

Exhibit X. Belle Grove Site
Preliminary Geotechnical Engineering
Report



January 25, 2017

Baton Rouge Area Chamber
564 Laurel Street
Baton Rouge, LA 70801

Belle Grove Site Preliminary Geotechnical Engineering Report

Attention : Mr. Jim A. Cavanaugh
Site Development Director
Email: jim@brac.org
Phone: (225) 339-1163

Re: **General Geotechnical Site Characterization Report
Belle Grove Plantation
White Castle, Louisiana
PSI Project No. 02591066**

Dear Mr. Cavanaugh:

Professional Service Industries, Inc. is pleased to submit this General Geotechnical Site Characterization Report for the Belle Grove Plantation Site Study located in White Castle, Louisiana. This report includes the results of field and laboratory testing, and information regarding the compatibility of this site with industrial development, suitability of soils for building foundations and on-site roadways, requirements of soil augmentation for construction of a typical 100,000 square feet (sf) industrial manufacturing building and depth of groundwater.

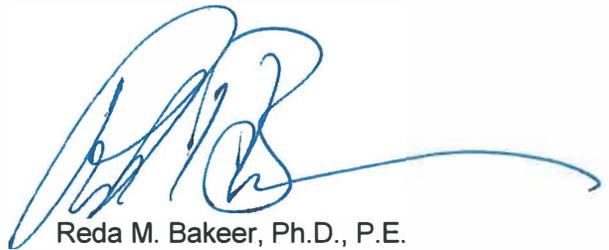
We appreciate the opportunity to perform this General Geotechnical Site Characterization Report. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.



Matthew Champagne
Staff Scientist
Geotechnical Services



Reda M. Bakeer, Ph.D., P.E.
Chief Engineer
Geotechnical Services

GENERAL GEOTECHNICAL SITE CHARACTERIZATION REPORT

**BELLE GROVE PLANTATION
WHITE CASTLE, LOUISIANA
PSI PROJECT NO.: 02591066**

PREPARED FOR

**BATON ROUGE AREA CHAMBER
564 LAUREL STREET
BATON ROUGE, LA 70801**

January 25, 2017

**BY
PROFESSIONAL SERVICE INDUSTRIES, INC.
11950 INDUSTRIPLEX BLVD.
BATON ROUGE, LOUISIANA 70809**

Name: Reda M. Bakeer, Ph.D., P.E.

Date: January 25, 2017

License No.: 27123

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PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc. (PSI) has completed a General Geotechnical Site Characterization study at the Belle Grove Plantation tract, located in White Castle, Louisiana. Our services were provided in general accordance with PSI Proposal No. 259-188854-R1, dated August 31, 2016. Authorization of the services was provided by Mr. Kyle Zeringue, Senior Vice President, Business Development, Baton Rouge Area Chamber (BRAC.)

Project Description

The primary objectives for this site characterization study are to provide general information regarding the compatibility of this site with industrial development; suitability of the naturally occurring soils for building foundations and on-site roadways; requirements of soil augmentation, if any, for construction of a typical 100,000 square feet (sf) industrial manufacturing building; and the depth of free groundwater table at the exploration locations during our drilling operations. This general geotechnical site characterization report will provide an initial baseline of the site subsurface conditions that will likely be encountered during future site development. However, as with any geotechnical investigation, particularly given the size of this subject site and the relatively limited number of explorations performed at this time, variations between exploration locations may and should be expected to exist, and there remains a distinct possibility that other specific conditions may exist at some parts of the site that were not encountered during this limited exploration.

The opinions and information to be presented in this site characterization study are estimates intended for preliminary consideration only and are based on limited geotechnical exploration. They are not to be used for final design or construction. A detailed geotechnical exploration and specific analyses should be performed once the layout, design and function of the proposed development have been finalized.

Purpose and Scope of Services

The purposes of PSI's limited geotechnical services were to:

- Perform 3 soil borings and 2 Cone Penetrometer Test (CPTu) soundings at designated and readily accessible locations within the subject site as per the request of the Client;
- Evaluate the general subsurface soil conditions and groundwater depth at the subject site at the exploration locations during our field activities;
- Perform limited laboratory testing on selected soil samples recovered from the borings; and,
- Provide a general discussion regarding compatibility of this site with industrial development, suitability of the soils for support of building foundations and on-site pavement improvement, and requirements of soil augmentation needed for construction of a typical 100,000 square foot industrial manufacturing building, if any.

