Exhibit V. Foti - Highway 18 Geotechnical Report

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Information To Build On
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Foti - Highway 18
Geotechnical Report

October 2, 2017

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

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

Re: **General Geotechnical Site Characterization Report**
Foti Highway 18 – 23.02 Acres
Donaldsonville, Ascension Parish, Louisiana
PSI Project No. 02591298

Dear Mr. Cavanaugh:

Professional Service Industries, Inc. is pleased to submit this General Geotechnical Site Characterization 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 square feet (sf) industrial manufacturing building and depth of groundwater.

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

Leo Keegan
Staff Engineer
Geotechnical Services

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

GENERAL GEOTECHNICAL SITE CHARACTERIZATION REPORT

Foti Highway 18
Donaldsonville, Ascension Parish, Louisiana
PSI Project No. 02591298

PREPARED FOR

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

October 2, 2017

BY
PROFESSIONAL SERVICE INDUSTRIES, INC.
724 CENTRAL AVENUE
JEFFERSON, LOUISIANA 70121
PHONE: 504-733-9411
FAX: 504-733-9415

Name: Reda M. Bakeer, Ph.D., P.E.
Date: October 2, 2017
License No.: 27123
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APPENDIX

PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc. (PSI) has completed a General Geotechnical Site Characterization Study at the above referenced project site, located in Ascension Parish, Louisiana. Our services were provided in general accordance with PSI Proposal No. 259-220260, dated August 21, 2017. Authorization of the services was provided by Mr. Jim Cavanaugh, with the Baton Rouge Area Chamber (BRAC) on August 29, 2017.

Project Description

The primary objectives for this preliminary report 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 boring 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 investigations, particularly given the size of this subject site and the relatively limited number of exploration locations, variations between exploration locations 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 investigation.

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

Purpose and Scope of Services

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

- Perform one (1) conventional soil boring and one (1) Cone Penetrometer Test (CPTu) sounding at 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 for industrial development, suitability of soils for building foundations and on-site pavement improvement, and requirements of soil augmentation for construction of a typical 100,000 square foot industrial manufacturing building.

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. 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

It is understood that, the subject site is an approximately 23-acre tract of land located on the southeast corner of LA Highway 3120 and its intersection with LA Highway 18 in Ascension Parish, Louisiana. The site extends southeastward approximately 0.28 miles along LA Highway 3120. It is bound by LA Highway 18 to the northwest, LA 3120 to the southwest, a residential neighborhood to the southeast, and elsewhere by mostly undeveloped, rural/agricultural or wooded tracts of land. The site is used primarily at this time for agricultural purposes and contains several dirt and gravel farm access roads. PSI's track-mounted drill rig was used to perform the field exploration. The explorations were made just off of existing field roads in view of the present use of the site. PSI made no attempt to enter the cultivated portions of the site. A Site Vicinity Map based on Google Earth Image dated October 20, 2016 is presented in the Appendix.

Field Exploration

The subsurface conditions at the subject site were explored by drilling and recovering soil samples from one (1) soil boring, and through one (1) Cone Penetrometer Test (CPTu) sounding. Boring SB-1 extended to a depth of approximately 25 feet below the existing ground surface. CPTu sounding CPT-1 extended to a depth of about 50 feet below the existing ground surface. Refer to the Boring Location Plan given in the Appendix for the approximate exploration locations based on a recent Google Earth Image dated October 20, 2016.

The soil boring was performed with a track-mounted drilling 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 depth. Drilling and sampling were accomplished in general accordance with ASTM Standard Procedures.

Undisturbed samples of cohesive soils were generally obtained 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.

For cohesionless and semi-cohesive soils, the Standard Penetration Test (SPT) was 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 that is required to advance the split-barrel sampler one (1) foot into the soil. To perform the test and obtain a sample, the sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer. The number of blows is recorded for each of three (3) successive increments of six (6) inches penetration. The "N" value is obtained by adding the second and third

incremental numbers. The results of the standard penetration test indicate the relative density of cohesionless soils and thereby provide a basis for estimating the relative strength of the soil profile components. Samples of granular soils were obtained utilizing a two (2) inch O.D. split-barrel sampler in general accordance with procedures for "Penetration Test and Split-Barrel Sampling of Soils" (ASTM D-1586).

The CPTu sounding was performed utilizing a track-mounted Geoprobe Model 7822DT direct-push rig. The CPTu sounding was performed in general accordance with ASTM D5778, utilizing an electric cone penetrometer with a 60º , 1.4 inch diameter cone, that was hydraulically pushed. As the sounding was being 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 boring 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 Unconsolidated-Undrained and Unconfined Compression shear strength tests. The samples which were not altered by laboratory testing will be retained for six (6) months 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 D 2487 or D 2488. Laboratory test data and detailed descriptions of the soils can be found on the boring log which is included in the Appendix. A key to terms and symbols used on the log is also given in the Appendix. The log of the CPTu sounding is 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. The boring log is presented in the Appendix along with a key to the terms and symbols used on the log. It should be noted that due to the size of the site variations existed between the subsoil conditions encountered at the boring and CPTu locations. In view of the site size and the limited number of explorations made at this time, generalized subsurface profiles for each exploration location are presented in Table 1 and Table 2. The boreholes were performed within the presently accessible areas to our drill rig along the existing farm road.

Table 1: Generalized Soil Profile - Boring B-1

Depth Range[1] (feet)	Description
0 – 2	Stiff lean clay (CL)
2 – 6	Firm Fat Clay (CH)
6 - 8	Soft Fat Clay (CH)
8 – 12	Very loose sandy Silty(SM)
12 - 25	Very soft to soft Fat Clay (CH)

(1) *The approximate depth range is referenced from existing ground surface at the boring location.*

Table 2: Generalized Soil Profile - Sounding CPT-1

Depth Range[1] (feet)	Description
0 – 8	Clay
8 – 14	Clay with Silt and Sand lenses
14 – 46	Clay
46 – 50	Clay with Silty Clay lenses

(1) *The approximate depth range is referenced from existing ground surface at the CPTu location.*

The above subsurface descriptions are 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, variations may occur and should be expected between 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 performed which were all performed within the immediate vicinity of the existing farm roads.

Groundwater Information

The groundwater depth measured in the boreholes during our drilling activities are shown in the following table.

Table 3: Groundwater Depth Measured During Drilling

Boring	Groundwater Depth During Drilling (feet below the existing ground surface)
B-1	7
CPT-1	8

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 relative close proximity to the subject site, alteration of drainage patterns, land usage and ground cover. Additionally, perched water may be encountered in discontinuous zones within the overburden. This condition develops as rainwater in entrapped in the more pervious surface cultivated soils underlain by less pervious cohesive soils. We recommend the Contractor determine the actual groundwater levels at the time any future construction activities begin. This is particularly important if the proposed construction will include relatively deep excavations. Any excavation or dewatering plans that fall within 1,500 feet from the Mississippi River 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, 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 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, the structural column loads are assumed to be on the order of 100 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 maximum of about 4 feet to achieve final design grades is assumed. The proposed designs 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 structure 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 assumed that the upper soils encountered in the cultivated areas will require significantly more effort to achieve proper compaction and may contain far more organic material and other additives (fertilizers, etc.) in the upper soils than the areas explored during this preliminary exploration.

The choice of type of deep foundation should be based on the tolerance criteria for the performance of the structures and economics of construction. Grade supported foundations or surface coverings will likely be governed by the anticipated load and settlement tolerances, particularly where a significant amount of new fill is placed. Driven piles should be viable foundation types considering the subsurface and groundwater conditions encountered and should be anticipated to carry the structural loads anticipating that settlement will occur as a result of new fill, building and slab loads. As previously discussed, construction in some areas of the site will be subjected to review and approval of the USACE. Lightly-loaded equipment pads may be able to be supported on shallow spread footings, or mat foundations, as long as the PVR issues described below are mitigated and settlement potential considered. 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 and proofrolling in the presence of the Geotechnical Engineer to assess general stability and firmness prior to fill placement.

Based on the limited number of soil boring and CPTu sounding, 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 after proper preparation.

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 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. Based on the site location, and PSI's previous experience with projects in the Donaldsonville area, it is anticipated that the amount of fill that will be needed on this site will be on the order of around two (2) to four (4) feet, PVR is not anticipated to adversely impact the project with great significance. The effects of PVR should be considered if lesser fills are planned. The suitability of reuse of excavated soils (ponds, etc.) as structural fill may require the use of lime treatment or soil mixing.

Site pavements should be underlain by at least 12 inches of properly compacted low plasticity engineered fill material or otherwise or chemically treated with lime prior to base material placement due to the near surface fat clay soils. At this time, we assume pavement areas will receive at least two (2) to four (4) feet of fill to achieve final grades.

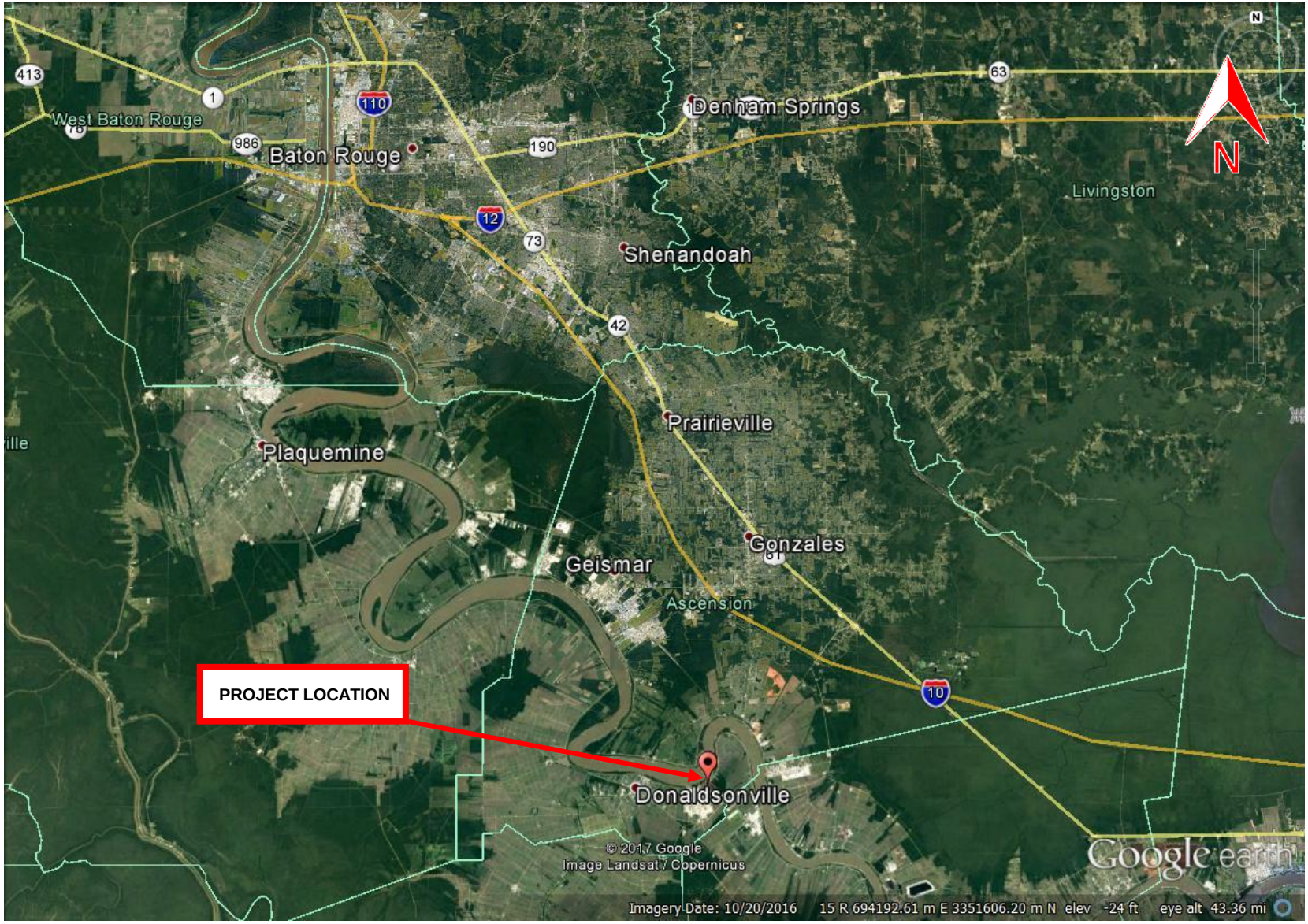
Areas within 1,500 feet of the existing levee to the west of the site should anticipate USACE interaction per the Hurricane and Storm Damage Risk Reduction System (HSDRRS) Design Guidelines and will likely be subject to the requirements of the Lower Mississippi Valley (MVN) and New Orleans District (NOD). Special permitting should also be anticipated for any geotechnical borings, new fill or 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 HSDRRS Design 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



GEOTECHNICAL ENGINEERING SERVICES
LA HIGHWAY 18
DONALDSONVILLE, LOUISIANA

SITE VICINITY MAP
PSI PROJECT No. 02591298
(Google Earth Image) date October 20, 2016

psi Information To Build On
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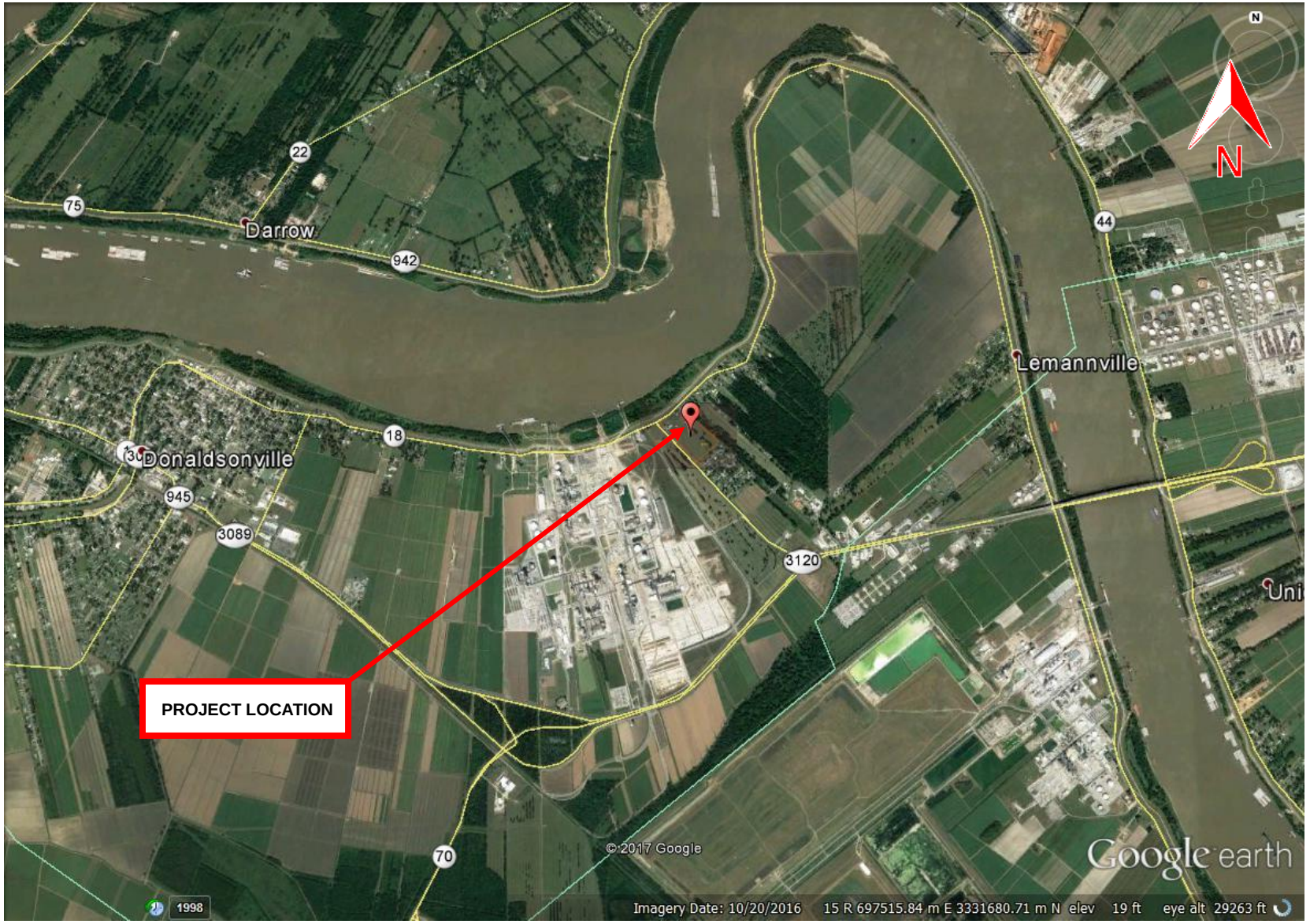

GEOTECHNICAL ENGINEERING SERVICES
LA HIGHWAY 18
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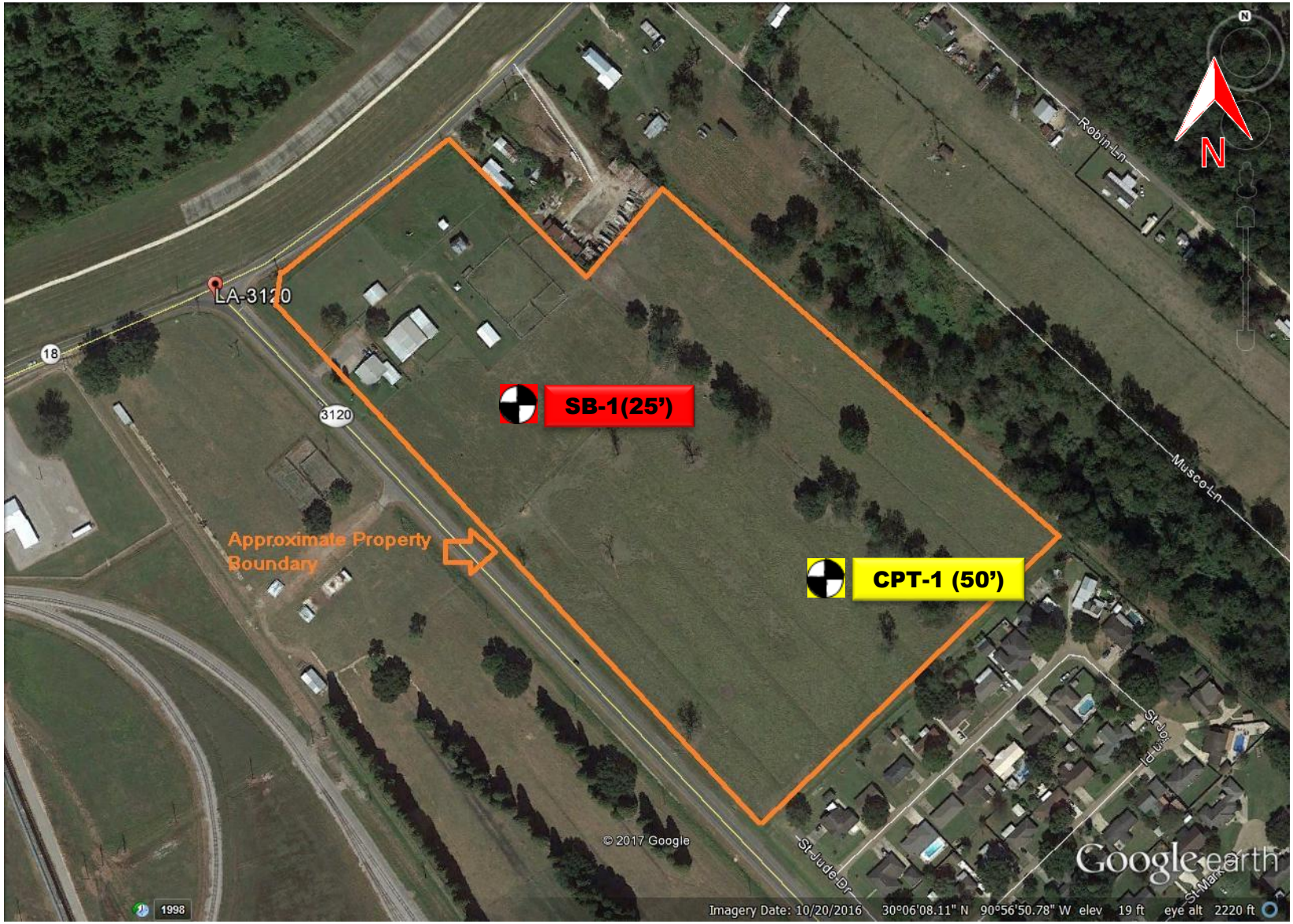

GEOTECHNICAL ENGINEERING SERVICES
LA HIGHWAY 18
DONALDSONVILLE, LOUISIANA

BORING LOCATION PLAN
PSI PROJECT No. 02591298
(Google Earth Image) date October 20, 2016

psi Information To Build On
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LOG OF BORING SB-1

BRAC
Foti Highway 18
Ascension Parish, Louisiana

TYPE OF BORING: Hollow Stem Auger | LOCATION: Prelminary Geotechnical Investigation | PSI Project No.: 02591298

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) ○ HP ● UC △ TV ▲ UU 0.0 0.5 1.0 1.5	STRENGTH (tsf) HP (tsf)	UC (tsf)	TV (tsf)	UU (tsf)	DRY UNIT WEIGHT (pcf)
		CL		Stiff brown **Lean Clay**, with brick pieces		28					●△	1.16	0.91	1.25		90
2.5		CH		Firm gray **Fat Clay**		39	72	23	49		○	0.33				
5.0						43					△			0.30		
		CH		Soft gray **Fat Clay** ▽		46	54	18	36		▲	0.16		0.20	0.14	78
7.5		ML		Very loose gray **Sandy Silt**	3	32				74						
10.0																
12.5		CH		Very soft to soft gray **Fat Clay**												
						50					△			0.10		
15.0																
17.5																
						59	90	24	66		△			0.15		
20.0																
22.5																
						46					▲			0.25	0.26	74
25.0				Boring terminated at 25 feet												
27.5																
30.0																
32.5																
35.0																
37.5																
40.0																
42.5																
45.0																
47.5																
50.0																

DEPTH OF BORING: 25 FEET
DATE DRILLED: 9/8/17
NOTE:

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

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 10/2/17 15:52 - 0254

psi Information To Build On
Engineering • Consulting • Testing
Professional Service Industries, Inc.
724 Central Avenue
Jefferson Louisiana 70121
(504) 733-9411

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CPT: CPT-1

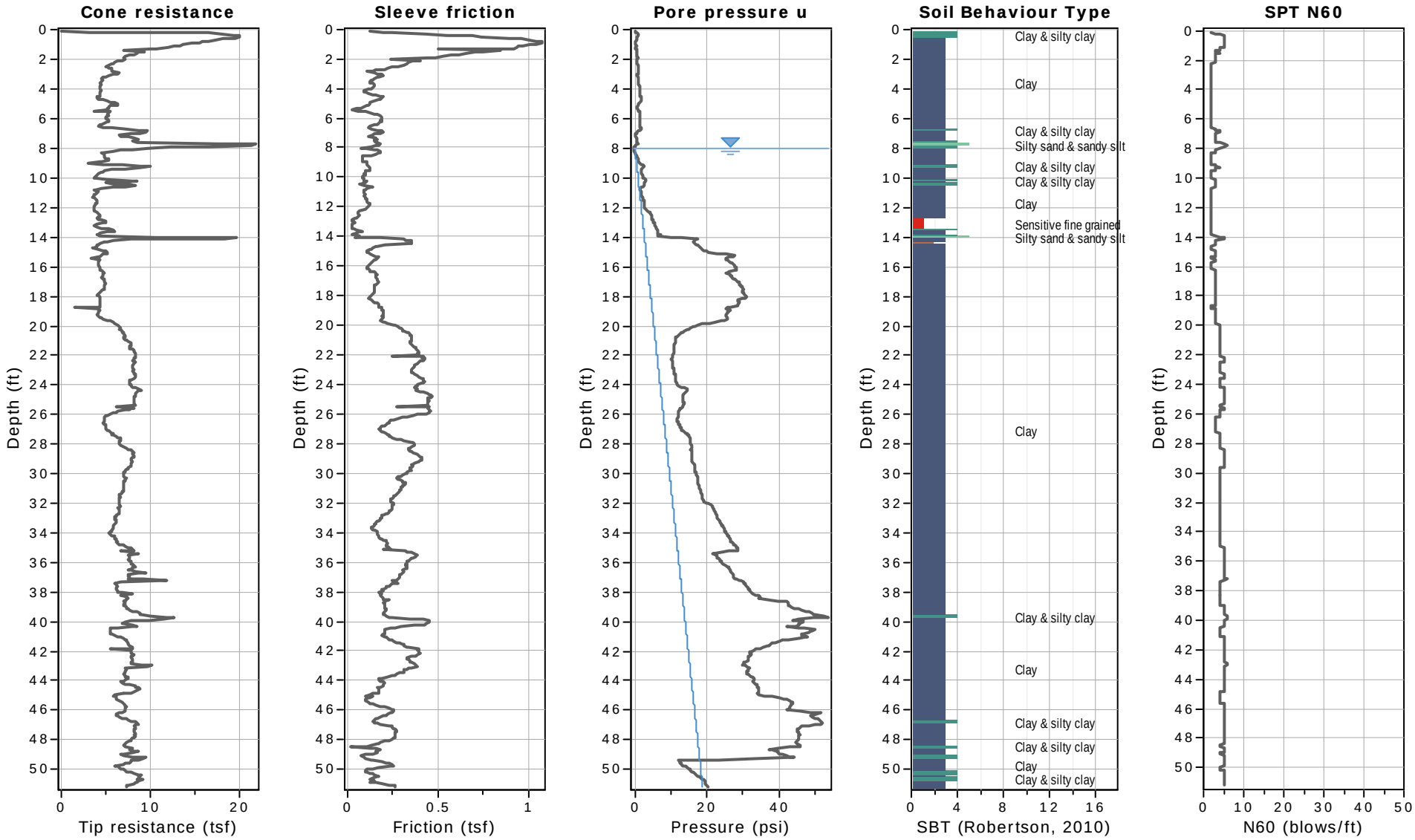
Total depth: 51.18 ft, Date: 9/8/2017

Cone Type: 60° 1.4" Diam. Type 2 Electric Cone Penetrometer

Cone Operator: Bill Penick

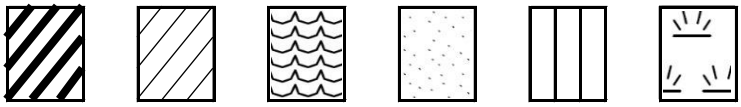
Project: 02591298 - BRAC

Location: Donaldsville, Louisiana



KEY TO TERMS AND SYMBOLS USED ON LOGS

SOIL TYPE

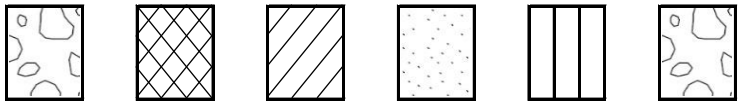


FAT CLAY | LEAN CLAY | ORGANIC CLAY | SAND | SILT | PEAT

SAMPLER TYPE

NO RECOVERY | AUGER SAMPLE | SHELBY TUBE | SPLIT SPOON

SOIL TYPE / MODIFIERS



GRAVEL | FILL | CLAYEY | SANDY | SILTY | GRAVELY

GROUNDWATER DURING DRILLING

GROUNDWATER UPON COMPLETION

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487 (1980)

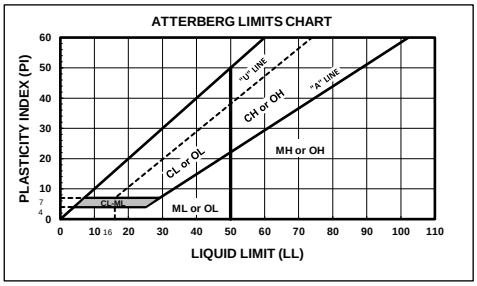
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS LESS THAN 50% PASSING NO. 200 SIEVE	GRAVEL & GRAVELLY SOILS LESS THAN 50% PASSING NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		WITH APPRECIABLE FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN 50% PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SAND
			SP	POORLY-GRADED SANDS
		WITH APPRECIABLE FINES	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

TV - MINIATURE TORVANE

FV - FIELD TORVANE

UC - UNCONFINED COMPRESSION TEST

UU - UNCONSOLIDATED UNDRAINED TRAIXIAL

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

July 2, 2018

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

Attn: Mr. Jim A. Cavanaugh
Phone: (225) 339-1163
Email: jim@brac.org

Re: **Addendum Letter #1 (07-02-2018)**
General Geotechnical Site Characterization Report
Foti Highway 18 – 23.02 Acres
Donaldsonville, Ascension Parish, Louisiana
PSI Project No. 02591298 – Addendum 1

Dear Mr. Cavanaugh:

This Addendum Letter was prepared in response to an email request on June 28, 2018 from Mr. Greg Bloss of Duplantis Design Group to provide preliminary geotechnical guidelines with regard to individual pile capacities for deep foundations and bearing capacity for shallow foundations, if practical, for the above referenced project. PSI previously performed geotechnical exploration services for this project and the results of that study were presented in PSI Report No. 02591298, dated October 2, 2017. In our report, recommendations with regard to 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 were provided. Those recommendations and discussions were provided in accordance with our scope of services outlined in our cost estimate proposal for the project dated August 21, 2017. As requested by the Client, this addendum letter provides additional preliminary geotechnical guidelines with regard to individual pile capacities for deep foundations and bearing capacity for shallow foundations for use in feasibility studies and cost estimating purposes.

PSI understands that the preliminary report and this addendum will not be used for the construction of structures or foundations, but will be limited to providing general characterization of the subsoil types and stratification at the subject site as indicated by a limited number of borings/CPT soundings considering the site size. PSI has been requested to provide preliminary recommendations for spread footings (if feasible) and estimates of axial capacity of concrete, timber, or pipe piles. It should be noted that only one (1) shallow boring and one (1) CPT sounding were made in random and readily accessible locations and some variations should be expected to exist away from the boring/CPT sounding locations. This is particularly important considering the relatively large area of the site of about 23.02 acres as well as its present use.

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

Shallow Foundations Preliminary Guidance

The near surface firm to stiff clays (CL and CH) encountered at the exploration locations are only fair in bearing quality. However, the underlying soft gray clay that was encountered between the six (6) and eight (8) foot depths in boring SB-1 is highly compressible. Therefore, consideration could be given to supporting lightly loaded and ancillary structures on spread footing type foundations provided that some long-term settlement could be tolerated.

Footings can be designed for net allowable soil bearing pressure of 1,200 pounds per square foot (psf) for square spread footings and 1,000 psf for continuous footings. In general, footings should bear at least 2 feet below the finished grade in firm naturally occurring clays or structural fill. The foregoing bearing capacities are based on the results of the limited exploration made at the subject site. They are intended for use in feasibility studies and cost estimating purposes and not for formal design or construction. They include a factor of safety of at least 3.0, which is believed adequate for design of lightly to moderately loaded structures. These do not consider the effect of footing size, settlement, etc. These values should be confirmed/revised as necessary through a full geotechnical investigation and analyses once a specific design/layout of the proposed construction has been finalized.

Additional recommendations will be provided in the detailed geotechnical investigations with regard to site preparation, shallow excavations, structural fill and shallow foundation footing construction and settlement since no specific details of the proposed construction and anticipated loads are available at this time.

Deep Foundation Preliminary Guidance

Due to the limited depth of the boring/CPT sounding performed at the subject site, preliminary pile capacities are given to a depth of 45 feet below existing ground surface for driven square precast, pre-stressed concrete (PPC) piles or round timber piles (ASTM D-25). PPC piles should be used for support of heavily loaded and industrial structures. Meanwhile, small timber piles (6'' tip and 8'' butt) are suitable for support of lightly loaded structures. Large timber, or composite timber piles (7'' tip and 12'' butt) are suitable for support of moderately and somewhat heavy structures.

Axial Capacity: The axial load carrying capacity of a shaft or pile can be computed using the static method of analysis. According to this method, axial capacity, Q, at a given penetration is taken as the sum of the skin friction on the side of the shaft/pile, Q_s, and the end (tip) or point bearing at the shaft/pile tip, Q_p, so that:

$$Q = Q_s + Q_p = fA_s + qA_p$$

where A_s and A_p represent, respectively, the embedded surface area and the end area of the shaft; f and q represent, respectively, the unit skin friction and the unit end or point bearing.

The total axial capacity in compression will be the summation of the frictional resistance and the end bearing resistance. The total ultimate axial capacity in tension, or uplift, will be the ultimate frictional resistance alone neglecting end bearing component. Using the static method analyses and soil profile, engineering analyses were performed to estimate the axial capacity for 8 inch butt/6 inch tip and 12 inch butt/ 7 inch tip timber piles and 14-inch square PPC driven piles. The pile will derive their compression and tension support through "skin friction" along their embedded lengths with a relatively small end

bearing contribution in compression since no competent stratum was encountered that provides good additional "point" support.

The recommended penetration lengths and the estimated corresponding allowable compression and tension (or uplift) capacities for the two (2) types of piles are presented in Tables 1 and 2. Practical length of PPC piles is at least 40 feet. For shorter lengths, cost/ton carried by a PPC pile becomes inefficient compared to timber piles. One pile size and length should be used for support of a given structure to minimize detrimental effects of differential settlement across the structure.

Table 1: Estimated Allowable Single Timber Pile Capacity[1]

Pile Penetration[2] (feet)	Small Treated Timber Pile (6-inch tip and 8-inch butt)		Large Treated Timber Pile (7-inch tip and 12-inch butt)	
	Compression (tons)	Tension (tons)	Compression (tons)	Tension (tons)
30	5	3	-	-
35	6	4	-	-
40	7 ½	5	10 ½	6
45	-	-	12 ½	8

Notes: [1]These are soil-pile related capacities and consideration should be given to the structural integrity of the pile member.
[2]Pile penetration is referenced from the existing grade at the exploration locations. Any pile length above, or below, this reference elevation needed to accommodate a raised floor or fill thickness, or piles installed within an excavation, should be added to, or subtracted from, the given lengths, respectively.

Table 2: Estimated Allowable Single PPC Pile Capacity[a]

Pile Penetration[b] (feet)	14-inch Square PPC	
	Comp. (tons)	Tension (tons)
40	20	12
45	21	14

Notes: [a]These are soil-pile related capacities and consideration should be given to the structural integrity of the pile member.
[b]Pile penetration is referenced from the existing grade at the exploration locations. Any pile length above, or below, this reference elevation needed to accommodate a raised floor or fill thickness, or piles installed within an excavation, should be added to, or subtracted from, the given lengths, respectively.

Factors of safety of 2.0 in compression and 3.0 in tension (or uplift) were applied to obtain the allowable capacities presented in Tables 1 and 2. A minimum factor of safety equal to two (2) in compression and three (3) in tension is recommended if a static compressive axial load test is performed. If a load test is not performed, then a minimum factor of safety equal to three (3) in compression is recommended. Lesser factors of safety could be considered if the design loads are transient and/or of short duration. PSI will be available to perform the pile load test and PDA monitoring upon request.

Additional recommendations will be provided in the detailed geotechnical investigations with regard to lateral loads, drag load, group effect, and settlement of deep foundation since no specific details of the proposed construction is available at this time.

REPORT LIMITATIONS

The preliminary information submitted in this addendum and our original report is based on the available subsurface data obtained by PSI at the time of our field exploration performed according to the request of the Client. 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 addendum and our original report have 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.

If any of the project information noted in this Addendum Letter is incorrect, please inform PSI in writing so that we may amend the recommendations presented if appropriate and desired by the Client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in project information.

This Addendum Letter addresses the specific request from the Client and all other recommendations given in PSI Report 02591298, dated October 2, 2017, remain unchanged. If you have any questions pertaining to this Addendum Letter, or if we may be of further service, please contact our office.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

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