COBALT
ENGINEERING AND INSPECTIONS, LLC

GEOTECHNICAL INVESTIGATION (CPT)
PREPARED FOR
ERIC GUZMAN
FLYWHEEL SPECIALTY SERVICES LLC.
REPORT: 23-0275-25
6325 MC RAY DR, BALL, LOUISIANA, 71405

Mr. Eric Guzman
601 West Baker Rd
Baytown, Texas
77521
Flywheel Specialty Services, LLC.

Reference: GEOTECHNICAL INVESTIGATION FOR THE RESIDENTIAL RECONSTRUCTION AT 6325 MC RAY DR, BALL, LOUISIANA, 71405.

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Dear Mr. Guzman:

Cobalt Engineering and Inspections, LLC. is pleased to submit the results of the geotechnical exploration study for the above-referenced project. This report briefly presents the findings of the study along with our conclusions and recommendations for the design of the foundation for the reconstruction of a new residence at 6325 Mc Ray Dr, Ball, La, 71405.

We appreciate the opportunity to serve you and look forward to working with you on other future projects.

Should you have any questions regarding this report, please do not hesitate to email us at projects@cobalt-engineering.com or call us at (409) 354-5925 at any time.

Respectfully submitted,

COBALT ENGINEERING AND INSPECTIONS, LLC.

Louisiana Registered Engineering Firm EF.0007366

STATE OF LOUISIANA
CURTIS C. HAMPTON
License No. 41509
PROFESSIONAL ENGINEER

Curtis Hampton, P.E.
Principal Engineer

06-10-2024

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1. PURPOSE AND SCOPE

The purpose of this report is to provide a geotechnical analysis of the soils present at the site so proper construction and foundation considerations can be utilized. Our scope was to conduct one CPT test to 8 feet and determine the physical characteristics of the subsurface strata. Following the completion of CPT testing, that illustrate engineering parameters such point and sleeve resistance, etc. The details of the subsurface strata at the site form the basis for our subsequent recommendations which are also included in this report.

Other services that are beyond the scope of this report, such as long-term groundwater monitoring, piezometer installation etc. may be added to our geotechnical scope at your behest.

1.1.- Site Conditions

The project site and the surrounding areas are generally flat and exhibit topographic variation of less than two feet. Currently, the project site is a vacant lot. Project site pictures were taken during our field exploration. The soil at this site was almost entirely composed of very soft to soft silts and clays. The site was dry at the time of drilling.

1.2.- Geologic Background

From our research, we have concluded that the site in question is characterized by Earth materials that are Holocene in age and native to fresh/saline marshes, alluvium, and natural levees. These materials include clays, silts, sands, and gravels. The only materials encountered in our subsurface investigation were clays and silts, with minimal sands, however.

2. APPROACH

2.1.- Subsurface Investigation

The site investigation was performed on June 10, 2024. The CPT test was performed using a Pagani TGAS rig, in accordance with the ASTM standard D5778-20 “Electronic Friction Cone and Piezocone Penetration Testing of Soils”. A summary of the results of this test are in the appendix section of this report.

Note: It is important to mention that during this study the total programmed depth could not be reached due to refusal hit found at approximately 8'.

3. SUMMARY OF FINDINGS

3.1.- Soil Characteristics

Descriptions and classifications of the various strata per their Robertson 1986 designations, and their depths and thickness are provided on the CPT sounding log included in the appendix section of this report. CPT sounding logs generated during subsurface investigation and data analysis; accurately reflect subsurface conditions at the sounding location(s). Included on the CPT sounding logs are graphs showing the point resistance (kips/ft^2) and sleeve resistance (kips/ft^2).

4. FOUNDATION RECOMMENDATIONS

4.1.- Recommendations for driven timber piles

Timber piles are suitable for permanent works if below the water table and or if kept permanently wet or dry. Timber piles have been proven to be deployed very successfully in marine environments but can be vulnerable to damage caused by certain marine organisms. Careful selection of appropriate timber species, and or pretreatment can mitigate many of these concerns. Timber piles outfitted with steel hoops on the head and steel shoes on the pile toe, can prevent damage from impact forces during driving.

