



**REPORT OF LIMITED
GEOTECHNICAL EXPLORATION**

**PROPOSED 6-STORY RESIDENTIAL BUILDING/PARKING GARAGE
FEDERAL HIGHWAY MULT-FAMILY
4211 NORTH FEDERAL HIGHWAY
POMPANO BEACH, FLORIDA**

FOR

**4211 N FED, LLC
6001 BROKEN SOUND PARKWAY NW
BOCA RATON, FLORIDA 33487**

PREPARED BY

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

ORDER NO. 21144.1

APRIL 2025



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www.nuttingengineers.com info@nuttingengineers.com

PZ25-12000016

10/01/2025



April 15, 2025

Mr. Edwin Muller
4211 N Fed, LLC
6001 Broken Sound Parkway NW
Boca Raton, Florida 33487
Phone: 561-876-5779 Email: edwincmuller@gmail.com

Subject: Report of Limited Geotechnical Exploration
Proposed 6-Story Residential Building/Parking Garage
4211 North Federal Highway
Pompano Beach, Florida

Dear Mr. Muller:

NUTTING ENGINEERS OF FLORIDA, INC. has performed a Limited Geotechnical Exploration at the above referenced project in accordance with our proposal dated March 3, 2025, and corresponding written authorization to proceed provided by 4211 N Fed, LLC. dated March 12, 2025. Included in this report are our limited observations, results of our exploration, limited analysis, and recommendations for the proposed development.

The purpose of this exploration was to evaluate the subsurface soil and groundwater conditions in order to determine the most appropriate foundation system for the proposed construction and provide design level information to the design Engineers and Architects to formulate design criteria.

Thank you for providing us the opportunity to be a part of your team for this project. If you have any questions or require further assistance, please contact us at your convenience.

Respectfully submitted,
NUTTING ENGINEERS OF FLORIDA, INC.

Christopher E. Gworek, P.E.
Senior Engineer



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INTRODUCTION

Project Authorization

NUTTING ENGINEERS OF FLORIDA, INC. has conducted a limited geotechnical exploration per your authorization for the proposed development referred to as **Federal Highway Multi-Family** located in Pompano Beach, Broward County, Florida. Our work was completed in general accordance with our proposal dated March 3, 2025 and corresponding written authorization to proceed provided by 4211 N Fed, LLC dated March 12, 2025. This report details the proposed new residential building/parking garage, pool and pool deck areas, various parking renovations, walkways, and possible onsite ancillary structures that may be constructed for the project.

Purpose and Scope

The purpose of this exploration was to obtain limited information concerning the subsurface soil conditions within the potential footprint of the new buildings and parking garage and other improvements in order to determine the most appropriate foundation system for the proposed construction. Also provided are site preparation and foundation design recommendations for support of the proposed construction along with design level information for the design Engineers and Architects to formulate design criteria. The scope of services included performing field reconnaissance, review of available subsurface test data, such as the soil survey maps of Broward County and prior test boring reports performed within the vicinity of the site, conducting additional field geotechnical explorations, and providing an engineering report.

Project Information

Based on discussions with representatives of your office and review of limited construction documents, plans include the demolition of all existing structures, vegetation, and ancillary features within the irregular shaped 2.72-acre parcel for the construction of a new six-story residential building with the first two floors consisting of a two to three level parking garage. The pool and pool deck will be developed within the building. Along with the building and garage, the surrounding existing areas will be renovated for new roadways and green areas. It is anticipated that the new building/garage may consist of concrete block construction, tilt-wall type construction, or cast in place concrete construction. We understand that there are no below grade floor slabs proposed for this project.

At this time, it is anticipated that the new structure is preferred to be supported upon a shallow foundation system after a vibrocompaction ground improvement program has been implemented. Structural information has not been provided at this time; however, based on similar construction/structures, column loads are estimated to be on the order of 600-1,000 kips and maximum wall loads are anticipated to be approximately 12-18 kips per linear foot. We understand that it is preferred to support the new building upon a shallow foundation system with an allowable soil bearing pressure of 7,000 pounds per square foot. We note that shear and uplift loads on the foundation would need to be determined by the project structural engineer.



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Based on surrounding structures it is estimated that final grades will be within one to two feet above existing site elevations. We note that final building pad elevations shall be determined by a professional architect, civil engineer, or other qualified party.

If any of our assumptions or understandings is not correct, if the structure differs substantially from the characterization we have provided in this report, Nutting Engineers of Florida, Inc. shall be notified immediately so that we may re-evaluate our analysis.

SITE DESCRIPTION

Site Location

The site is located in Pompano Beach, Broward County, Florida. A vicinity/boring location map delineating the subject property is presented in the Appendix of this report as Figure 1.

Site Characteristics and Current Conditions

Currently, the majority of the site is occupied with approximately five hotel building structures and pool/courtyard area along with associated at grade asphalt paved parking lots and roads with some low lying grass areas. We were provided with a boundary survey of existing site conditions along with a site plan noting the proposed construction.

SUBSURFACE EXPLORATION

Field Exploration

The exploration of subsurface conditions included the performance of Standard Penetration Test (SPT) borings, and review of the Natural Resources Conservation Service (NRCS) online soil survey map for Broward County.

