GEOTECHNICAL INVESTIGATION
BELLE FETE PHOTOGRAPHY/ART STUDIO AND GALLERY
SLIDELL, LOUISIANA

Prepared For

MR. DREW MANUEL
LACOMBE, LOUISIANA

June 2, 2021

GILLEN ENGINEERING, LLC
Soil and Foundation Consultants
Construction Materials Testing

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June 2, 2021

Belle Fete
59380 Boe Drive
Lacombe, Louisiana 70445

Project No. 9844.01

Attention: Mr. Drew Manuel

Re: Geotechnical Investigation
Belle Fete Photography/Art
Studio and Gallery
Slidell, Louisiana

Gentlemen:

Submitted herein is the report of our investigation of soil and foundation conditions for the proposed Belle Fete photography/art studio and gallery located on Amber Street Lot 5A in Slidell, Louisiana. The proposed building will have plan dimensions of 60 ft by 100 ft. This work was performed in accordance to our proposal dated May 11, 2021 and was authorized on May 13, 2021.

This report presents the results of an investigation made to determine a suitable foundation for the proposed building and pavement recommendations for the parking areas and driveways. The soil borings performed for this investigation indicate the near-surface soils at the site consist of soft silty clays to a depth of about 4 ft. Stiff to hard silty clays were encountered below a depth of 4 ft. Based on this information, it is our opinion that the proposed building could be supported on a shallow foundation provided the soft silty clays are overexcavated and replaced with compacted select fill materials. After the soft silty clays are removed and replaced, a shallow foundation could be designed for an allowable net soil bearing pressure of 2,500 lbs per sq ft. Details of our recommendations related to design and construction of the foundation elements and pavement recommendations are included in the body of this report.

We appreciate the opportunity of providing services to you. If we can answer any questions or provide additional information, please call.

Very truly yours,
Gillen Engineering, LLC

Gregory L. Gillen, P. E.

Copies Submitted: (2)

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1.0 INTRODUCTION

Plans are being developed for the proposed Belle Fete photography/art studio and gallery located on Amber Street Lot 5A in Slidell, Louisiana. The site is located on the northeast corner at the intersection of Amber Street and Coral Street. The proposed building will have plan dimensions of 60 ft by 100 ft. The 24-ft by 60-ft center section of the building will have a second floor with a balcony/mezzanine.

The site is relatively flat and wooded but was recently bushhogged. Drainage ditches are located adjacent to the streets along the south and west sides of the site. The site appears to be low-lying with poor drainage as flooding and standing water were observed during a hard rain at the time of our field investigation.

Scope/Purposes. The purposes of the investigation reported herein were as follows:

- To determine soil conditions in the proposed construction areas;
- To evaluate pertinent physical properties of the soils encountered; and
- After analyses of available field and laboratory data, to develop guideline recommendations related to foundation design and construction.

2.0 FIELD INVESTIGATION

Subsurface soil conditions at the project site were investigated by means of 2 borings made at the locations shown on Figure 1. The borings were located in opposite corners of the proposed building footprint and were advanced to a terminal depth of 20 ft each by a track-mounted drill rig utilizing rotary wash drilling techniques. Graphical logs of the borings showing the types of soils encountered are attached. Symbols and soil classifications used in the graphical boring logs are also attached.

Soil Sampling. Relatively undisturbed samples of the cohesive soils encountered in the borings were taken by pushing a 3-in. OD thin-wall Shelby tube sampler a distance of approximately 2 ft into the soils with hydraulic cylinders on the drill rig (ASTM D 1587). Depths at which these samples were taken are indicated by shaded portions in the "Samples" column of the boring logs. After the Shelby tube was recovered from a boring, the sample was carefully extruded in the field and examined visually. One representative portion of each sample was selected and sealed in a cylindrical cardboard container to prevent loss of moisture and to protect the sample during transportation to the laboratory. Another portion of each undisturbed sample was also selected and sealed in a plastic jar for ease in subsequent visual examination.

Disturbed samples of the near-surface soft soils were obtained by driving an ASTM standard 2-in. OD split-spoon sampler a distance of 18 in. into the soils with a 140-lb hammer falling a distance of 30 in. (ASTM D 1586). This sampling procedure is referred to as the Standard Penetration Test. The depth at which the split-spoon sample was taken is indicated by crossed-slashes in the "Samples" column of the boring logs. The number of blows (N-value) required to drive the sampler the final 12 in. of penetration is recorded at the corresponding depth in the "Field Tests Results" column of the boring logs. A representative portion of the split-spoon sample was selected and sealed in a plastic jar to prevent loss of moisture. All jars were placed in protective boxes for transportation to the laboratory for further visual examination.

