Information To Build On
Engineering • Consulting • Testing

Exhibit W. Grace Farms West Preliminary Geotechnical Engineering Report

April 2, 2013

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

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

Re: **Geotechnical Site Evaluation Report**
Grace Farms West Site Evaluation
Ramah, Louisiana
PSI Project No. 0193481-02

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 Engineering Study and look forward to continuing participation 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.

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

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

THIS PRELIMINARY DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

Distribution: Addressee (3)
File (1)

GEOTECHNICAL SITE EVALUATION REPORT

GRACE FARMS WEST SITE
RAMAH, LOUISIANA
PSI PROJECT NO.: 0193481-02

PREPARED FOR

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

APRIL 2, 2013

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

TABLE OF CONTENTS

Page No.

APPENDIX

PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc. (PSI) has completed a geotechnical site evaluation study for "Grace Farms West", located in Ramah, Louisiana. Our services were provided in general accordance with PSI Proposal No. 193-90391-01, dated March 7, 2013. Authorization to provide our services was provided by Mr. Jim Cavanaugh (Site Development Director with the Baton Rouge Area Chamber) whom signed our Proposal on March 8, 2013.

Project Description

The site for the requested geotechnical site evaluation is 450 to 500 acres in size and is located north of Interstate I10 and west of Hwy. 3000 in Ramah, 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 80 feet below existing grade across the site per the client's recommendations;
- Evaluate subsurface soil conditions and depth-to-water at the project site;
- Perform 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 just north of Interstate I10 and west of Hwy. 3000 in Ramah, Louisiana (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 that was utilized for this project was limited in its movements to the headlands and field roads at this site, however it should be noted that a truck rig would not have been suitable for this project site due to the soft surficial soils present at this site.

Field Exploration

The field exploration included mobilization to the site by a PSI drilling crew, drilling of the soil borings, and recovering soil samples. Boring B-1 was drilled and sampled to a depth of about 80 feet below existing grade. Three (3) additional soil borings (i.e., Borings B-2 through B-4) were drilled and sampled to a terminal depth of about 25 feet below existing grade at random locations across the site (as illustrated in the Boring Location Plan on Figure No. 2 in the Appendix). As noted previously, the borings were advanced using a truck-mounted drill rig equipped with a rotary head and hollow-stem flight augers. Boring B-1 was drilled utilizing wet-rotary drilling techniques, while Borings B-2 through B-4 were drilled and sampled utilizing hollow stem augers. 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., the 80 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

Boring B-1 generally disclosed about two (2) inches of topsoil underlain by soft to stiff fat clay to about 68 feet below existing grade. A thick silt stratum extends from about 63 feet to the boring termination depth of 80 feet below existing grade.

Borings B-2 and B-4 generally disclosed 2 inches of topsoil underlain by very soft to firm fat clay to the boring's termination depth of about 25 feet below existing grade.

Boring B-3 generally disclosed about 2 inches of topsoil underlain by lean clay to 2 feet further underlain by firm fat clay to about 6 feet below grade. Underlying this fat clay layer, a thick stratum of silt material was disclosed to about 13 feet with an approximate 1-foot thick layer of lean clay layer following to about 14 feet. Beneath this lean clay layer, soft to firm fat clay was disclosed to the boring termination depth of about 25 feet below existing grade.

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-2 through B-4 during PSI's drilling operations at depths ranging from 6 to 8 feet below existing grade. Boring B-1 was drilled using wet rotary techniques, therefore no groundwater readings were measured in this boring. It should be noted that groundwater level fluctuations may occur due to seasonal and climatic variations, alteration of drainage patterns, land usage and ground cover. We recommend the Contractor determine the actual groundwater levels at the time 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. 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 piles for this project. Pile foundations are recommended for the support of the heavy structures or settlement sensitive structures. 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. These foundations will be governed by the anticipated load and settlement tolerances.

A geotechnical concern at this site is the presence of near-surface expansive soils. As such, there exists a potential vertical rise (PVR) concern for slab-on-grade foundations, thereby necessitating as much as 5 feet of engineered fill buffer between foundation slabs and existing subgrade. Placement of low plasticity engineered fill is the most conventional method for limiting PVR and should be achieved by undercutting, raising the site grade or a combination of both. Alternatively, on-site soils within planned building pads or roadbeds may be treated with hydrated lime to reduce their plasticity to within the stated limits for engineered fill.