The limited scope of 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

informational purposes. Prior to development of this site, an environmental assessment is advisable. Additionally, 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 the 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

Site Location and Description

The subject site is an approximately 558 acre tract of land located on the south side of LA Highway 405 beginning approximately ½ mile west of its intersection with Cannonburg Road and extending ½ mile to the west in White Castle, Iberville Parish, Louisiana. The site extends southwestward approximately 1 ½ miles from LA Highway 405. It is bound by LA Highway 405 and the Mississippi River to the northwest, Clark Road to the southeast, and elsewhere by mostly undeveloped, rural/agricultural land. The site is currently used primarily for agricultural purposes and contains several dirt and access farm roads. The site also contains an approximately 1,200 square foot residential structure on the north side of the site approximately 2,350 feet southwest from the northeast boundary of the site. Several ditches and other runoff conveyances were observed during our field reconnaissance. PSI's track-mounted drill rig was used to perform all of the borings and CPTu soundings, which were located just off of existing farm roads in view of the present site use. PSI made no attempt to enter into the cultivated portions of the site. A Site Vicinity Map based on a Google Earth Image dated October 20, 2016 is presented in the Appendix.

Site Geology

Based on the Geological Map of Louisiana (1984), the site is located within the Natural Levees Formation (Qnl) geologic unit. The Natural Levees geologic unit is characterized by gray and brown silt and silty clay with some very fine sand. Per the U.S. Geological Society (USGS), these deposits are encountered on past and present courses of major streams. Natural Levee deposits in the site vicinity are relatively weak and compressible in nature. The northwest side of the site extends along a building bank of the Mississippi River. Therefore, some variations in subsoil characteristics and stratifications should be expected across the subject site as they were influenced by the annual floods and distance away from the Mississippi River.

Field Exploration

The subsurface conditions at the subject site were explored by drilling and recovering soil samples from soil borings, and through performing Cone Penetrometer Testing (CPTu) soundings. Borings B-1, B-2 and B-3 extended to a depth of approximately 30 feet below the existing ground surface at their locations. CPTu soundings CPT-1-2 and CPT-2 extended to a depth of about 100 feet below the existing ground surface at their locations. Refer to the Boring Location Plan given in the Appendix for the approximate exploration locations based on the Google Earth Image dated October 20, 2016.

The soil borings were performed with a track-mounted Geoprobe Model 7822DT direct-push rig using hollow stem auger and wet rotary drilling techniques. Samples were generally obtained at two (2) foot intervals from the ground surface to a depth of ten (10) feet and at five (5) foot intervals thereafter to the boring termination depths. Drilling and sampling were accomplished in general accordance with ASTM Standard Procedures.

Undisturbed samples of cohesive soils were generally obtained from borings B-1, B-2, and B-3 using thin-walled tubes in general accordance with the procedures for "Thin-Walled Tube Geotechnical Sampling of Soils" (ASTM D1587). These samples were extruded in the field with a hydraulic ram.

The CPTu soundings were performed utilizing the same track-mounted Geoprobe Model 7822DT direct-push rig. The CPTu soundings were performed in general accordance with ASTM D5778, utilizing an electric cone penetrometer with a 60°, 1.4 inch diameter cone, that was hydraulically pushed. As the soundings were performed, the cone tip resistance, sleeve friction and pore pressure were measured essentially continuously throughout the depth of exploration at each one to two inch depth interval. From this data, information regarding soil types, in-situ strength parameters and groundwater levels can be interpreted.

The samples were identified according to the project number, boring number and depth, and placed in polyethylene plastic wrapping to protect against moisture loss. In addition, undisturbed samples were wrapped in aluminum foil prior to placing in the plastic wrapping and were transported to the laboratory in containers to minimize further disturbance.

Laboratory Testing

In addition to the field exploration, selected soil samples obtained from the borings were tested in the laboratory to evaluate the subsurface soil properties. Laboratory testing on selected soil samples included natural moisture content, Atterberg limits, percent passing the number 200 sieve, and unconfined compression tests. The samples which were not altered by laboratory testing will be retained for sixty (60) days from the date of this report and then will be discarded without further notice.

The soil samples obtained from the drilling operation were classified in general accordance with ASTM D2487 or D2488. Laboratory test data and detailed descriptions of the soils can be found on the boring logs which are included in the Appendix along with a key to terms and symbols used on the logs. The logs of the CPTu soundings are also included in the Appendix.

Subsurface Conditions

Based on the field observations and the results of the laboratory testing, the soils were classified and the boring and CPTu logs were developed and summarized in Table 1. The exploration logs are presented in the Appendix along with a key to the terms and symbols used on the logs. The borings and CPTu soundings were all made within the presently accessible areas to our drill rig and along the existing farm roads.