3.0 LABORATORY INVESTIGATION

The engineering properties which were considered to be pertinent for this study are classification, soil shear strength and shrink-swell potential. These engineering properties were determined by means of tests completed in our laboratory. Laboratory tests completed for this study include natural moisture content, visual classification, unconfined compression, wash over the No. 200 sieve and liquid and plastic (Atterberg) limits. These tests were performed in accordance with recognize ASTM standards and procedures. The laboratory tests are discussed in the following paragraphs.

Unconfined Compression. Undrained shear strength values for the cohesive soils were evaluated by means of 10 unconfined compression tests. In an unconfined compression test, a cylindrical sample of soil is subjected to a uniformly increasing axial load until failure develops. For purely cohesive soils, the undrained shear strength is taken to be equal to one-half of the maximum normal stress which was observed to develop on the sample during the test. Undrained shear strength or simply "cohesion" values determined from the results of the unconfined compression tests are presented in the laboratory data section of the boring logs. Also shown are the natural moisture contents and unit weights determined as a part of each unconfined compression test. The cohesion values and moisture contents are also presented graphically on the boring logs as small open circles and shaded circles, respectively.

Liquid and Plastic (Atterberg) Limits. The compressibility and shrink-swell potential of the subsurface soils were investigated indirectly by means of natural moisture content and liquid and plastic limit tests. For this study, liquid and plastic limit tests were performed on 2 selected samples. The results of the liquid and plastic limit tests can be used to classify fine-grained soils by the Unified Soil Classification System as silts or clays of high or low plasticity. The numerical difference between the liquid and plastic limit is defined as the plasticity index. The magnitude of the liquid limit and plasticity index and the proximity of the natural moisture content to the plastic limit are indicators of the potential for a soil to shrink or swell upon changes in moisture content or to consolidate under loading. The results of the liquid and plastic limit tests are plotted as small vertical lines interconnected by a horizontal-dashed line in the data section of the boring logs.

Moisture Contents. Additionally, natural moisture content tests and visual classifications were performed on 4 soil samples to verify field classifications for consistency in soil type and to extend the usefulness of shear strength and plasticity data. Results of these additional moisture content tests are also presented in the "Laboratory Data" section of the boring logs. Results of the visual classifications were utilized in the development of the "Description of Material" section in the graphical boring logs.

No. 200 Washes. In order to further classify the soil types, one selected soil sample was washed over the No. 200 sieve to determine the percent of fine particles in the sample. Soils passing through the No. 200 sieve are considered to be fine particles (clays and silts). Results of the No. 200 washes are presented as percent fines in the data section of the boring logs.

4.0 SUBSURFACE CONDITIONS

The soil conditions within the depths explored at the boring locations consist of clayey sands, silty clays and clays. The general soil and groundwater conditions encountered at the project site and the engineering properties of the soils are discussed below.

Soil Conditions. The near-surface soils at the location of Boring 1 consist of very loose clayey sands (Unified Soils Classification System - SC). The clayey sands were encountered at ground surface and extended to a depth of 2 ft. The moisture content of the clayey sands is about 32%. A standard penetration test performed within the clayey sands yielded a penetration resistance (N-value) of the weight of rotary (WOR).

Generally underlying the clayey sands in Boring 1 and the near-surface soils in Boring 2 are soft to hard silty clays (CL). The silty clays were encountered at a depth of 2 ft in Boring 1 and ground surface in Boring 2 and extended to a depth of 17 ft in Boring 1 and 12 ft in Boring 2. The moisture content of the silty clays ranges from 18% to 25%. Liquid and plastic (Atterberg) limit tests performed on selected silty clay samples yielded liquid limits of 32% and 44%, plastic limits of 15% and 16%, and corresponding plasticity indices of 17 and 28. Unconfined compression tests performed on selected silty clays samples yielded undrained shear strengths that range from 1,060 lbs per sq ft to 4,150 lbs per sq ft with corresponding unit dry weights ranging from 97 lbs per cu ft to 110 lbs per cu ft. Standard penetration tests performed within the silty clays yielded penetration resistances (N-values) that range from the weight of rotary (WOR) to 3 blows per ft.