Nutting Engineers of Florida, Inc. was requested to perform five Standard Penetration Test (SPT) borings (ASTM D-1586) to depths of eighty feet. The Standard Penetration Tests were performed continuously for 12 feet at each boring with successive sampling at 5-foot intervals thereafter. The number of successive blows (2nd and 3rd blow count) required to drive the sampler into the soil constitutes the test result commonly referred to as the "N" value. The "N" value has been empirically correlated with various soil properties and is considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive soils.

Representative samples collected from the SPT borings were visually reviewed in the laboratory by a geotechnical engineer to confirm the field classifications. The samples were then classified in general accordance with industry standards.

GENERALIZED SUBSURFACE CONDITIONS

Soil Survey Map Review

As part of the geotechnical exploration, we have reviewed available Natural Resources Conservation Service (NRCS) online soil survey map for Broward County. The USDA online NRCS mapping provides 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. The NRCS data may or may not reflect actual current site conditions.

A review of the United States Soil Conservation map of Broward County indicates that at the time the survey was conducted, Duette-Urban land complex and Urban Land series were located in the area of the site. These are both described as occurring in areas where the natural soil is mostly covered by pavement or buildings and cannot be readily observed. Fifty to seventy percent of the complex consists of Duette soils that are nearly level, moderately well drained soils on low ridges and knolls in the eastern part of the survey area. The Urban Land series consists of soils in the Hallandale, Margate, Immokalee and Basinger series that have been altered by fill spread on the surface to an average thickness of approximately 12 inches. We note that the maximum depth of the survey is six feet.

Test Boring Results

The test borings typically recorded a surface layer of topsoil in the upper three to six inches or asphalt and basecourse in the upper six to twelve inches, underlain by very loose to medium dense light gray to light brown sand to depths of seventeen feet. From seventeen to thirty-seven feet, intermixed medium hard to medium dense light gray limestone and sand was encountered, underlain by medium dense light brown to light gray sand with little limestone lenses to a depth of fifty feet. Below fifty feet medium hard to refusal light gray limestone with some sand lenses was encountered to a depth of eighty feet, the maximum depth explored. Please see the enclosed soil classification sheet in the Appendix of this report for additional important information regarding these descriptions, the field evaluation and other related information.

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 Conditions

The immediate groundwater level was measured at the boring locations at the time of drilling. The groundwater level was encountered at an approximate depth of eight feet below the existing ground surface at the time of drilling operations.

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.

Further information regarding stabilized groundwater elevations at the site could be developed upon specific request. Additional evaluation might include monitoring of piezometers, survey of the project area for evidence of current groundwater elevation influences such as wellfields, obvious construction dewatering, tidal activity, flood control canals and other surface water bodies.

LIMITED EVALUATION AND RECOMMENDATIONS

The recommendations reported herein are based upon the known project information at this time. Once additional design and final structural loading information becomes available along with discussions with all interested parties in order to determine the best method of construction, additional comprehensive geotechnical exploration, and/or analysis may be required. Foundation recommendations may change depending on final design information provided and the results of additional field-testing and/or analysis.

Proposed 6-Story Residential Buildings with 2 to 3-Level Parking Garage

Based on the test borings performed, if the proposed residential building/parking garage structure was constructed over the existing soil profile utilizing a conventional shallow foundation, settlements on the order of two inches or more and excessive footing sizes would be anticipated; therefore, alternative foundation methods would need to be employed for this structure. The foundation alternatives are discussed in further detail below.

Foundation alternatives discussed herein are based on the results of the geotechnical exploration, the proposed construction, and the available project information. We have considered the following foundation alternatives:

1. Deep Foundations
 - Augercast Piles
2. Shallow Foundations After Completion of Soil Improvement.
 - Vibrocompaction

The actual alternative used for the project will depend upon structural loading conditions, costs, and possibly other factors that are not presently known to Nutting Engineers. It is necessary that all interested parties partake in foundation meetings to better understand these alternatives as well as being aware of the varying pros and cons for each.

Deep Foundation Conclusion: Based on the anticipated costs and other factors associated with implementation of a deep foundation system, it is anticipated that a deep foundation system is not desired for this project. Therefore, we are providing recommendations for shallow foundations for support of the proposed improvements.

It is our opinion at this time that a shallow foundation system utilizing a soil improvement technique known as Vibrocompaction would be most appropriate for the project.

Shallow Foundations – Vibrocompaction

Vibrocompaction is a method of mechanically improving the density of the subsurface sands through the use of a vibratory flot penetrating the soils beneath proposed footing locations. The flot is typically inserted to depths of twice the foundation width for isolated spread footings (4 times the width for strip footings) below the bottom of footing. Due to the intense vibration of the flot along with the induction of water at the tip of the flot the loose sand soils are reconfigured into a compacted state. The compacted soils create a cone of depression condition which is then filled by the addition of clean sand fill from the surface of the vibro-point. This technique typically improves the soils to provide an allowable bearing capacity of 6,000 to 8,000 pounds per square foot, depending on equipment power, time, and soil type.

The following recommendations are for improvement of the soils to allow for an allowable bearing capacity of 7,000 pounds per square foot, NET.

The following analyses and recommendations are based on the project information presented in this report. We should be notified about any changes being made that could affect the recommendations in this report.

