

August 29, 2013

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

Exhibit W. NRG Industrial Park Preliminary Geotechnical Engineering Report

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

Re: **Geotechnical Site Evaluation Report**
NRG Industrial Park Site Evaluation
New Roads, Louisiana
PSI Project No. 0193481-01

Dear Mr. Cavanaugh:

Professional Service Industries, Inc. is pleased to submit our Site Evaluation Report for the above referenced project. 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 sq. ft. industrial manufacturing building and depth of groundwater.

We appreciate the opportunity to perform this Geotechnical Site Evaluation Study. 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.



Steven L. Gunter, P.E.
Department Manager
Geotechnical Services

Name: Steven L. Gunter, P.E.
Date: April 2, 2013
License No.: 30561

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GEOTECHNICAL SITE EVALUATION REPORT

**NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA
PSI PROJECT NO.: 0193511-01**

PREPARED FOR

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

AUGUST 29, 2013

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

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PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc. (PSI) has completed a geotechnical site evaluation study for the NRG Industrial Park, located in New Roads, Louisiana. Our services were provided in general accordance with PSI Proposal No. 193-92651-01, dated August 16, 2013. Authorization to provide our services was provided by Mr. Iain Vasey (Executive Director/BD Group with the Baton Rouge Area Chamber) whom signed our Proposal on August 21, 2013.

Project Description

The site for the requested geotechnical site evaluation is approximately 500 acres in size and is located northeast of New Roads, Louisiana. Primary objectives for this preliminary report are to provide 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 sq. ft. industrial manufacturing building, depth to "stiff" soils and the depth of the free groundwater table.

This geotechnical site evaluation report shall 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 project site and relatively limited number of borings performed, variations between borings may and should be expected to exist, and there remains a distinct possibility that other conditions may exist on site that were not encountered within the scope of this exploration.

The opinions and information to be presented in this report are estimates for preliminary consideration only, are based on limited geotechnical exploration, and are not to be used for final design and construction.

Purpose and Scope of Services

The purposes of PSI's geotechnical services are to:

- Drill 3 borings to a terminal depth of 25 feet below existing grade and 1 boring to a terminal depth of 75 feet below existing grade across the site to facilitate this site characterization study;
- Evaluate subsurface soil conditions and depth-to-water at the project site;
- Perform limited laboratory tests on soil samples recovered from the project site; and,
- Provide 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 sq. ft. industrial manufacturing building and depth of groundwater.

The 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. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. 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 project site is located northeast of New Roads, Louisiana, north of the John James Audubon Bridge crossing the Mississippi River (LA Hwy. 10) (as illustrated on the Site Vicinity Map provided on Figure No. 1 in the Appendix). The site currently exists as a cultivated field for agricultural purposes. At the time of the field exploration, the ground surface generally appeared topographically level, firm and was generally dry. The ATV-mounted drill rig utilized for this project exploration was limited in its movements to the main field road at this site due to the presence of crops in the field.

Field Exploration

The field exploration included mobilization to the site by a PSI drilling crew, drilling of the soil borings, and recovering soil samples. Borings B-1, B-2 and B-4 were drilled and sampled to a depth of about 25 feet below existing grade. Boring B-3 was drilled and sampled to a terminal depth of about 75 feet below existing grade (as illustrated in the Boring Location Plan on Figure No. 2 in the Appendix). As noted previously, the borings were advanced using an ATV-mounted drill rig equipped with a rotary head and hollow-stem flight augers. Boring B-1, B-2 and B-4 was drilled utilizing hollow-stem augers, while Boring B-3 was drilled and sampled utilizing wet-rotary drilling techniques. Drilling and sampling activities were performed in general accordance with referenced ASTM procedures or other accepted methods. The shallow soil borings (i.e., 25 feet deep) were backfilled with soil cuttings upon completion of drilling and groundwater observations while the deeper soil boring (i.e., Boring B-3 to 75 feet deep) was backfilled with a cement/bentonite grout mixture per LA DOTD requirements.

