

**PEA SHELLING FACILITY
ALCORN STATE UNIVERSITY
Mound Bayou Technology & Transfer Center
Project Number: 2019-001**

Addendum No. 1

From: Vernell Barnes, Architect
1409 Watkins Street
Natchez, MS 39120
Telephone: 770.605.9829
Fax: 770.987.5208

04June2020

The following additions, changes, clarifications, and substitutions to the specifications and drawings of the original plans and specifications dated January 21, 2020, are to be included as part of the contract documents. Receipt of this addendum shall be acknowledged in the bid proposal form.

Bid Date: The bid date, time and location shall remain unchanged.

GENERAL INFORMATION:

No items

REFER TO THE SPECIFICATIONS:

ARCHITECTURAL:

Item No. 1 Division 00, Section 00 3132 – Geotechnical Data

Add: See the attached Geotechnical Investigation and Engineering Report dated August 22, 2019 as produced by W. L. Burle Engineers, P.A.

REFER TO THE DRAWINGS:

No items.

End of Addendum Number One



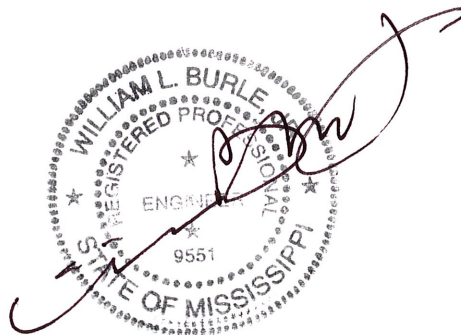
Vernell E. Barnes, AIA
Vernell Barnes, Architect



GEOTECHNICAL INVESTIGATION
AND
ENGINEERING REPORT
FOR
ALCORN STATE UNIVERSITY BUILDING PROJECT
MOUND BAYOU, MS

Submitted To:

Vernell Barnes Architect, PLLC
1409 Watkins Street
Natchez, MS 39120



August 22, 2019



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August 22, 2019

Mr. Vernell E. Barnes
Vernell Barnes Architect, PLLC
1409 Watkins Street
Natchez, MS 39120

Re: Geotechnical Investigation and Engineering Report
Alcorn State University (ASU) Building Project
Mound Bayou, Mississippi

Dear Mr. Barnes:

W. L. Burle, Engineers, P.A. has completed the authorized geotechnical investigation and engineering report for the referenced project. This report contains the results of our findings, an engineering interpretation of these with respect to the available project characteristics and recommendations to aid in the design and construction of the foundation system for the proposed project.

We appreciate having the opportunity to work with you during the site investigation phase of this project and look forward to assisting you during construction phase. If we can be of further assistance or should you have any questions regarding this report, please contact our office.

Sincerely,

W. L. BURLE, ENGINEERS, P.A.



William L. Burle, Jr., Ph.D., P.E., P.G.

WLB/lcl

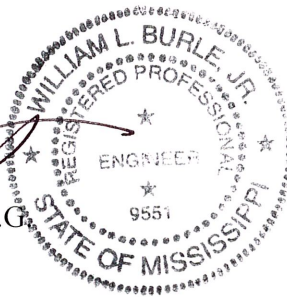


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1.0 INTRODUCTION AND PURPOSE

Vernell Barnes Architect, PLLC (CLIENT) of Natchez, MS, retained W. L. Burle, Engineers, P.A. (BURLE) to conduct a geotechnical investigation for the proposed Alcorn State University (ASU) building project at the ASU facility in Mound Bayou, MS.

The purpose of the geotechnical investigation is to:

- determine the general, on-site, sub-surface soil and groundwater conditions;
- evaluate the findings with respect to the proposed construction;
- identify potential problems which may develop during construction; and
- recommend an appropriate foundation system for the proposed project.

2.0 PROJECT CHARACTERISTICS

The project site is in Section 3, Township 23 North, Range 5 West, Mound Bayou, Bolivar County, MS. The site is located along the east side of Granges Dorsey Road and is referenced on Figure 1.

The proposed building site is located on the ASU Mound Bayou complex. The site is currently cultivated farmland. The site's topography is relatively flat with a ground elevation of ~143 feet Mean Sea Level (MSL). The site is referenced on Figure No. 2.

The proposed project will be a 12,800 square foot (s.f.) (80' x 160') pre-engineered building. The building will be a single story structure. The project is shown on Figure 2.