Ground Floor Slab Conditions

The proposed ground floor slabs may be constructed as a slab on grade following that any deleterious surficial soils are fully removed and replaced with clean backfill and the successful completion of compaction operations as detailed in this report. We also estimated the modulus of subgrade reaction to be 200 pounds per square inch per inch (PCI) for the floor slab and pavement areas.

Vibrocompaction Procedure

We recommend that a vibro-flot with a minimum horsepower of 150 be used for this project. We recommend that Vibrocompaction points be spaced at a maximum of six feet on center within column and wall footing areas.

Below the bottom of the footings, the points should be extended to a depth of twice the greatest width of isolated column footings and four times the width of all strip (wall) footings with a minimum depth of fifteen feet and a maximum depth of thirty feet.

Suitable sand soils as approved by the project geotechnical engineer of record shall be added from the surface at each probe penetration to compensate for increased density. During the Vibrocompaction operations, verification borings should be performed to evaluate the level of improvement and verify that the allowable bearing capacity has been achieved.

The Vibrocompaction contractor should prepare shop drawings, which indicate the location and depth of the points and equipment to be used. This submittal should be reviewed by Nutting Engineers. It is important that the installation of the Vibrocompaction points be installed under the full-time observation of the Nutting project geotechnical engineer. This is to ensure that the engineering intent is being satisfied.

Upon completion of the Vibrocompaction and satisfactory verification test borings, the building area should be leveled and compacted with a minimum of 10 overlapping passes, or as determined by Nutting Engineers, per unit area of a vibratory compactor imparting a minimum dynamic force of 10 tons. The roller coverages should be equally divided into two perpendicular directions. The vibratory roller should operate at a high frequency level at a maximum speed of 2 feet per second. The compaction operations should be observed by a Nutting representative on a full time basis.

When this has been completed, footing excavation/construction may begin. The bottom of footings should be compacted until field density tests equivalent to at least 98 percent of the modified Proctor maximum dry density are uniformly obtained to a depth of at least 12 inches below the compacted surface. All footing backfill should be compacted in maximum 12-inch lifts. Each lift should be compacted to at least 98 percent of the modified Proctor maximum dry density. This will allow for the floor slab to be constructed as a slab-on-grade.

Settlement Analysis (Vibrocompaction)

We have compared the field test data obtained in this exploration with our experience using the Vibrocompaction technique. After completion of the Vibrocompaction operations and using a bearing pressure on the order of 7,000 pounds per square foot, we have estimated that the total settlement of the structure will be approximately one inch. Differential settlements should be approximately one-half of the total settlement. Differential settlement between adjacent foundations should be less than one-half of the total settlement.

Vibration Concerns

The Vibrocompaction operations transmit vibrations similar to conventional vibratory compactors. Considering the distance to adjacent structures, in general vibrations are anticipated to be minimal. If desired by the client, the vibrations can be monitored.

The monitoring will be done with seismograph equipment. In general, the allowable peak particle velocity (PPV) one is permitted to induce at adjacent properties is 0.50 inches per second. We also note that if desired by the client, a preconstruction condition video survey can be performed of any nearby features/structures.

GENERAL CONSTRUCTION RECOMMENDATIONS

Site Preparation

The surficial organic soils, debris from the clearing operations, and any unsuitable soils as determined by the Geotechnical Engineer will need to be completely removed within the construction area and to a lateral distance of at least 5 feet beyond the footprint limits and potentially further based upon depth. A Nutting Engineer's representative should be present to observe that the stripping operations are performed as we have discussed herein.

Upon approval by the geotechnical engineer, the stripped surface (no fill added at this time) should then be thoroughly soaked with water and compacted with at least 20 overlapping passes of a vibratory compactor having a minimum dynamic force of 10 tons operated no faster than at a slow walking pace. The roller coverage's should be equally divided into two perpendicular directions. The compaction operations must be observed by a representative of Nutting Engineers.

In addition, the surface should also be compacted until a density equivalent to at least 98 percent of the modified Proctor maximum dry density (ASTM D-1557) is achieved to a depth of at least 12 inches below the compacted surface.

Any structural fill needed to bring the site to construction grade may then be placed in lifts not exceeding twelve inches in loose thickness. Each lift should be thoroughly compacted until densities equivalent to at least 98 percent of the modified Proctor maximum dry density are uniformly obtained. Fill should consist of granular soil, with less than 10% passing the No. 200 sieve, free of rubble, organics (5% or less) clay, debris, and other unsuitable material.

The fill should have ASTM designation (D-2487) of GP, GW, SP, or SW, with a maximum particle size of no more than 3 inches or as otherwise approved by Nutting Engineers.

In restricted areas where a small compactor must be used, the lift thickness should be reduced to 6 inches, as directed by the inspecting Geotechnical Engineer. Backfill placed adjacent to the footprints should be compacted to at least 95% of the ASTM D-1557 maximum dry density.

Following site and building pad construction as discussed above, the foundation area should be excavated, and the footings formed.

The bottom of foundation excavations should be compacted after excavation to develop a minimum density requirement of 98 percent of the maximum modified Proctor dry density, for a minimum depth of one foot below the bottom of the footing depth, as determined by field density compaction tests. The floor slab area should also be compacted in the same manner.

Ground Water Control

The water table was encountered at a depth of approximately eight feet below existing grades, subject to fluctuation as noted in the **Groundwater Conditions** earlier in this report. We anticipate that groundwater control may be needed for the shear wall, elevator pits and other deep excavation areas. The contractor should anticipate performing necessary dewatering measures in order to control the water table during construction. Dewatering design should be performed by a specialist knowledgeable of local conditions. We note that this was beyond the scope of services at this stage of the project.