As stated previously, the opinions and information presented in this report are estimates for preliminary consideration only, and are based on a very limited geotechnical exploration program, 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 final geotechnical study and provide complete and final recommendations.

APPENDIX

SITE VICINITY MAP

GEOTECHNICAL ENGINEERING SERVICES
GRACE FARMS WEST SITE EVALUATION
RAMAH LOUISIANA

DATE: 03/2013

DRAWN JG

CHKD: SG

SHEET NO.: 1

PSI PROJECT NO.: 0193481-01

Information To Build On
Engineering • Consulting • Testing

BORING LOCATION PLAN – GRACE FARMS WEST

GEOTECHNICAL ENGINEERING SERVICES
GRACE FARMS WEST SITE EVALUATION
RAMAH, LOUISIANA

DATE: 03/2013
DRAWN: JG
CHKD: SG

SHEET NO.: 2

PSI PROJECT NO.: 0193481-01

psi Information To Build On
Engineering • Consulting • Testing

LOG OF BORING B-1

GRACE FARMS WEST

IBERVILLE PARISH PARISH, LOUISIANA

TYPE OF BORING: WET ROTARY **PROJECT NUMBER: 0193481-01**

COORDINATE LAT: N30°24'41.3"
COORDINATE LON: W91°30'37.7"
SURFACE ELEVATION: NOT RECORDED
BORING LOCATION PLAN: APPENDIX SHEET NO. 2

DEPTH, FEET	SOIL	USCS GROUP SYMBOL	SAMPLES	SOIL DESCRIPTION	SPT-N (BLOWS/FOOT)	Hand Pen. (tsf)	Torvane (tsf)	UC (tsf) (D2166) (unconfined compressive strength)	UU (tsf) (D2850) (undrained shear strength)	UNIT DRY WT. (lbs/ft^3)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING NO. 200
		CH		**2" Topsoil; Very stiff, brown fat CLAY** w/ ferrous nodules, organics and organic stains		2.50					22.9	72	28	44	
		CH		**Firm, brown and gray fat CLAY** w/ ferrous nodules and stains, organics, organic stains and silt		1.00					40.5				
5						0.50					46.8				
				-w/ calcareous nodules (6'-8'); slickensided		0.50		0.26		66	53.1				
		CH		**Soft, gray fat CLAY** w/ ferrous nodules, organics, organic stains and wood fragments		0.25	0.25				66.9				
10															
15							0.25				84.1				
		CH		**Firm, brown and gray fat CLAY** w/ organics and organic stains		1.00					43.1				
20															
				-w/ wood fragments and calcareous nodules (23'-25')											
25						0.75					46.2				
		CH		**Soft, gray fat CLAY** w/ ferrous nodules and stains, organics and organic stains		0.50					64.3				
30															
				-w/ wood fragments (33'-35')											
35						0.50					56.9				
		CH		**Soft, gray and brown fat CLAY** w/ organics			0.35				68.2				
40															
				-w/ silt partings and organic stains (43'-45')											
45						0.25	0.35				64.2				
		CH		**Firm, gray fat CLAY** w/ silt (48'-50'), ferrous nodules and organics (48'-55')											
50						0.50					57.8				

DEPTH OF BORING: 80 FEET **DEPTH TO FREE GROUNDWATER: NOT ENCOUNTERED**

DATE DRILLED: Tuesday, March 19, 2013

LOG OF BORING B-1

GRACE FARMS WEST

IBERVILLE PARISH PARISH, LOUISIANA

TYPE OF BORING: WET ROTARY **PROJECT NUMBER: 0193481-01**

COORDINATE LAT: N30°24'41.3"
COORDINATE LON: W91°30'37.7"
SURFACE ELEVATION: NOT RECORDED
BORING LOCATION PLAN: APPENDIX SHEET NO. 2