A shallow foundation system, consisting of both spread footings and perimeter continuous footings, is planned for the project. An engineered fill will be constructed to build the site to grade. A concrete, slab-on-grade flooring system will be constructed to support the structure.

Anticipated building loads were estimated by BURLE. Maximum column loads will be less than 50 kips. Maximum wall loads will be less than 1.5 kips per linear foot.

3.0 GEOLOGICAL SETTING

A study of the geologic survey of Mississippi indicates that this site is in the Atlantic/Gulf Coastal Plain Province. The site is specifically in the Mississippi River Alluvial Section of the province. The deposit is of Holocene age. This deposit consists of poorly drained, nearly level and gently sloping soils on natural levees and low terraces.

The alluvial deposit is essentially one stratigraphic unit consisting of an upper zone composed of fine-grained soils of silt and clay and a lower zone composed of sands and

gravels. The upper zone typically contains highly plastic clays which can exhibit volumetric change. The lower zone typically consists of stable sands and gravels composed primarily of brown chert, quartz, gneiss and diorite. The formation varies in depth throughout the Delta and is approximately 135 feet thick in the Mound Bayou area.

4.0 FIELD AND LABORATORY METHODS

Three (3) soil test borings, designated B-1 through B-3, were drilled at the proposed building site at the approximate locations shown in the appendices. The borings were drilled to depths of 15 feet below ground surface (bgs) within the immediate vicinity of the proposed building footprint. Actual boring locations used to investigate the site were selected by BURLE. The boring locations were referenced in the field by GPS.

The borings were made with a truck-mounted drill rig using the hollow-stem auger (HSA) drilling method. The Standard Penetration Test (STP) method (ASTM D-1586) was used to obtain disturbed soil samples at maximum intervals of five feet or at major changes in soil conditions. The recovered samples were visually classified (ASTM D-2487) in the field, logged and sealed in moisture proof containers.

Groundwater levels were monitored during the drilling operation. All readings were recorded on the field boring logs. The open boreholes were properly abandoned upon completion of all field activities.

Preliminary test boring logs were developed on the job site by the drill foreman. At the completion of the field program, the samples were taken to the laboratory where they were again examined and classified, in accordance with the Unified Soil Classification System (USCS), by a soils technician and/or the project engineer; the field classifications were revised where necessary. The soil descriptions, USCS symbols and SPT values (N) are referenced on the Test Boring Logs.

In addition to the field investigation, supplementary laboratory analyses were performed to aid in the soil classification and to further define the pertinent physical properties of the foundation soils. Atterberg Limits and moisture content tests were performed on selected samples. Sieve analyses were performed on selected samples to aid in determining soil classification. All laboratory testing was conducted in accordance with appropriate ASTM standards. Results of the laboratory tests are referenced on the Test Boring Logs and/or in the appendices of this report.

5.0 SUBSURFACE FINDINGS

5.1 Site Geology

Two (2) strata of soils existed to the termination depths referenced on the boring logs.

The surficial stratum was a fine-grained deposit consisting of a **clay** (CL and/or CH). The following comments describe the deposit:

1. The surficial deposit was encountered from the ground surface and extended to depths ranging from ~4.5 feet to ~10 feet bgs.
2. Field SPT N values ranged from 4 to 9; the soil's consistency ranged from soft to stiff.
3. The soil's moisture contents ranged from 9 to 28% and varied with both depth and clay content.
4. The lean clay's Liquid Limit (LL) ranged from 36 to 45 and its Plasticity Index (PI) ranged from 13 to 22 (*such soils typically exhibit a low to moderate shrink/swell potential actuated by soil moisture loss/gain. Since the clay deposit was encountered within the Active Zone (which, in the Mississippi Delta, is the sub-surface vertical zone from the ground surface to depths varying from 5 to 10 feet bgs; soils within this zone can experience seasonal changes in soil moisture content), there is a low to moderate probability that these soils will experience seasonal variations in moisture content which can translate to volumetric change (i.e. shrink/swell).*)
5. A heavy clay (CH) lense was encountered in the vicinity of boring B-3 within a vertical zone from ~4.5 feet to ~10 feet bgs. The following comments described the lense:
 - The soil's moisture content was 36%; the soil was within its plastic state.
 - The clay's LL was 68 and its PI was 37 (*such soils typically exhibit a high shrink/swell potential actuated by soil moisture loss/gain. Since the clay deposit was encountered within the lower half of the Active Zone, there is a moderate to high probability that these soils will experience seasonal variations in moisture content which can translate to volumetric changes (i.e. shrink/swell).*)
 - The field SPT N value was 5; the soil's consistency was firm.