Design Parameters

Estimated design geotechnical soil parameters were developed from the results of the test borings. The following table summarizes our recommendations for the soil parameters and the lateral active and at rest pressure coefficients to be utilized for construction. The design of the support system shall include hydrostatic pressure acting on walls or footings at the highest anticipated water level during construction, and/or design life of the structure.

SUMMARY OF DESIGN GEOTECHNICAL PARAMETERS

DEPTH (FEET)	SPT N- VALUE RANGE	SOIL UNIT WEIGHT (PCF)		ANGLE OF INTERNAL FRICTION (DEGREES)	EARTH PRESSURE COEFFICIENT	
		SATURATED	SUB- MERGED		ACTIVE (K _a)	PASSIVE (K _p)
0 – 15	7 - 52	115	53	30	0.33	3.0

Soil Friction Information

Based on soils located at the base of foundations and prior test boring results a soil friction angle of 30 degrees should be used. With this angle a coefficient of friction, δ , of 20 degrees may be used ($2/3$ friction angle) or a $\tan \delta$ (friction factor) of 0.36. A factor of safety of at least 1.5 should be applied for determining sliding resistance.

Excavation Requirements

Excavations of five feet or more in depth should be sloped or shored in accordance with OSHA and State of Florida requirements. Materials removed from any excavation should not be stockpiled immediately adjacent to the open excavation as this load may cause a sudden collapse of the sidewalls.

In October of 1989, as published in the Federal Registrar, Volume 54, No. 209, the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its; "Construction Standards for excavations, 29CFR part 1926, subpart P". It is mandated by this federal regulation that all excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the OSHA guidelines. The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom.

PAVEMENTS

Provided below are general pavement recommendations. The project Civil Engineer should review the report information in order to provide final pavement design specifications.

Pavement areas should be compacted to a minimum of 98 percent of the modified Proctor maximum dry density to a depth of at least 12 inches below the subgrade level. We recommend that stabilized subgrade having a minimum Limerock Bearing Ratio (LBR) of 40 be placed to a depth of approximately one foot below the base course. The base course will range from approximately 6 to 8 inches and should have a minimum LBR of 100.

At this time, it appears that material will need to be imported in order to develop the subbase and base course sections at the site. We would require that the collection of bulk samples of both the imported base and subbase course in order to determine their LBR values and suitability. When more engineering information is available pertaining to the pavement design we should be notified.

Where concrete pavement is used, a minimum concrete pavement thickness of 6 inches is recommended for the standard and heavy-duty pavement design. The minimum thickness is based upon concrete with a compressive strength of 3,500 psi, and a modulus of rupture of 550 psi. The pavement section should bear on properly compacted subgrade as recommended in this report.

The concrete shall be reinforced per the civil engineer's recommendations. The pavement section should bear on properly compacted subgrade as recommended in this report.



GENERAL

The recommendations reported herein considered the information made available to us, professional experience, and engineering judgment. If final design differs or is subject to revisions, we should be provided the opportunity to evaluate our recommendations to determine whether additional analyses and explorations should be performed. A representative of the geotechnical engineer should observe the site preparation procedures to ensure the engineering intent is accomplished.

Our client for this geotechnical evaluation was:

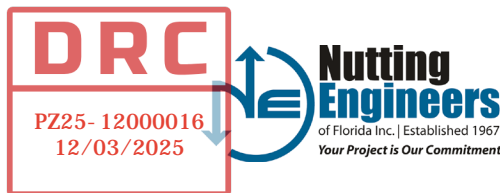
Mr. Joseph Sullivan
CRD Federal, LLC
512 Lake Avenue
Lake Worth Beach, Florida 33460

The contents of this report are for the exclusive use of the client, the client's design & construction team and governmental authorities 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.

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.

Prior to initiating compaction operations, we recommend that representative samples of the structural fill material to be used and acceptable in-place soils be collected and tested to determine their compaction and classification characteristics. The maximum dry density, optimum moisture content, gradation and plasticity characteristics should be determined. These tests are needed for compaction quality control of the structural fill and existing soils, and to determine if the fill material is acceptable.

Nutting Engineers of Florida, Inc. (NE), recommends that we be contracted to provide input to the design team and owner during the foundation and earthwork design process and that we review final foundation drawings and specifications to verify that our report recommendations and design intent have been properly implemented. NE shall also perform testing and inspections during the earthwork and foundation construction as recommended in this report.



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If NE is NOT engaged to perform these services as detailed herein, the Client agrees that NE shall not be the Geotechnical Engineer of Record and shall bear no liability for the interpretation, implementation of our reports recommendations and/or inspection and testing services as described in our reports. Further, NE will be unable to provide ongoing Geotechnical Engineering consulting on the subject project as that role has been assumed by another firm.

The vibratory compaction equipment may cause vibrations that could be felt by persons within nearby buildings and could potentially induce structural settlements. Additionally, preexisting settlements may exist within these structures that could be construed to have been caused or worsened by the proposed vibratory compaction after the fact. Pre- and post-conditions surveys of these structures along with the vibration monitoring during vibratory compaction could be performed to better evaluate this concern. The contractor should exercise due care during the performance of the vibratory compaction work with due consideration of potential impacts on existing structures. If potential vibrations and impacts are not considered tolerable, then alternate foundation modification techniques should be considered.