Very stiff clays (CH) were encountered at a depth of 17 ft in Boring 1 and 12 ft in Boring 2 and extended to the 20-ft terminal depth of each boring. The moisture content of the clays ranges from 37% to 43%. Unconfined compression tests performed on selected clay samples yielded undrained shear strengths that range from 2,050 lbs per sq ft to 3,300 lbs per sq ft with corresponding unit dry weights ranging from 79 lbs per cu ft to 84 lbs per cu ft.

Groundwater Conditions. Based on the near-surface soft soils conditions, the borings were advanced with rotary wash drilling techniques starting at ground surface in an effort to prevent the soils from collapsing in the borings. Therefore, groundwater conditions at the project site were not determined. However, it is likely that a perched groundwater condition exists at he bottom of the soft silty clays at the interface of the underlying stiff to very stiff silty clays. Notes pertaining to groundwater level observations are presented on the graphical boring logs. Proper note should be taken that groundwater conditions will fluctuate seasonally with variations in rainfall, temperature and other environmental factors.

5.0 GUIDELINE FOUNDATION DESIGN RECOMMENDATIONS

The soil borings performed for this investigation indicate the near-surface soils at the site consist of soft silty clays to a depth of about 4 ft. Stiff to hard silty clays were encountered below a depth of 4 ft. Based on this information, it is our opinion that the proposed building could be supported on a shallow foundation provided the soft silty clays are overexcavated and replaced with compacted select fill materials. After the soft silty clays are removed and replaced, a shallow foundation could be designed for an allowable net soil bearing pressure of 2,500 lbs per sq ft. Our recommendations related to design and construction of the foundation elements and pavement recommendations are discussed in the following paragraphs.

5.1 Site Preparation

Objectionable Materials. Site preparation for this project should include, as a minimum, the removal of any objectionable materials at or near the existing ground surface. Objectionable materials that should be removed include organic matter, debris, trees, stumps and roots. The near-surface soft silty clays in the building area should also be removed to the underlying stiff to very stiff soils.

Pumping Soils. The near-surface soils at this project site are silty. Silty soils are sensitive to increases in moisture content and have a tendency to lose strength as the moisture content increases or as construction vehicles pass over the area. Such materials, if wet, are subject to pumping when being compacted. Soils that are stable during compaction could become unstable from exposure to inclement weather, groundwater level fluctuations and/or construction vehicles. Therefore, the Contractor should be cautioned to provide adequate drainage both during and after earthwork activities and to minimize construction traffic.

Select Fill Materials. The select fill materials used for this project should consist of a soil having a liquid limit of not more than 45% and a plasticity index between 8 and 25. Silts (ML, MH) should not be used for select fill. Select fill used for this project should be compacted from horizontally-placed loose lifts not exceeding 9 in. in thickness to a density which is equal to at least 95% standard Proctor density (ASTM D 698). Field density tests should be completed in each lift of the select fill materials to provide some assurance that adequate and uniform densities are being obtained before proceeding with subsequent lifts. Any subgrade soils that are disturbed from undercutting should also be recompacted and tested prior to placement of select fill. The surface of each lift should be scarified prior to placement of subsequent lifts. Gillen Engineering, LLC should be retained by the Owner to perform the field density tests as a continuation of our geotechnical services.

Based on our site observations of flooding and standing water during the field investigation, we suggest fill materials be placed to raise the site to an adequate elevation to assure protection against flooding. However, we should be notified immediately to evaluate the potential of long-term settlement if the site is raised more than 2 ft above existing grade.

Excavations. All foundation excavations should be inspected prior to concrete placement. Any foundation soils that have become soft or saturated should be overexcavated and replaced with compacted select fill materials. These select fill materials should be compacted to at least 95% of the maximum unit dry weight as determined by standard Proctor procedures (ASTM D 698). Finish grades around the proposed structure should be established to promote quick run-off of rainwater away from the foundation in all directions.

5.2 Shallow Foundation

For a shallow foundation, we recommend a monolithic slab and grade beam system. The exterior grade beams should extend at least 2 ft below finish grade. Interior ribs should be used to stiffen the floor slab and should be located beneath load-bearing walls and spaced on not more than 15-ft centers in both directions. These ribs should extend at least 18 in. below the bottom of the floor slab and, together with the exterior grade beams, should be reinforced for both positive and negative bending. The exterior grade beams and interior ribs should be dimensioned based on an allowable net soil bearing pressure of 2,500 lbs per sq ft with a minimum bearing width of 16 in. The allowable net soil bearing pressure should not be exceeded for any maximum combination of dead, live or wind loads.