The second stratum was a fine-grained deposit consisting of a **silt** (ML). The following comments describe the deposit:

6. The deposit was encountered beneath the surficial clay deposit in all of the borings. The deposit extended to the boring termination depths of 15 feet bgs.
7. The soil's field SPT N values ranged from 4 to 12; the deposit's consistency ranged from soft to stiff.

8. A sand (SM) lense was encountered in the vicinity of boring B-1 within a vertical zone from ~10 feet to ~15 feet bgs. The following comments described the lense:

- The soil's moisture content was 17%.
- The field SPT N value was 8; the soil's relative density was loose.

5.2 Hydrogeology

The groundwater capillary fringe was not encountered to boring depths of ~15 feet bgs. (*The surficial, unconfined aquifer in the Mound Bayou area is not typically encountered until reaching depths of ~50 feet or deeper*).

6.0 DESIGN RECOMMENDATIONS

The following recommendations are made based on the subsurface findings and the project characteristics:

6.1 Site Work

1. Clearing/Grubbing Activities:

The project site should be cleared/grubbed. The operation will remove the vegetation, and organic-laden soils located within the proposed building footprint. The depth of excavation will vary. The horizontal limits of excavation should extend 5 feet outside the exterior lines of the project footprint.

If these activities conflict with existing structures and/or other improvements that are to remain, the activities should be carried as close to these existing improvements as possible without damaging them or jeopardizing their structural integrity.

Due to the organic content of the soil, the excavated material is not believed to be suitable for use on-site and should be disposed of off-site.

A geotechnical engineer should inspect the site to determine if the site has been properly cleared/grubbed.

2. Engineered Fill Construction:

Upon completion of the clearing/grubbing activities, the cleared, sub-grade should be graded and compacted to 95% Standard Proctor Density (ASTM D-698). If unstable soil conditions (i.e. pumping) are encountered, the situation should be reviewed by a geotechnical engineer as noted in Section 6.7 of this report.

After the sub-grade has been properly prepared, an engineered fill consisting of select fill material should then be immediately constructed within the cleared/grubbed area. The fill will serve to build the site to grade. The select fill material should consist of imported, non-organic and debris-free silty clays (CL), sandy clays (CL), or silty clay (CL-ML), having a PI within the range of 5 to 25 and a LL less than 35.

The fill should be placed in 8" loose lifts and compacted to 95% Standard Proctor density at moisture contents within 3% of optimum moisture. The lifts/benches should be level. The fill should be constructed in this manner until the site is brought to grade.

Testing services, consisting of the testing of the compacted fill, should be performed. The density and moisture content of the in-place fill material should be verified by testing at a frequency of one test per 2,500 square feet per six (6) inch compacted lift. Nuclear gauge (ASTM D-2922) or sand cone methods (ASTM D-1556) are approved testing methods for density verification.

6.2 Foundation System

The proposed building can be supported by a shallow foundation system consisting of spread and/or continuous footings. The allowable **gross** soil bearing capacity is 1,700 pounds per square foot (psf). The Safety Factor is 3.0. Total settlement under this loading is anticipated to be less than 1.0 inch and differential settlement is anticipated to be less than 0.5 inches.

The following information is provided to assist in designing the foundation systems:

- Foundation Design – The foundation system should be designed by a structural engineer. Minimum footing widths are recommended even if the designs will allow for smaller footings; continuous footings should not be less than 18 inches wide and spread footings should not be less than 36 inches wide. In order to provide adequate frost protection, the base of the footings should extend to a depth of at least 18 inches below the final exterior grade.
- Seismic Information – The Site Class for this project was obtained by interpreting the results of the soil borings and estimating the appropriate soil properties below the base of the borings to a depth of 100 feet as allowed by the International Building Code (IBC 2012). Based on this approach, the site class identification for the building site is Site Class D (IBC 2012 Section by 1613).

6.3 Floor Slab

The flooring system should be a reinforced-concrete, slab-on-grade system. The floors should be supported by a prepared sub-grade. Two (2) equivalent options are offered for preparing the sub-grade.

1. Option 1 – Granular Mat

A mat of granular material (4" thick) may be placed upon the prepared engineered fill. This material should be naturally-occurring earth material, fairly well-graded with an upper particle size diameter of 1 inch. A minimum of 30% should pass the No. 10 sieve and a maximum of 5% should pass the No. 200 sieve. This material should be spread uniformly over the sub-grade and tamped or rolled to provide a firm, true surface for placing concrete. A moisture barrier should be placed over the granular material.

2. Option 2 – Engineered Fill

The engineered fill described in Section 6.1.2 of this report can serve as the sub-grade for the floor slab system. A moisture barrier should be placed over the fill prior to the construction of the floor slab/foundation system.

6.4 Drainage

Adequate drainage should be provided to minimize any increase in the moisture content of the foundation soils. The drainage from the roof systems, pavement areas and/or yard should be directed away from the foundation systems to prevent the ponding of water around the building.

6.5 Landscaping

All trees should be at least 30' from the foundation systems. This will reduce the soil moisture loss from beneath the building and thus reduce the potential for shrinkage of the foundation soils. Shrubbery may be planted closer to the building, however, the issue of soil moisture loss should be considered when choosing shrubbery type.

6.6 Excavations

All excavations should be constructed in accordance with applicable United States Department of Labor, Occupational Safety and Health Administration (OSHA) regulations/guidelines. These guidelines are found in 29 Code of Federal Regulations (CFR) 1926. These regulations are strictly enforced by OSHA and, if not adhered to by the contractor, can not only result in worker injuries and/or fatalities, but also result in substantial penalties and fines levied by OSHA.

The burden of adhering to OSHA regulations falls solely on the contractor. The contractor is responsible for not only the design of the excavations but also their construction. The contractor will assign a “responsible person” as defined in 29 CFR 1926, to evaluate such excavations as part of the contractor’s health and safety plan. In no case should the contractor subject workers to excavations which do not comply with OSHA regulations/guidelines.

6.7 Potential Construction Problems/Issues

1. Unstable Soil Conditions:

In the Mississippi Delta, the potential always exists for unstable (i.e. pumping) soil conditions to be encountered during site preparation work. Undrained, saturated soils are typically the cause. Unless otherwise noted in this report, the problem is typically:

- localized or confined to an area, such as a ditch or low-lying area that is poorly drained;
- associated with an area that is affected by the groundwater situation or localized water/sewer leaks; and/or
- associated with an area that has conveyed/held water in the past.

If normal site work activities, such as discing and aeration, cannot dry the soil to a moisture level that will allow proper compaction and stabilization, the area should be inspected by a geotechnical engineer so that a remedial plan can be developed. Such a plan typically involves either:

- over excavation of the unstable soils and construction of an engineered fill to bridge the affected area; and/or
- installation of a geogrid material/aggregate mat over the affected area.

7.0 REPORT LIMITATIONS

The recommendations provided herein were developed from the information obtained from both the site reconnaissance and the test borings which depict subsurface conditions only at the specific locations and the particular time designated on the logs. Soil conditions at other locations may differ from conditions occurring at the boring locations. The nature and extent of variations between the borings may not become evident until the course of construction. If variations are encountered, it will be necessary to re-evaluate the recommendations of this report after performing on-site observations during the excavation period and documenting the characteristics of these variations.

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted geotechnical

engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

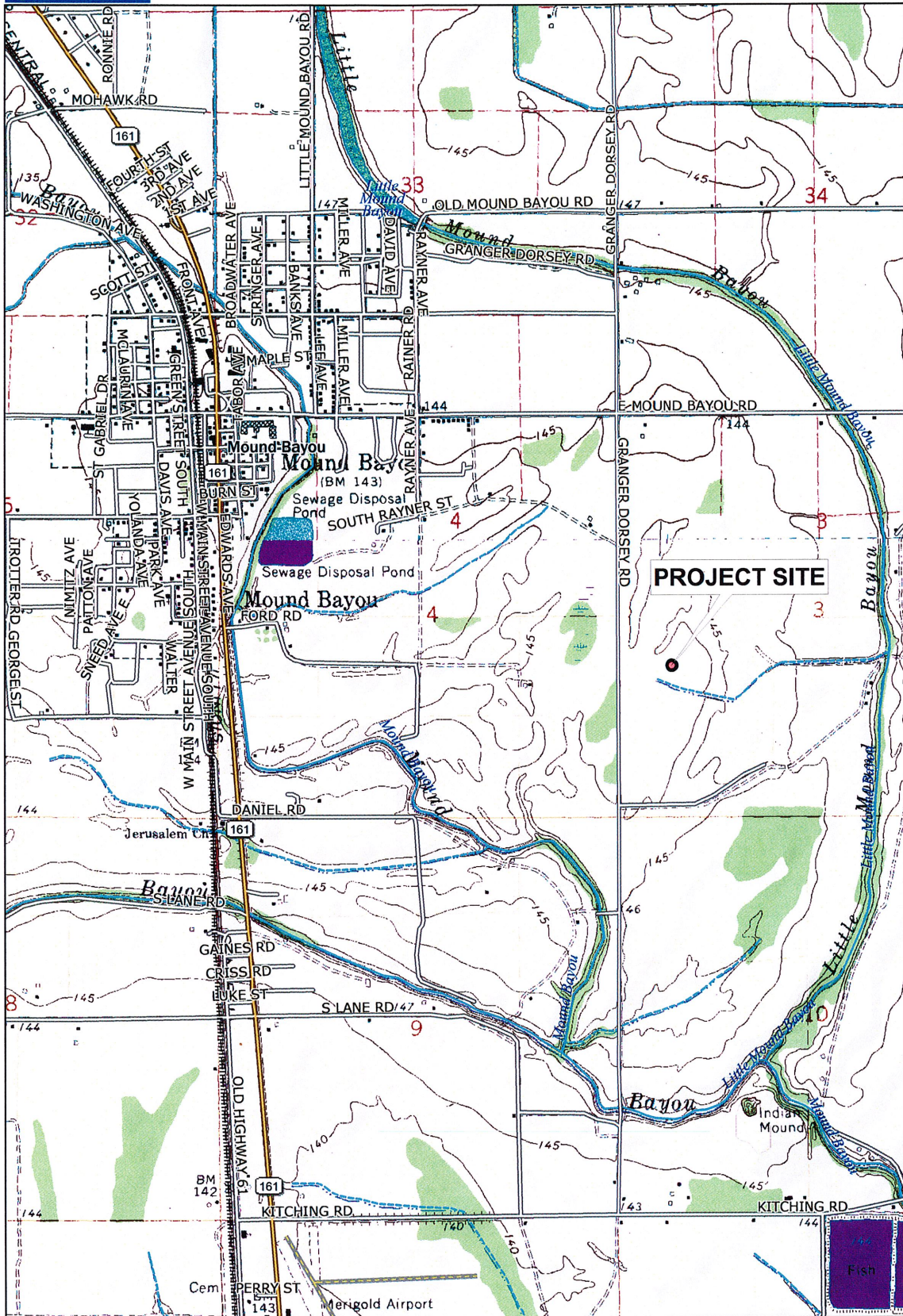
8.0 USER RELIANCE

This report was requested/authorized by CLIENT and was prepared for use by CLIENT and CLIENT's sub-consultants based on the CLIENT-approved scope of services, schedule and cost estimate. This report shall not be relied upon by and/or transferred to another party without the written consent of BURLE.

END OF REPORT

FIGURES

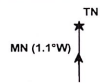
FIGURE 1
VICINITY MAP



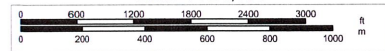
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Scale 1 : 24,000



1" = 2,000.0 ft Data Zoom 13-0



W. L. BURLE
ENGINEERS , P.A.
 111 South Walnut Street
 Greenville, MS 38701

FIGURE 1
VICINITY MAP

GEOTECHNICAL INVESTIGATION
 ASU BUILDING PROJECT
 MOUND BAYOU, MISSISSIPPI



QUADRANGLE LOCATION

Proj. No.	00534-4-0119
CAD File No.	ASU MOUND BAYOU.Dwg
Drawn By:	MJJ
Chkd. By:	WLB, Jr.
Date:	8/9/2019
Scale:	1" = 2000'
Dwg. No.	1

FIGURE 2
BORING LOCATION SITE MAP



GRANGER DORSEY ROAD

SOIL BORING	BORING LATITUDE	COORDINATES LONGITUDE
B-1	N 33°52'14.24"	W 90°42'29.34"
B-2	N 33°52'14.18"	W 90°42'27.45"
B-3	N 33°52'13.44"	W 90°42'28.41"



LEGEND:

SB-1 SOIL BORING LOCATION AND NUMBER

PROPOSED GRAVEL ROAD



W. L. BURLE
 ENGINEERS, P.A.
 111 South Walnut Street
 Greenville, MS 38701

GEOTECHNICAL INVESTIGATION
 ASU BUILDING PROJECT
 MOUND BAYOU, MISSISSIPPI

FIGURE 2
 BORING LOCATION
 SITE MAP

Proj. No. 00534-4-0119	
CAD File No. ASU MoundBayouSite.Dwg	
Drawn By: MJJ	Dwg. No.
Chkd. By: WLB, Jr.	2
Date: 8/26/2019	
Scale: NOT TO SCALE	

APPENDICES

APPENDIX A
TEST BORING RECORDS

TEST BORING RECORD

PROJECT: ASU Building Project, Mound Bayou, MS

SHEET 1 OF 1

CLIENT: Vernell Barnes Architect, PLLC, Natchez, MS





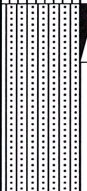



DATE: 8-16-19

BORING NO.: 1 LOCATION: See Site Map

PROJECT NO.: 00534-4-0119

ELEVATION: 143.1' MSL DRILLING METHOD: 3.25 I.D. HSA

DRILLER: G. Olivi

DEPTH (FT)	USCS	LEGEND	SAMPLE	DESCRIPTION	PID (PPM)	N Value	W	PL	LL	PI	REMARKS
0				Reddish Brown and Grey Silty Clay							
	CL					5	26	24	45	21	
						4	25	23	42	19	
						4	28	22	43	21	
5				Grey Sandy Silt							52.3% Passing #200
	ML					7	24				
10				Brown Silty Sand							35.8% Passing #200
	SM					8	17				
15				Brown Sandy Silt							68.3% Passing #200
	ML					4	25				
20											
25											
30											
35											

DEPTH TO WATER: INITIAL ∇ NE AFTER N/A HOURS ∇ N/A BORING TERMINATED AT 15 FT

TEST BORING RECORD

PROJECT: ASU Building Project, Mound Bayou, MS

SHEET 1 OF 1

CLIENT: Vernell Barnes Architect, PLLC, Natchez, MS

DATE: 8-16-19

BORING NO.: 2 LOCATION: See Site Map

PROJECT NO.: 00534-4-0119

ELEVATION: 143.3' MSL DRILLING METHOD: 3.25 I.D. HSA

DRILLER: G. Olivi

DEPTH (FT)	USCS	LEGEND	SAMPLE	DESCRIPTION	PID (PPM)	N Value	W	PL	LL	PI	REMARKS
0	CL		▲	Reddish Brown and Grey Silty Clay		6	9				
1						9	19				
2						9	23				
5	CH		▲	Reddish Brown and Grey Clay		9	16				
10											
10	ML		▲	Tan Sandy Silt		12	14				
15											
15			▲			7	14				
20											
25											
30											
35											

DEPTH TO WATER: INITIAL ∇ NE AFTER N/A HOURS ∇ N/A BORING TERMINATED AT 15 FT

TEST BORING RECORD

PROJECT: ASU Building Project, Mound Bayou, MS

SHEET 1 OF 1

CLIENT: Vernell Barnes Architect, PLLC, Natchez, MS

DATE: 8-16-19

BORING NO.: 3 LOCATION: See Site Map

PROJECT NO.: 00534-4-0119

ELEVATION: 143.1' MSL DRILLING METHOD: 3.25 I.D. HSA

DRILLER: G. Olivi

DEPTH (FT)	USCS	LEGEND	SAMPLE	DESCRIPTION	PID (PPM)	N Value	W	PL	LL	PI	REMARKS	
0	CL			Reddish Brown and Grey Silty Clay							63.3% Passing #200	
1					6	21	23	36	13			
2					5	26	25	43	18			
3					5	27	23	45	22			
4	5	36	31	68	37							
5	CH			Reddish Brown and Grey Clay								
6												
7												
8												
9	ML			Tan Sandy Silt								
10					8	14						
11												
12												
13												
14												
15											70.9% Passing #200	
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												

DEPTH TO WATER: INITIAL ∇ NE AFTER N/A HOURS ∇ N/A BORING TERMINATED AT 15 FT

KEY TO SYMBOLS

Symbol Description

Strata symbols



Low plasticity
clay



Silt



Silty sand



High plasticity
clay

Soil Samplers



Standard penetration test

Notes:

1. Exploratory borings were drilled on 8-16-19 using a 3.25-inch I.D. diameter hollow stem auger.
2. Water was not encountered at the time of drilling.
3. Boring locations were referenced by GPS.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.