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 presented 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 provide these services for you. If we can be of any further assistance, or if you need additional information, please feel free to contact us.

Respectfully submitted,
NUTTING ENGINEERS OF FLORIDA, INC.

Christopher E. Gworek, P.E. #69947
Senior Engineer


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

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APPENDICES



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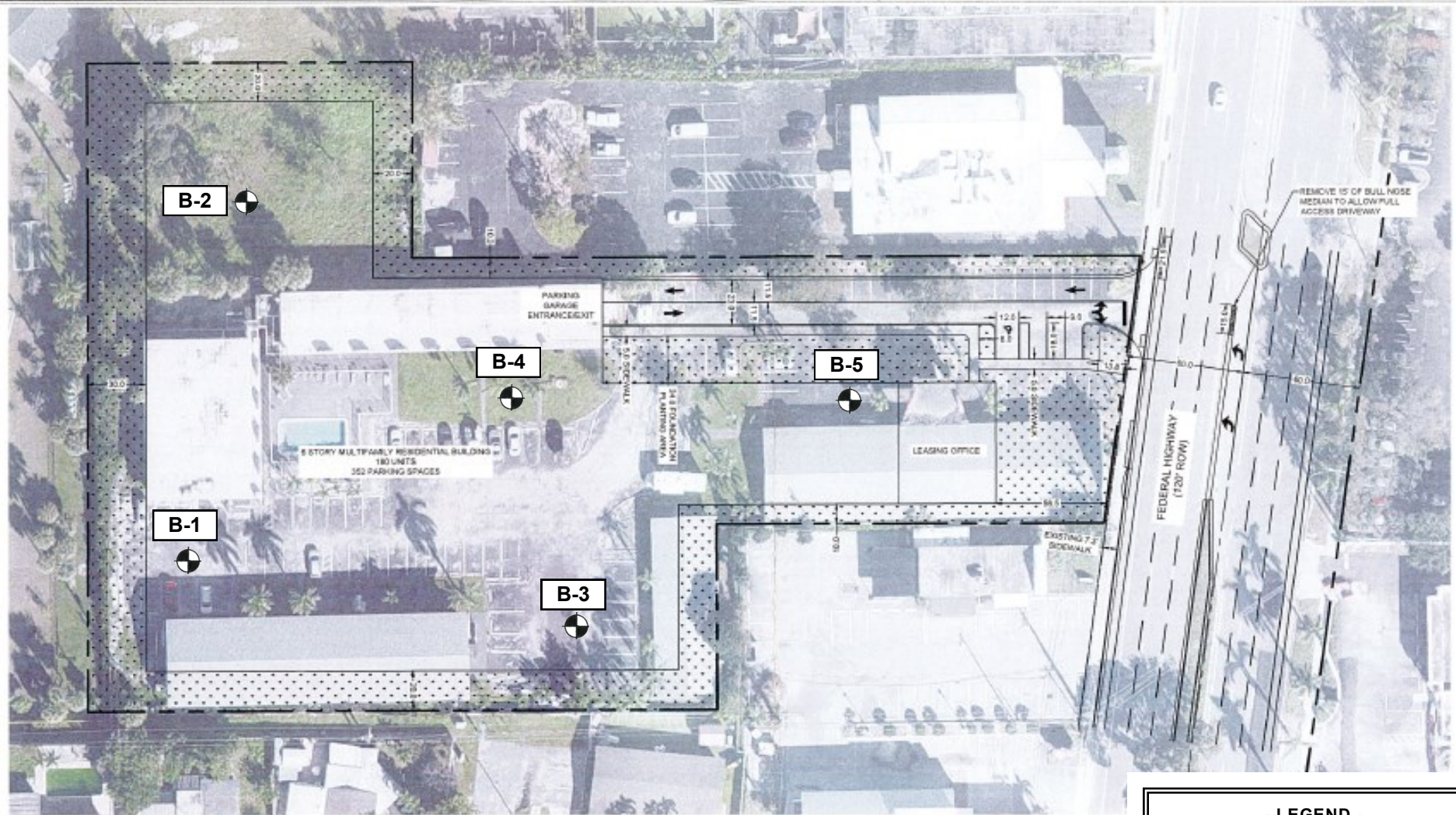
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FIGURE
BORING LOCATION PLAN



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- LEGEND -



APPROX. TEST LOCATION



TEST BORING RECORDS



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 Telephone: (561) 736-4900
 Fax: (561) 737-9975

BORING NUMBER B-1

PAGE 1 OF 2

PROJECT NUMBER 21144.1CLIENT 4211 N FED, LLCPROJECT NAME Federal Highway Multi FamilyPROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, FloridaDATE STARTED 4/3/25 COMPLETED 4/3/25 SURFACE ELEVATION REFERENCE Approx. @ Road CrownDRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:LOGGED BY T. Simmons CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 8.0 ftAPPROXIMATE LOCATION OF BORING As located on the approximate test location 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 (%) □			
0		ASPHALT 1.5", basecourse 4"							
		Gray fine SAND	AU 1						
		Lt. gray fine SAND	AU 2						
5		Gray to brown fine SAND	SS 3	1-1-1-1	2	▲			
		Dk. brown fine SAND	SS 4	2-3-3-3	6	▲			
		Brown fine SAND	SS 5	2-3-4-4	7	▲			
10									
		Lt. bown fine SAND							
15			SS 6	1-1-1-1	2	▲			
20		Lt. gray LIMESTONE, some sand lenses	SS 7	2-4-4-11	8	▲			
25			SS 8	4-6-6-4	12	▲			
30			SS 9	2-3-1-2	4	▲			
35			SS 10	7-2-2-2	4	▲			
		Lt. gray LIMESTONE, trace sand							
			SS 11	11-8-7-15	15	▲			

