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May 19, 2015

Rotolo Consultants Inc. (RCI)
894 Robert Boulevard
Slidell, Louisiana 70458

Attention: Kasey Dorr
Phone: (985) 643-2427
Email: kdorr@rotoloconsultants.com

Re: Geotechnical Engineering Services Report
Proposed Outdoor Patio
Fair Ground Race Course
New Orleans, Louisiana
PSI Project No. 0254689

Dear Mr. Dorr:

Professional Service Industries, Inc. (PSI) is pleased to submit our Geotechnical Engineering Report for the above referenced project. This report presents the results of the field exploration and laboratory testing, site preparation guidelines, and recommendations for foundation design for the above-referenced project located in New Orleans, Louisiana.

We appreciate the opportunity to perform these geotechnical services and look forward to continuing to participate during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.

William Barker
Project Manager
Geotechnical Services

Reda Bakeer, Ph.D., P.E.
SVP and Principal Consultant
Geotechnical Services

GEOTECHNICAL ENGINEERING SERVICES REPORT

PROPOSED OUTDOOR PATIO
FAIR GROUNDS RACE COURSE
NEW ORLEANS, LOUISIANA

PSI PROJECT NO. 0254689

PREPARED FOR

ROTOLO CONSULTANTS INC. (RCI)
894 ROBERT BOULEVARD
SLIDELL, LOUISIANA

MAY 19, 2015

BY

PROFESSIONAL SERVICE INDUSTRIES, INC.
724 CENTRAL AVENUE
JEFFERSON, LOUISIANA 70121
(504) 733-9411
http://www.psiusa.com

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PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc. (PSI) has completed our geotechnical exploration for the proposed Outdoor Patio to be constructed within the Fairgrounds Race Course facility located at 1751 Gentilly Boulevard in New Orleans, Louisiana. This exploration was performed in general accordance with PSI Proposal No. 150416 and the results of our field exploration and laboratory testing, foundation design recommendations and general site preparation guidelines for the proposed construction.

Project Description

Based on furnished information, the project will include the construction of an Outdoor Patio at the subject site. The open-air Patio will include a concrete floor slab and will be surrounded by an L-shaped concrete masonry unit (CMU) free standing wall approximately 55 feet long and 12 feet high. Although no detailed grading plan was provided, it is anticipated that less than two (2) feet of fill will be required to raise or level the site grade in the project area.

The geotechnical recommendations presented in this report are based on the available project information, structure location and description, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Purpose and Scope of Services

The purpose of this study is to evaluate subsurface conditions at the proposed site and develop geotechnical engineering recommendations and guidelines for use by others in preparing appropriate design and other related construction documents for the proposed project. Our scope of services included a reconnaissance of the project site, drilling the soil borings, performing laboratory testing, and preparation of this geotechnical report. This report briefly outlines the field and laboratory testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommendations regarding the following:

- General discussion with regard to site and subgrade preparation;
- Foundation recommendations, depth, and an estimate of potential settlement; and
- Comments regarding factors that will impact construction and performance of the proposed construction.

The scope of geotechnical services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for information purposes. Prior to development of this site, an environmental assessment is advisable.

In addition, PSI did not provide any service to investigate or detect the presence of moisture, mold, or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence or amplification of the same.

The client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. The client further acknowledges that site conditions are outside of PSI's control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

SITE AND SUBSURFACE CONDITIONS

Project Site Location and Description

The site for the proposed Outdoor Patio is a manicured, mostly grass covered area located in the southeast corner of the Fairgrounds Race Course facility in New Orleans, Louisiana. The site is encompassed by parking and drive way areas, with the grand stands located immediately to the northwest. The general site location is shown on the Site Vicinity Map included in the Appendix.

Drilling, Sampling, and Laboratory Testing Procedures

It was originally planned to drill two (2) soil borings to the 40 ft. depth at selected locations along the alignment of the proposed patio. However, due to the character of the near surface soils that were encountered during the drilling of the first boring, the boring depths were adjusted. The penetration depth of boring B-1 was increased to 60 feet and boring B-2 was only drilled to a depth of 10 feet below the existing ground surface in order to confirm the conditions of the near surface soils. The depths and locations of the soil borings were selected by PSI and were adjusted in the field during the drilling operations as indicated on the Boring Location Plan included in the Appendix.