Table 1: Generalized Soil Profile - Boring B-1

Depth Range ¹ (feet)	Description
0 – 6	Firm to stiff lean clay (CL), with silt or silty clay (CL-ML)
6 – 12	Firm to stiff lean clay (CL)
12 – 22	Soft to firm lean clay (CL) with trace organic
22 – 50 ⁽²⁾	Soft to firm fat clay (CH)
50 – 57 ⁽³⁾	Loose to medium dense clayey sand (SC)
57 – 100	Firm to stiff lean clay (CL) or fat clay (CH)

(1) The approximate depth range is referenced from existing ground surface at the exploration locations.

(2) B-1, B-2, and B-3 were terminated at 30 foot depth

(3) Only in CPT-1-2. Lean Clay (CL) and fat clay (CH) in CPT-2

The above subsurface description is generalized in nature to highlight the major subsurface stratification features and material characteristics at each exploration location. The boring and CPTu logs included in the Appendix should be reviewed for specific information at the individual exploration locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples, and laboratory test data. The stratifications shown on the boring and CPTu sounding logs represent the conditions only at the actual exploration locations. Due to the size of the site and its vicinity to a building bank along the Mississippi River, variations and should be expected to occur between the exploration locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. This is particularly important considering the site size and the limited number of borings and CPTu soundings performed which were all performed within the immediate vicinity of the existing farm roads.

Groundwater Information

Free groundwater was encountered at about the 9 foot depth below the existing ground surface in each of the three soil borings (B-1, B-2, and B-3) during our drilling activities. It should be noted that groundwater level fluctuations at this site may occur due to seasonal and climatic variations; the stage of the adjacent Mississippi River; alteration of drainage patterns; land usage and ground cover including drainage gullies, ditches, etc. Additionally, a perched water condition could develop in discontinuous zones within the overburden. This condition develops as rainwater is entrapped in the more pervious surface agricultural soils underlain by less pervious cohesive soils. We recommend that the Contractor determine the actual groundwater levels at the particular time when future construction activities begin. This is particularly important if the proposed construction will include relatively deep excavations. Any excavation or dewatering plans and some construction activities that fall within 1,500 feet from the centerline of the Mississippi River flood protection system may be subject to review and approval of the U.S. Army Corps of Engineers (USACE).

EVALUATION AND DISCUSSIONS

The foundations suitable for a given structure primarily depend on several factors including the subsurface conditions, function of the structure, the loads it may carry, cost of the foundation and the criteria set by the Design Engineer with respect to vertical and differential movements which the structure can withstand without damage. Detailed column loads for a typical 100,000 sq. ft. industrial manufacturing building were not provided at the time of this study; however, structural column loads are assumed to be on the order of 300 kips, with wall loads on the order of about 5 kips per lineal foot. Grading plans are also not available at this time, but for the purpose of our preliminary analysis, a typical range of about 2 to 4 feet was assumed needed to achieve the final design grades. The proposed design should also consider the requirements of the U.S. Army Corps of Engineers (USACE) with regard to any construction to be made within 1,500 feet from the existing flood protection system along the adjacent Mississippi River.

Again, it should be noted that the exploration locations were performed on or near the shoulder of existing access farm roads. No attempt was made to enter cultivated areas typically used for planting crops. It should be expected that the near surface soils presently in the cultivated areas will require significant additional effort to achieve proper compaction and may contain more organic material and other additives (fertilizers, etc.) than the areas explored during this preliminary exploration.

The choice of type of a foundation system should be based on the tolerance criteria for the performance of the structures and economics of construction. Grade-supported foundations or surface and pavement-improvements will likely be governed by the anticipated loads and acceptable movement tolerances, particularly where a significant amount of new fill will be placed. Driven concrete or steel piles, drilled shafts, or auger-cast-in-place (ACIP) piles should be a viable foundation type considering the subsurface and groundwater conditions encountered and should be capable of supporting heavy structural loads anticipating that some settlements will occur as a result of new fill and structural loads. As previously discussed, construction in some areas of the site may be subjected to review and approval of the USACE. Lightly-loaded structures including equipment pads could be supported on shallow spread footings, or mat foundations, as long as some long-term movement can be tolerated. Timber piles could also be used for support of lightly loaded structures. Prior to new fill placement, site preparation should include removal of surficial topsoil, organic materials, and soft soil or demucking of wet areas or drainage conveyances. Proofrolling should then be performed in the presence of the Geotechnical Engineer to assess general stability and firmness of the soil prior to fill placement.