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10/01/2025

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

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BORING NUMBER B-1

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PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

TEST BOREHOLE 1-21144.1 4211 N FED LLC - FEDERAL HIGHWAY MULTI FAMILY 4211 N FEDERAL HIGHWAY POMPANO BEACH GPJ GINT US GDT 4/11/25

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
40		Lt. gray LESTONE, trace sand <i>(continued)</i>							
			SS 12	50/1"	100+				>>▲
45									
		Lt. gray fine SAND, little shell	X SS 13	2-7-5-10	12	▲			
50									
		Lt. gray fine SAND, some shell, trace limestone	X SS 14	8-9-9-9	18	▲			
55									
		Lt. gray fine SAND	X SS 15	9-11-12-12	23		▲		
60									
			X SS 16	16-25-36-34	61				>>▲
65									
			X SS 17	17-22-15-13	37			▲	
70									
		Gray LESTONE, little sand	X SS 18	15-30-9-6	39				▲
75									
			X SS 19	7-10-8-8	18	▲			
80		Bottom of hole at 80.0 feet.							

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BORING NUMBER B-2

PAGE 1 OF 2

PROJECT NUMBER 21144.1CLIENT 4211 N FED, LLCPROJECT NAME Federal Highway Multi FamilyPROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, FloridaDATE STARTED 4/8/25 COMPLETED 4/8/25 SURFACE ELEVATION REFERENCE Approx. @ Road CrownDRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY T. Simmons CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 8.0 ftAPPROXIMATE LOCATION OF BORING As located on the approximate test location plan

TEST NUTTING BORING HOLE 1-21144.1 4211 N FED LLC - FEDERAL HIGHWAY MULTI FAMILY 4211 N FEDERAL HIGHWAY POMPANO BEACH GPJ GINT US GDT 4/11/25

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
0						20	40	60	80
		Gray to brown fine SAND	AU 1						
		Lt. tan fine SAND	AU 2						
5		Dk. reddish brown fine SAND	SS 3	3-6-7-7	13		▲		
		Reddish brown fine SAND	SS 4	4-4-3-2	7	▲			
		▽ Brown fine SAND	SS 5	1-2-2-2	4	▲			
10		Tan fine SAND							
15		Lt. brown fine SAND	SS 6	1-1-2-2	3	▲			
20		Tan fine SAND and LIMESTONE	SS 7	1-4-6-6	10	▲			
		Gray LIMESTONE, some sand							
25			SS 8	4-8-6-8	14		▲		
30			SS 9	7-10-9-9	19			▲	
35			SS 10	3-4-3-4	7	▲			
		Gray LIMESTONE, little sand	SS 11	5-2-6-1	8	▲			

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BORING NUMBER B-2

PAGE 2 OF 2

PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

TEST BORING BOREHOLE 1-21144.1 4211 N FED LLC - FEDERAL HIGHWAY MULTI FAMILY 4211 N FEDERAL HIGHWAY POMPANO BEACH GPJ GINT US GDT 4/11/25

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
40		Gray LIMESTONE, little sand <i>(continued)</i>							
			X SS 12	4-3-3-4	6	▲			
45		Lt. gray fine SAND							
			X SS 13	3-3-3-3	6	▲			
50		Lt. gray fine SAND, little limestone							
			X SS 14	3-3-5-5	8	▲			
55									
			X SS 15	4-5-7-7	12	▲			
60		Lt. gray fine SAND							
			X SS 16	19-30-24-24	54				>>▲
65									
			X SS 17	17-26-29-20	55				>>▲
70									
		Gray LIMESTONE, little sand	X SS 18	5-2-8-21	10	▲			
75									
			X SS 19	9-15-19-22	34			▲	
80		Bottom of hole at 80.0 feet.							

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BORING NUMBER B-3

PAGE 1 OF 2

PROJECT NUMBER 21144.1CLIENT 4211 N FED, LLCPROJECT NAME Federal Highway Multi FamilyPROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, FloridaDATE STARTED 4/4/25 COMPLETED 4/4/25 SURFACE ELEVATION REFERENCE Approx. @ Road CrownDRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY T. Simmons CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 8.0 ftAPPROXIMATE LOCATION OF BORING As located on the approximate test location plan

