STATE OF ALABAMA
No. 3365
RICK N. LATHAN
REGISTERED ARCHITECT

LATHAN ARCHITECTS
LATHAN ▪ BRYANT ▪ CALMA

300 CHASE PARK SOUTH • SUITE 200 • HOOVER, ALABAMA 35244
205-988-9112

ADDENDUM NO. 1
ADDITION AND RENOVATION FOR FLOMATON ELEMENTARY SCHOOL
PACKAGE A: MEDIA CENTER AND CLASSROOM ADDITION
DCM NO. 2021011 PSCA NO. 9167
Architect Job No. 21-04A
March 24, 2022

BIDS DUE:
Tuesday April 5, 2022 until
10:00 a.m., local time
Escambia County Board of Education
301 Belleville Avenue,
Brewton, AL 36426

The Plans and Specifications are here by amended. The following supersedes all contrary and/or conflicting information and is made part of the contract documents.

ATTACHED IS THE ADVERTISEMENT FOR BID.

A Mandatory Pre-Bid Meeting will be held at the Flomaton Elementary School 1634 Poplar Street, Flomaton, AL 36441 at 10:00 a.m. on Monday, March 28, 2022. All General Contractors expecting to submit a bid on this project should have a representative at this meeting.

ATTACHED IS THE GEOTECHNICAL REPORT

CLARIFICATIONS

1. Reference Sheet A2.4: The Roof Slope should be 4:12 as shown on the roof plan.

2. Roof insulation shall be tapered Polyiso insulation with a minimum start of 5" thick.

3. Reference Sheet A2.5: Cover board required should be 5/8".

APPROVED MANUFACTURERS

The following manufacturers have submitted data for prior approval and have been approved by our office, **contingent upon the stipulation that their products must meet or exceed the contract specifications**.

Product	**Manufacturer**
Laminate Clad Casework	Case Systems

ADVERTISEMENT FOR BIDS

Sealed proposals, in duplicate, from Qualified General Contractors will be received by the Awarding Authority: Escambia County Board of Education, 301 Belleville Avenue, Brewton, AL 36426 until 10:00 a.m. local time, Tuesday, April 5, 2022, for:

ADDITION AND RENOVATION FOR FLOMATON ELEMENTARY SCHOOL
PACKAGE A: MEDIA CENTER AND CLASSROOM ADDITION
DCM NO. 2021011 PSCA NO. 9167
Architect Job No. 21-04A

At such time and place, the bids will be opened and read. Bids that are received via mail and not presented at the bid opening are to be considered non-responsive. It is the responsibility of the bidder to assure that bids are presented at the time of the bid if they choose to mail the bid. Contractors must notify the Awarding Authority if a bid is to be received by mail.

A Mandatory Pre-Bid Meeting will be held at the Flomaton Elementary School 1634 Poplar Street, Flomaton, AL 36441 at 10:00 a.m. on Monday, March 28, 2022. All General Contractors expecting to submit a bid on this project should have a representative at this meeting.

A cashier's check or bid bond payable to Escambia County Board of Education in an amount not less than five (5) percent of the amount of the proposal, but in no event more than $10,000.00, must accompany the bidder's proposal for each project. Performance and Payment Bonds and evidence of insurance as required in the bid documents will be required at the signing of the Contract.

Drawings and specifications for the project may be examined at the Office of Lathan Associates Architects, P.C., 300 Chase Park South, Suite 200, Hoover, AL 35244, and at the Digital Plan Room at Alabama Graphics (algraphicsplanroom.com). Private Jobs with Password. Password is lathan.

Prior to issuance of plans and specifications, all Contractors must provide evidence that they are properly licensed for the classification of work for this project. Evidence shall be in the form of a copy of current license clearly indicating all classifications, or sub-classifications, bid limits, license number; and expiration date.

General Contractor Bidders may obtain digital copies of drawings and specifications from the Architect for each project upon receipt of Application for Bid. General Contractors will then be placed on Official Bidders List. Hard copy sets of drawings/ specifications will be available to General Contractors for purchase directly from the document printer: Alabama Graphics. Addenda and other proposal information will be issued only to holders of drawings and specifications distributed by the Architect and on the Official Bidders List. Release of contract documents to the bidder does not imply acceptance of the bidder's qualifications by the Owner or Architect.