Based on the limited number of soil borings and CPTu soundings made at such a large site, field data and laboratory test results, the proposed site is generally feasible for industrial development. The subsurface soils explored are suitable for support of building foundations and site roadways after proper preparation. The near surface soils encountered at the exploration locations are generally lean clays (CL of CL-ML). Therefore, they have low potential for experiencing movements due to volumetric changes (swelling and shrinkage). However, some near surface fat clays (CH) soils may exist at some parts of the site away from the exploration locations. These CH soils are more susceptible to experiencing volumetric changes with variation in moisture conditions. If fat clays were encountered, the Potential Vertical Rise (PVR) should be further evaluated considering the actual fill thickness needed to raise the site to

achieve final design grades. PVR in portions of this site could be mitigated by undercutting the fat clay (CH) soils to a predetermined depth and replacing with moisture-conditioned, properly compacted lean clay (CL) soils, or with the addition of chemical treatment such as lime mixing to fat clay (CH) native soils if encountered within the construction areas. The suitability of reuse of excavated soils (ponds, swales, etc.) as structural fill will depend on their character and may require the use of lime treatment or soil mixing depending on the desired use (structural fill, pavement subgrade, general fill, etc.) as well as the character of the excavated soils (CH, CL, etc.).

Pavement or surface improvements should be underlain by at least 12 inches of properly compacted low plasticity engineered fill material or otherwise chemically treated with lime if needed, prior to base material placement or limestone surfacing if the near surface soils including fat clays (CH). A separation geotextile fabric could be placed over the prepared soil subgrade for the purpose of separation.

Areas within 1,500 feet of the existing Mississippi River flood protection system, along the northwest of the site should anticipate USACE interaction and will likely be subject to the requirements of the Lower Mississippi Valley (MVN) and New Orleans District (NOD). Special permitting should also be anticipated for any geotechnical exploration, excavations, and any loading or changes in loading configurations within the referenced area of the site. Supplemental exploration and sampling methods, laboratory testing and engineering analysis (including, but not limited to, slope stability, seepage analysis, impact of pile driving, and settlement analysis) following the USACE guidelines may be required for the project. Additionally, the USACE permits typically prohibit excavation or deep foundation installation during periods of high water (typically late April through late July but may vary dependent on the weather conditions in the region) as detailed by the permit requirements. Strict monitoring of pile driving is also mandated by the USACE in terms of vibration and potential impact on the adjacent flood protection system.

As stated previously, PSI's opinions and information presented in this site evaluation report are provided for planning purposes and preliminary considerations only; they are based on a very limited geotechnical exploration, and are not to be used for final design and construction.

REPORT LIMITATIONS

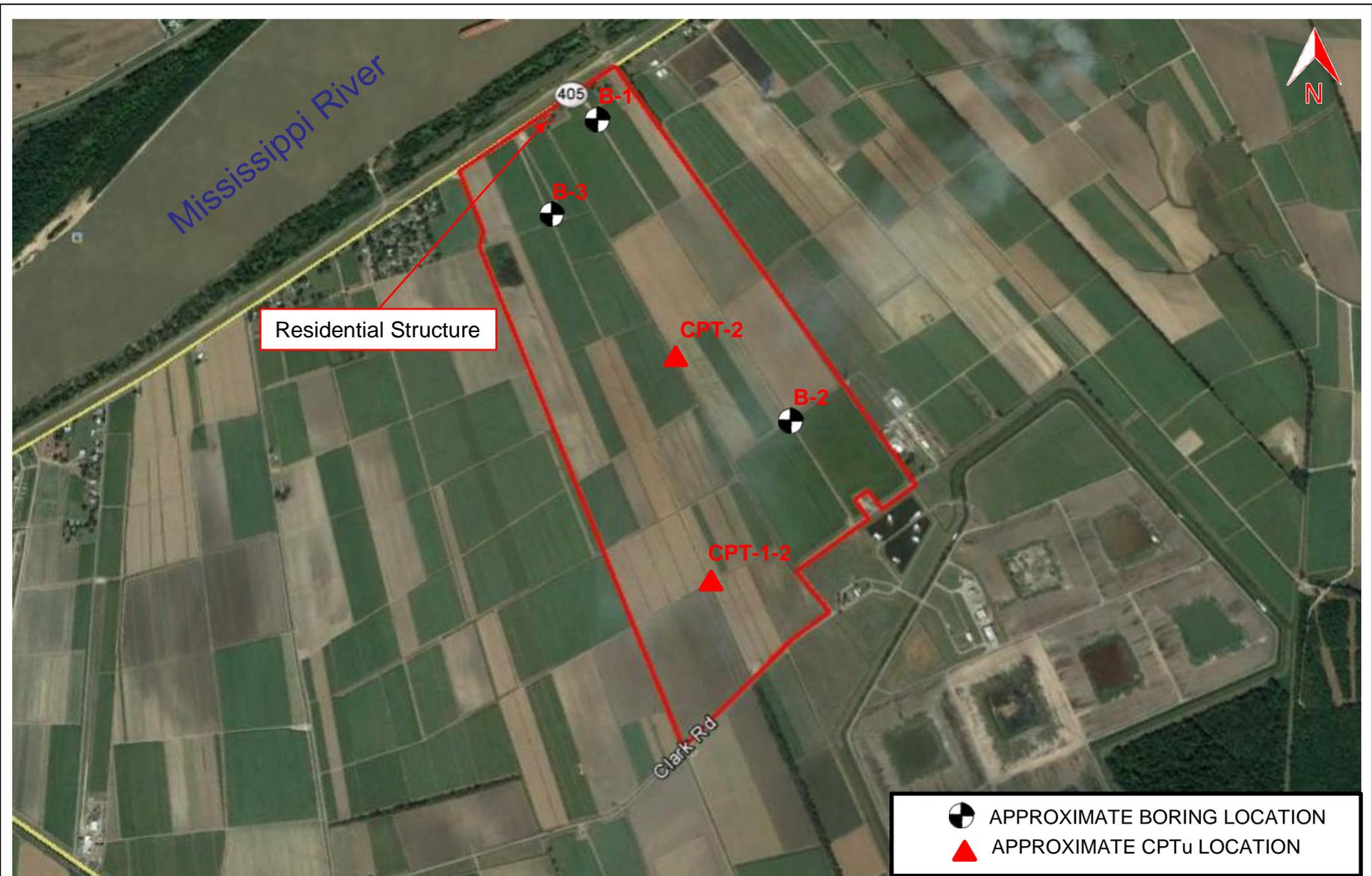
The preliminary information submitted in this report is based on the available subsurface data obtained by PSI at the time of our field exploration. PSI warrants that the preliminary findings contained herein have been made in accordance with generally accepted drilling procedures and visual soil classification methods in the local area. No other warranties are implied or expressed. This report has been prepared for the exclusive use of the Baton Rouge Area Chamber for the specific purpose of determining general subsurface information at the subject site to develop a general geotechnical site characterization.

APPENDIX



Belle Grove Plantation Site

SITE VICINITY MAP



Residential Structure

405

B-1

B-3

CPT-2

B-2

CPT-1-2

Clark Rd

-  APPROXIMATE BORING LOCATION
-  APPROXIMATE CPT_u LOCATION

LOG OF BORING B-1

BELLE GROVE PLANTATION
HIGHWAY 405
WHITE CASTLE, LOUISIANA

TYPE OF BORING: HOLLOW STEM AUGER

LOCATION: BUILDING AREA

PSI Project No.: 02591066

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf)				UNIT DRY WEIGHT (pcf)
											HP	UC	TV	UU	
0.0 - 2.5		CL		Firm to stiff gray LEAN CLAY		28					0.92				
2.5 - 5.0						35	39	23	16			0.26	0.35		87
5.0 - 7.5				-with ferrous stains at 6 feet		31							0.45		
7.5 - 10.0						33					0.33				
10.0 - 12.5						33					0.50	0.79			90
12.5 - 15.0		CL		Soft to firm LEAN CLAY with silt		33							0.15		
15.0 - 17.5															
17.5 - 20.0				-with silt below 18 feet		37	44	22	22				0.30		
20.0 - 22.5															
22.5 - 25.0		CH		Soft gray FAT CLAY , with silt		41						0.21	0.40		70
25.0 - 27.5															
27.5 - 30.0						59							0.30		
30.0 - 32.5				Boring terminated at 30 feet											
32.5 - 35.0															
35.0 - 37.5															
37.5 - 40.0															
40.0 - 42.5															
42.5 - 45.0															
45.0 - 47.5															
47.5 - 50.0															

DEPTH OF BORING: 30 FEET
DATE DRILLED: 10/11/16
NOTE:

▽ GROUNDWATER DURING DRILLING: 8 FEET
▼ GROUNDWATER UPON COMPLETION: N/A
▽ DELAYED GROUNDWATER: N/A

BORING LOG - BATON ROUGE - PSIHOUSTON.GDT - 1/25/17 11:05 - 0254

LOG OF BORING B-2

BELLE GROVE PLANTATION
HIGHWAY 405
WHITE CASTLE, LOUISIANA

TYPE OF BORING: HOLLOW STEM AUGER

LOCATION: BUILDING AREA

PSI Project No.: 02591066

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf)				UNIT DRY WEIGHT (pcf)
											HP	UC	TV	UU	
0.0 - 2.5		CL-ML		Firm gray SILTY CLAY		31					0.75				
2.5 - 3.4						34					0.50				
3.4 - 5.0						37						0.39	0.55		84
5.0 - 7.5		CL		Soft gray LEAN CLAY , with silt		30	37	19	18					0.20	
7.5 - 10.0				▽		36								0.15	
10.0 - 12.5															
12.5 - 15.0						34						0.14	0.30		89
15.0 - 17.5															
17.5 - 20.0						35								0.20	
20.0 - 22.5															
22.5 - 25.0		CH		Firm gray FAT CLAY		33								0.30	
25.0 - 27.5															
27.5 - 30.0						38	72	21	51			0.33			
30.0 - 32.5				Boring terminated at 30 feet											
32.5 - 35.0															
35.0 - 37.5															
37.5 - 40.0															
40.0 - 42.5															
42.5 - 45.0															
45.0 - 47.5															
47.5 - 50.0															

DEPTH OF BORING: 30 FEET
DATE DRILLED: 10/11/16
NOTE:

▽ GROUNDWATER DURING DRILLING: 9 FEET
▼ GROUNDWATER UPON COMPLETION: N / A
▽ DELAYED GROUNDWATER: N / A

BORING LOG - BATONROUGE - PSIHOUSTON.GDT - 1/25/17 11:05 - 0254

LOG OF BORING B-3

BELLE GROVE PLANTATION
HIGHWAY 405
WHITE CASTLE, LOUISIANA

TYPE OF BORING: HOLLOW STEM AUGER

LOCATION: BUILDING AREA

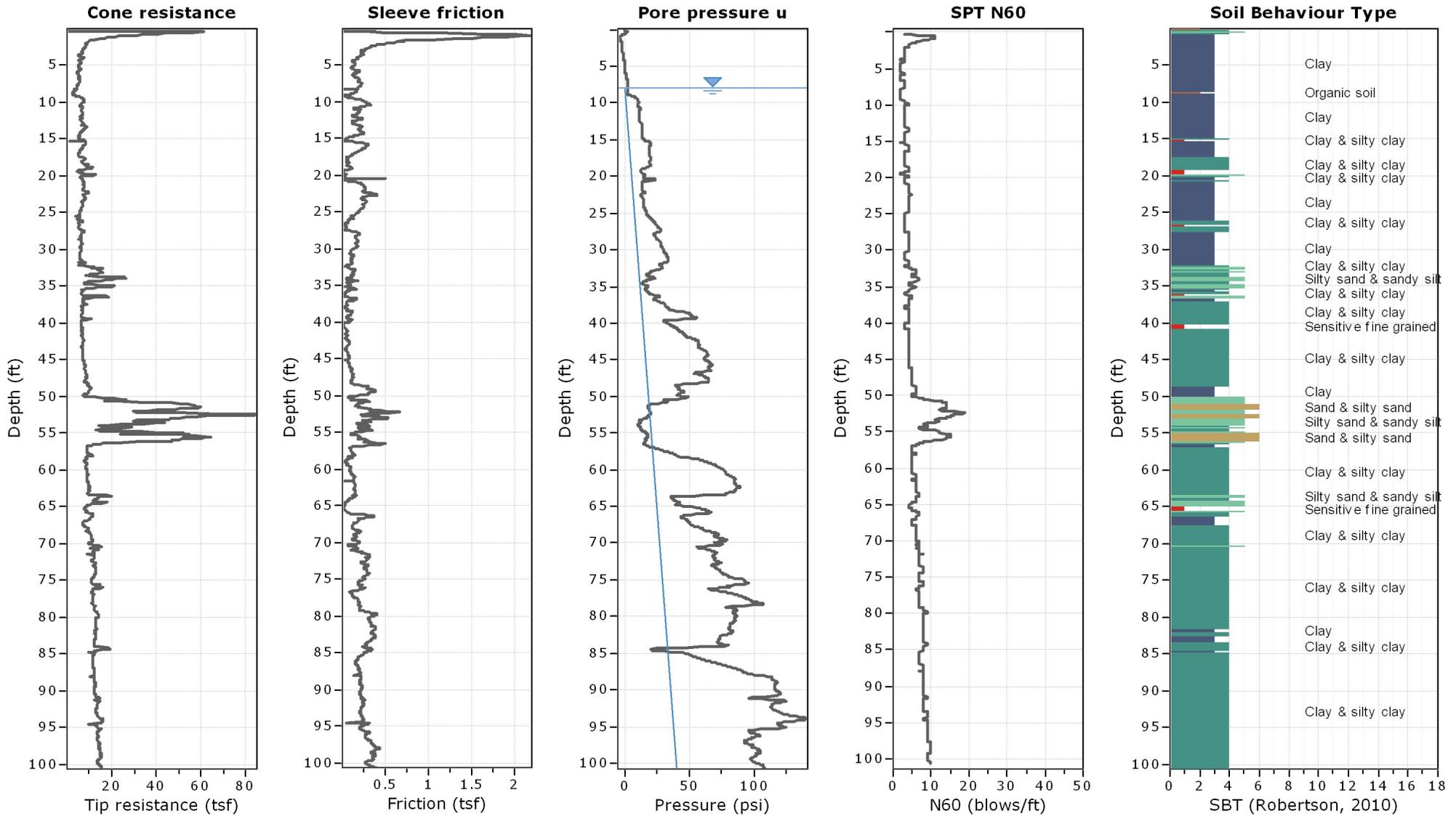
PSI Project No.: 02591066

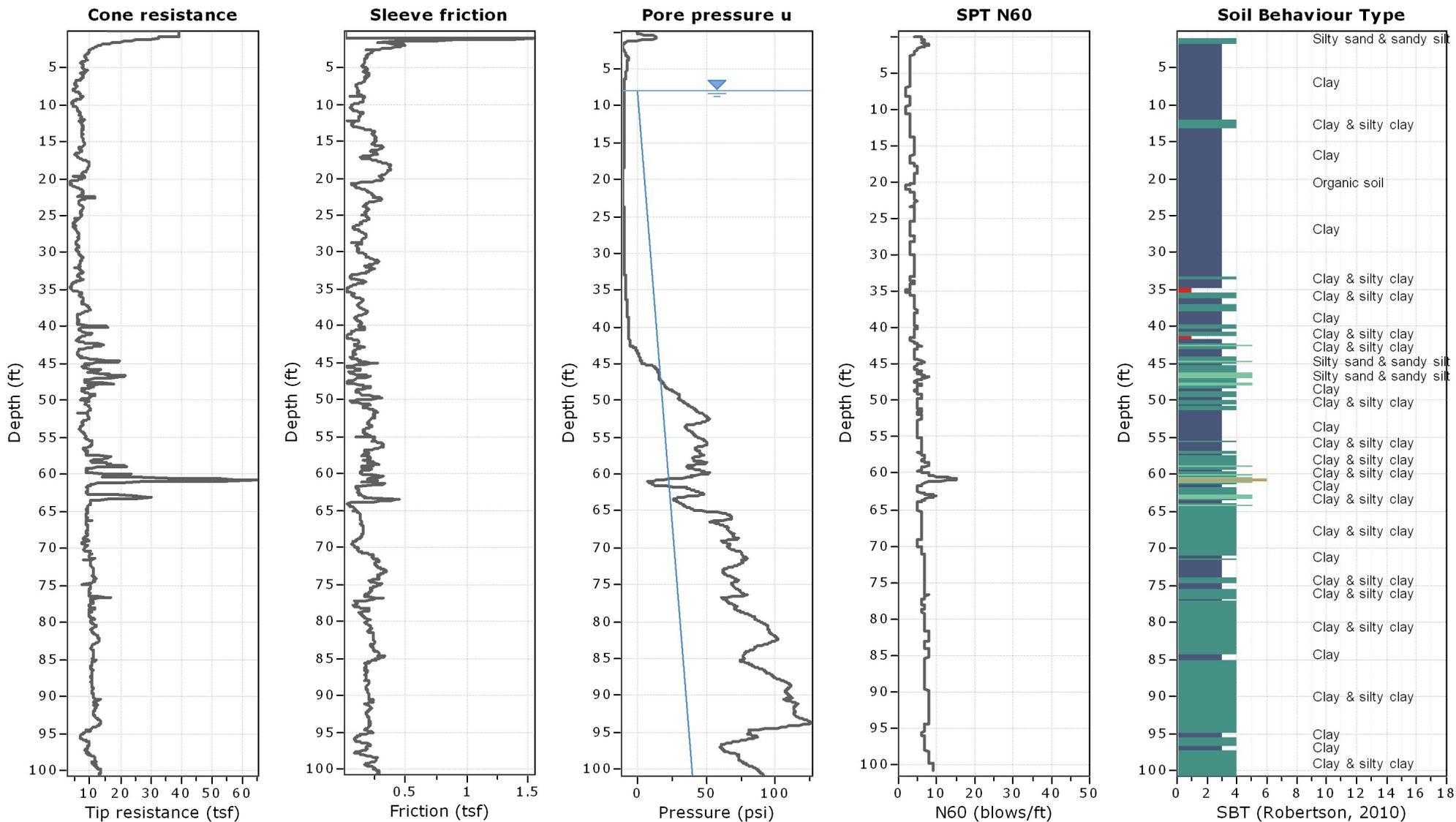
DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT			% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf)				UNIT DRY WEIGHT (pcf)			
							LL	PL	PI		HP	UC	TV	UU		HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)
0.0 - 2.5		CL		Firm to stiff gray LEAN CLAY , with silt		14	36	20	16					1.50				
2.5 - 5.0						34							0.33					
5.0 - 7.5						32	34	24	10					0.37	0.25			93
7.5 - 10.0						35									0.30			
10.0 - 12.5		CL		Soft to firm gray LEAN CLAY with trace organic		38								0.25				
12.5 - 15.0						27								0.42	0.45			97
15.0 - 17.5																		
17.5 - 20.0		CL		Very soft gray SANDY LEAN CLAY		32				63						0.10		
20.0 - 22.5																		
22.5 - 25.0		CH		Soft gray FAT CLAY		55	84	29	55					0.25				
25.0 - 27.5																		
27.5 - 30.0						70								0.25				
30.0 - 32.5				Boring terminated at 30 feet														
32.5 - 35.0																		
35.0 - 37.5																		
37.5 - 40.0																		
40.0 - 42.5																		
42.5 - 45.0																		
45.0 - 47.5																		
47.5 - 50.0																		