TEST BORING BOREHOLE 1-21144.1 4211 N FEDERAL HIGHWAY POMPANO BEACH.GPJ GINT US.GDT 4/11/25

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		ASPHALT 1.5", basecourse 6"							
		Dk. gray to brown fine SAND	AU 1						
		Gray fine SAND							
		Lt. tan fine SAND	AU 2						
5		Dk. brown fine SAND	SS 3	2-4-5-5	9	▲			
		Brown fine SAND	SS 4	3-4-3-3	7	▲			
		Lt. brown fine SAND	SS 5	2-1-1-1	2	▲			
15			SS 6	1-1-2-2	3	▲			
20		Lt. gray Limestone, some sand	SS 7	2-3-9-12	12	▲			
25		Lt. tan fine SAND	SS 8	8-16-10-14	26		▲		
30			SS 9	10-6-3-5	9	▲			
35		Lt. gray fine SAND, trace shell	SS 10	4-5-3-3	8	▲			
		Lt. gray fine SAND	SS 11	4-7-7-9	14	▲			

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BORING NUMBER B-3

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PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

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
40		Lt. gray fine SAND (continued)							
		Lt. gray fine SAND, little limestone							
45			X SS 12	4-4-4-4	8	▲			
50			X SS 13	4-4-5-4	9	▲			
55		Lt. gray fine SAND	X SS 14	4-6-6-8	12	▲			
60			X SS 15	5-9-20-26	29			▲	
65		Gray fine SAND	X SS 16	7-13-18-15	31			▲	
70		Lt. gray LIMESTONE, little sand	X SS 17	11-19-22-29	41				▲
75			X SS 18	9-16-21-14	37				▲
80			X SS 19	8-13-10-10	23		▲		
		Bottom of hole at 80.0 feet.							

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PAGE 1 OF 2

PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

DATE STARTED 4/3/25 COMPLETED 4/4/25 SURFACE ELEVATION REFERENCE Approx. @ Road Crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY T. Simmons CHECKED BY C. Gworek ∇ AT TIME OF DRILLING 8.0 ft

APPROXIMATE LOCATION OF BORING As located on the approximate test location plan

TEST NUTTING BOREHOLE 1-21144.1 4211 N FEDERAL HIGHWAY POMPANO BEACH.GPJ GINT US.GDT 4/11/25

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			
0						□ FINES CONTENT (%) □			
						20	40	60	80
		Gray to brown fine SAND	AU 1						
		Gray fine SAND	AU 2						
		Lt. tan fine SAND							
5		Dk. brown fine SAND	SS 3	4-7-7-8	14		▲		
		Reddish brown fine SAND	SS 4	7-7-8-8	15		▲		
		∇ Brown fine SAND	SS 5	3-2-1-1	3	▲			
10		Lt. brown fine SAND							
		Tan fine SAND							
15			SS 6	3-4-4-3	8		▲		
20		Lt. gray Limestone and SAND	SS 7	2-5-1-3	6	▲			
25			SS 8	5-7-5-7	12		▲		
30			SS 9	7-13-8-11	21			▲	
35			SS 10	3-2-1-2	3	▲			
		Lt. gray fine SAND, little limestone	SS 11	5-5-7-8	12		▲		

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BORING NUMBER B-4

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PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

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
40		Lt. gray fine SAND, little limestone (<i>continued</i>)							
			X SS 12	4-5-8-15	13		▲		
45									
			X SS 13	13-7-6-6	13		▲		
50		Lt. gray fine SAND, trace limestone							
			X SS 14	5-8-6-6	14		▲		
55									
			X SS 15	5-5-5-5	10		▲		
60		Lt. gray fine SAND							
			X SS 16	7-10-10-14	20		▲		
65		Gray fine SAND							
			X SS 17	14-19-16-23	35				▲
70		Lt. gray LIMESTONE, little sand							
			X SS 18	8-16-16-12	32				▲
75									
			X SS 19	15-15-13-11	28				▲
80		Bottom of hole at 80.0 feet.							

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TEST NUTTING BORING LOG 1-21144.1 4211 N FED LLC - FEDERAL HIGHWAY MULTI FAMILY 4211 N FEDERAL HIGHWAY POMPANO BEACH GPJ GINT US GDT 4/11/25

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BORING NUMBER B-5

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PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

DATE STARTED 4/7/25 COMPLETED 4/7/25 SURFACE ELEVATION REFERENCE Approx. @ Road Crown

DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:

LOGGED BY T. Simmons CHECKED BY C. Gworek ∇ AT TIME OF DRILLING 7.8 ft

APPROXIMATE LOCATION OF BORING As located on the approximate test location plan

TEST PITTING BOREHOLE 1-21144.1 4211 N FEDERAL HIGHWAY MULTI FAMILY 4211 N FEDERAL HIGHWAY POMPANO BEACH.GPJ GINT US.GDT 4/11/25

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 <input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/>			
0		ASPHALT 1", basecourse 5"							
		Gray to brown fine SAND	AU 1						
		Brown fine SAND	AU 2						
5		Lt. brown fine SAND	SS 3	1-1-2-3	3	▲			
	∇		SS 4	2-3-3-3	6	▲			
10		Lt. brown fine SAND, slight trace root	SS 5	2-3-2-2	5	▲			
		Lt. gray fine SAND							
15			SS 6	1-2-1-3	3	▲			
20		Lt. gray Limestone and SAND	SS 7	3-5-8-6	13		▲		
25			SS 8	6-7-7-7	14		▲		
30			SS 9	5-8-11-7	19			▲	
35		Lt. tan fine SAND and Limestone	SS 10	2-2-3-2	5	▲			
		Lt. brown fine SAND	SS 11	3-5-8-8	13		▲		