The soil borings were drilled with a truck-mounted drilling rig using solid stem auger and wet rotary drilling techniques. Due to the very loose or very soft character of the soils encountered at the boring locations, only Standard Penetration Test (SPT) was performed to obtain standard penetration values of the soils. The standard penetration value (N) is defined as the number of blows of a 140 pound hammer falling 30 inches that is required to advance the split-barrel sampler one (1) foot into the soil. To perform the test and obtain a sample, the sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer. The number of blows is recorded for each of three (3) successive increments of six (6) inches penetration. The "N" value is obtained by adding the second and third incremental numbers. The results of the standard penetration test indicate the relative density of cohesionless soils and thereby provide a basis for estimating the relative resistance of the soil profile components.

Drilling and sampling procedures were accomplished in general accordance with ASTM Standards. Samples of granular, and cohesive, soils were obtained in the field and were identified according to boring number and depth, placed in polyethylene plastic bags to protect against moisture loss and transported to the laboratory for testing.

Selected soil samples were tested in the laboratory to determine material properties for use in our evaluation. The laboratory testing program included visual classification (Atterberg Limits and percent passing the No. 200 sieve) and natural moisture content tests on selected soil samples. Due to the character of the soils encountered at the site and since only disturbed samples could be obtained with SPT drilling, it was not possible to perform any compression shear strength tests. The laboratory testing program was conducted in general accordance with applicable ASTM Standard Procedures. The results of these tests are presented on the accompanying boring logs in the Appendix of this report.

Subsurface Conditions

The general subsurface stratigraphy based on the soil conditions encountered in the deep boring B-1 is summarized in Table 1. Some minor difference in the character of the near surface soils were encountered in boring B-2 which was terminated at the 10 foot depth. Those variations in the near surface soils are likely due to the presence of fill or reworked naturally occurring soils.

Table 1: General Subsurface Stratigraphy based on Boring B-1

Depth (ft.)	Material Description	Friction Angle (ϕ)	Average Cohesion (psf)
0 to 2	Silty Sand with (FILL)	20	--
2 to 7	Very loose to loose Silty Sand (SM)	20	--
7 to 12	Very loose to loose Sand (SP-SM)	20	--
12 to 48	Very soft Lean Clay (CL-ML)	-	200
48 to 60	Very loose to loose Sandy Silt (ML)	28	--

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics encountered in the area of boring B-1. The boring logs included in the Appendix should be reviewed for specific information at each boring location. These records also include soil descriptions, stratification, penetration resistances, and location of the samples and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring location. Variation may occur and should be expected between or away from boring locations. The stratification represents the approximate boundary between subsurface materials and the actual transition may be more gradual or more distinct. Water level information obtained during field operations is also shown on the boring logs. The samples, which were not altered by laboratory testing will be retained for 60 days from the date of this report and then will be discarded.

Groundwater Conditions

Groundwater was encountered in both borings at a depth of approximately 7 feet below the existing ground surface during drilling operations. The groundwater level presented in this report is the level that was measured at the time of our field activities and groundwater may not have become fully static at the time of measurement. Groundwater could fluctuate due to seasonal precipitation and variations in weather conditions. Additionally, perched water may be encountered in discontinuous zones within the overburden. We recommend that the Contractor determine the actual groundwater levels at the site at the time of the construction activities.

Seismic Site Classification

For the purposes of seismic design, a Site Class E as defined in the 2012 International Building Code (IBC) is recommended for use at this site. The site class is based on the subsurface conditions encountered at our soil boring, the results of field and laboratory testing, and our experience with similar projects in this area. It should be noted that the deepest boring at this site extended only to 60 feet, whereas IBC site classifications are based on the upper 100 feet of the soil profile. Deeper boring data, geophysical surveys or a site specific seismic assessment should be considered if a refined site classification is desired.

EVALUATION AND RECOMMENDATIONS

General

The type and depth of foundation suitable for a given structure primarily depends on several factors including the subsurface conditions, the function and configuration of the structure, the loads it may carry, the cost of the foundation and the criteria set by the Design Engineer with respect to vertical and differential movement which the structure can withstand without damage.

The subsoils encountered in the exploratory borings made along the alignment of the proposed Patio are generally poor in bearing quality. The near surface soils including the fill are granular in character and, therefore, are susceptible to erosion and loss of bearing support. In addition, the underlying soils are somewhat compressible even under nominal loading. In view of this, piles are recommended for support of the Patio Wall particularly since it will be subjected to lateral loads. Details related to site preparation, foundation and general construction considerations are presented in the following sections.

