McCLELLAND CONSULTING ENGINEERS, INC.
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April 8, 2024

POLK
STANLEY
WILCOX

801 South Spring Street
Little Rock, Arkansas 72201

CERTIFICATE OF AUTHORIZATION
McCLELLAND CONSULTING ENGINEERS, INC.
No. 24
ARKANSAS-ENGINEER

ATTN: Mr. Rodney Parham
Associate Principal

RE: Geotechnical Report for
English Pub Development
Little Rock, Arkansas
MCE Project Number: 24-9611

Dear Mr. Parham:

We are submitting herewith the report for the Geotechnical Report on the above-referenced project. We appreciate the opportunity to provide this service to you. If there are any questions regarding the Geotechnical Investigation, please contact us.

Sincerely yours,

McCLELLAND CONSULTING ENGINEERS, INC.
DESIGNED TO SERVE

STATE OF ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
No. 16434
STEVEN J. HEAD

04/08/2024

Steven J. Head, PE
Principal | Geotechnical Department Head

Anna Claire Vocque, EI
Project Designer

Enclosure: Geotechnical Report

McCLELLAND CONSULTING ENGINEERS, INC.
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7302 Kanis Road
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GEOTECHNICAL REPORT

English Pub Development
Little Rock, Arkansas

Project No. 24-9611

Prepared For:

POLK
STANLEY
WILCOX

Mr. Rodney Parham
801 South Spring Street
Little Rock, Arkansas 72201

GEOTECHNICAL REPORT

English Pub Development

MCE Project Number: 24-9611

Little Rock, Arkansas

FOR

POLK
STANLEY
WILCOX

801 South Spring Street
Little Rock, Arkansas 72201

Executive Summary

This is a report of the findings of the Geotechnical Investigation for the English Pub Development project located in Little Rock, Arkansas. This report includes detailed information on subsurface conditions and existing surface materials in addition to providing recommendations for site preparation, grading, structure foundations, and site development. The significant findings listed below should not be used separately from the further discussion provided in the body of this report.

- This Geotechnical Investigation consisted of a total of six (6) project borings.
- Groundwater was not encountered by any of the six (6) project borings.
- Materials resulting in auger refusal were encountered by four (4) project borings (B-01 through B-04) at depths ranging from approximately 4.7 to 11.6 feet below the existing surface elevations.
- The proposed restaurant is anticipated to be a two-story building with a below-grade basement. The main floor is understood to have a footprint of approximately 3,460 square feet (sf).
- Finalized structural loading conditions are not available at this time but are expected not to exceed 100 kips per square foot (ksf) for column loads and two (2) kips per linear foot (klf) for wall loads.
- The Contractor should be aware that the site was previously developed. MCE recommends that the Contractor anticipate between two (2) and three (3) feet of uncontrolled fill being present across the site. These materials were encountered by four (4) of the six (6) conducted borings.
- Should any remnants of the previous development, including foundations, abandoned utility lines, construction debris, or pavements be encountered during construction, these materials should be removed full-depth from the project site.
- Materials that result in auger refusal that would present difficulties with excavation are anticipated to be encountered at relatively shallow depths during construction; particularly near boring location B-03.
- Based on the provided information, current project scope, and encountered subgrade materials, it is recommended that a shallow foundation system composed of continuous and individual (spread) footings will be suitable for the support of the proposed structure foundations.
- It is recommended that a minimum of one (1) foot of select fill material is properly placed beneath the slab dimensions to provide adequate subgrade support and stable under-slab dimensions.
- Any material to be used as a select fill on the project should be reviewed and approved by the Geotechnical Engineer. The compaction requirements for the project are provided in the table below.

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Tables

Appendices.

1.0 Introduction

McClelland Consulting Engineers, Inc. (MCE) conducted a Geotechnical Investigation for the planned English Pub Development project located in Little Rock, Arkansas. The investigation was requested and authorized by Mr. Rodney Parham with Polk Stanley Wilcox Architects, to explore the subsurface soil conditions within the planned project area and provide recommendations for site preparation, grading, structure foundations, site development, and construction considerations.

2.0 Existing Site Description

The project site is located at 5701 Kavanaugh Boulevard in Little Rock, Arkansas. This is Pulaski County Parcel No. 33L0370002600. This lot constitutes the southwest quadrant of the intersection of Kavanaugh Boulevard and North Fillmore Street. The site has been a vacant lot since the demolition of a previous commercial development in 2019. On-site vegetation at the time of this investigation was observed to consist of some low to medium-cut grass. Topographically, the site exhibits a general downward slope from north to south and west to east, with maximum grade differentials on the order of 14 feet from north to south and three (3) feet from west to east.

3.0 Project Scope

It is understood that the project scope includes the development of a two-story restaurant with a below-grade basement. The main floor is understood to have a footprint of approximately 3,460 square feet (sf), and the second story is understood to have an approximate footprint of 3,010 sf. The basement is anticipated to lie at the southern end of the building. The structure is expected to be constructed of either conventional timber or steel framing. Finalized structural loading conditions are not available at this time but are expected not to exceed 100 kips per square foot (ksf) for column loads and two (2) kips per linear foot (klf) for wall loads.

Pavement improvement areas are anticipated to consist of drive lanes, parking areas, a dumpster pad, and pedestrian walkways. The pavements are anticipated to be subjected to regular loading of light passenger vehicles and occasional loading of heavy trucks. Rigid concrete and flexible asphalt pavements are anticipated to be utilized in the design.

4.0 Field Investigation

Based on the understood project scope and through coordination with the Client, MCE conducted a Geotechnical Investigation consisting of six (6) project borings. Table 1 below provides details pertaining to the locations of the project borings, their planned target depths, and shows how the borings relate to the planned project scope features. A Boring Layout is provided in Appendix A on Plate 1.

Table 1: Project Boring Locations and Planned Target Depths

Project Boring ID	Planned Development Feature	Planned Target Depths (feet)
B-01	Building Footprint / Elevator Shaft	30.0
B-02	Building Footprint	20.0
B-03	Building Footprint	20.0
B-04	Building Footprint	20.0
B-05	Building Footprint	6.5
B-06	Parking Lot	6.5

Boring B-05 was terminated at a depth of 6.5 feet within the building footprint after encountering sufficient subgrade information represented by the highly weathered sandstone formation which resulted in auger refusal in borings B-01, B-02, and B-03.

4.1 Project Borings

All project borings were conducted using a GeoProbe 7822DT track-mounted drill rig, utilizing 2.25-inch diameter hollow stem augers. Soil samples were obtained at the depths indicated on the boring logs with the use of a two (2) inch

diameter split-spoon sampler. The split-spoon sampler was driven by blows from a 140-pound automatic hammer dropped from a fixed height of 30 inches.

The number of blows required to drive the split-spoon sampler the final 12 inches of an 18-inch drive, or portion thereof, is referred to as the Standard Penetration value, N, and is recorded on the boring logs in units of blows-per-foot. Final drilled depths are shown as the depths achieved by the split-spoon sampler. In addition to Standard Penetration Testing (SPT), the field tests performed included visual soil classifications and groundwater observations.

The visual soil classifications are given on the boring logs, which can be referenced in Appendix B on Plates 2 through 7; a key to the terms and symbols on the boring logs is provided on Plate 8. Table 2 below provides details of the project borings.