The floor slab should be reinforced and could be designed based on a soil modulus, k, of 120 lbs per cu in. Column, wall or concentrated loads could be supported satisfactorily by means of thickened monolithic portions of the slab in accordance with design procedures of the American Concrete Institute (ACI). Design of the thickened sections should be based on the design criteria of the above-mentioned exterior grade beams.

5.3 Pavement Design

For the parking areas and driveways, the near-surface soft silty clays could also be removed to the underlying stiff to very stiff soils and replaced with compacted select fill materials. However, an alternative in the pavement areas could include overexcavating the near-surface soft silty clays to a minimum depth of 2 ft below the bottom of the proposed pavement section and replacing with a geotextile fabric and sand. The geotextile fabric should conform to Mirafi RS380i or equal material. An 18-in. layer of sand having 10% or less passing the No. 200 sieve should be placed over the fabric by backdumping. The sand should be spread and compacted to at least at least 95% standard Proctor density (ASTM D 698) or 70% relative density (ASTM D 4253/4254). Select fill materials could then be placed to bring the pavement area to the desired finish subgrade elevation. Our recommendations related to pavement design for rigid and flexible pavement sections are provided below.

Flexible (Asphalt) Pavement. For areas servicing light vehicles such as passenger cars and light trucks, we recommend an asphalt pavement section consisting of a 3-in. thick blackbase with a 1.5-in. thick binder course and a 1.5-in. thick wearing surface. For driveways servicing heavier vehicles such as delivery or garbage trucks, we recommend an asphalt pavement section consisting of a 4-in. thick blackbase with a 2-in. thick binder course and a 1.5-in. thick wearing surface.

If a garbage dumpster is utilized at the project site, we recommend an 8-in. thick reinforced concrete pad be designed for the dumpster and front wheels of a garbage truck. Impact loads exerted by the front wheels of a garbage truck when emptying the dumpster could cause indentations and ultimate failure in a normal asphalt pavement section.

Rigid (Concrete) Pavement. For parking areas expecting to service light vehicles such as passenger cars and light trucks, we recommend a rigid pavement section consisting of a 5-in. thick concrete section constructed in accordance with the design procedures of the American Concrete Institute (ACI). Joints should be placed on approximately 12.5-ft centers in each direction. For driveways and parking areas expected to service heavier vehicles such as delivery and garbage trucks, we recommend a rigid pavement section consisting of a 7-in. thick concrete section with joints placed on approximate 17.5-ft centers in each direction.

Most pavement failures are due to the lack of proper drainage. Therefore, we strongly recommend proper slopes and drainage be designed for all pavement areas.

6.0 REPORT LIMITATIONS

The borings made for this report were located in the field by measurements from existing features shown on the site plan. The locations of the borings should therefore be considered accurate only to the degree implied by the methods used in their determination. The boring logs shown in this report contain information related to the types of soils encountered at specific locations and times and show lines delineating the interface between these materials, as well as results of laboratory tests performed on representative samples. The logs also contain our field representative's interpretation of soil conditions that are believed to exist in those depth intervals between the actual samples taken. Therefore, the boring logs contain both factual and interpretative information. It is not warranted that the logs are representative of subsurface conditions at other locations and times.

With regard to groundwater conditions, this report presents data on groundwater levels as they were observed during the course of the field work. In particular, water level readings have been made in the borings at the times and under conditions stated in the text of this report and on the boring logs. It should be noted that fluctuations in the groundwater level can occur with passage of time due to variations in rainfall, temperature and other factors.

Unanticipated soil conditions at a construction site are commonly encountered and cannot be fully predicted by mere soil samples and test borings. Such unexpected conditions frequently require that additional expenditures be made by the owner to attain a properly designed and constructed project. Therefore, provisions for some construction contingency funds are recommended to accommodate such potential extra cost.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our field investigation and further on the assumption that the exploratory borings are representative of the subsurface conditions throughout the site, that is, that the subsurface conditions everywhere are not significantly different from those disclosed by the borings at the time they were completed. If, during construction, different subsurface conditions from those encountered in our borings are observed, or appear to be present during earthwork activities, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary. If there is a lapse of time of more than one year between submission of this report and start of the work at the site, if conditions have changed due either to natural causes or to construction operations at or adjacent to the site, or if the structure location is changed, we urge that we be promptly informed, and retained to review our report to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse.

Further, we request that our firm be retained to review those portions of the plans and specifications for this particular project that pertain to the foundation as a means to determine whether the plans and specifications are consistent with the recommendations contained in this report. In addition, we also request our firm be retained to observe construction, particularly the overexcavation of soft silty clays, placement and compaction of fill materials, placement of concrete and such other field observations.