Site Preparation

Once any topsoil, vegetation, trees, roots, organic material within the construction area are stripped and removed from the site, fill placement may begin as necessary to reach design grades. The fill within the footprint of a pile-supported structure should be selected and placed so that it does not present high resistance to pile driving. Consequently, a lower degree of compaction within a structure footprint should be considered. The fill within the footprint of a pile-supported structure and within unpaved areas could consist of good quality cohesive material or excavated material, free from organic, demolition debris, wood, roots, deleterious materials, etc. Alternatively, the backfill could consist of “sugar” sand or “pumped” sand having less than 10 percent fines passing the No. 200 Sieve. In either case, the backfill should be compacted to a density of about that of the natural subsoils in order to minimize long-term areal settlements and the effect of drag load. However, controlled-compaction of this portion of the fill is believed to be unwarranted.

Pile Foundations

Engineering analyses were performed based on boring B-1 and laboratory test data with regard to a pile foundation for support of the proposed Outdoor Patio. Consideration was given to small (6” tip and 8” butt) and large (7” tip-12” butt) treated timber piles to support the proposed structure. The timber piles should conform to ASTM D25 for treatment and quality and have the minimum dimensions discussed herein. The piles at this site will generally derive their support in both compression and tension, or uplift, through “skin friction” along their embedded lengths since no stratum was encountered that would offer good additional “end bearing” support. The recommended driven lengths and the estimated corresponding allowable compression and tension capacities for the piles are presented in Table 2. The contribution of the upper two (2) feet of soil was ignored to account for pile cutoff. The recommended pile lengths are referenced from the existing ground surface at the boring location and any length of pile needed above, or below, this reference should be added to, or subtracted from, the pile lengths given in Table 2.

Table 2: Pile Capacities

ESTIMATED ALLOWABLE SINGLE PILE CAPACITY (tons)[1]				
Pile Length (feet)[2]	**Small Treated Timber Piles (6" tip – 8" butt)**		**Large Treated Timber Piles (7" tip – 12" butt)**	
	Compression	**Tension**	**Compression**	**Tension**
30	2-1/2	1-1/2	3-1/2	2
35	3	2	4	2-1/2
40	3-1/2	2-1/2	5	3
45	-	-	6	4
50	-	-	9	5
55[3]	-	-	13	7

(1) Capacities are soil-pile related capacities and consideration should be given to the structural integrity of the pile member.
(2) Pile lengths are referenced from existing ground surface at the time of drilling.
(3) Pile with tips driven to firm embedment into sand.

The foregoing estimated pile load capacities contain factors of safety of 2.0 against failure in compression and 3.0 against failure in tension, or uplift, which are recommended for design, but do not consider lateral loads, drag load, group effect or settlements, as will be discussed.

Lateral Loads

The values given in the foregoing table are for axial capacities of a single vertical pile in compression and tension, or uplift. In general, the allowable lateral load on single, vertical small timber piles and Class "B" timber piles should be limited to ½ ton per pile and 1 ton per pile, respectively. For piles driven on a batter, the lateral capacity of the pile could be determined as the horizontal component of the axial pile load capacity, depending upon the batter selected.

Drag Load

When fill is placed on the site, the underlying compressible soils consolidate, resulting in surface settlement. As the compressible soils consolidate, "negative skin friction" or downdrag may be imparted on piles. This could result in an extraneous load, additive to any structural load, on the piles and could increase settlements of the structure. It is our opinion that drag load is dependent on the thickness of fill, compressibility of the soils, time rate of consolidation and pile length. If 2 ft. of new fill or less is required, drag load should be unimportant to design. However, it is recommended that this fill be placed as soon as practical prior to construction. If more than 2 ft. of new fill is required, further consideration should be given to the effects of drag load.

Spacing and Group Effect

Per the Jefferson Parish Code of Ordinances, the minimum center-to-center spacing for all piles should be either three (3) feet or as determined by the following expression (whichever is greater):

$$SPAC = 0.05\ (L_1) + 0.025\ (L_2) + 0.0125\ (L_3)$$

where SPAC = Center-to-center spacing of piles, ft.
L_1 = Pile penetration up to 100 ft.
L_2 = Pile penetration from 101 to 200 ft.

L_3 = Pile penetration beyond 201 ft.

Spacing and group effect should be evaluated according to the local building code requirements.

Settlement of Piles

No detailed settlement analyses were made since design structural loads, pile type, pile length, pile layout, etc. are not known at the present time. However, settlement of pile supported footings using the recommended pile load capacities in single widely spaced rows or in clusters of up to 6 to 8 piles are estimated to be on the order of ¾ to 1 inch. Settlements would increase with the size of the pile cluster and, if larger clusters of closely spaced piles are needed for support, detailed settlement analyses should be made.