Table 2: Field Investigation Details – Project Borings

Project Boring ID	Existing Surface Elevations (feet)	Existing Surface Material	Surface Material Thickness (in)	Auger Refusal Depth (feet)	Total Depth Drilled/Sampled (feet)	End of Boring Elevation (feet)
B-01	578.12	Topsoil	2.0	11.6	11.6	566.52
B-02	575.56	Gravel	2.0	4.7	4.7	570.86
B-03	577.67	Topsoil	2.0	6.8	6.8	570.87
B-04	577.76	Topsoil	3.0	6.1	6.1	571.66
B-05	578.22	Topsoil	3.0	-	6.5	571.72
B-06	574.01	N/A*	-	-	5.5	568.51

NOTES: Surface Elevations shown in Table 2 are rounded to the nearest 0.01 foot and are based on MCE Survey (February, 2024).
Reported thicknesses of the surface materials are rounded to the nearest one (1) inch.
*Stratum I Surface materials were not encountered at this location. Encountered materials began with Stratum II.

4.2 Encountered Groundwater Conditions

Groundwater was not encountered by any of the project borings. Any groundwater or perched water, if encountered during construction, must be removed prior to the placement of fill or construction materials. To help reduce the potential for issues related to perched groundwater, it is recommended that earthwork operations take place during historically drier portions of the calendar year (June through September). Earthwork operations conducted outside of this recommended timeframe should expect general dewatering measures to be required to maintain a desirable construction schedule.

4.3 Encountered Auger Refusal Materials

Auger refusal is generally defined as the point at which a boring encounters material in which it can no longer be advanced with traditional auger drilling techniques. Refusal is somewhat subjective and is dependent on the type of drilling equipment used and the down pressures exerted by the drill rig.

At the time of this investigation, materials resulting in auger refusal were encountered by four (4) project borings (B-01 through B-04) at depths ranging from approximately 4.7 to 11.6 feet below the existing surface elevations. Based on the encountered overburden materials, and the mapped local geology, these refusal materials are anticipated to consist of sandstone. Materials that result in auger refusal that would present difficulties with excavation are anticipated to be encountered during construction; particularly at relatively shallow depths near boring B-03.

More information pertaining to the local geology and how it affects the project site can be found in the *Local Geology of the Project Site* section of this report (Section 7.0).

5.0 Laboratory Analysis

Laboratory tests were performed on soil samples recovered from the borings. The laboratory tests were conducted to determine the engineering properties of the project soil strata. The tests performed on samples from the borings included moisture content, Atterberg Limits, and sieve analyses. Results of laboratory testing for the project borings are provided

on the boring logs and on the Laboratory Testing Results in Appendix C. Table 3 below shows the relevant test method specifications utilized on the project.

Table 3: Laboratory Test Method Specifications

Test Designation	Test Method
ASTM D2488	Standard Practice for Description and Identification of Soils (Visual)
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purpose (USCS)
ASTM D2216	Standard Test Method for Lab Determination of Water Content of Soil
ASTM D6913	Standard Test Method for Particle-Size Distribution of Soils Using Sieve Analysis
ASTM D4318	Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

6.0 On-Site Soil Conditions

The following project sections provide information regarding on-site conditions at the project location. This information includes descriptions of the existing soil types, imagery showing the approximate location of the existing soil types, and details about the local geology.

6.1 United States Department of Agriculture (USDA) Soil Types and Map

The following soil type exists in the project area according to current USDA soil maps, with the description from the Natural Resources Conservation Service (NRCS). The project site is located in Pulaski County in central Arkansas. The soil type that exists in the project area according to current USDA soil maps is briefly detailed in Table 4 below.

Table 4: USDA Local Soil Types

USDA Soil Type	USDA Symbol	USDA Descriptions
Urban Land	Ut	The Urban soils refer to soils in areas with a high population density in a highly developed environment. These soils can be significantly altered due to import (select fill material) or be intact native soils. These soils exhibit a wide variety of conditions and properties. They may be occupied by impervious surfaces such as pavements and buildings.

Figure 1 on the following page provides imagery of the approximate site location and how it relates to the existing soil types.

Figure 1: USDA Soil Survey Report
The image was produced by the United States Department of Agriculture.
The orange outline is the approximate project extent.

7.0 Local Geology of the Project Site

According to maps and literature published by the Arkansas Geological Commission (AGC), the project site is underlain by the Pennsylvanian-Aged (323.2 million years ago to 298.9 million years ago) Jackfork Deposits.

A brief description from the Stratigraphic Summary of Arkansas – Information Circular 36 (IC-36) of the local geologic formation is provided below and on the following page.

7.1 Jackfork Deposits (Pj)

The Jackfork deposits indicated by this notation are formations consisting of shale, siltstone, dimension stone, building stone, and sandstone. Conglomerates of quartz, chert and metaquartzite occur in this formation. The Jackfork formation developed during the rapid influx of clastic sediments followed by deformation. This deformation included folding, faulting and low-grade metamorphism. This time period is also when the Ouachita Mountains formed. Some invertebrate and plant fossils have been discovered in this formation. The thickness varies between 3,500 feet and 6,000 feet.

Figure 2 on the following page relates the approximate project location to the underlying geologic formation.