Undisturbed samples of cohesive soils were generally obtained using three (3) inch diameter thin-wall tube samplers (Shelby tube) 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 and were identified according to boring number and depth, wrapped in aluminum foil, placed in polyethylene plastic wrapping to protect against moisture loss and transported to the laboratory in containers to minimize disturbance.

For cohesionless soils, Standard Penetration Tests (SPT) were performed to obtain standard penetration values of the soil. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer, falling 30 inches, required to advance the split-barrel sampler 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 successive increments of six 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 strength and compressibility of the soil profile components. Soil samples were obtained utilizing a two-inch O.D. split-barrel sampler in general accordance with procedures for

“Penetration Test and Split-Barrel Sampling of Soils” (ASTM D 1586). These samples were identified according to boring number and depth, placed in polyethylene plastic wrapping to protect against moisture loss and transported to the laboratory.

Laboratory Testing

Selected soil samples were tested in the laboratory to determine material properties for our evaluation. Visual classifications were performed in the laboratory. Physical testing included determination of moisture contents, Atterberg limits classification testing and unconfined compressive strength tests (to supplement the field pocket penetrometer testing). The laboratory testing was performed in general accordance with ASTM procedures. Samples not altered by laboratory testing will be retained for sixty (60) days from the date of this report and then be discarded.

Subsurface Conditions

Borings B-1, B-2 and B-4 generally disclosed about two (2) inches of topsoil underlain by a hard to stiff thick fat clay (CH) layer to about 13 feet in Borings B-1 and B-2 and 18 feet in Boring B-4. Underlying this fat clay layer is a soft lean clay (CL) layer to the boring termination depth of 25 feet below existing grade. An exception occurred in Boring B-2, wherein a very soft silt layer was disclosed from about 18 feet to the boring termination depth.

Boring B-3 generally disclosed about 2 inches of topsoil underlain by hard to firm fat clay (CH) to about 33 feet below grade. Underlying this fat clay layer is a thin layer of very soft gray silt soils to about 38 feet further underlain by soft lean clay to about 58 feet. From 58 feet to about 68 feet, loose to medium dense silty, clayey sand was disclosed. From 68 feet to the boring termination depth of 75 feet, medium dense sand was disclosed.

The above subsurface description is generalized in nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the Appendix should be reviewed for specific information at the individual boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples, and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual.

Groundwater Information

The free groundwater table was encountered in Borings B-1 and B-2 at 12 feet below existing grade during PSI's drilling operations. This groundwater table was encountered in Borings B-3 and B-4 at 13 feet below existing grade during drilling, and rose to 12 feet in Boring B-4 15 minutes after initially encountered. It should be noted that groundwater level fluctuations at this site may occur due to seasonal and climatic variations, the stage of the Mississippi River due to its close proximity to the project site, alteration of drainage patterns, land usage and ground cover. We recommend the Contractor determine the actual groundwater levels at the time any future construction activities begin.

EVALUATION AND DISCUSSIONS

The type and depth of foundation suitable for a given structure primarily depends on several factors including the subsurface conditions, the function 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.

Based on the limited number of soil borings, field data and laboratory test results, the proposed site is generally feasible for industrial development. The subsurface soils explored are suitable for building foundations and site roadways, although due to the presence of fat clay (CH) soil in the upper 13 to 18 feet of the soil profile, potential vertical rise (PVR) would need to be further evaluated. PVR at this site could be alleviated by undercutting the fat clay 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. Detailed column loads for a typical 100,000 sq. ft. industrial manufacturing building were not provided at the time of this study; however, the structural column loads are anticipated to be on the order of 60 to 100 kips with wall loads on the order of 3.0 kips per lineal foot.