It should be recognized that some areal settlements will probably occur due to the load imposed by the fill that will be used to raise the site grade in the area of the proposed structure. Areal settlement should be considered in design, particularly where unsupported appurtenances (driveway, walkways, planters, etc.) adjoin pile supported structure. At these vulnerable locations, it may be desirable to structurally tie such unsupported elements into the pile-supported structure to minimize the effects of differential settlement. Also, the effect of areal settlement should be considered where utility lines connect to and underlie pile-supported structures, if any. Flexibility should be incorporated into the lines to allow for settlement and "pulling" of the lines.

Patio Floor Slab

The Outdoor Patio floor slab, including sidewalks and landings immediately adjacent to the proposed wall, should be pile-supported. The patio slab should have an adequate number of joints to reduce cracking resulting from any differential movement and shrinkage. It is also recommended that a polyethylene sheeting vapor barrier be provided at the patio slab/fill soil interface.

Pile Installation

Pile driving hammers used to drive foundation piles should be selected according to pile type, length, size, and weight of pile, as well as potential vibrations resulting from pile driving operations. Care should be taken to assure that the hammer selected is capable of achieving the desired penetration without causing damage to the piles or causing excessive vibrations which could damage existing, nearby structures. Generally, experience of the local contractor is often the primary source for the selection of the hammer. In general, driving of small timber piles should be limited to the rate of 10 to 12 blows per foot using a Vulcan No. 2 hammer or a 2000 to 3000 lb. drop hammer falling 5 ft. Driving of Class "B" timber piles should be limited to the rate of 25 blows per foot using a Vulcan No. 1 hammer or equivalent. These recommendations are given in order to minimize possible damage to the piles.

It should be noted that the density of the various granular strata that were encountered in boring B-1 is relatively low. However, some variations in density could occur away from the boring location. In view of this, it is recommended that probe types piles be driven throughout the site to establish driving characteristics and pile lengths. While it is believed the piles could be driven several feet into the various granular strata without severe damage, the piles should be closely observed and, if "refusal" or little or no penetration under several successive blows occurs, driving should be ceased. The probe piles should be of the same type and size as the job piles and should be installed with the same equipment and techniques that would be used to install the job piles.

Each pile should be driven to the desired tip elevation and driving resistance should be monitored without interruption in the driving operations. Driving of the center piles in the cluster first will better facilitate driving operations. Accurate records of the final tip elevation and driving resistances should be obtained during the pile driving operations. Supplemental techniques like predrilling holes or jetting may reduce the pile capacity and should be avoided. LADOTD requirements for predrilling should be followed. Some pile heaving may be experienced during installation of adjacent displacement type piles. It is therefore recommended that the tip elevation of the pile be recorded and if significant heave is noted after driving subsequent piles, provisions must be made for reseating them. The Geotechnical Engineer should be provided with predrilling plans for consideration prior to construction. Additionally, construction conformance testing should be performed to document the construction activities.

Pile Driving Monitoring

We recommend that the pile driving be monitored by the Geotechnical Engineer or his representative. Sometimes, premature refusal occurs due to poor performance of the hammer rather than from soil resistance. Any changes in hammer blow counts should be carefully examined before making any decisions about the pile penetration.

Pile Load Test

It is recommended that the pile capacities be verified by a field load test. It is recommended that at least one test pile be driven in the building pad area and tested in compression as outlined by ASTM D1143 no sooner than 14 days following pile installation to allow pile “set up” to fully develop. The pile load test should be performed under the guidance of the geotechnical engineer so that the data may be interpreted and the recommended pile capacity adjusted, if necessary, according to the load test results.

Vibration Survey and Monitoring

Thresholds of vibration induced cracking are generally site specific and depend on the type and age of the structure, the frequency of ground vibration, and the type of soil supporting the structure. Research by the U.S. Bureau of Mines (USBM) and other investigative groups have established criteria relating the occurrence of structural damage to certain frequencies and level of ground motion. According to the USBM, within the range of four to 12 hertz, the maximum particle velocity recommended to preclude the threshold damage to plaster-on-wood for old structures is 0.5 inch per second (ips). Please note that a threshold of 0.25 ips has been adopted by the local engineering community and is recommended for the project. Furthermore, a site specific survey to collect vibration data during performance of the load test and during driving of the job piles is recommended.

CONSTRUCTION CONSIDERATIONS

It is recommended PSI be retained to provide observation and testing of construction activities involved in the foundations, earthwork, and related activities of this project. PSI cannot accept any responsibility for any conditions which deviated from those described in this report, nor for the performance of the foundations if not engaged to also provide construction observation and testing for this project.

