarily on data from test borings made at the locations shown on the test boring reports. Soil variations commonly exist between boring locations. Such variations may not become evident until construction. Test pits sometimes provide valuable supplemental information that derived from soil borings. If variations are then noted, the geotechnical engineer shall be contacted in writing immediately so that field conditions can be examined and recommendations revised if necessary.

The geotechnical report states our understanding as to the location, dimensions and structural features proposed for the site. **Any significant changes of the site improvements or site conditions must be communicated in writing to the geotechnical engineer immediately** so that the geotechnical analysis, conclusions, and recommendations can be reviewed and appropriately adjusted as necessary.

CONSTRUCTION OBSERVATION

Construction observation and testing is an important element of geotechnical services. The geotechnical engineer's field representative (G.E.F.R.) is the "owner's representative" observing the work of the contractor, performing tests and reporting data from such tests and observations. **The geotechnical engineer's field representative does not direct the contractor's construction means, methods, operations or personnel.** The G.E.F.R. does not interfere with the relationship between the owner and the contractor and, except as an observer, does not become a substitute owner on site. The G.E.F.R. is responsible for his/her safety, but has no responsibility for the safety of other personnel at the site. The G.E.F.R. is an important member of a team whose responsibility is to observe and test the work being done and report to the owner whether that work is being carried out in general conformance with the plans and specifications. The enclosed report may be relied upon solely by the named client.