DEPTH, FEET	SOIL	USCS GROUP SYMBOL	SAMPLES	SOIL DESCRIPTION	SPT-N (BLOWS/FOOT)	Hand Pen. (tsf)	Torvane (tsf)	UC (tsf) (D2166) (unconfined compressive strength)	UU (tsf) (D2850) (undrained shear strength)	UNIT DRY WT. (lbs/ft^3)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING NO. 200
				-w/ ferrous stains (53'-60'), organic stains and wood											
55				fragments (53'-55'); slickensided		0.75					72.8				
				-w/ silt partings (58'-65')											
60						0.50					41.6				
				-w/ ferrous nodules and organics (63-65'); slickensided											
65						1.00		0.32		79	39.3				
		ML		**Gray SILT** w/ organic stains											
70						0.75					39.9				
				-becoming medium dense											
75					22						35.0				
				-becoming dense											
80					32						30.1				
				Boring terminated @ 80 feet											
				Boring backfilled with cement/bentonite grout											
85															
90															
95															
100															

DEPTH OF BORING: 80 FEET **DEPTH TO FREE GROUNDWATER: NOT ENCOUNTERED**
DATE DRILLED: Tuesday, March 19, 2013

LOG OF BORING B-2

GRACE FARMS WEST

IBERVILLE PARISH, LOUISIANA

TYPE OF BORING: HOLLOW-STEM AUGER **PROJECT NUMBER: 0193481-01**

COORDINATE LAT: N30°24'56.4"
COORDINATE LON: W91°30'47.3"
SURFACE ELEVATION: NOT RECORDED
BORING LOCATION PLAN: APPENDIX SHEET NO. 2

DEPTH, FEET	SOIL	USCS GROUP SYMBOL	SAMPLES	SOIL DESCRIPTION	SPT-N (BLOWS/FOOT)	Hand Pen. (tsf)	Torvane (tsf)	UC (tsf) (D2166) (unconfined compressive strength)	UU (tsf) (D2850) (undrained shear strength)	UNIT DRY WT. (lbs/ft^3)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING NO. 200
		CH		**2" Topsoil; Stiff, gray and light gray fat CLAY** w/ ferrous nodules and stains, silt and silt partings		1.50					25.9				
		CH		**Firm, gray fat CLAY** w/ silt partings, ferrous stains and organic stains		0.75					42.2	50	20	30	
5				-w/ ferrous nodules and organics		0.75		0.57		71	53.6				
		CH		**Firm, light gray fat CLAY** w/ gray clay partings, ferrous nodules and stains, organics and organic stains ▼		1.00					52.0				
10		CH		**Firm, gray fat CLAY** w/ ferrous nodules, organics and wood fragments		0.50					57.4				
15		CH		**Soft, gray and light gray fat CLAY** w/ organics, ferrous nodules and stains		0.25					57.1				
20		CH		**Very soft, gray fat CLAY** w/ ferrous nodules and stains, organics and organic stains		0.25	0.20				57.5				
25				-becoming soft		0.50					62.8				
				Boring terminated @ 25 feet											
				Boring backfilled with soil cuttings											
30															
35															
40															
45															
50															

DEPTH OF BORING: 25 FEET **DEPTH TO FREE GROUNDWATER: 8 FEET**

DATE DRILLED: Tuesday, March 19, 2013

LOG OF BORING B-3

GRACE FARMS WEST

IBERVILLE PARISH, LOUISIANA

TYPE OF BORING: HOLLOW-STEM AUGER **PROJECT NUMBER: 0193481-01**

COORDINATE LAT: N30°24'30.2"
COORDINATE LON: W91°30'44.5"
SURFACE ELEVATION: NOT RECORDED
BORING LOCATION PLAN: APPENDIX SHEET NO. 2

DEPTH, FEET	SOIL	USCS GROUP SYMBOL	SAMPLES	SOIL DESCRIPTION	SPT-N (BLOWS/FOOT)	Hand Pen. (tsf)	Torvane (tsf)	UC (tsf) (D2166) (unconfined compressive strength)	UU (tsf) (D2850) (undrained shear strength)	UNIT DRY WT. (lbs/ft^3)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING NO. 200
		CL		**2" Topsoil; Hard, brown lean CLAY** w/ silt, ferrous nodules, organics and organics stains, grass and roots		4.5+					18.2				
		CH		**Firm, gray fat CLAY** w/ organic stains, ferrous nodules and stains		0.75					42.8				
5				-becoming soft											
						0.25	0.25				34.5	54	22	32	
		ML		**Very soft, gray SILT** w/ brown clay partings (6'-8') ▼											
							0.13				32.0				
				-w/ organics, ferrous stains and wood fragments											
10							0.15	0.21		94	31.3				
		CL		**Soft, brown and gray lean CLAY** w/ silt											
15		CH		**Soft, gray fat CLAY** w/ wood fragments (13'-25') and ferrous nodules; slickensided		0.25	0.38				42.8				
				-becoming firm w/ ferrous stains (18'-25'), silt partings and organics (18'-20')											
20						0.75					51.0				
25						1.00					45.9				
				Boring terminated @ 25 feet											
				Boring backfilled with soil cuttings											
30															
35															
40															
45															
50															