- We recommend the minimum penetration of the driven piles to be at least the same depth into the surface as the structure is raised above ground for a 1 to 1 ratio. For formations with relatively stable soil, the anticipated pilling depth should be approximately 20 feet into the subsurface. For less stable strata, the anticipated pilling depth can be up to 40 feet. The final pilling size and embedment depth shall be specified by the structural engineer.
- We recommend the minimum pile spacing, center to center, of 3 times the diameter minimum pile dimension be used for driven piles.
- It is important that any pile driving operations be initiated only after completion of any earthwork or fill placement activities at the project site. No earthwork or fill activities should occur after the piles are driven.
- Piles should be driven with a hammer having a minimum energy rating proportionate to the size of the pile to be driven.

5. GENERAL RECOMMENDATIONS

5.1.- Demolition Considerations

Recommendations in this section apply to the removal of any existing foundations, utilities or pavement which may be present at this site.

Special care should be taken in the demolition and removal of existing floor slabs, foundations, utilities, and pavements to minimize disturbance of the subgrade. Excessive disturbance of the subgrade resulting from demolition activities can have serious detrimental effects on planned foundation and paving elements.

Existing foundations are typically slabs, shallow footings, or drilled piers. If slab or shallow footings are encountered, they should be completely removed. If drilled piers are encountered, they should be cut off at an elevation at least 24-inches below proposed grade beams or the final subgrade elevation, whichever is deeper. The remainder of the drilled pier should remain in place. Foundation elements to remain in place should be surveyed and superimposed on the proposed development plans to determine the potential for obstructions to the planned construction.

5.2.- Excavation and Back-filling

The grade shall fall a minimum of 6" within the first 10' away from the foundation and finished construction grading pattern shall convey water run-off away from adjacent properties.

a) Before beginning any excavation, the subsurface must be checked for potential buried structures. Provided their existence, these buried structures should be relocated in a safe way that guarantees their potential future functionality. Special care should be taken with electrical equipment, drainage systems, pipes, existing structural foundations, grounding systems etc.

b) The existing crushed stone should be removed and sorted properly to avoid excessive mixing so that these materials can potentially be reused when backfilling.

c) All backfilling material should ideally comply with the following parameters:
Liquid limit: 35
Plasticity limit: 6
Dry Density (Min) 115-125 $\text{lbs.}/ft^3$
If existing backfilling material does not comply with these parameters, other materials such as the ones excavated can be used to achieve ideal conditions.

d) Backfilling should be completed under suitable weather conditions and under proper quality control.

e) Water content is one of the most important factors for compaction. The moisture content should be as close to optimal as possible, in accordance with ASTM D-1557.

f) The compacted layers should be checked by means of a nuclear densimeter or electrical densimeter.
g) If the construction of the foun
ation is carried out during the rainy season, special construction considerations should be implemented to avoid flooding scenarios.

h) For the quality control of the concrete of the foundations, we recommend that the maximum dispersion of the valued tests is smaller than 10% of the specified concrete strength.

5.3.- Location and Topography

Location and topography strongly influence selection of the foundation. Local practices and standards are usually an excellent guide. Other variables that may restrict the utilization of these foundation types should be considered.

5.4.- Rainwater Management and Surface Drainage

The following drainage precautions should be taken during construction and maintained at all times after construction has been completed:

- The ground surface surrounding the exterior of the structures should be provided with erosion protection and sloped to drain away from the structures in all directions. We recommend a minimum slope of 6 inches for the first 10 feet.
- Roof downspouts and drains should discharge beyond the limits of the edges of the foundations and be channeled to drain immediately away from the foundations or discharged into a proper drainage system.
- Excessive wetting or drying of foundations should be avoided. Trees and other vegetation are capable of withdrawing significant amounts of moisture from the soil, should be located at a distance from the nearest foundation equal to at least the expected ultimate extent of the vegetation root system, or appropriate moisture barriers should be provided.