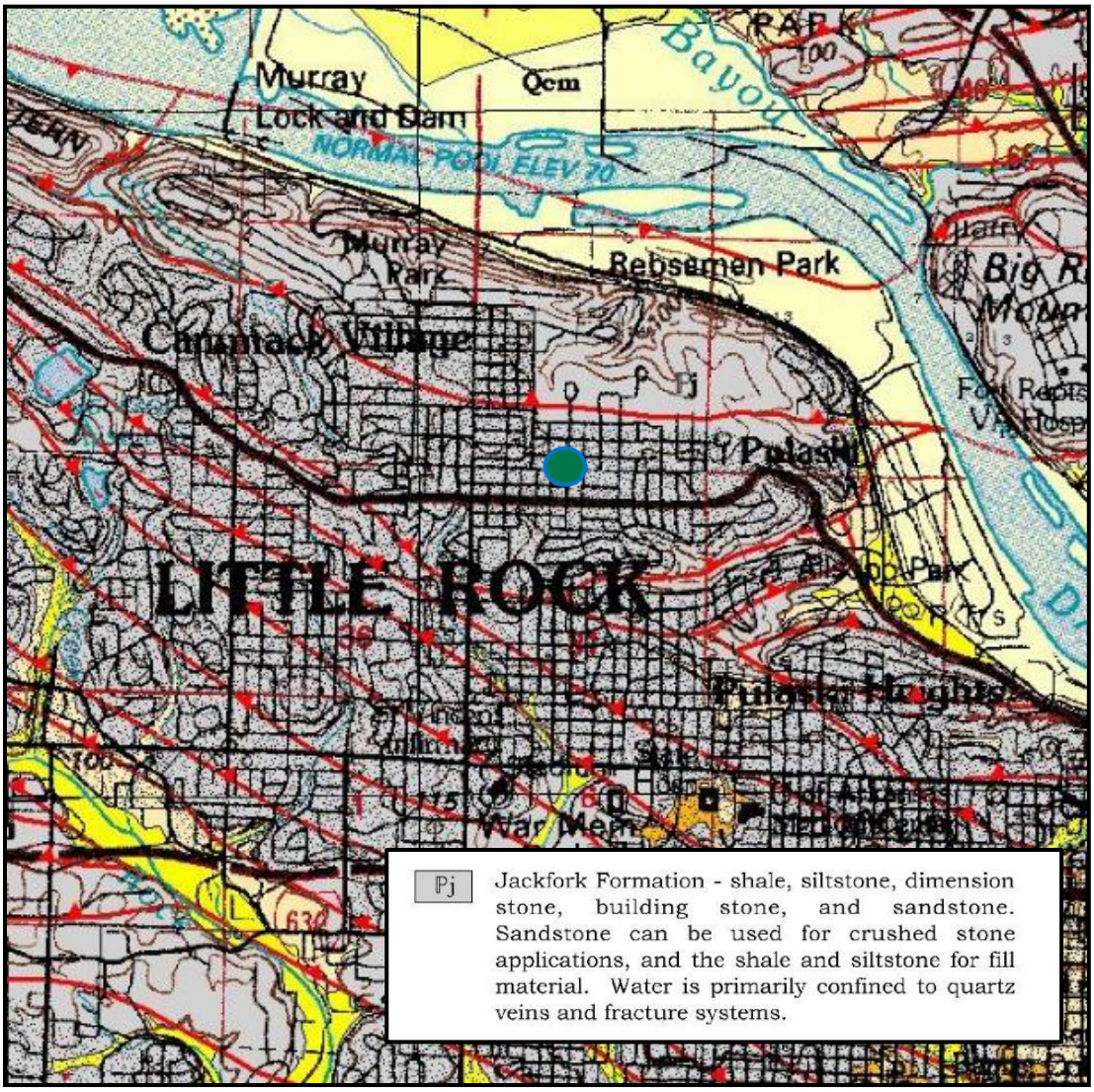

Figure 2: Image from the Geologic Map of Arkansas
The green dot represents the approximate location of the project site.

8.0 Seismic Site Classification

The project site is recommended to be assigned as a Risk Category II according to Table 1604.5 of the 2021 International Building Code (IBC). The site seismic classification determination may utilize spectral response accelerations S_{DS} and S_{D1} of 0.320 and 0.177 respectively, with reference to IBC Section 1613 and current Applied Technology Council (ATC) information based on Site Class C for the profile within the project area.

9.0 On-Site Soil Stratum Summary

This summary is based on a collection of field notes and field-testing values recorded during the on-site investigation, notes recorded during the laboratory analysis, and results from the laboratory testing. The encountered subsurface soil conditions are summarized below and on the following page.

9.1 Stratum I – Surface Materials

The materials that make up Stratum I consist of topsoil and gravel materials with thicknesses ranging from approximately two (2) to three (3) inches. It should be noted that project boring B-06 was conducted with Stratum II fine-grained materials encountered at the surface. The measured thicknesses are only valid for the project boring locations and could fluctuate in the unexplored portions of the project site.

9.2 Stratum II – Shallow Subgrade Materials

The materials that make up Stratum II consist of Sandy Lean Clay with Gravel (CL), Sandy Lean Clay (CL), Fat Clay with Sand (CH), and Silty Gravel with Sand (GM). These materials were encountered in colors ranging from reddish-brown to dark and contained varying amounts of sands, clays, silts, and gravels.

Consistency values for the Stratum II CL materials ranged from very soft to very stiff, with corresponding N-values ranging from two (2) to 20. The natural soil moisture content for these materials ranged from 8.1 to 18.0 percent. The Liquid Limit (LL) of these materials ranged from 29 to 32, with Plasticity Index (PI) values ranging from 14 to 15. The fine fraction of these materials exhibited low plasticity characteristics. The fine fraction of these materials makes up between 55.9 and 62.6 percent of the overall soil mass, as indicated by the results of gradation analysis from the borings.

Consistency values for the Stratum II CH materials were stiff, with a corresponding N-value of 11. The natural soil moisture content for these materials was 24.0 percent. The LL of these materials was 56, with a PI value of 28. The fine fraction of these materials exhibited moderate plasticity characteristics. The fine fraction of these materials makes up approximately 73.3 percent of the overall soil mass, as indicated by the results of gradation analysis from the borings.

Consistency values for the Stratum II GM materials were stiff, with corresponding N-values of 36. The natural soil moisture content for these materials was 1.8 to 5.2 percent. The fine fraction of these materials exhibited negligible plasticity characteristics.

Figure 3: (Left) Stratum II CH material from B-06 approximately 2.0 feet below the existing surface elevation.
Figure 4: (Right) Stratum II CL material from B-05 approximately 0.3 feet below the existing surface elevation.

9.3 Stratum III – Highly Weathered Sandstone Materials

The materials that make up Stratum III consist of Highly Weathered Sandstone (CL, SM, GC, and GM), Weathered Sandstone (SM, GC, & GM). These materials were encountered in colors ranging from white to dark reddish-brown and contained varying amounts of sands and silts.

Consistency values for the Stratum III Highly Weathered Sandstone materials ranged from soft to hard, with corresponding N-values ranging from 15 to greater than 50. The natural soil moisture content for these materials ranged 1.1 to 21.6 percent. The LL of these materials ranged from 37 to 49, with PI values between 16 and 25. A large portion of the Stratum III materials had negligible plasticity characteristics as well. The fine fraction of these materials makes up between 27 and 56 percent of the overall soil mass, as indicated by the results of gradation analysis from the borings.

Figure 5: (Left) Stratum III SM material from B-04 approximately 3.5 feet below the existing surface elevation.
Figure 6: (Right) Stratum III CL material from B-03 approximately 3.5 feet below the existing surface elevation.

Figure 7: (Left) Stratum III GC material from B-01 approximately 8.5 feet below the existing surface elevation.
Figure 8: (Right) Stratum III GM material from B-02 approximately 2.0 feet below ethe existing surface elevation.

10.0 Engineer's Analysis and Recommendations

At the time of preparing this report, it is understood that the project scope includes the development of a two-story restaurant with a below-grade basement. The main floor is understood to have a footprint of approximately 3,460 sf, while the second story is understood to have an approximate footprint of 3,010 sf. Each of these levels is planned to be utilized for dining, bar space, kitchen space, and restrooms; the main floor is also planned to have staff offices and an outdoor courtyard space. The basement level is anticipated to lie at the southern end of the building and is planned to be utilized for dry storage and cooler/keg storage.

The structure is expected to be constructed of either conventional timber or steel framing. Finalized structural loading conditions are not available at this time but are expected not to exceed 100 ksf for column loads and two (2) kips per linear foot for wall loads.

In addition, pavement improvements consisting of access drives, a dumpster pad, parking areas, and pedestrian walkways are anticipated to be constructed under the project scope. It is anticipated that both flexible asphalt and rigid concrete pavement materials will be utilized.

This investigation was intended to provide the Client with geotechnical recommendations relating to the encountered subgrade conditions and the suitability of the site regarding the planned restaurant facility and associated civil site features.

10.1 Initial Site Preparation

As mentioned in *Section 9.1*, surface materials within the project borings consisted of topsoil and gravel materials with measured thicknesses ranging from two (2) to three (3) inches across a majority of the project site. As noted previously, Stratum II fine-grained materials were encountered at the surface of project boring B-06. These thicknesses are only valid for the project boring locations and could fluctuate in the unexplored portions of the project site. Due to the site being previously developed, uncontrolled fill material and construction debris were encountered to depths between two (2) and three (3) feet below existing surface elevations across the site by four (4) of the six (6) conducted borings. These materials, where encountered, exhibited low N-values and are unstable/unsuitable to remain beneath the new development dimensions.