This report has been prepared for the exclusive use of Mr. Drew Manuel for design and construction of the foundation elements for the proposed Belle Fete photography/art studio and gallery located on Amber Street Lot 5A in Slidell, Louisiana. The only warranty made by us in connection with the services provided is that we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

Legend

◉ Soil Boring

GEOTECHNICAL INVESTIGATION BELLE FETE PHOTOGRAPHY/ART STUDIO AND GALLERY SLIDELL, LOUISIANA	GILLEN ENGINEERING, LLC Soil and Foundation Consultants Construction Materials Testing	Drawn By: GLG Checked By: GLG Date: 6/2/2021	**BORING LOCATION MAP** **FIGURE 1**

GILLEN ENGINEERING, LLC
Soil and Foundation Consultants
Construction Materials Testing

BORING NUMBER 1

CLIENT Mr. Drew Manuel
PROJECT NAME Belle Fete
PROJECT NUMBER 9844.01
PROJECT LOCATION Slidell, Louisiana
DATE STARTED 5/25/21 **COMPLETED** 5/25/21
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR GSE
GROUND WATER LEVELS:
DRILLING METHOD Rotary Wash
AT TIME OF DRILLING ---
LOGGED BY R. Slack **CHECKED BY** G. Gillen
AT END OF DRILLING --- not determined
NOTES Boring backfilled with soil cuttings
AFTER DRILLING ---

DEPTH (ft)	SYMBOL	SAMPLES	MATERIAL DESCRIPTION	FIELD TEST RESULTS (N-value)	% FINES	COHESION (ksf)	MOISTURE CONTENT %	DRY UNIT WT. (pcf)	PLASTICITY INDEX
0			Very loose brown clayey sand (SC)	WOR	26.6		32		
			Soft light gray and tan silty clay (CL)	WOH			25		
5			- stiff 4' - 6'			1.50	21	106	28
			- very stiff 6' - 8'			3.66	22	107	
			- hard 8' - 12'			4.15	19	109	
10									
			- stiff below 12'						
15						1.06	24	97	
			Very stiff light gray and tan clay (CH)						
20						2.30	37	83	

△ SPT N VALUE △
20 40 60 80
PL MC LL
20 40 60 80
○ COHESION (ksf) ○
1 2 3 4

Bottom of borehole at 20.0 feet.

25
30
35
40

GILLEN ENGINEERING, LLC
Soil and Foundation Consultants
Construction Materials Testing

BORING NUMBER 2

CLIENT Mr. Drew Manuel
PROJECT NAME Belle Fete
PROJECT NUMBER 9844.01
PROJECT LOCATION Slidell, Louisiana
DATE STARTED 5/25/21 **COMPLETED** 5/25/21
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR GSE
GROUND WATER LEVELS:
DRILLING METHOD Rotary Wash
AT TIME OF DRILLING ---
LOGGED BY R. Slack **CHECKED BY** G. Gillen
AT END OF DRILLING --- not determined
NOTES Boring backfilled with soil cuttings
AFTER DRILLING ---

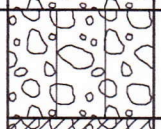
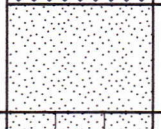
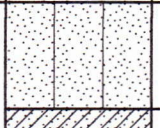
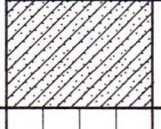
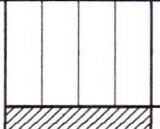
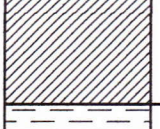
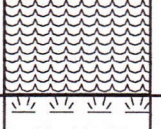
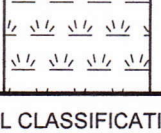
DEPTH (ft)	SYMBOL	SAMPLES	MATERIAL DESCRIPTION	FIELD TEST RESULTS (N-value)	% FINES	COHESION (ksf)	MOISTURE CONTENT %	DRY UNIT WT. (pcf)	PLASTICITY INDEX
0			Soft tan and light gray silty clay (CL)	1-1-2 (3)			18		
				WOR			22		17
5			- very stiff, light gray and tan below 4'			3.95	20	110	
						3.83	22	107	
10						2.33	18	109	
			Very stiff tan and light gray clay (CH)						
15						3.30	43	79	
20						2.05	38	84	

Bottom of borehole at 20.0 feet.

△ SPT N VALUE △ (20 40 60 80)
PL MC LL (20 40 60 80)
○ COHESION (ksf) ○ (1 2 3 4)

25 30 35 40

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS