Baton Rouge Area Chamber®

Exhibit AA. Colyell Business Park Preliminary Geotechnical Engineering Report

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Subsurface Exploration and Geotechnical Considerations Report

Proposed Colyell Business Park Development
Livingston, Louisiana
Premier File No.: 19-0022

October 31, 2019

Colyell Business Park Preliminary Geotechnical Engineering Report

Prepared for:

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Prepared by:

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INTRODUCTION

Premier Geotech and Testing, LLC (Premier) is pleased to present this Geotechnical Services Report for the proposed Colyell Business Park development. Our services were performed in general accordance with the executed agreement between Premier and Baton Rouge Area Chamber and authorized by Mr. Russell Richardson with BRAC on June 17th, 2019.

The engineering recommendations presented herein pertain to only to the 420-acre tract of land located west of LA Highway 63 and south of Interstate 12 in Livingston. Louisiana. Additional subsurface explorations will be needed/required to provide engineering recommendations (i.e., allowable bearing pressures, estimates of settlement, etc.) pertaining to surrounding acreage of the project site. The engineering recommendations presented herein only apply to the proposed 420 acres for the proposed Colyell Business Park and this report shall not be relied on for design and/or construction of surrounding acreage.

PROJECT DESCRIPTION

It is understood that the purpose of this geotechnical investigation is to meet the requirements of the LED Certified Site Application. Premier drilled and sampled a total of five (5) soil borings for this project. One (1) soil boring was performed to a depth of about 100 feet below existing grade and the remaining four (4) were drilled and sampled to a depth of about 20 feet below existing grade.

The proposed project site is approximately 420 acres and is located west of LA Highway 63 just south Interstate 12 in Livingston, Louisiana. The project site was heavily wooded with mature growth trees and underbrush. The project site was generally topographically flat with small creeks traversing throughout and one (1) pond situated near the center of the 420 acres. Additional testing will be required for the surrounding acreage of the site and this report shall not be used for any undeveloped land in surrounding areas.

The following table lists the structural loads and other features that are required for or are the design basis for the conclusions of this report:

Table 1.0 – Design Parameters

STRUCTURAL LOAD/PROPERTY	REQUIREMENT/REPORT BASIS		
BUILDING		**R***	**B***
Maximum Column Loads	75 kips	☐	☒
Maximum Wall Loads	2.5 kips per foot	☐	☒
Maximum Floor Loads	125 psf	☐	☒
Settlement Tolerances	Less than one (1) inch	☐	☒
GRADING			
Anticipated Amount of Fill Material Required to Achieve Design Grade	Up to two (2) feet	☐	☒

* "R" = Requirement indicates specific design information was supplied.
"B" = Report Basis indicates specific design information was not supplied; therefore, this report is based on this parameter.

The geotechnical recommendations presented in this report are based on the available project information and the subsurface materials described in this report. If any of the information noted above is incorrect, please inform Premier in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. Premier will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

SITE CONDITIONS

Subsurface Conditions

The subsurface soil encountered was generally stiff to very stiff in nature with low shrink/swell potential and good bearing capacity. The material encountered was generally classified as lean and fat clay with a sand layer generally situated at eight (8) to 13 feet below existing grade. A very dense sand stratum was disclosed in test location B1 at a depth of about 83 feet to 100 feet below existing grade, the maximum depth explored at this test location.

The above subsurface description is of a generalized 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 individual boring locations. These records include soil descriptions, stratifications, penetration resistances, and 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 test locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained (if any) during field operations is also shown on these boring logs. The samples that were not altered by laboratory testing will be retained for a period of thirty (30) days from the date of this report and then will be discarded.

Groundwater Conditions

The free groundwater table was encountered and recorded in boring locations at a depth of about seven (7) to 18 feet below existing grade at the time of our field exploration. The measured depth is noted on each individual boring log included in the appendix of this report.

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.

Presence of Expansive Soils

Field and laboratory test results indicate that the soils encountered at the site exhibit low shrink and swell potential. **A Potential Vertical Rise (PVR) value of about 0.37 inches was calculated using the TEX-124E method with an applied contact pressure of 75 psf and assuming an active zone of ten (10) feet.** Therefore, and based on the subsurface materials encountered, mitigation of the site conditions will not be necessary to maintain the potential vertical movement to less than one (1) inch.

The estimated amount of vertical movement of a foundation or floor slab constructed on swelling clays is referred to as the Potential Vertical Rise (PVR). To reduce the potential for shrinkage and swelling of the site soils, it is important that consideration be given to reducing the potential for moisture changes of the site soils. As a minimum, positive drainage away from the new building should be provided. If positive drainage is not provided, water will pond around or below the structure and excessive total and differential movements may occur.

FOUNDATION CONSIDERATIONS

The project is compatible and suitable for industrial development from a geotechnical engineering perspective. The subsurface soils provide good strength characteristics for building foundations and roadways. Considered the subsurface conditions indicated in the five (5) borings performed, assumed structural loading and fill requirements typically associated with large, 100,000 square foot industrial warehouse buildings, a shallow foundation may be feasible if the loads and bearing capacities are adequate. In addition, a deep foundation system consisting of driven timber piles, precast prestressed concrete piles, and/or auger cat piles are all viable options for heavily loaded structures.

Shallow Foundation Parameters

The PVR and settlements were estimated to be less than one (1) inch based on the subsurface soils encountered and the assumed design information. Design parameters are given below for the condition when a post-tensioned slab-on-grade is to be placed on a thin layer of select structural fill or natural soil. The differential movements given below should be considered by the structural engineer for the foundation design:

Predominant Clay Type	Montmorillonite
Average Plasticity Index, PI	Approx. 20
Average Unconfined Compressive Strength, q_u, psf	2,722
Thornthwaite Moisture Index	40

It should be realized that the soil differential movements presented above do not account for the influence of vegetation, such as trees and shrubs located near the foundation, which can greatly influence the foundation performance. Also, the construction of post-tensioned slabs, require close attention to detail during construction. Only contractors experienced in post-tensioned slab construction should be used on this project.

Soil Bearing Pressures and Depths

Square spread and continuous footings bearing at least 24 inches below finished grade, within properly compacted structural fill or the stiff insitu clay soil, may be designed for a net allowable bearing capacity of 3,000 pounds per square foot (psf) and 2,500 psf, respectively. A minimum dimension of 24 inches for the square spread footing and 18 inches for the continuous footing should be used in the foundation design to reduce the possibility of a local bearing failure.

After opening, foundation excavations should be observed, and concrete placed as quickly as possible to avoid exposure of the foundation bottoms to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond. The foundation concrete should be placed during the same day the excavation is made. If it is required that foundation excavations be left open for more than one day, they should be protected to reduce evaporation or entry of moisture.

Estimated Settlement

Total and differential settlements for square spread footings up to five (5) feet and continuous footings up to two (2) feet in width are expected to be on the order of one (1) inch or less and ¾ inch, respectively. Settlement was estimated based on the total sustained dead loads of 70% of the above recommended net allowable bearing capacities plus up to two (2) feet of fill material, using empirical correlations between Atterberg Limits and compressibility. The Structural Engineer shall confirm if these magnitudes are within tolerance limits. If not, Premier shall be notified to provide some remedial measures and/or change the foundation type.

Uplift Resistance

The uplift resistance of shallow spread footings formed in open excavations should be limited to the weight of the foundation concrete and the soil above it. **For preliminary design purposes, the uplift resistance can be computed by using a total unit weight of 128 pcf for the structural fill placed and compacted above the footing and a unit weight of 150 pcf for the concrete.** Concrete reinforcing steel should be properly sized to resist the uplift forces. We recommend that a factor of safety of at least 1.5 be used when determining the allowable uplift resistance of spread footings.

The resistance to sliding of spread footing bearing in structural fill can be computed by multiplying the footing base contact area by a sliding friction factor of 0.35. Spread footings should be sized to resist overturning due to moment forces.

Deep Foundation Considerations

A prestressed precast concrete pile was evaluated and is suitable for heavily loaded recommended to support the proposed new structure. The driven piles will derive their support through mainly through skin friction resistance and some end bearing resistance at deep depths. **The ULTIMATE axial pile capacity for a single, 14-inch square prestressed precast concrete pile is shown on the attached *Ultimate Pile Capacity vs Depth* sheet. The pile capacities were provided for your convenience and shall not be used or relied upon for design.** The pile capacities were determined using APILE 2018 from Ensoft. Due to the possible construction disturbances, the top five (5) feet was neglected in our calculations.

Settlement

The estimated settlement of an individual pile is shown on the attached *Load vs Settlement Curve* sheet. Once a pile load test is performed, Premier can evaluate the capacity and settlement for pile groups.

The piles shall be installed at a minimum center to center spacing of three (3) pile diameters or side dimension. For this spacing and with the pile cap in firm contact with the soil, a

reduction in capacity due to group effects should not be required. If the pile cap will not be in firm contact with the soil, group effects could reduce the pile capacities and should be evaluated accordingly when the actual pile length and layout are known.

Pile Installation

The piles will attain most of the capacity through skin friction and some end bearing; therefore, achieving pile embedment depths to 80 feet below existing grade should be feasible and should not require any predrilling.

All pile driving operations should be observed by a qualified inspector. Records of driving resistance versus depth, tip elevation of piles, driving equipment, etc., should be permanently kept. The large timber piles should be driven using a hammer with a minimum rated energy of 15,000 foot-pounds.

Floor Slab

A floor slab can be grade supported on naturally occurring stiff clay soil, or a minimum of 12 inches of properly compacted structural fill. Premier recommends that a minimum four (4) inch thick free-draining granular mat be placed beneath the floor slab to enhance drainage. The soil surface shall be graded to drain away from the building without low spots that can trap water prior to placing the granular drainage layer. Proof rolling should be accomplished to identify soft or unstable soils that should be removed from the floor slab area prior to fill placement and/or floor slab construction. These soils should be replaced with properly compacted structural fill as described in this report.

The precautions listed below should be followed for construction of slab-on-grade pads. These details will not reduce the amount of movement but are intended to reduce potential damage should some settlement of the supporting subgrade take place. Some increase in moisture content is inevitable as a result of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices.

- Cracking of slab-on-grade concrete is normal and should be expected. Cracking can occur not only as a result of heaving or compression of the supporting soil and/or bedrock material, but also as a result of concrete curing stresses. The occurrence of concrete shrinkage crack, and problems associated with concrete curing may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement, finishing, and curing, and by the placement of crack control joints at frequent intervals, particularly where re-entrant slab corners occur. The American Concrete Institute (ACI) recommends a maximum panel size (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. For example, joints are recommended at a maximum spacing of twelve (12) feet based on having a four-inch slab. Premier also recommends that the slab be independent of the foundation walls. Using fiber reinforcement in the concrete can also control shrinkage cracking.

- Areas supporting slabs should be properly moisture conditioned and compacted. Backfill in all interior and exterior water and sewer line trenches should be carefully compacted to reduce the shear stress in the concrete extending over these areas.

Exterior slabs should be isolated from the building. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the building foundation or superstructure.

EARTHWORK CONSIDERATIONS

Site Preparation

Premier recommends that all topsoil, vegetation, roots, soft, organic, or unsuitable soils in the construction areas be stripped from the site and either wasted or stockpiled for later use in non-structural areas. It should also be noted that it is not unusual for topsoil thickness to vary from these values in the open field. Oftentimes the topsoil can be deeper in low-lying areas, where erosion, wind and precipitation can deposit this material. **For estimating purposes, Premier anticipates an average stripping depth of approximately 10-inches, but this shall be verified by the contractor(s) prior to bidding and construction.** There may be areas of the site that require additional, or possibly less stripping for the reasons discussed above. A representative of the Premier should determine and document the depth of removal at the time of construction.

In this region, these otherwise competent silts and lean clays can undergo a significant loss of stability when construction activities are performed during wetter portions of the year. Premier anticipates that the soils in the project area can become easily disturbed if subjected to conventional rubber tire or narrow track-type equipment. Soils that become disturbed would need to be excavated and replaced; however, this remedial excavation may expose progressively wetter soils with depth, thus compounding the problem condition. Thus, a normal approach to subgrade preparation may not be possible. Appropriate wide-track equipment selection should aid in minimizing potential disturbance.

Fill Material and Placement

After subgrade preparation, proof-rolling and observation have been completed, fill placement required to establish grade may begin. A representative of Premier should be on-site to observe, test, and document the placement of the fill. If the fill is too dry, water should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Close moisture content control will be required to achieve the recommended degree of compaction. It should be noted that high plasticity clays are typically more difficult to compact and achieve the optimum moisture content during the placement of fill.

SPECIFICATION	REQUIREMENT
Lift Thickness	Maximum 8-inch loose lifts when compacted with large heavy compaction equipment; Maximum 6-inch loose lifts when compacted with lightweight compaction equipment (thinner lifts may be required in confined locations)
Density	Minimum of 95 percent of maximum dry density as defined by ASTM D 698 at all locations and depths.
Moisture	± 2 percent of optimum moisture as defined by ASTM D 698 for cohesive soils. For cohesionless soils with greater than 12 percent passing the US Standard No. 200 sieve, ± 3 of optimum moisture as defined above. Moisture requirement is waived for cohesionless soils with less than 12 percent passing the No. 200 sieve.

Density Testing Frequency	Minimum one (1) test per 2,500 square feet per lift in the building footprints, minimum one (1) test per 5,000 square feet per lift in the parking/.drive areas, and minimum one (1) test per 200 feet of trench backfill with minimum of 2 tests per lift, or as required by local government agencies.

The edges of compacted fill should extend a minimum of five (5) feet beyond the building footprint, or a distance equal to the depth of fill beneath the footings, whichever is greater. The measurement should be taken from the outside edge of the footing to the toe of the excavation prior to sloping.

Structural Clay Fill

Structural clay fill materials placed beneath the structural features or slabs should be free of organic or other deleterious materials and have a maximum particle size of less than three (3) inches. Structural clay fill soils are defined as having a liquid limit less than forty (40) and plasticity index between ten (10) and twenty-two (22).

On-Site Material for Structural Clay Fill

Based on the subsurface soil disclosed in our limited test locations, the on-site subsurface material appears to generally meet the requirements for structural fill material. Additional testing of the subsurface soil should be performed to confirm prior to beginning construction activities. It should be noted that variations in the subsurface material should be expected.

Utility Trench Backfill

Excavation for utility trenches shall be performed in accordance with OSHA regulations as stated in 29 CFR Part 1926. It should be noted that utility trench excavations have the potential to degrade the properties of the adjacent fill materials. Utility trench walls that are allowed to move laterally can lead to reduced bearing capacity and increased settlement of adjacent structural elements and overlying slabs.

Backfill for utility trenches is as important as the original subgrade preparation or structural fill placed to support either a foundation or slab. Therefore, it is imperative that the backfill for utility trenches be placed to meet the project specifications for the structural fill of this project. Premier recommends that flowable fill or lean mix concrete be utilized for utility trench backfill. If on-site soils are placed as trench backfill, the backfill for the utility trenches should be placed in four (4) to six (6) inch loose lifts and compacted to a minimum of 95% of the maximum dry density achieved by the standard Proctor test. The backfill soil should be moisture conditioned to be within 2% of the optimum moisture content as determined by the standard Proctor test. Up to four (4) inches of bedding material placed directly under the pipes or conduits placed in the utility trench can be compacted to the 90% compaction criteria with respect to the standard Proctor. Backfill of utility trenches should not be performed with water standing in the trench. If granular material is used for the backfill of the utility trench, the granular material should have a gradation that will filter protect the backfill material from the adjacent soils. If this gradation is not available, a geosynthetic non-woven filter fabric should be used to reduce the potential for the migration of fines into the backfill material. Granular backfill material shall be compacted to meet the above compaction criteria. The clean granular backfill material should be compacted to achieve a relative density greater than 75% or as specified by the geotechnical engineer for the specific material used.

Excavations

In Federal Register, Volume 54, Number 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better enhance the safety of workers entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is Premier's understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

Premier is providing this information solely as a service to our client. Premier does not and will not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

REPORT LIMITATIONS

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations presented in the preceding section constitutes Premier's professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and referenced during this evaluation, and Premier's experience in working with these conditions.

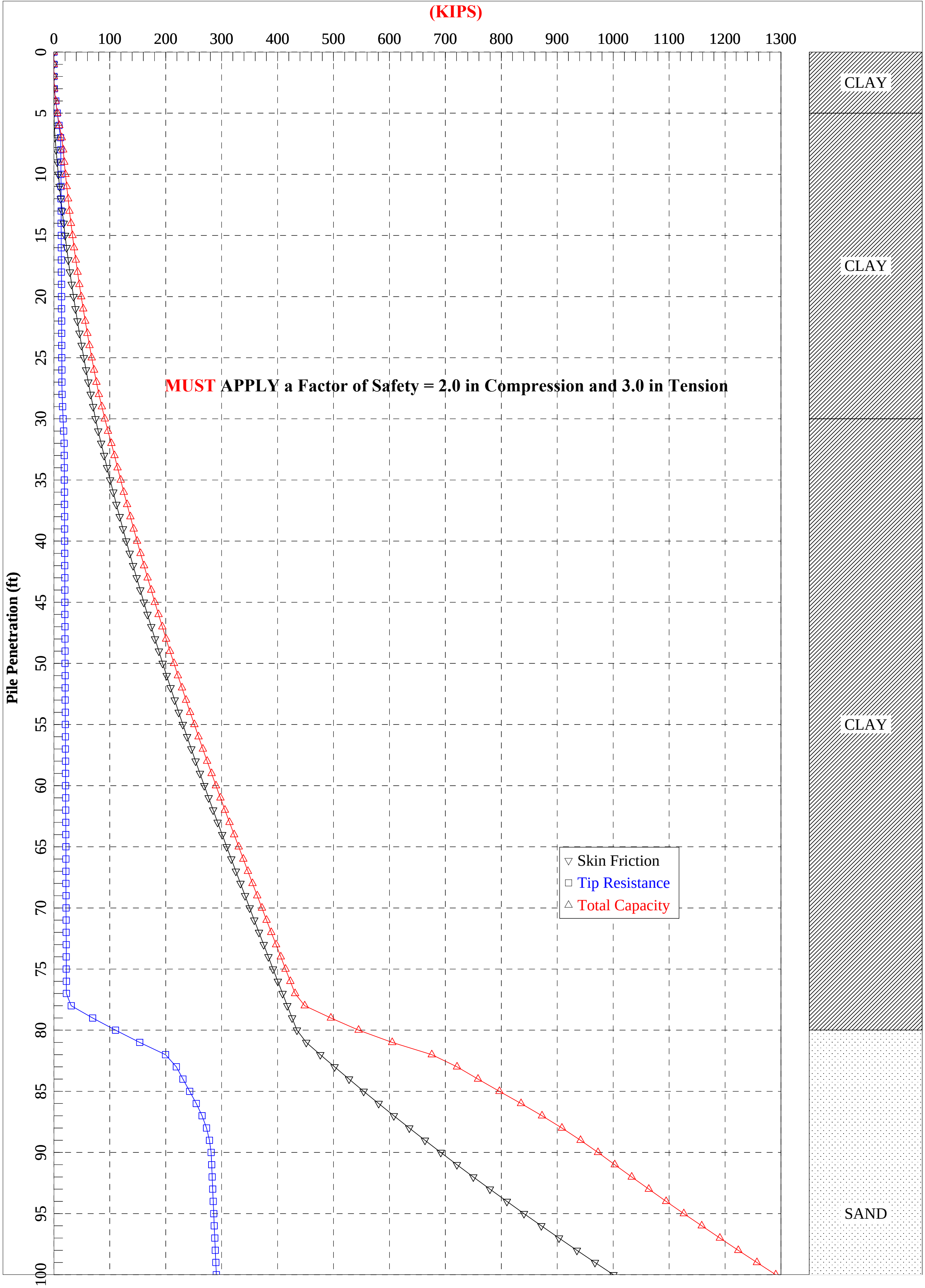
The recommendations submitted in this report are based on furnished project information by the design team and the subsurface information obtained from borings drilled by Premier. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, Premier must be notified immediately to determine if changes in the foundation recommendations are required. If Premier is not notified in writing of such changes, Premier will not be responsible for the impact of those changes on the project.
The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted

professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are complete, the Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents.
The scope of Premier's services did not include any environmental assessment or investigation for the presence or absence or hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

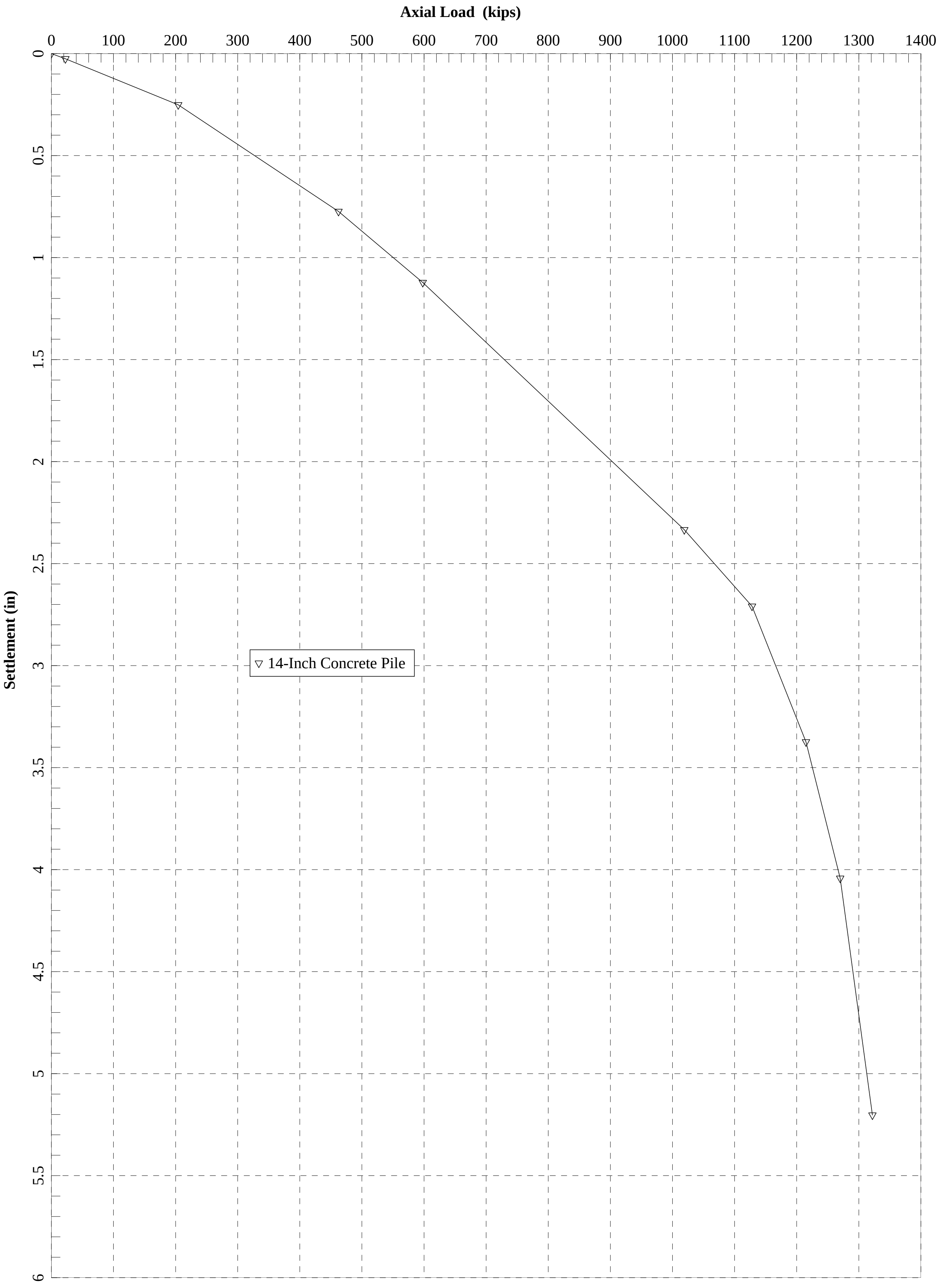
This report has been prepared for the exclusive use by Baton Rouge Area Chamber, CSRS, Inc. and their design team for the specific application to Colyell Business Park located in Livingston, Louisiana as described herein. The recommendations presented herein cannot be used or relied on for construction since this is a feasibility study. The information and data obtained (i.e., Instrument of Service) and prepared by Premier Geotech and Testing, LLC may not be used or relied on by any other entity, now or at any point in the future, without the express, written consent from Premier Geotech and Testing, LLC.

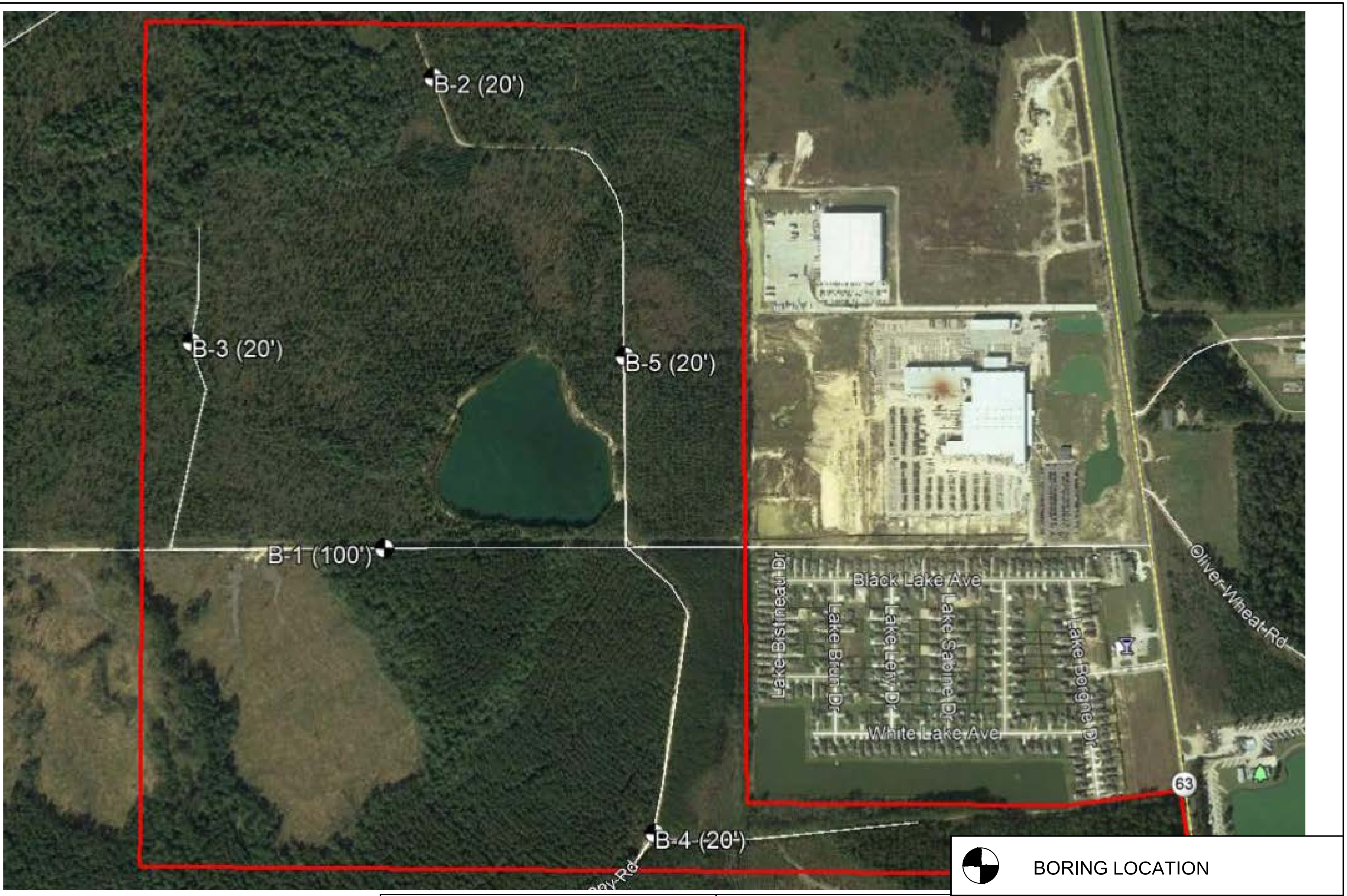
ULTIMATE, 14-Inch Square Concrete Pile Capacity vs. Depth
(KIPS)



MUST APPLY a Factor of Safety = 2.0 in Compression and 3.0 in Tension

Coyell Business Park - LED
Livingston, Louisiana
Premier File No.: 19-0022





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COLYELL BUSINESS PARK
LIVINGSTON, LOUISIANA
PREMIER FILE NO.: 19-0022

Premier GEOTECH AND TESTING, LLC

BORING LOCATION PLAN

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
▨	Low plasticity clay
▨	High plasticity clay
▥	Silty sand
░	Poorly graded sand
▒	Poorly graded sand with silt
Misc. Symbols	
▽	Water table during drilling
■	Unconfined Shear Strength
Soil Samplers	
□	Undisturbed thin wall Shelby tube
◩	Standard penetration test

Notes:

1. Exploratory borings were drilled on

2. Boring locations were located using handheld GPS technology.

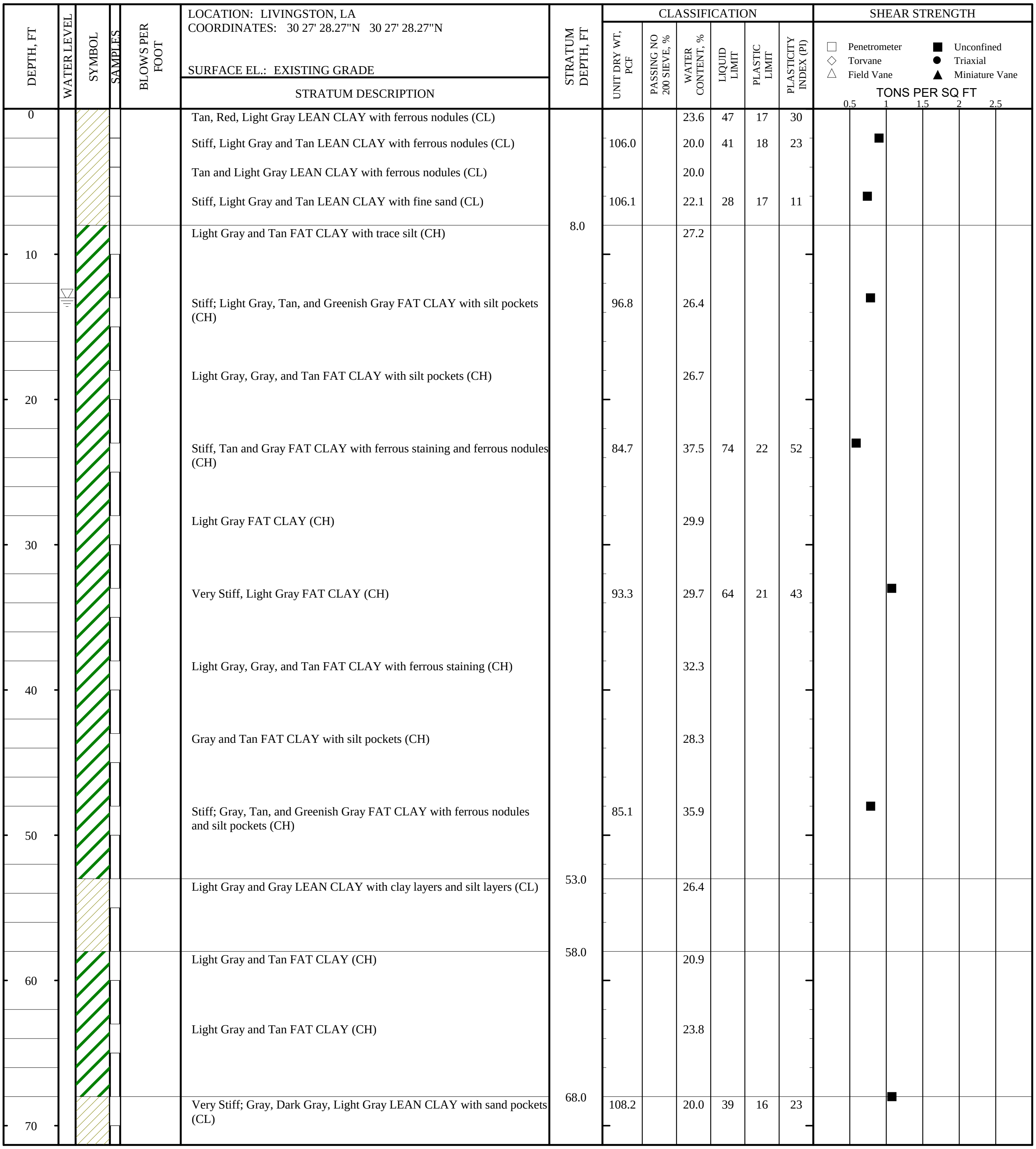
3. These logs are subject to the limitations, conclusions, and recommendations in this report.

4. Results of tests conducted on samples recovered are reported on the logs.

LOCATION: LIVINGSTON, LA
COORDINATES: 30 27' 28.27"N 30 27' 28.27"N

SURFACE EL.: EXISTING GRADE

STRATUM DESCRIPTION	STRATUM DEPTH, FT	UNIT DRY WT, PCF	PASSING NO 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)
Tan, Red, Light Gray LEAN CLAY with ferrous nodules (CL)				23.6	47	17	30
Stiff, Light Gray and Tan LEAN CLAY with ferrous nodules (CL)		106.0		20.0	41	18	23
Tan and Light Gray LEAN CLAY with ferrous nodules (CL)				20.0			
Stiff, Light Gray and Tan LEAN CLAY with fine sand (CL)		106.1		22.1	28	17	11
Light Gray and Tan FAT CLAY with trace silt (CH)	8.0			27.2			
Stiff; Light Gray, Tan, and Greenish Gray FAT CLAY with silt pockets (CH)		96.8		26.4			
Light Gray, Gray, and Tan FAT CLAY with silt pockets (CH)				26.7			
Stiff, Tan and Gray FAT CLAY with ferrous staining and ferrous nodules (CH)		84.7		37.5	74	22	52
Light Gray FAT CLAY (CH)				29.9			
Very Stiff, Light Gray FAT CLAY (CH)		93.3		29.7	64	21	43
Light Gray, Gray, and Tan FAT CLAY with ferrous staining (CH)				32.3			
Gray and Tan FAT CLAY with silt pockets (CH)				28.3			
Stiff; Gray, Tan, and Greenish Gray FAT CLAY with ferrous nodules and silt pockets (CH)		85.1		35.9			
Light Gray and Gray LEAN CLAY with clay layers and silt layers (CL)	53.0			26.4			
Light Gray and Tan FAT CLAY (CH)	58.0			20.9			
Light Gray and Tan FAT CLAY (CH)				23.8			
Very Stiff; Gray, Dark Gray, Light Gray LEAN CLAY with sand pockets (CL)	68.0	108.2		20.0	39	16	23



NOTES:

DRILLED DATE: 8/17/19
DRILLER: PREMIER GEOTECH
LOGGER: WW
TOTAL DEPTH (Ft): 100
WATER LEVEL: 13'
BACKFILL: BENTONITE CEMENT GROUT

LOG OF BORING B1
Colyell Business Park

LOCATION: LIVINGSTON, LA
COORDINATES: 30 27' 28.27"N 30 27' 28.27"N

SURFACE EL.: EXISTING GRADE

DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	STRATUM DESCRIPTION	STRATUM DEPTH, FT	UNIT DRY WT, PCF	PASSING NO 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	SHEAR STRENGTH
					Greenish Gray and Gray FAT CLAY with silt pockets (CH)	73.0			20.1				
80				N=15	Medium Dense, Light Gray SAND with clay pockets (SM)	78.0		28.1	11.8	NP	NP	NP	
				N=50+	Very Dense, Light Gray SAND with trace gravel (SP)	83.0			16.9	NP	NP	NP	
90				N=50+	Very Dense, Light Gray SAND with trace gravel (SP)				17.0	NP	NP	NP	
				N=50+	Very Dense, Tan SAND with gravel and trace clay (SP-SM)	93.0		6.3	16.8	NP	NP	NP	
				N=50+	Very Dense, Light Gray SAND (SP)	98.0			18.3	NP	NP	NP	
100					Boring Terminated at 100 Feet	100.0							
110													
120													
130													
140													

SHEAR STRENGTH

☐	Penetrometer	■	Unconfined
◇	Torvane	●	Triaxial
△	Field Vane	▲	Miniature Vane

TONS PER SQ FT
0.5 1 1.5 2 2.5

NOTES:

DRILLED DATE: 8/17/19
DRILLER: PREMIER GEOTECH
LOGGER: WW
TOTAL DEPTH (Ft): 100
WATER LEVEL: 13'
BACKFILL: BENTONITE CEMENT GROUT

LOG OF BORING B1
Colyell Business Park

LOCATION: LIVINGSTON, LA
COORDINATES: 30 27' 55.74"N 90 45' 31.19"W

SURFACE EL.: EXISTING GRADE

SHEAR STRENGTH legend:

□ Penetrometer	■ Unconfined
◇ Torvane	● Triaxial
△ Field Vane	▲ Miniature Vane

TONS PER SQ FT: 0.5 1 1.5 2 2.5

							CLASSIFICATION						SHEAR STRENGTH
DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	STRATUM DESCRIPTION	STRATUM DEPTH, FT	UNIT DRY WT, PCF	PASSING NO 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	TONS PER SQ FT
0					Light Gray, Gray, and Tan LEAN CLAY (CL)				20.1				
					Stiff, Tan and Light Gray LEAN CLAY with fine sand (CL)		104.2		20.3	42	19	23	■
					Tan and Light Gray LEAN CLAY (CL)				18.5				
5													
					Tan and Light Gray LEAN CLAY (CL)				20.2				
					Tan and Light Gray LEAN CLAY with fine sand (CL)				18.9				
10													
					Medium Dense, Light Gray and Tan SAND with clay pockets and silt (SM)	13.0	117.9		14.5	NP	NP	NP	●
15													
	▽				Tan, Light Gray, Gray, and Bluish Gray LEAN CLAY with fine sand pockets (CL)	18.0			17.2				
20					Boring Terminated at 20 Feet	20.0							
25													
30													
35													

NOTES:

DRILLED DATE: 8/8/19
DRILLER: PREMIER GEOTECH
LOGGER: WW
TOTAL DEPTH (Ft): 20
WATER LEVEL: 18'
BACKFILL: NATIVE SOIL CUTTINGS

LOG OF BORING B2
Colyell Business Park

LOCATION: LIVINGSTON, LA
COORDINATES: 30 27' 40.00"N 90 45' 47.27"W

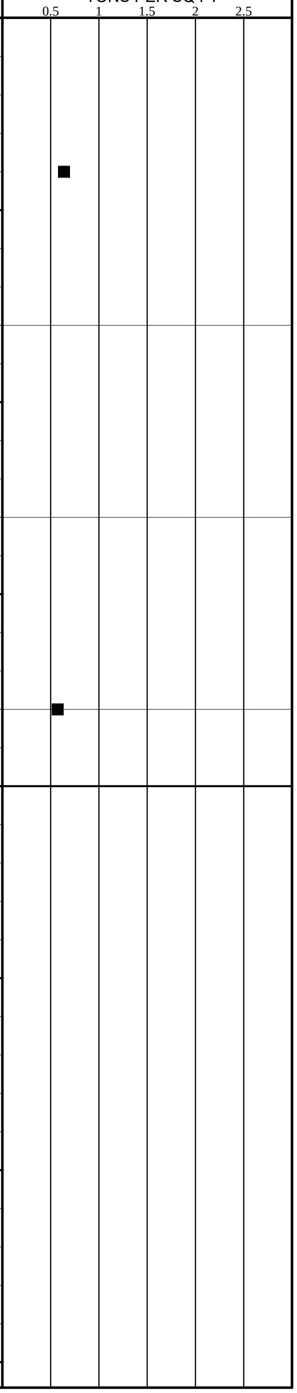
SURFACE EL.: EXISTING GRADE

DEPTH, FT	WATER LEVEL	BLOWS PER FOOT	STRATUM DESCRIPTION	STRATUM DEPTH, FT	UNIT DRY WT, PCF	PASSING NO 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)
0			Red, Tan, and Light Gray LEAN CLAY (CL)				24.6	44	23	21
			Tan and Light Gray LEAN CLAY (CL)				20.3			
5			Stiff, Tan and Light Gray LEAN CLAY with fine sand (CL)		111.9		17.3	30	21	9
	▽		Tan and Light Gray sandy LEAN CLAY (CL)				16.8			
10		N=30	Dense, Tan and Light Gray silty SAND with clay pockets (SM)	8.0			21.8			
15			Light Gray and Tan LEAN CLAY with ferrous staining and ferrous nodules (CL)	13.0			22.4			
			Stiff, Light Gray and Tan FAT CLAY with silt (CH)	18.0	93.1		29.9	60	17	43
20			Boring Terminated at 20 Feet	20.0						
25										
30										
35										

SHEAR STRENGTH

☐ Penetrometer ■ Unconfined
◇ Torvane ● Triaxial
△ Field Vane ▲ Miniature Vane

TONS PER SQ FT



NOTES:

DRILLED DATE: 8/8/19
DRILLER: PREMIER GEOTECH
LOGGER: WW
TOTAL DEPTH (Ft): 20
WATER LEVEL: 7'
BACKFILL: NATIVE SOIL CUTTINGS

LOG OF BORING B3
Colyell Business Park

PREMIER FILE# 19-0022

Premier GEOTECH AND TESTING, LLC

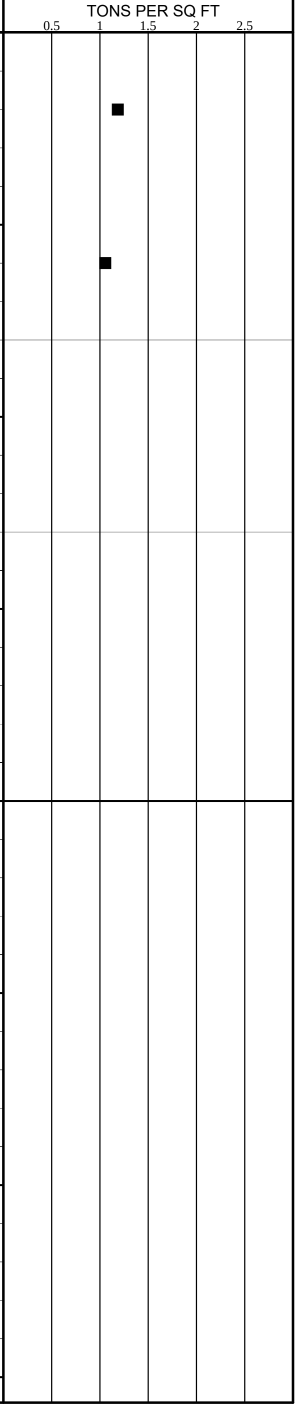
LOCATION: LIVINGSTON, LA
COORDINATES: 30 27' 12.03"N 90 45' 16.21"W

SURFACE EL.: EXISTING GRADE

DEPTH, FT	WATER LEVEL	BLOWS PER FOOT	STRATUM DESCRIPTION	STRATUM DEPTH, FT	UNIT DRY WT, PCF	PASSING NO 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	SHEAR STRENGTH
0			Tan and Light Gray LEAN CLAY (CL)				22.3				
			Very Stiff, Tan and Gray LEAN CLAY with ferrous nodules (CL)		108.7		20.5	30	17	13	■
			Tan and Light Gray LEAN CLAY with sand (CL)				18.1				
5			Very Stiff, Light Gray and TAN sandy LEAN CLAY (CL)		112.7		17.7	24	16	8	■
		N=11	Medium Dense, Tan silty SAND (SM)	8.0			21.1				
10											
			Tan and Light Gray sandy LEAN CLAY (CL)	13.0			14.1				
15											
	▽										
			Light Gray sandy LEAN CLAY (CL)				13.6				
20			Boring Terminated at 20 Feet	20.0							
25											
30											
35											

SHEAR STRENGTH

☐ Penetrometer ■ Unconfined
◇ Torvane ● Triaxial
△ Field Vane ▲ Miniature Vane



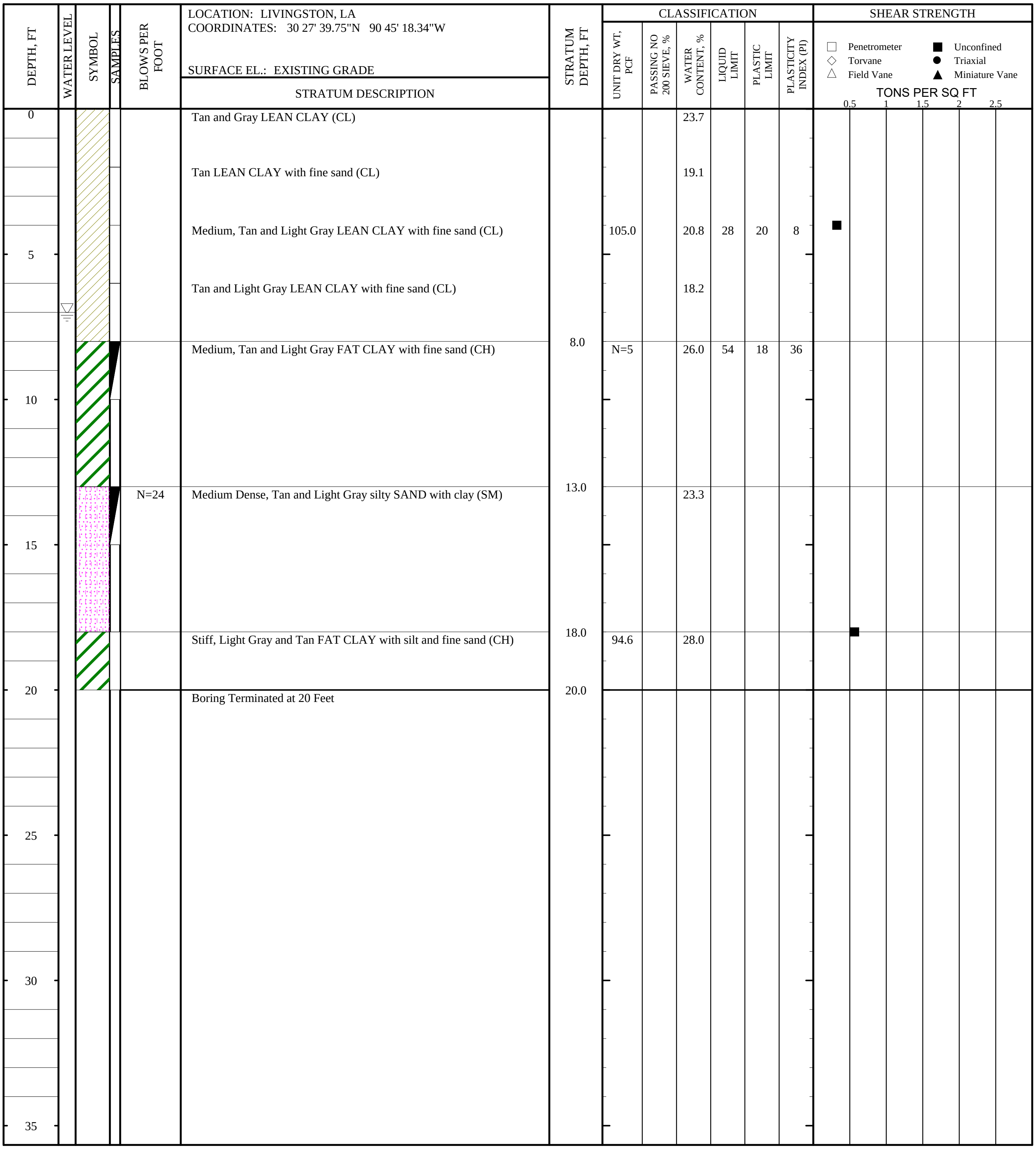
NOTES:

DRILLED DATE: 8/8/19
DRILLER: PREMIER GEOTECH
LOGGER: WW
TOTAL DEPTH (Ft): 20
WATER LEVEL: 17'
BACKFILL: NATIVE SOIL CUTTINGS

LOG OF BORING B4
Colyell Business Park

LOCATION: LIVINGSTON, LA
COORDINATES: 30 27' 39.75"N 90 45' 18.34"W

SURFACE EL.: EXISTING GRADE



BLOWS PER FOOT	STRATUM DESCRIPTION	STRATUM DEPTH, FT	UNIT DRY WT, PCF	PASSING NO 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)
	Tan and Gray LEAN CLAY (CL)				23.7			
	Tan LEAN CLAY with fine sand (CL)				19.1			
	Medium, Tan and Light Gray LEAN CLAY with fine sand (CL)		105.0		20.8	28	20	8
	Tan and Light Gray LEAN CLAY with fine sand (CL)				18.2			
	Medium, Tan and Light Gray FAT CLAY with fine sand (CH)	8.0	N=5		26.0	54	18	36
N=24	Medium Dense, Tan and Light Gray silty SAND with clay (SM)	13.0			23.3			
	Stiff, Light Gray and Tan FAT CLAY with silt and fine sand (CH)	18.0	94.6		28.0			
	Boring Terminated at 20 Feet	20.0						

NOTES:

DRILLED DATE: 8/8/19
DRILLER: PREMIER GEOTECH
LOGGER: WW
TOTAL DEPTH (Ft): 20
WATER LEVEL: 7'
BACKFILL: NATIVE SOIL CUTTINGS

LOG OF BORING B5
Colyell Business Park