MCE recommends that the Contractor anticipates a minimum of six (6) inches of initial stripping with the project development areas in order to remove the surface materials full-depth. In addition, the Contractor should be aware that the site was previously developed and should carry an allowance sufficient to remove an average of two (2) feet of material across the site, wherever uncontrolled fill/construction debris is present . Should any remnants of the previous development, including foundations, abandoned utility lines, or pavements be encountered during construction, these materials should be removed full-depth from the project site.

10.2 Site Grading Considerations

Based on the provided finalized site and grading documents, it is expected that the Finished Floor Elevation (FFE) will be 578.77 feet. The planned underlying basement is anticipated to have a ceiling height of 12 feet. Therefore, the anticipated elevation of the basement finished floor is 566.27 feet (assuming a six (6) inch floor). Boring B-01 was conducted within the anticipated footprint of the basement (and elevator shaft), while the remainder of the structure borings (B-02 through B-05) were conducted within the planned at-grade portion of the structure.

Table 5 on the following page provides anticipated depths to stable subgrade materials within the understood structure footprint, in relation to the FFE. The recommendations contained herein are based on an estimated six (6) inch slab thickness, and foundations bearing two (2) feet below the planned finished exterior grades, which is adequate to protect against frost heave in the project area, for a total depth of 2.5 feet below FFE.

Table 5: Anticipated Depth to Stable Subgrade Materials

Project Boring ID	Existing Surface Elevations (feet)	Planned Finished Floor Elevation (feet)	Approx. Planned Foundation Bearing Elevation (feet)	Anticipated Depth to Stable Subgrade Materials Below Existing Elev. (feet)	Approx. Elevation of Anticipated Stable Subgrade Materials (feet)
B-01	578.12	566.27	563.77	3.5	574.62
B-02	575.56	578.77	576.27	2.0	573.56
B-03	577.67	578.77	576.27	2.0	575.67
B-04	577.76	578.77	576.27	2.0	575.76
B-05	578.22	578.77	576.27	5.0	573.22

NOTES: Surface Elevations shown in Table 5 are rounded to the nearest 0.01 foot and are based on the McClelland Consulting Engineers, Inc. Topographic Survey.

The provided depths and elevations to the anticipated stable subgrade materials factor in the anticipated depth of foundation elements within the structure footprint and provide the anticipated depth of stable subgrade conditions below these features. The anticipations contained herein are based on the site conditions encountered at the time of this investigation and may vary at the time of construction. Additional recommendations pertaining to the structure foundations are provided in *Sections 10.5 through 10.8.*

Within the planned pavement area (project boring B-06), subgrade materials suitable for the placement of select fill materials were generally encountered at the surface of the boring location. However, high plasticity clay (CH) materials were encountered at a depth of two (2) feet below the existing surface elevation. Should these materials be encountered during construction, additional undercut of up to 3.5 feet below the existing surface elevation may be required to fully remove these materials.

Excavated slopes during construction should be benched or sloped to provide a minimum two-to-one horizontal-to-vertical (2H:1V) ratio. Construction slopes steeper than recommended may be unstable, particularly when introduced to moisture increases during precipitation events.

Any excavation efforts that require deep vertical trenching (deeper than five (5) feet), and if the minimum 2H:1V ratio is not achievable, then the Contractor must establish a comprehensive Shoring Plan. That Shoring Plan should be reviewed and stamped by a licensed Professional Engineer (PE) prior to excavation.

10.3 Rock Excavation Potential

As mentioned in *Section 4.3,* materials resulting in auger refusal were encountered in four (4) of the project borings, B-01 through B-04, at depths ranging from approximately 4.6 to 11.6 feet below the existing surface elevations, at elevations as shallow as 570.87 feet.

Based on the encountered depth of these refusal materials, it is anticipated that these materials will likely be encountered during the excavation of the planned restaurant basement. It is recommended that the Contractor budget for the use of rock-removal equipment, such as hammer-hoe attachments, as the sandstone materials associated with the local geologic formation are known to present difficult excavation conditions.

10.4 Subgrade Verification

Following stripping and initial grading, the subgrade within the structure and pavement improvement dimensions should be initially evaluated by the Geotechnical Engineer or his/her representative. All subgrade materials should be proof-rolled with a tandem-axle fully-loaded dump truck weighing approximately 60,000 pounds, or equivalent construction equipment. The proof-rolling should be observed by the Geotechnical Engineer or his/her representative to verify and document stable subgrade conditions. Alternate means of subgrade verification may be conducted should proof-rolling not be feasible within undercut or excavation dimensions. The implemented means of verification should be under the direction of the Geotechnical Engineer.

Any soft and/or yielding subgrade areas encountered should be repaired by undercutting and backfilling with select fill material. These materials should then be subsequently evaluated by the Geotechnical Engineer or his/her representative for approval.

It is highly recommended that the subgrade dimensions for project pavements and the structure footprint are evaluated immediately following initial site stripping and grading to reduce unnecessary undercut.

10.5 General Foundation Recommendations

Any foundations relevant to the planned project elements should be sized to meet the following three (3) conditions. The maximum stresses imposed by the foundation shall not exceed the allowable bearing pressures of the bearing strata. Foundations should be designed to limit the maximum anticipated total and differential settlement to magnitudes that will neither damage nor impair the use of the structures. The foundation systems must be designed to resist the anticipated lateral or overturning forces during the most critical loading conditions, including earthquake loadings. These factors, as well as construction considerations related to the existing soil and ground conditions, were influential in the preparation of the recommendations presented hereinafter.

10.6 Structure Shallow Foundations

Based on the provided information, current project scope, and encountered subsurface materials, it is recommended that a shallow foundation system composed of continuous and/or individual (spread) footings will be suitable for the support of the planned English Pub structure, both at-grade and within the basement level. As previously mentioned, the FFE for the at-grade level of the structure is planned to be 578.77 feet and the anticipated elevation of the basement finished floor is 566.27 feet.

The shallow foundations should either bear directly on suitable in-situ Stratum III materials or on newly-placed, properly-compacted, and moisture-conditioned select fill material meeting the criteria outlined in the *Select Fill Material* section of this report. Stable subgrade conditions should be exposed prior to placing any select fill or footing elements. **Foundation elements should not bear on a combination of both select fill and native materials as this may induce differential settlement beyond the values anticipated within this report.**

In this case, “stable” subgrade conditions within the planned footprint consist of Stratum III Highly Weathered and Weathered Sandstone materials, generally encountered between two (2) and 3.5 feet below the existing surface elevations across the site. The anticipated site grading and depth to stable subgrade materials for the structure is briefly detailed in Table 5 in *Section 10.2.*

It is recommended that the Contractor budget for the placement of a minimum of one (1) foot of imported select fill material below the foundation elements, spanning the entire extent of the building pad dimensions. Based on the currently understood project scope and the materials encountered during this investigation, it is anticipated that this is a conservative recommendation, intended to provide sufficient budget allowances. Further, it is likely that the entire building pad will require fill operations, following removal of uncontrolled fill material/construction debris across the site.

Footings bearing on stable in-situ materials or on newly placed, properly compacted, and moisture-conditioned select fill material can utilize safe allowable bearing pressures of 2,200 pounds per square foot (psf) for continuous foundations and 2,500 psf for spread or individual foundations. The allowable bearing pressures provide a minimum factor of safety of three (3) and were calculated using a minimum footing width of two (2) feet, a minimum footing thickness of one (1) foot, and a minimum footing depth of two (2) feet below exterior ground elevations, which is adequate to protect against frost heave in the project area.