DEPTH OF BORING: 30 FEET
DATE DRILLED: 10/11/16
NOTE:

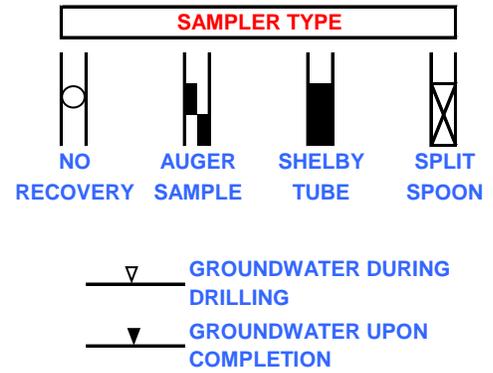
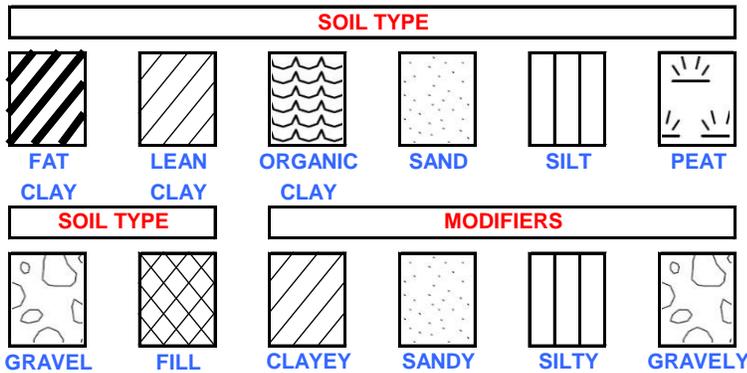
▽ GROUNDWATER DURING DRILLING: 9 FEET
▼ GROUNDWATER UPON COMPLETION: N / A
▽ DELAYED GROUNDWATER: N / A

BORING LOG - BATONROUGE - PSIHOUSTON.GDT - 1/25/17 11:05 - 0254





KEY TO TERMS AND SYMBOLS USED ON LOGS



UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487 (1980)

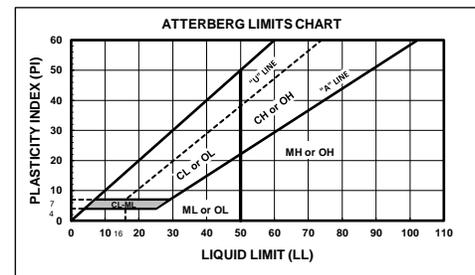
MAJOR DIVISIONS		LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS LESS THAN 50% PASSING NO. 200 SIEVE	GRAVEL & GRAVELLY SOILS LESS THAN 50% PASSING NO. 4 SIEVE	GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN 50% PASSING NO. 4 SIEVE	SW	WELL-GRADED SAND
		SP	POORLY-GRADED SANDS
		SM	SILTY SANDS
		SC	CLAYEY SANDS
FINE-GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT < 50	ML	INORGANIC SILTS & VERY FINE SANDS, CLAYEY SILT W/ LOW PLASTICITY INDEX
		CL	INORGANIC LEAN CLAYS GRAVELLY, SANDY, OR SILTY LEAN CLAYS
		OL	ORGANIC SILTS & ORGANIC SILTY CLAYS W/LOW PLASTICITY INDEX
	SILTS AND CLAYS LIQUID LIMIT ≥ 50	MH	INORGANIC SILTS W/ HIGH PLASTICITY INDEX, ELASTIC SILTS
		CH	INORGANIC FAT CLAYS GRAVELLY, SANDY, OR SILTY FAT CLAYS
		OH	ORGANIC CLAYS OF MED TO HIGH PLASTICITY, ORGANIC SILTS
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 | UC - UNCONFINED COMPRESSION TEST |
| TV - MINIATURE TORVANE | UU - UNCONSOLIDATED UNDRAINED TRIAXIAL |
| FV - FIELD TORVANE | CU - CONSOLIDATED UNDRAINED |

NOTE: BORING LOGS INDICATE 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		
BOULDERS	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								