Bids received from General Contractors who are not on the Official Bidders List may not be accepted or opened. Lathan Associates Architects, P.C. makes no guarantee for plans and specifications obtained by Contractors and Vendors from sources other than the contract documents provided by their firm. Contractors and Vendors who base their pricing from contract documents obtained from other electronic sources, either in part or whole, do so at their own risk.

Bids must be submitted on proposal forms furnished by the Architect or copies thereof, issued either with the original contract documents or by addendum. General Contractors shall not use Proposal Forms other than those provided in the contract documents.

All bidders bidding in amounts exceeding that established by the State Licensing Board for General Contractors must be licensed under the provisions of Title 34, Chapter 8, Code of Alabama, 1975. The Bidder must display current General Contractor's License Number on the outside of the sealed envelope in which the proposal is delivered, or it will not be considered by the Architect or Owner. The Owner reserves

the right to reject any or all proposals and to waive technical errors if, in the Owner's judgment, the best interests of the Owner will thereby be promoted.

Escambia County Board of Education
Awarding Authority

Lathan Associates Architects, P.C.
205-988-9112

Geotechnical Engineering Report

Flomaton Elementary School Additions
Flomaton, Alabama
March 8, 2022
Terracon Project No. EK225004

Prepared for:
Escambia County School District
Brewton, Alabama

Prepared by:
Terracon Consultants, Inc.
Theodore, Alabama

March 8, 2022

Terracon GeoReport

Escambia County School District
301 Belleville Avenue
Brewton, Alabama 36426
c/o Lathan Associates Architects, P.C.

Attn: Ms. Samantha Wilson, AIA
P: (205) 988 9112
E: swilson@lathanassociates.com

Re: **Geotechnical Engineering Report**
Flomaton Elementary School Additions
1634 Poplar Street
Flomaton, Alabama
Terracon Project No. EK225004

Dear Ms. Wilson:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PEK225004 dated January 17, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations and floor slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Nicholas K. Leber, P.E. (MS)
Department Manager

Matthew R. Ponder, P.E.
Office Manager

Peer Reviewed By: Ryan P. Steiner, P.E. (MS) - Principal

REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the ***GeoReport*** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Flomaton Elementary School Additions
1634 Poplar Street
Flomaton, Alabama

Terracon Project No. EK225004
March 8, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed addition at Flomaton Elementary School located at 1634 Poplar Street in Flomaton, Alabama. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC

The geotechnical engineering scope of services for this project included the advancement of nine (9) test borings to depths ranging from approximately 6 to 20 feet below existing site grades. Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Site Information	The project site is located at Flomaton Elementary School at 1634 Poplar Street in Flomaton, Alabama (approximately 31.0042° N, -87.2685° W) See **Site Location**
Existing Improvements	Existing school buildings with associated sidewalks, playgrounds, covered walkways, and parking/drive areas
Existing Topography (from Google Earth)	Relatively flat with about 2 feet of elevation change

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	Boring Location Plan from Ms. Samantha Wilson with Lathan Associates Architects, P.C. via email
Project Description	The project consists of construction an approximate 14,500 square foot classroom addition on the east side of the existing school building and an approximate 11,700 square foot kitchen/cafeteria addition on the west side of the existing school building. The building additions will be slab-on-grade (non-basement).
Assumed Maximum Loads	■ Columns: 150 kips ■ Walls: 3 kips per linear foot (klf) ■ Slabs: 100 pounds per square foot (psf)
Grading	A grading plan was not available at the time of the report. However, we assume that the finished floor elevations (FFE) of the building additions will match FFE of the existing structures. Therefore, we expect that final grades are at/near existing grades, less than 2 feet of cut or fill.
Estimated Start of Construction	Summer 2022

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation, foundation and floor slab options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

In borings in which groundwater was encountered, the depth of groundwater varied from 7 to 16 feet below current grades. Conditions encountered at each exploration point are indicated on the individual logs. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may differ from those indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

Based on the results of the subsurface investigation, the majority of the near surface silty sands (SM) were found to have a very loose to loose density at the time of our investigation. In their current state, these soils are likely to be unstable and not suitable of supporting foundations or floor slabs. It should be noted that the silty sands (SM) encountered throughout the project site are high silt content soils and are highly susceptible to instability when wet. The near surface soil conditions should be thoroughly evaluated at the time of construction to determine stability and suitability.