The total long-term foundation settlement for footings bearing on properly placed select fill material with the assumed dimensions and loading is anticipated to be approximately ¾-inch. The maximum differential settlement between footings is anticipated to be on the order of ½-inch between individual footings or along a 40-foot span for continuous footings.

10.7 Structure Slab-on-Grade

Slab-on-grade construction may be utilized for the planned English Pub development, provided a minimum four (4) inch cushion of sand, crushed stone, or gravel is placed below the slab areas with a vapor barrier directly below the concrete. It is recommended that a minimum of one (1) foot of select fill material is properly placed beneath the slab dimensions to provide adequate subgrade support and stable under-slab dimensions.

The entirety of the slab subgrade area is recommended to be verified during construction by proof-rolling as previously described in the *Subgrade Verification* section of this report.

10.8 Site Retaining Structures – Lateral Earth Pressures

All earth-retaining structures implemented on the project should be designed to resist the minimum equivalent fluid weights provided in Table 6 below. The recommended minimum factor of safety against sliding is 1.5, and the recommended minimum factor of safety against overturning is 2.0.

The lateral earth pressures provided in Table 6 assume an undrained condition for the backfill material. Due to the proximity of drainage structures, it is recommended that site retaining structures be designed conservatively to resist the undrained condition because achieving a drained condition is not anticipated to be feasible at the project site. Alternative means of drainage would need to be discussed and approved by the Design Team.

The values provided in Table 6 for No. 57 or No. 67 crushed stone gravel assume a 1H:1V maximum backfill slope from the heel of the retaining wall foundation.

Table 6: Undrained Lateral Earth Pressures

Soil/Backfill Type	Moist Unit Weight (lbs/ft^3)	Friction Angle φ (^{0})	Equivalent Fluid Pressure (lbs/ft^3)		
			Active	Passive	At-Rest
On-site Stratum II	120	15	71	204	89
On-site Stratum III	115	24	48	273	68
Select Fill Material (GC, GM, SC, SM)	115	25	47	283	66
No. 57 or No. 67 Stone	95	35	25	350	41

A coefficient of friction of 0.40 may be used provided the walls/retaining structures are supported on a minimum of four (4) inches of planned and compacted Class 7 Base Course material. However, a friction value of 0.35 may be used provided the retaining structures are supported directly on select fill material or on-site soils.

10.9 Project Pavement Subgrade

As previously mentioned, it is anticipated that pavement improvements, including access drives, parking areas, and pedestrian walkways will be constructed to the south of the English Pub structure. Site grading for the planned pavement areas should initially consist of stripping all Stratum I materials, followed by proof-rolling as previously described. Based on the data obtained during this investigation, stable subgrade materials within the pavement area (south of the building footprint) are anticipated to exist immediately below the surface materials. However, should site grading during construction expose the high plasticity clay materials encountered within project boring B-06 at a depth of approximately two (2) feet below the existing surface elevation, additional undercut of up to 3.5 feet below the existing surface elevations may be required to fully remove these materials.

It is recommended that the Contractor budget for the placement of up to two (2) feet of imported select fill beneath all project pavement elements. As with the building pad recommendation, this is likely to be a conservative allowance, but is recommended as being adequate to mitigate the concern for high plasticity subgrade conditions or reduced soil shear strengths during periods of increased moisture conditions.

Should unstable subgrade conditions be encountered within the project pavement dimensions at the time of construction, thickened or "bridging" lifts may be an adequate method of producing stable subgrade conditions. Bridging lifts should only be implemented under the direction of the Geotechnical Engineer. The top eight (8) inches of any thickened lift should be compacted and tested per project specifications. A minimum of one (1) standard lift should be placed above any thickened lift utilized beneath pavement areas. Select fill and base course material should be placed per the requirements provided in *Section 10.10* of this report. **Bridging lifts should not be utilized within the structure footprint or beneath any structure-related elements.**

10.10 Minimum Project Pavement Recommendations

The following pavement recommendations provided in this section are based on stable subgrade material and/or select fill material existing beneath the recommended pavement sections. This requirement would be provided by proper placement of approved select fill material and/or stable onsite material being verified by proof-rolling within the pavement dimensions. Minimum pavement sections are recommended to be as shown in Tables 7 and 8 below.

For the recommendations provided in Tables 7 and 8, light-duty pavements are considered to be those pavements with low-volume traffic areas such as pedestrian sidewalks, parking, staging areas, and areas primarily subjected to passenger vehicles. The standard-duty pavements are recommended as performing similarly to a typical city street pavement section with a residential classification. Heavy-duty pavement recommendations are intended to apply to areas subjected to frequent heavy-truck traffic, such as dumpster pads.

Table 7: Minimum Project Pavement Sections – Asphalt

Pavement Type	Pavement Materials	Light Duty	Standard Duty	Heavy Duty
Asphalt Pavement	ACHM Surface Course	2''	3''	2''
	ACHM Binder Course	N/A	N/A	3''
	Class 7 Base Course (95% MPD)	6"	8''	8''

Table 8: Minimum Project Pavement Section – Concrete

Pavement Type	Pavement Materials	Light Duty	Standard Duty	Heavy Duty
Concrete Pavement	Portland Cement Concrete	4''	5''	6''
	Class 7 Base Course (95% MPD)	6''	8''	8''

The pavement sections provided in Tables 7 and 8 should be viewed as minimums and may be increased through the design process by the project Civil Engineer if warranted.

10.11 Select Fill Material

Any select fill material planned or required for the project is recommended to be an off-site borrow material of locally available sand or gravel material meeting Unified Soils Classifications System (USCS) as a GC, GM, SC, or SM material and having a PI of 35 or less, a LL of 55 or less, a minimum of 30% retained on the ¾-inch sieve and a maximum of 35% passing the No. 200 sieve.

Alternatively, locally available shale materials may be utilized as select fill on the project provided that the shale classifies with the stipulations listed previously. Any shale material utilized as select fill should be compacted to 98 percent of the maximum dry density, as determined by the Modified Proctor Test, ASTM D1557, at a moisture content within two (2) percent of optimum. **Shale fill should not be used as base course material on the project**.

All fill and backfill should be placed in horizontal lifts. When placing fill next to existing slopes, the slope face should be stripped of all vegetation and the face "benched" to allow the placement of horizontal lifts and bonding to the slope face.

Table 9 below provides the recommended compaction parameters for select fill and Class 7 base course to be used on the project.

Table 9: Compaction Requirements

Material Type	Test Standard	Minimum Dry Density (%)	Optimum Moisture Range (%)
Select Fill	ASTM D698 / AASHTO T99	98	-3% to +3%
Class 7 Base Course	ASTM D1557 / AASHTO T180	95	Near Optimum

11.0 Construction Materials Testing and Special Inspections

Construction materials testing and special inspection services are recommended to be provided by MCE to provide consistency with the recommendations in this report and the documentation of those recommendations being implemented during construction.

Testing of the earthwork, concrete, structure, and other phases is recommended to be conducted and documented during construction to assure the Owner and Engineer that the construction complies with the specifications. Field verification of earthwork operations will be required to confirm the recommendations contained herein.

Additionally, all trenching and excavations should be conducted following the current Arkansas State Law and Occupational Safety and Health Administration (OSHA) guidelines and requirements.