Moisture Sensitive Soils/Weather Related Concerns

The soils encountered at this site can be sensitive to disturbances caused by construction traffic when wet. The contractor should be cognizant of the importance of proper maintenance of surface drainage. Depending on weather-related ground conditions, the contractor's maintenance of drainage during construction, and other factors, some difficulty may be encountered by the contractor in achieving compaction on initial lifts of fill placed on loose or soft subgrade. This will be exacerbated by wet weather, particularly if the contractor allows surface drainage to enter and pond in the excavations.

During wet weather periods, increases in the moisture content of the soil can cause reduction in the soil strength and support characteristics. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather. Earthwork activities performed during cooler, wetter months may certainly offer more difficulties than if performed during warmer, drier periods.

If construction is performed during wet conditions, work platforms may be necessary; these can be created for earthwork by mixing soil and hydrated lime, cement, or combinations of these additives.

Drainage and Groundwater Concerns

Water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrade areas either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the structure, and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the structure.

The free groundwater table was encountered within the boring following drilling activities at a depth 7 feet below the existing ground surface. It is possible seasonal variations or other factors will cause groundwater fluctuations and a water table may be present in the upper soils at a later time. Additionally, perched water may be encountered in discontinuous near surface zones. Any water accumulation should be removed from excavations by pumping. Should excessive and uncontrolled amounts of seepage occur, the Geotechnical engineer should be consulted.

REPORT LIMITATIONS

The recommendations submitted in this report, are based on the available subsurface information obtained by PSI and project information furnished by RCI for the proposed patio. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation recommendations are required. If PSI is not notified of such changes, PSI will not be responsible for the impact of those changes on the project.

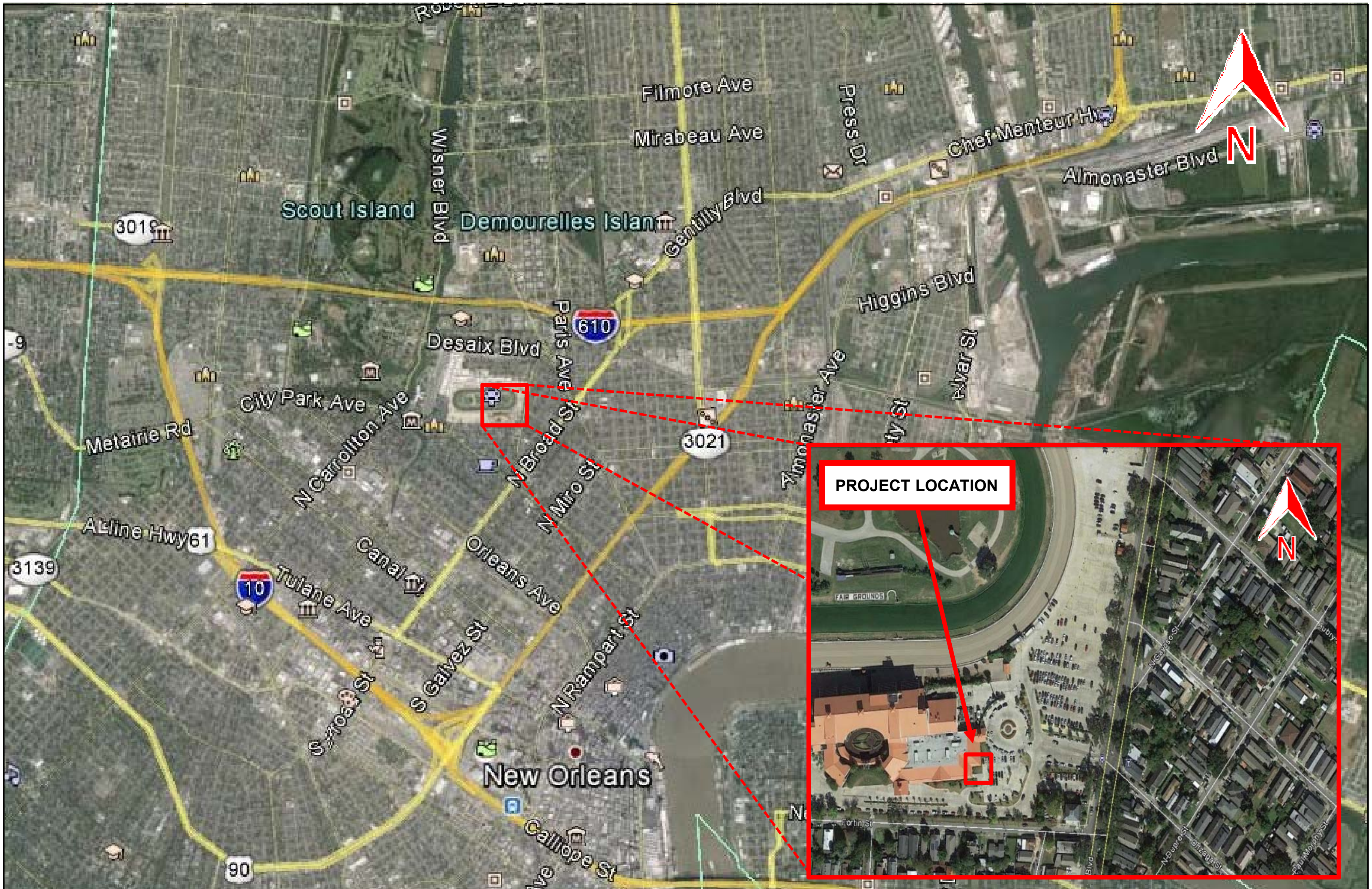
The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the project. This report has been prepared for the exclusive use of RCI for the proposed patio to be constructed at the Fairgrounds Race Course located at 1751 Gentilly Blvd., in New Orleans, Louisiana.

APPENDIX

Site Vicinity Map
Boring Location Plan
Boring Logs
Key to Terms and Symbols Used on Boring Logs

SITE VICINITY MAP &
BORING LOCATION PLAN



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SITE VICINITY MAP

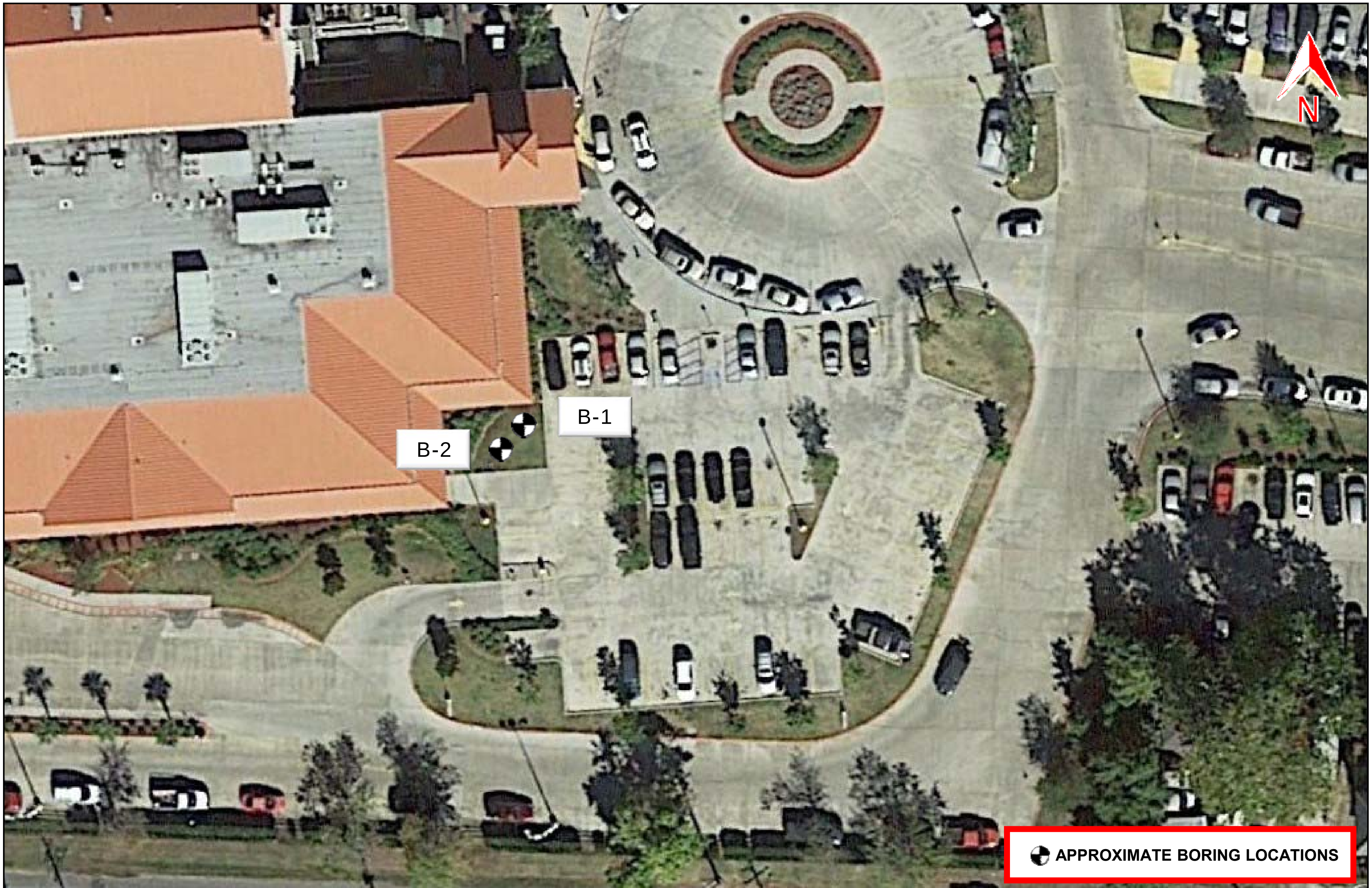
PROJECT NO. 0254689

GEOTECHNICAL ENGINEERING SERVICES

PROPOSED PATIO WALL

1751 GENTILLY BLVD.

NEW ORLEANS, LOUISIANA



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BORING LOCATION PLAN
PROJECT NO. 0254689

GEOTECHNICAL ENGINEERING SERVICES
PROPOSED PATIO WALL
1751 GENTILLY BLVD.
NEW ORLEANS, LOUISIANA

BORING LOGS

LOG OF BORING B-1

PROPOSED PATIO WALL
FAIR GROUNDS RACE COURSE
NEW ORLEANS, LOUISIANA

TYPE OF BORING: WET ROTARY | LOCATION: BUILDING AREA | PSI Project No.: 0254689

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) ○ HP ● UC △ TV ▲ UU 0.0 0.5 1.0 1.5	SHEAR STRENGTH (tsf) HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)	UU (tsf)	UNIT DRY WEIGHT (pcf)
		FILL		Gray SILTY SAND, with traces of organics and gravel (**FILL**)		28										
2.5		SM		Brown **SILTY SAND**		17				30						
5.0		SP-SM		Very loose to loose brown **SAND**, with silt	2	29										
7.5				▽	4	27										
10.0					WOH	29				7						
12.5		CL-ML		Very soft to soft gray **LEAN CLAY**, with silt												
15.0					WOH	38										
17.5–20.0					WOH	38										
22.5–25.0					WOH	34										
27.5–30.0					WOH	36	37	21	16	93						
32.5–35.0					WOH	37										
37.5–40.0					1	39										
42.5–45.0					4	32										
47.5		ML		Very loose to loose gray **SANDY SILT**												
50.0					4	31				70						

DEPTH OF BORING: 60 FEET
DATE DRILLED: 5/6/15
NOTE:

▽ GROUNDWATER DURING DRILLING: 7 FEET
▼ GROUNDWATER UPON COMPLETION: N /A
▼ DELAYED GROUNDWATER: N / A

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 5/19/15 08:42 - 0254