Foundation systems may include shallow foundations, mat foundations, deep foundations such as driven piles or auger cast-in-place (ACIP) piles or drilled piers for this project. Pile/pier foundations are recommended for the support of the heavy structures or settlement sensitive structures at this site. The choice of type of deep foundation should be based on the tolerance criteria for the performance of the structures and economics of construction. Lightly loaded structures can generally be supported on shallow spread footings/grade beam system, or mat foundations, as long as the PVR issues described above are mitigated. These foundations will be governed by the anticipated load and settlement tolerances.

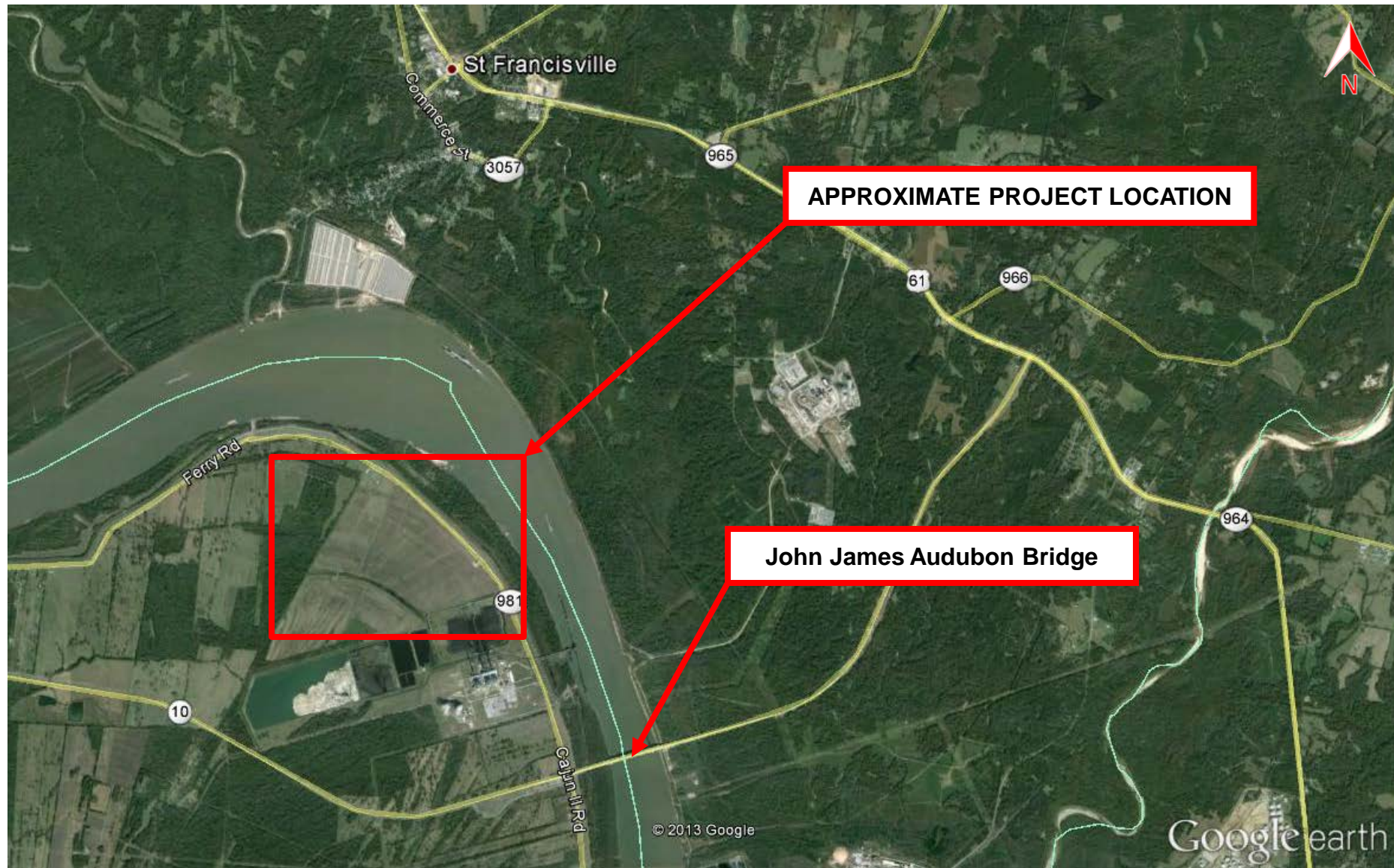
As stated previously, the opinions and information presented in this site evaluation report are estimates for preliminary consideration only, and are based on a very limited geotechnical exploration, and are not to be used for final design and construction.