12.0 Limitations and Reserved Rights

The recommendations and conclusions made in this report are based on the assumption that the subsoil conditions do not deviate appreciably from those disclosed in the subsurface exploration. Should significant subsoil variations or undesirable conditions be encountered during construction operations that are not described herein, the Geotechnical Engineer reserves the right to inspect these conditions to reevaluate this report. a review of the final construction plans and specifications by this office is encouraged to ensure compliance with the intent of these recommendations.

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Appendix A: BORING LAYOUT

801 South Spring Street
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POLK STANLEY WILCOX

PROJECT NUMBER

24-9611

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English Pub Development

Little Rock, Arkansas

PLATE 1

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Appendix B:
BORING LOGS

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BORING NUMBER B-01

CLIENT Polk Stanley Wilcox
PROJECT NAME English Pub Development
PROJECT NUMBER 24-9611
PROJECT LOCATION Little Rock, Arkansas
DATE STARTED 2/23/24 **COMPLETED** 2/23/24
GROUND ELEVATION 578.12 ft **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Building & Earth
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY A. Miller **CHECKED BY** D.Hubbard
AT END OF DRILLING ---
NOTES Conducted Utilizing a GeoProbe 7822DT Drill Rig
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL (2")										
		(CL) SANDY LEAN CLAY WITH GRAVEL: Dark Brown and Yellowish-Brown; Stiff; Low Plasticity; Moist; Little Gravel; Little Sand; Organics Present	SPT 1	67	4-4-4 (8)			15	29	15	14	63
2.5		(CL) SANDY LEAN CLAY: Brown to Dark Brown and Reddish-Brown; Very Soft to Soft; Low Plasticity; Moist; Few to Little Gravel; Little to Some Sand	SPT 2	67	2-1-1 (2)			16				
		(GC) HIGHLY WEATHERED SANDSTONE: Light Brown and White; Soft to Moderately Hard; Low to Moderate Plasticity; Dry; Quartz Fragments	SPT 3	67	3-14-15 (29)			6				
5.0		- Brown and White	SPT 4	67	3-14-20 (34)			4				
7.5		- Light Brown and White; Moderately Hard to Hard;	SPT 5	71	5-7-50/5"			11	49	24	25	43
10.0		- Very Hard Drilling at 10.5' on Quartz										
			SPT 6	100	50/1"			9				

Refusal at 11.6 feet.
Bottom of borehole at 11.6 feet.

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BORING NUMBER B-02

CLIENT Polk Stanley Wilcox
PROJECT NAME English Pub Development
PROJECT NUMBER 24-9611
PROJECT LOCATION Little Rock, Arkansas
DATE STARTED 2/23/24 **COMPLETED** 2/23/24
GROUND ELEVATION 575.56 ft **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Building & Earth
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY A. Miller **CHECKED BY** D.Hubbard
AT END OF DRILLING ---
NOTES Conducted Utilizing a GeoProbe 7822DT Drill Rig
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		GRAVEL (2")										
		(GM) SILTY GRAVEL WITH SAND: Brown and Reddish-Brown; Dense; Negligible Plasticity; Dry; Some to Mostly Gravel; Some Sand - Seam of Weathered Sandstone and Quartz at 1'	SPT 1	89	2-7-29 (36)			5				
2.5		(GM) HIGHLY WEATHERED SANDSTONE: Brown and White; Moderately Hard to Hard; Negligible Plasticity; Dry; Some to Mostly Gravel; Some Sand; Quartz Fragments	SPT 2	100	21-40-18 (58)			6	NP	NP	NP	19
		- Light Brown and White; Hard	SPT 3	60	50/5"			4				
			SPT 4	50	50/2"			2				
		- Auger Grinding at 4.5'										

Refusal at 4.7 feet.
Bottom of borehole at 4.7 feet.

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BORING NUMBER B-03

CLIENT Polk Stanley Wilcox
PROJECT NAME English Pub Development
PROJECT NUMBER 24-9611
PROJECT LOCATION Little Rock, Arkansas
DATE STARTED 2/23/24 **COMPLETED** 2/23/24
GROUND ELEVATION 577.67 ft **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Building & Earth
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY A. Miller **CHECKED BY** D.Hubbard
AT END OF DRILLING ---
NOTES Conducted Utilizing a GeoProbe 7822DT Drill Rig
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL (2")										
		(CL) SANDY LEAN CLAY WITH GRAVEL: Dark Brown and Reddish-Brown; Medium-Stiff to Stiff; Low Plasticity; Dry to Moist; Little Gravel Little Sand; Possible Fill Materials and Asphalt Present	SPT 1	67	2-3-3 (6)			8				
2.5		(CL) HIGHLY WEATHERED SANDSTONE: Reddish-Brown; Soft; Low Plasticity; Dry; Little Gravel; Little Sand; Sandstone Fragments	SPT 2	89	11-8-7 (15)			1				
			SPT 3	44	4-7-8 (15)			16	37	21	16	56
5.0		- Moderately Hard to Hard; Quartz Fragments	SPT 4	63	5-7-50/4"			22				
		- No Recovery on Sample #5	NR 5	0	50/3"							
		Refusal at 6.8 feet. Bottom of borehole at 6.8 feet.										

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BORING NUMBER B-04

CLIENT Polk Stanley Wilcox
PROJECT NAME English Pub Development
PROJECT NUMBER 24-9611
PROJECT LOCATION Little Rock, Arkansas
DATE STARTED 2/23/24 **COMPLETED** 2/23/24
GROUND ELEVATION 577.76 ft **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Building & Earth
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY A. Miller **CHECKED BY** D.Hubbard
AT END OF DRILLING ---
NOTES Conducted Utilizing a GeoProbe 7822DT Drill Rig
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL (3")										
		(CL) SANDY LEAN CLAY WITH GRAVEL: Dark Brown and Reddish-Brown; Very Soft to Soft; Low Plasticity; Moist; Little Gravel; Little Sand; Possible Fill Materials	SPT 1	22	1-1-1 (2)			12				
2.5		(SM) HIGHLY WEATHERED SANDSTONE: Light Brown and Reddish-Brown; Soft to Moderately Hard; Negligible Plasticity; Moist; Little Gravel; Some to Mostly Sand	SPT 2	67	3-4-29 (33)			22				
		- Seam of Weathered Sandstone at 3'										
		- Brown and White; Moderately Hard to Hard; Quartz Fragments	SPT 3	100	23-50			6	NP	NP	NP	27
5.0		- Light Brown and White; Hard	SPT 4	80	50/5"			9				
		- Very Hard Drilling/Auger Grinding	NR 5	0	50/1"							
		Refusal at 6.1 feet. Bottom of borehole at 6.1 feet.										

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BORING NUMBER B-05

CLIENT Polk Stanley Wilcox
PROJECT NAME English Pub Development
PROJECT NUMBER 24-9611
PROJECT LOCATION Little Rock, Arkansas
DATE STARTED 2/23/24 **COMPLETED** 2/23/24
GROUND ELEVATION 578.22 ft **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Building & Earth
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY A. Miller **CHECKED BY** D.Hubbard
AT END OF DRILLING ---
NOTES Conducted Utilizing a GeoProbe 7822DT Drill Rig
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL (3")										
		(CL) SANDY LEAN CLAY WITH GRAVEL: Dark Brown and Black; Medium-Stiff to Stiff; Low Plasticity; Moist; Little Gravel; Little Sand; Possible Fill Materials	SPT 1	83	2-3-3 (6)			18	32	17	15	59
2.5		- Dark Brown; Stiff	SPT 2	0	6-4-4 (8)			9				
		- Quartz Fragments	SPT 3	33	1-3-15 (18)			8				
5.0		(CL) HIGHLY WEATHERED SANDSTONE: Dark Reddish-Brown; Very Stiff; Low Plasticity; Moist; Little Gravel; Little Sand; Quartz Fragments	SPT 4	89	3-25-34 (59)			8				

Bottom of borehole at 6.5 feet.