LOG OF BORING B-1

PROPOSED PATIO WALL
FAIR GROUNDS RACE COURSE
NEW ORLEANS, LOUISIANA

TYPE OF BORING: WET ROTARY   LOCATION: BUILDING AREA   PSI Project No.: 0254689

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) ○ HP ● UC △ TV ▲ UU 0.0 0.5 1.0 1.5	SHEAR STRENGTH (tsf) HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)	UU (tsf)	UNIT DRY WEIGHT (pcf)
		ML		Soft to fime gray **SANDY SILT**												
52.5																
			X		4	32										
55.0																
57.5																
			X		10	35										
60.0				Boring terminated at 60 feet												
62.5																
65.0																
67.5																
70.0																
72.5																
75.0																
77.5																
80.0																
82.5																
85.0																
87.5																
90.0																
92.5																
95.0																
97.5																
100.0																

DEPTH OF BORING: 60 FEET
DATE DRILLED: 5/6/15
NOTE:

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 5/19/15 08:42 - 0254

LOG OF BORING B-2

PROPOSED PATIO WALL
FAIR GROUNDS RACE COURSE
NEW ORLEANS, LOUISIANA

TYPE OF BORING: WET ROTARY | LOCATION: BUILDING AREA | PSI Project No.: 0254689

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) ○ HP ● UC △ TV ▲ UU 0.0 0.5 1.0 1.5	HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)	UU (tsf)	UNIT DRY WEIGHT (pcf)
0–2.5		FILL		Gray SILTY SAND, with traces of organics and gravel (**FILL**)		28				29						
2.5		SM		Brown **SILTY SAND**	4	17										
5.0		SP-SM		Very loose to loose gray **SAND**, with silt	7	29				11						
7.5		CL		Firm to stiff gray **LEAN CLAY**, with traces of silt and sand ▽	9	27	39	20	19							
					8	29				92						
10.0				Boring termianted at 10 feet												

DEPTH OF BORING: 10 FEET
DATE DRILLED: 5/6/15
NOTE:

▽ GROUNDWATER DURING DRILLING: 7 FEET
▼ GROUNDWATER UPON COMPLETION: N /A
▼ DELAYED GROUNDWATER: N / A

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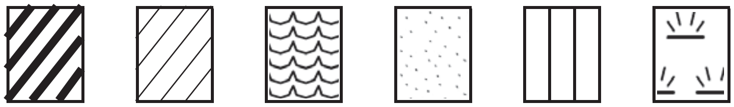
Geotechnical Consulting Services
22171 MCH Road
Mandeville, Louisiana 70471

KEY TO TERMS AND SYMBOLS USED ON LOGS

SOIL TYPE

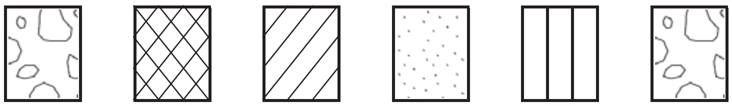


FAT CLAY | LEAN CLAY | ORGANIC CLAY | SAND | SILT | PEAT

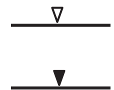
SAMPLER TYPE

NO RECOVERY | AUGER SAMPLE | SHELBY TUBE | SPLIT SPOON

SOIL TYPE / **MODIFIERS**



GRAVEL | FILL | CLAYEY | SANDY | SILTY | GRAVELY



GROUNDWATER DURING DRILLING

GROUNDWATER UPON COMPLETION

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487 (1980)

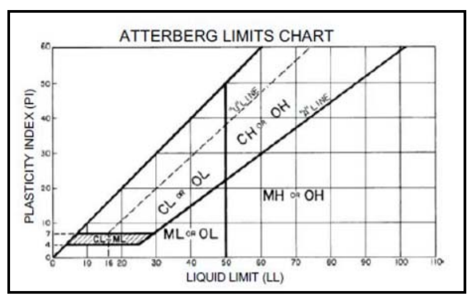
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS LESS THAN 50% PASSING NO. 200 SIEVE	GRAVEL & GRAVELY SOILS LESS THAN 50% PASSING NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR NO FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		W/ APPRECIABLE FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN 50% PASSING NO. 4 SIEVE	CLEAN SANDS LITTLE FINES	SW	WELL GRADED SAND, GRAVELY SAND (LITTLE FINES)
			SP	POORLY GRADED SANDS, GRAVELY SAND (L.FINES)
		SANDS WITH APPREA. FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS,SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS,ROCK FLOUR SILTY OR CLAYEY FINE SANDS OR CLAYEY SILT W/ LOW PI
			CL	INORGANIC CLAY OF LOW TO MEDIUM PI LEAN CLAY GRAVELY CLAYS, SANDY CLAYS, SILTY CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PI
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS
			OH	ORGANIC CLAYS OF MED TO HIGH PI, ORGANIC SILT
HIGHLY ORGANIC SOIL			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS
UNCLASSIFIED FILL MATERIALS				ARTIFICIALLY DEPOSITED AND OTHER UNCLASSIFIED SOILS AND MAN MADE SOIL MIXTURES

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	SHEAR STRENGTH IN TONS/FT^2
VERY SOFT	0 TO 0.125
SOFT	0.125 TO 0.25
FIRM	0.25 TO .50
STIFF	0.50 TO 1.00
VERY STIFF	1.00 TO 2.00
HARD	> 2.00 OR 2.00+

RELATIVE DENSITY - GRANULAR SOILS

CONSISTENCY	N-VALUE (BLOWS/FOOT)
VERY LOOSE	0-4
LOOSE	4-9
MEDIUM DENSE	10-29
DENSE	30-49
VERY DENSE	> 50 OR 50+



ABBREVIATIONS

HP - HAND PENETROMETER

TV - TORVANE

MV - MINIATURE VANE

UC - UNCONFINED COMPRESSION TEST

UU - UNCONSOLIDATED UNDRAINED TRAIXIAL

CU - CONSOLIDATED UNDRAINED

NOTE: PLOT INDICATES SHEAR STRENGTH AS OBTAINED BY ABOVE TESTS

CLASSIFICATION OF GRANULAR SOILS

U.S. STANDARD SIEVE SIZE(S)

6" | 3" | 3/4" | 4 | 10 | 40 | 200

BOUL--DERS	COBBLES	GRAVEL		SAND			SILT OR CLAY	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

152 | 76.2 | 19.1 | 4.76 | 2.0 | 0.42 | 0.074 | 0.002

GRAIN SIZE IN MM

Geotechnical Consulting Services
Mandeville, Louisiana

dfl