DEPTH OF BORING: 25 FEET **DEPTH TO FREE GROUNDWATER: 7 FEET**

DATE DRILLED: Tuesday, March 19, 2013

LOG OF BORING B-4

GRACE FARMS WEST

IBERVILLE PARISH, LOUISIANA

TYPE OF BORING: HOLLOW-STEM AUGER **PROJECT NUMBER: 0193481-01**

COORDINATE LAT: N30°25'02.2"
COORDINATE LON: W91°30'24.3"
SURFACE ELEVATION: NOT RECORDED
BORING LOCATION PLAN: APPENDIX SHEET NO. 2

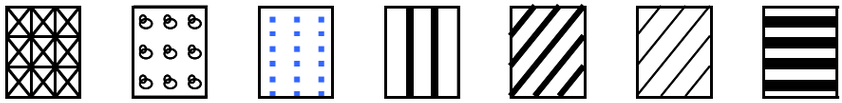
DEPTH, FEET	SOIL	USCS GROUP SYMBOL	SAMPLES	SOIL DESCRIPTION	SPT-N (BLOWS/FOOT)	Hand Pen. (tsf)	Torvane (tsf)	UC (tsf) (D2166) (unconfined compressive strength)	UU (tsf) (D2850) (undrained shear strength)	UNIT DRY WT. (lbs/ft^3)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING NO. 200
		CH		**2" Topsoil; Firm gray fat CLAY** w/ organics (0'-6'), ferrous nodules and stains (0'-20')		1.00					28.1				
				-becoming very soft w/ silt (2'-6')											
						0.25	0.15				30.8				
5				-becoming stiff											
						1.50					38.1				
				-becoming firm ▼											
						0.75					52.4				
				-w/ silt partings (8'-10')											
10						1.00					39.2				
				-becoming soft w/ organics (13'-20'), organic stains											
15				and wood fragments (13'-15')		0.25	0.30				51.6				
20						0.50		0.46		73	50.5				
		CH		**Stiff, brownish gray fat CLAY** w/ ferrous nodules and											
25				stains, organics and organic stains; slickensided		1.50					41.4				
				Boring terminated @ 25 feet											
				Boring backfilled with soil cuttings											
30															
35															
40															
45															
50															

DEPTH OF BORING: 25 FEET **DEPTH TO FREE GROUNDWATER: 6 FEET**

DATE DRILLED: Tuesday, March 19, 2013

KEY TO TERMS AND SYMBOLS USED ON LOGS

SOIL TYPE

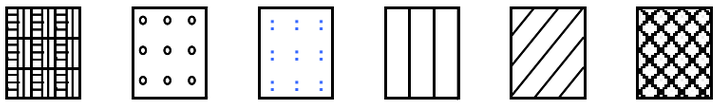


ROCK | GRAVEL | SAND | SILT | FAT CLAY | LEAN CLAY | PEAT

SAMPLER TYPE

NO SAMPLE | AUGER SAMPLE | SHELBY TUBE | SPLIT SPOON

MODIFIERS



STONE or CONCRETE | GRAVELY | SANDY | SILTY | CLAYEY | FILL

NO RECOVERY | ROCK CORE | 2" SHELBY TUBE | TXDOT CONE

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487 (1980)

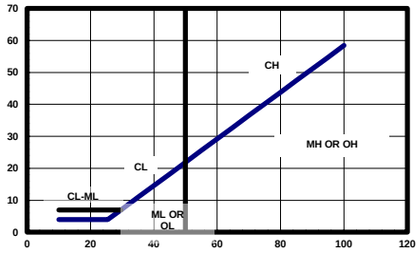
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS LESS THAN 50% PASSING NO. 200 SIEVE	GRAVEL & GRAVELY SOILS LESS THAN 50% PASSING NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR NO FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		W/ APPRECIA BLE 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	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 - 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

▼ GROUNDWATER FIRST ENCOUNTERED

▽ 24-HOUR GROUNDWATER READING

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