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BORING NUMBER B-06

CLIENT Polk Stanley Wilcox
PROJECT NAME English Pub Development
PROJECT NUMBER 24-9611
PROJECT LOCATION Little Rock, Arkansas
DATE STARTED 2/23/24 **COMPLETED** 2/23/24
GROUND ELEVATION 574.01 ft **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Building & Earth
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY A. Miller **CHECKED BY** D.Hubbard
AT END OF DRILLING ---
NOTES Conducted Utilizing a GeoProbe 7822DT Drill Rig
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		(CL) SANDY LEAN CLAY WITH GRAVEL: Reddish-Brown; Very Stiff; Low Plasticity; Dry to Moist; Little Gravel; Little Sand; Quartz Fragments	SPT 1	67	5-8-12 (20)			9				
2.5		(CH) FAT CLAY WITH SAND: Reddish-Brown; Stiffl Moderate to High Plasticity; Moist; Trace Gravel; Little Sand - Quartz Fragments From 3.25' to 5.25'	SPT 2	67	3-5-6 (11)			24	56	28	28	73
5.0		(SM) HIGHLY WEATHERED SANDSTONE: Reddish-Brown; Moderately Hard to Hard; Negligible Plasticity; Moist; Little Gravel; Some to Mostly Sand	SPT 3	78	3-8-42 (50)			18				
		- Light Reddish-Brown and Brown	SPT 4	50	50			20				

Bottom of borehole at 5.5 feet.

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KEY TO SYMBOLS

CLIENT Polk Stanley Wilcox **PROJECT NAME** English Pub Development

PROJECT NUMBER 24-9611 **PROJECT LOCATION** Little Rock, Arkansas

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)


BLDRCBBL: Boulders and cobbles


CH: USCS High Plasticity Clay


CL: USCS Low Plasticity Clay


CLG: USCS Low Plasticity Gravelly Clay


GM: USCS Silty Gravel


SANDSTONE: Sandstone


TOPSOIL: Topsoil

SAMPLER SYMBOLS


No Recovery


Standard Penetration Test

FINE GRAINED ANALYSIS DESCRIPTORS

Descriptor	Meaning
Trace	Less than 5%
Few	5% to 10%
Little	15% to 25%
Some	30% to 45%
Mostly	50% to 100%

IN-SITU SHEAR STRENGTHS

COARSE-GRAINED SOILS			FINE-GRAINED SOILS		
Penetration (blows/foot)		In-Situ Strengths	Penetration (blows/foot)		In-Situ Strengths
Auto	Manual		Auto	Manual	
0 - 3	0 - 4	Very Loose	< 2	< 2	Very Soft
3 - 8	4 - 10	Loose	2 - 3	2 - 4	Soft
8 - 23	10 - 30	Medium-Dense	3 - 6	4 - 8	Medium-Stiff
23 - 38	30 - 50	Dense	6 - 12	8 - 15	Stiff
> 38	> 50	Very Dense	12 - 23	15 - 30	Very Stiff
			> 23	> 30	Hard

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)
TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION


Water Level at Time Drilling, or as Shown


Water Level at End of Drilling, or as Shown


Water Level After 24 Hours, or as Shown

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SUMMARY OF LABORATORY RESULTS

CLIENT Polk Stanley Wilcox **PROJECT NAME** English Pub Development

PROJECT NUMBER 24-9611 **PROJECT LOCATION** Little Rock, Arkansas

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
B-01	0.2	29	15	14	19	63	CL	14.7			
B-01	2.0							16.0			
B-01	3.5							5.5			
B-01	5.0							4.5			
B-01	8.5	49	24	25	19	43	GC	11.2			
B-01	11.5							9.1			
B-02	0.2							5.2			
B-02	2.0	NP	NP	NP	25	19	GM	5.5			
B-02	3.5							4.2			
B-02	4.0							1.8			
B-03	0.2							8.1			
B-03	2.0							1.1			
B-03	3.5	37	21	16	25	56	CL	15.6			
B-03	5.0							21.6			
B-04	0.3							12.0			
B-04	2.0							21.6			
B-04	3.5	NP	NP	NP	25	27	SM	6.1			
B-04	5.0							8.8			
B-05	0.3	32	17	15	19	59	CL	18.0			
B-05	2.0							8.6			
B-05	3.5							8.1			
B-05	5.0							7.7			
B-06	0.0							8.7			
B-06	2.0	56	28	28	9.5	73	CH	24.0			
B-06	3.5							17.6			
B-06	5.0							20.0			

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Appendix C:
LABORATORY RESULTS

GRAIN SIZE DISTRIBUTION

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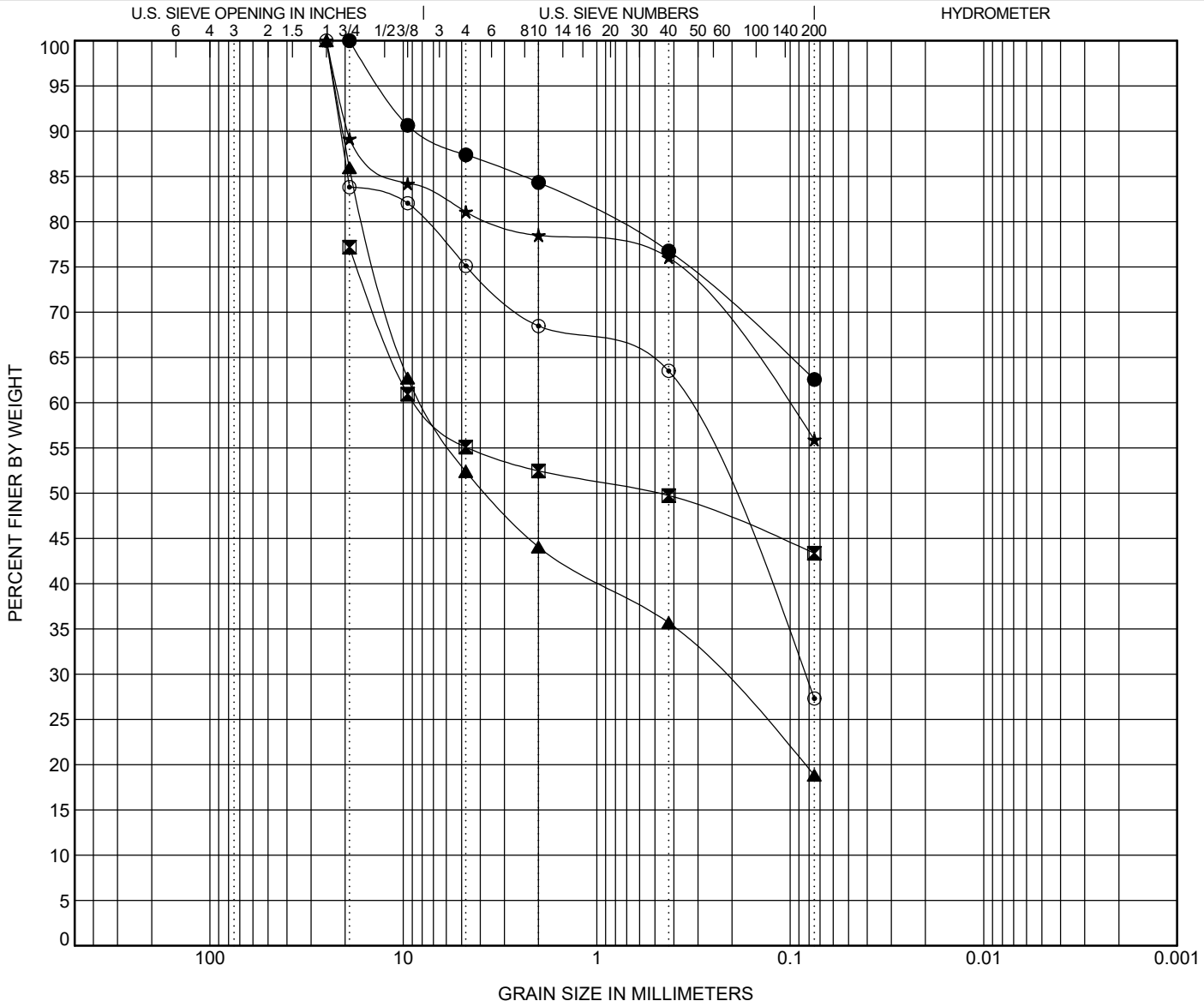
CLIENT Polk Stanley Wilcox **PROJECT NAME** English Pub Development