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 letter has been prepared for the exclusive use of the Baton Rouge Area Chamber for the specific purpose of determining general subsurface information at the site of the referenced project. Upon authorization through a supplemental services agreement, PSI will be available to perform a thorough geotechnical study and provide complete and final recommendations.

APPENDIX

SITE VICINITY MAP



GEOTECHNICAL ENGINEERING SERVICES
NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

DATE: 08/2013

DRAWN: WV

CHKD: SG

psi Information
To Build On
Engineering • Consulting • Testing

BORING LOCATION PLAN



GEOTECHNICAL ENGINEERING SERVICES
NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

DATE: 08/2013

DRAWN: WV

CHKD: SG





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LOG OF BORING B-1

NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

TYPE OF BORING: HOLLOW STEM AUGER

PSI Project No.: 0193511-01

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	WATER LEVELS	SAMPLES	LATITUDE: N 30° 44' 33." LONGITUDE: W 91° 22' 56.9"	N-BLOWS/FT.	% PASSING No. 200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	HAND PENTROMETER (tons/ft²)	TORVANE (tons/ft²)	UNDRAINED SHEAR STRENGTH (kips/ft²)		DRY UNIT WEIGHT (lbs/ft³)
					BORING LOCATION PLAN: APPENDIX SHEET NO. 2									UC	UU	
					SOIL DESCRIPTION											
		CH		2-INCHES TOPSOIL							19	4.50				
				Hard, brown fat CLAY w/ ferrous nodules												
				-becomes very stiff												
5				-becomes stiff												
				-w/ silt partings												
10		CL		Soft, brown lean CLAY w/ silt, ferrous nodules and a ferrous parting							32	0.25	0.15			
15																
20																
				-becomes gray w/ silt and fine sand												
25	Boring terminated at 25 feet.															
30																
35																
40																
45																
50																

DEPTH OF BORING: 25 feet

GROUNDWATER DURING DRILLING (FT): 12

DATE DRILLED: 8/26/13

NOTES: The stratification lines represent approximate boundaries.

NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

PSI Project No.: 0193511-01

NOTES: The stratification lines represent approximate boundaries.

LOG OF BORING B-3

NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

TYPE OF BORING: WET ROTARY

PSI Project No.: 0193511-01

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	WATER LEVELS	SAMPLES	LATITUDE: N 30° 44' 24.1"	N-BLOWS/FT.	% PASSING No. 200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	HAND PENTROMETER (tons/ft ³)	TORVANE (tons/ft ³)	UNDRAINED SHEAR STRENGTH (kips/ft ²)		DRY UNIT WEIGHT (lbs/ft ³)
					LONGITUDE: W 91° 23' 01.0"									UC	UU	
					BORING LOCATION PLAN: APPENDIX SHEET NO. 2									SOIL DESCRIPTION		
		CH			2-INCHES TOPSOIL			50	19	31	16	4.50				
					Hard, brown fat CLAY w/ silt partings and roots											
					-becomes stiff w/ silt partings, and organic and ferrous stains			54	17	37	28	1.00				
5					-becomes firm						29	1.00				
					-no silt partings						35	0.75	0.47			88
					-becomes stiff, gray and brown						35	1.00				
10																
												</				

DEPTH OF BORING: 75 feet

GROUNDWATER DURING DRILLING (FT): 13

DATE DRILLED: 8/26/13

NOTES: The stratification lines represent approximate boundaries.