6. STATEMENTS AND CONSIDERATIONS

Cobalt Engineering and Inspections, LLC., has performed a geotechnical investigation and provided recommendations pertaining to the design and construction of foundations for the residential reconstruction at 6325 Mc Ray Dr, Ball, Louisiana, 71405. This report has been prepared for the exclusive use of Flywheel Specialty Services, LLC., and their authorized representatives in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event that changes are made to the nature, design, or location of the proposed project, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the findings/ recommendations of this report are modified or verified in writing. The analyses and recommendations presented in this report are based upon data obtained from 1 CPT sounding, conducted on June 10, 2024. The nature and extent of variations within the subsurface materials may not become evident until after construction is initiated. If significant variations in the subsurface materials are encountered during construction, it may be necessary to re-evaluate the recommendations provided in this report.

7. APPENDIX

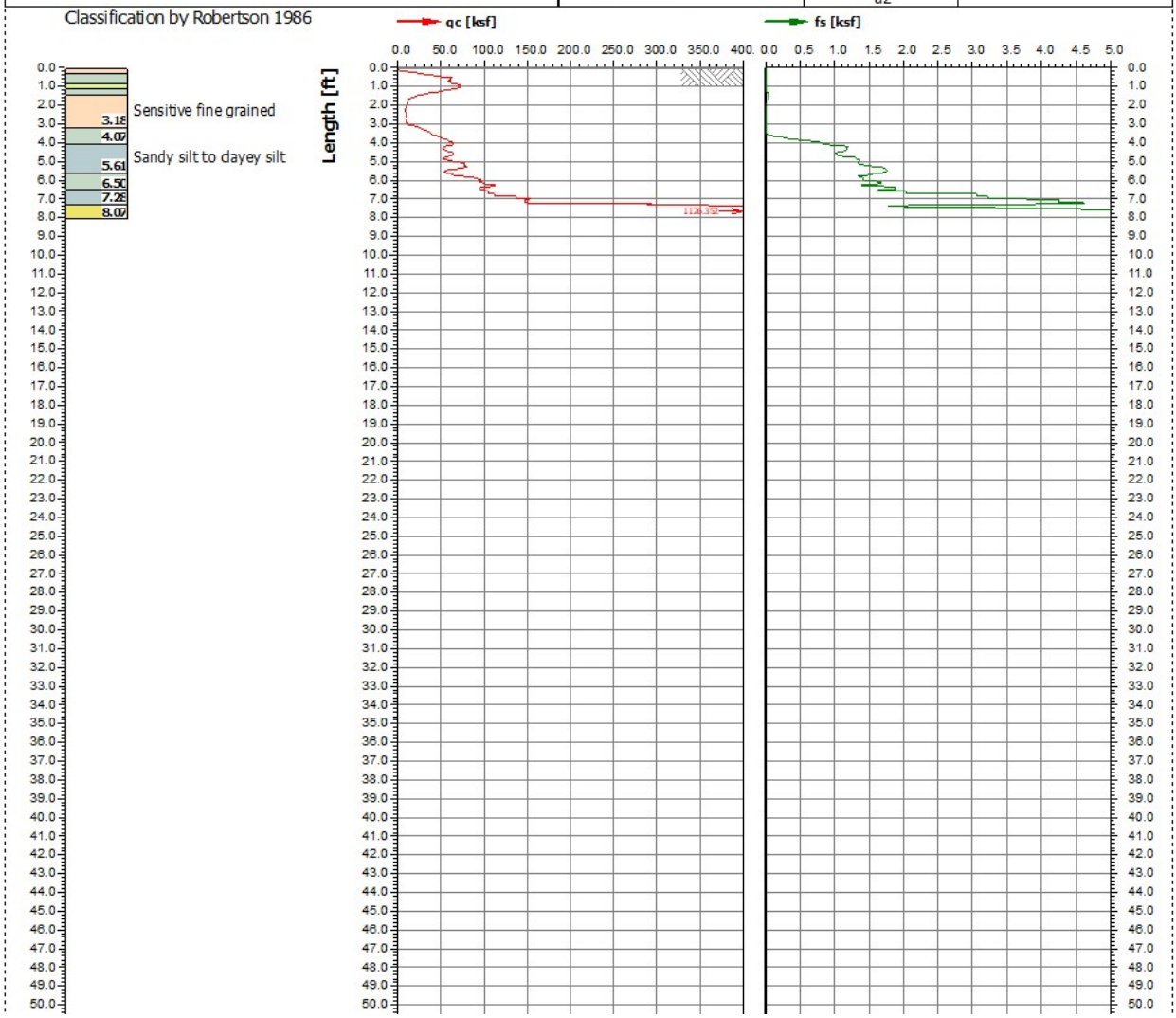
7.1.- Additional Attachments

CPT Test Location(s)

Borehole ID	Coordinates		Depth (ft)	Elev (ft)
	Longitude	Latitude		
CPT - 01	92°25'22.25"W	31°24'54.58"N	8.0	162.9

7.2.- CPT Sounding Data

Test location name	Latitude/Y coordinate	Z value	Test name	Cone serial number	Logo
	/				
Project ID: 23-0275-25	Client	Investigation start ...: 6/10/2024	Standard/ Standar...: /	Nominal surface area of...: /	
Project name: 6325 McRay Dr, Ball		Page: 1/1	Scale: 1:100	Net surface area quotie...: 0.800/0.000	
Remarks1		Coordinate system used		U: u2	



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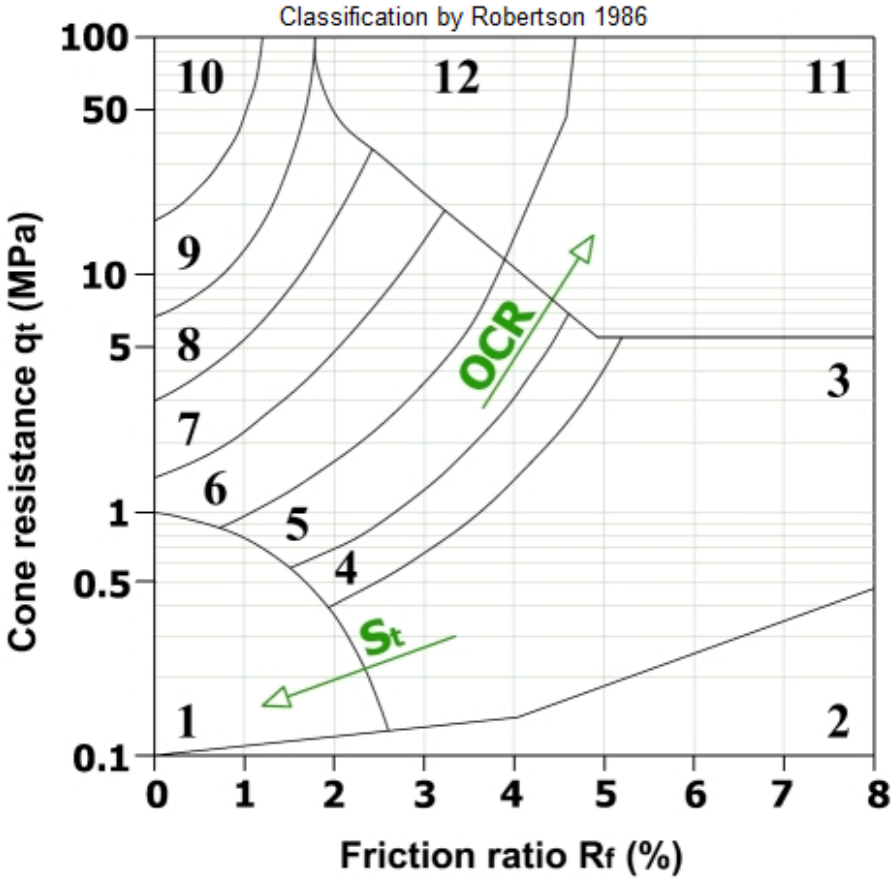

1. Sensitive fine grained
2. Organic material
3. Clay
4. Silty clay to clay
5. Clayey silt to silty clay
6. Sandy silt to clayey silt
7. Silty sand to sandy silt
8. Sand to silty sand
9. Sand
10. Gravelly sand to sand
11. Very stiff fine grained
12. Sand to clayey sand

Test name 01

Test location name