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BORING NUMBER B-5

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PROJECT NUMBER 21144.1

CLIENT 4211 N FED, LLC

PROJECT NAME Federal Highway Multi Family

PROJECT LOCATION 4211 N. Federal Highway, Pompano Beach, Florida

TESTING BOREHOLE 1-21144.1 4211 N FED LLC - FEDERAL HIGHWAY MULTI FAMILY 4211 N FEDERAL HIGHWAY POMPANO BEACH GPJ GINT US GDT 4/11/25

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
40		Lt. brown fine SAND (continued)							
			X SS 12	8-9-11-9	20		▲		
45		Lt. gray fine SAND							
		Gray fine SAND							
			X SS 13	5-3-21-50/3"	100+				>>▲
50		Lt. gray LESTONE, some sand							
			X SS 14	6-6-5-4	11		▲		
55									
			X SS 15	5-8-15-8	23			▲	
60									
			X SS 16	7-10-8-8	18		▲		
65									
		Gray fine SAND							
			X SS 17	8-12-19-20	31				▲
70									
		Lt. gray LESTONE, little sand							
			X SS 18	6-1-1-14	2	▲			
75									
			X SS 19	7-11-14-14	25			▲	
80		Bottom of hole at 80.0 feet.							

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SOILS CLASSIFICATION CRITERIA

LIMITATIONS OF LIABILITY



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.

SOIL AND ROCK CLASSIFICATION CRITERIA

SAND/SILT

N-VALUE (bpf)	RELATIVE DENSITY
0 – 4	Very Loose
5 – 10	Loose
11 – 29	Medium
30 – 49	Dense
>50	Very dense
100	Refusal

CLAY/SILTY CLAY

N-VALUE (bpf)	UNCONFINED COMP. STRENGTH (tsf)	CONSISTENCY
<2	<0.25	v. Soft
2 – 4	0.25 – 0.50	Soft
5 – 8	0.50 – 1.00	Medium
9 – 15	1.00 – 2.00	Stiff
16 – 30	2.00 – 4.00	v. Stiff
>30	>4.00	Hard

ROCK

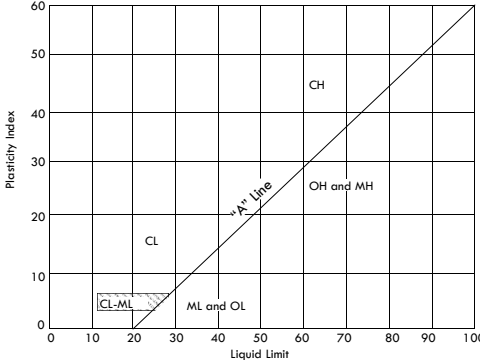
N-VALUE (bpf)	RELATIVE HARDNESS	ROCK CHARACTERISTICS
$N \geq 100$	Hard to v. hard	Local rock formations vary in hardness from soft to very hard within short vertical and horizontal distances and often contain vertical solution holes of 3 to 36 inch diameter to varying depths and horizontal solution features. Rock may be brittle to split spoon impact, but more resistant to excavation.
$25 \leq N \leq 100$	Medium hard to hard	
$5 \leq N \leq 25$	Soft to medium hard	

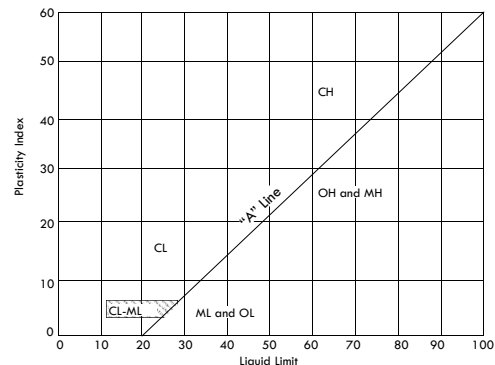
PARTICLE SIZE

Boulder	>12 in.
Cobble	3 to 12 in.
Gravel	4.76 mm to 3 in.
Sand	0.074 mm to 4.76 mm
Silt	0.005 mm to 0.074 mm
Clay	<0.005 mm

DESCRIPTION MODIFIERS

0 – 5%	Slight trace
6 – 10%	Trace
11 – 20%	Little
21 – 35%	Some
>35%	And

Major Divisions			Group Symbols	Typical names	Laboratory classification criteria		
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW		
		Gravels with fines (Appreciable amount of fines)	GW*	d	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are <i>borderline</i> cases requiring use of dual symbols.
				u			
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7		
			SW	Well-graded sands, gravelly sands, little or no fines			$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW			
		Sands with fines (Appreciable amount of fines)	SM*	d	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are <i>borderline</i> cases requiring use of dual system.
u							
				SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. more than 7	
Fine-grained soils (More than half of material is smaller than No. 200 sieve size)	Silt and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	<div>Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than five percent.....GW, GP, SW, SP More than 12 percent.....GW, GC, SW, SC 5 to 12 percent.....<i>Borderline</i> cases requiring dual systems**</div> 			
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy, clays, silty clays, lean clays				
		OL	Organic silts and organic silty clays of low plasticity				
	Silt and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts				
		CH	Inorganic clays or high plasticity, fat clays				
		OH	Organic clays of medium to high plasticity, organic silts				
	Highly organic soils	PT	Peat and other highly organic soils			Plasticity Chart	



Plasticity Chart

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