LOG OF BORING B-3

NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

TYPE OF BORING: WET ROTARY

PSI Project No.: 0193511-01

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	WATER LEVELS	SAMPLES	LATITUDE: N 30° 44' 24.1" LONGITUDE: W 91° 23' 01.0" BORING LOCATION PLAN: APPENDIX SHEET NO. 2	N-BLOWS/FT.	% PASSING No. 200 SIEVE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	HAND PENTROMETER (tons/ft)	TORVANE (tons/ft)	UNDRAINED SHEAR STRENGTH (kips/ft ²)		DRY UNIT WEIGHT (lbs/ft ³)
					SOIL DESCRIPTION									UC	UU	
55		CL			Soft, gray lean CLAY (layer continued from previous page) -becomes stiff w/ sand	10					21					
60		SC-SM			Loose, gray, silty, clayey SAND -becomes medium dense	9					26					
65						12					26					
70		SP			Medium dense, gray SAND w/ traces of clay	11					17					
75						14					18					
80					Boring terminated at 75 feet.											
85																
90																
95																
100																

DEPTH OF BORING: 75 feet

GROUNDWATER DURING DRILLING (FT): 13

DATE DRILLED: 8/26/13

NOTES: The stratification lines represent approximate boundaries.

NRG INDUSTRIAL PARK
NEW ROADS, LOUISIANA

PSI Project No.: 0193511-01

NOTES: The stratification lines represent approximate boundaries.

CLIENT BATON ROUGE AREA CHAMBER

PROJECT NAME NRG INDUSTRIAL PARK

PROJECT NUMBER 0193511-01

PROJECT LOCATION NEW ROADS, LOUISIANA

LITHOLOGIC SYMBOLS (Unified Soil Classification System)



CH: Fat Clay (CH)



CL: Lean Clay (CL)



ML: Silt (ML)



SC-SM: Silty, Clayey Sand



SP: Poorly-graded Sand (SP)



TOPSOIL: Topsoil

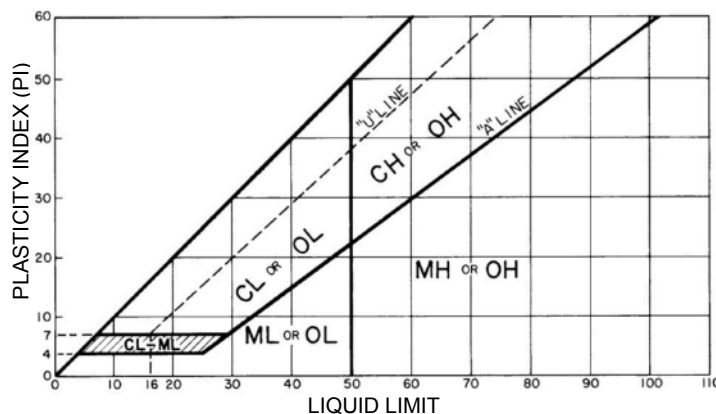
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH IN TONS/FT ²
VERY SOFT	0.0 TO 0.25
SOFT	0.25 TO 0.50
FIRM	0.50 TO 1.0
STIFF	1.0 TO 2.0
VERY STIFF	2.0 TO 4.0
HARD	>4.0 OR 4.0+

RELATIVE DENSITY OF GRANULAR SOILS

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

ATTERBERG LIMITS CHART



SAMPLER SYMBOLS



Split Spoon



Shelby Tube

ABBREVIATIONS

NP - NON PLASTIC
UC - UNCONFINED COMPRESSION
UU - UNCONSOLIDATED UNDRAINED TRIAXIAL
TV - TORVANE
W/ - WITH

▽ Water Level at Time of Drilling, or as Shown
▼ Water Level at End of Drilling, or as Shown
▼ Water Level After 24 Hours, or as Shown