PROJECT NUMBER 24-9611 **PROJECT LOCATION** Little Rock, Arkansas



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**B-01**	**0.2**	**SANDY LEAN CLAY(CL)**	**29**	**15**	**14**		
⊠	**B-01**	**8.5**	**CLAYEY GRAVEL(GC)**	**49**	**24**	**25**		
▲	**B-02**	**2.0**	**SILTY GRAVEL with SAND(GM)**	**NP**	**NP**	**NP**		
★	**B-03**	**3.5**	**SANDY LEAN CLAY with GRAVEL(CL)**	**37**	**21**	**16**		
⊙	**B-04**	**3.5**	**SILTY SAND with GRAVEL(SM)**	**NP**	**NP**	**NP**		

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-01**	**0.2**	**19**				**12.6**	**24.8**	**62.6**	
⊠	**B-01**	**8.5**	**19**	**8.499**			**22.1**	**11.7**	**43.4**	
▲	**B-02**	**2.0**	**25**	**7.916**	**0.237**		**47.6**	**33.6**	**18.8**	
★	**B-03**	**3.5**	**25**	**0.107**			**18.9**	**25.2**	**55.9**	
⊙	**B-04**	**3.5**	**25**	**0.359**	**0.085**		**24.9**	**47.8**	**27.3**	

GRAIN SIZE DISTRIBUTION

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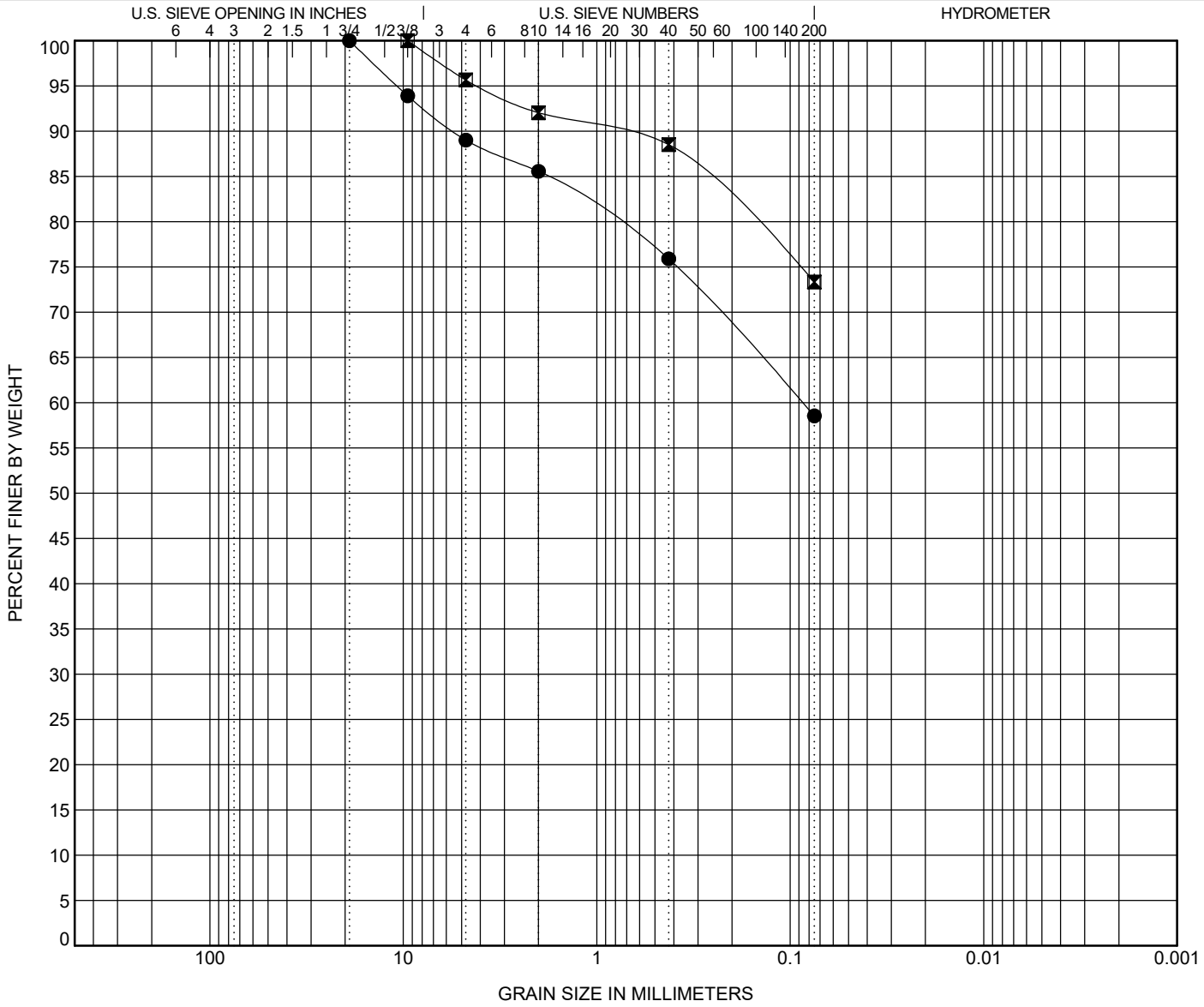
CLIENT Polk Stanley Wilcox **PROJECT NAME** English Pub Development

PROJECT NUMBER 24-9611 **PROJECT LOCATION** Little Rock, Arkansas



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**B-05**	**0.3**	**SANDY LEAN CLAY(CL)**	**32**	**17**	**15**		
⊠	**B-06**	**2.0**	**FAT CLAY with SAND(CH)**	**56**	**28**	**28**		

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-05**	**0.3**	**19**	**0.087**			**11.0**	**30.5**	**58.5**	
⊠	**B-06**	**2.0**	**9.5**				**4.3**	**22.3**	**73.3**	