Additionally, possible fill soils were encountered in Boring B-07 to a depth of about 4 feet below existing site grades. Undocumented fill soils produce a risk for compressibility due to existing void spaces within the existing fill soils and void spaces created as a result of any debris materials decomposing. The risk for this compressibility in building areas cannot be eliminated without completely removing the existing fill soils. The depth and lateral extent of the possible soils are unknown and will need to be determined at the time of construction under the supervision of the geotechnical engineer so that the appropriate mitigation can be prescribed.

The near surface soils could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible mitigation of unstable subgrade soils will persist. We would recommend accounting for mitigation of the unstable soils in the project budget and would suggest having an add/deduct line item for overexcavation and backfill of unstable soils in the bidding process and evaluating earthwork contractors accordingly. We also recommend that care is taken to limit the amount of surface water allowed to be introduced to the surficial soils. Specifications should require the contractor to maintain the area in a relatively dry condition. Adequate surface drainage will be required to minimize the amount of surface water entering the area.

The **Shallow Foundations** section addresses support of the building additions bearing on native soils or engineered fill. The **Floor Slabs** section addresses slab-on-grade support of the building additions. The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include demolition of existing structures and pavements, stripping/grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations and floor slabs.

Unstable Subgrade and Possible Fill Soils

As discussed in **Geotechnical Overview**, very loose to loose near surface soils were encountered throughout the site to depths of about 6 to 8 feet below existing site grades, as well as possible fill soils near Boring B-07 to a depth of about 4 feet. These low density and possible fill soils appear to be unstable and not capable, in their current state, of supporting foundations or floor slabs for the building additions. Therefore, upon demolition of existing structures/pavements and any stripping/grubbing we recommend that the in-place soils are thoroughly evaluated to determine stability and suitability under the supervision of the Geotechnical Engineer. If the in-place soils are found to be unstable or debris-laden, then mitigation of the unstable/debris-laden soils will be required. Mitigation will likely consist of overexcavating the unstable/debris-laden soils to a stable subgrade. The excavation should be properly backfilled with engineered fill as specified in **Fill Material Types** and **Fill Compaction Requirements**. The on-site soils appear suitable for re-use as engineered fill; however, moisture conditioning (i.e. drying) of these soils may be required at the time of construction.

Site Preparation

All existing above and below grade improvements (i.e., buildings, slabs, pavements, etc.) within the proposed development area, including concrete footings, slabs, pavements, any vegetation and topsoil, or other loose, soft or otherwise unsuitable material should be removed from the entire construction area.

Stripped materials consisting of vegetation and organic materials should be wasted off site, or used to vegetate landscaped areas or exposed slopes after completion of grading operations. Stripping depths between our boring locations and across the site could vary considerably as such we recommend actual stripping depths be evaluated by a representative of Terracon during construction to aid in preventing removal of excess material. The demolition phase may also encounter buried foundations, old fills, or other past site improvements. Former utility lines and utility backfill should be removed from beneath the building additions, and the resulting excavations should be properly backfilled as outlined herein. These conditions should be evaluated at the time of construction by the geotechnical engineer.

Care should be taken during excavation adjacent to existing foundations, to avoid disturbing existing foundation bearing soils. All excavations made by undercutting should be left open for the shortest possible duration. It may be necessary to temporarily underpin or shore the existing building foundations if undercutting is performed. Screw anchors or similar methods can be appropriately utilized as determined by the project structural engineer.

New foundations should bear at or near the bearing elevation of immediately adjacent existing foundations. Depending upon their locations and current loads on the existing foundations, foundations for the new building addition could cause settlement of foundations. To reduce this concern and risk, clear distances at least equal to the new foundation widths should be maintained

between the new equipment's foundations and foundations supporting the existing building or equipment. Due to the presence of the existing adjacent building and the potential for shallow groundwater, this mitigation measure may prove difficult and may require an alternate method of mitigation or deep foundation system.

The subgrade should be proofrolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proofrolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Mitigation might include processing to remove excess moisture, overexcavation and backfilling, chemical stabilization, or modification with geotextile reinforcement. Should mitigation of wet and pumping soils be required, our office should be notified so that appropriate mitigation can be prescribed by the project geotechnical engineer.

Fill Material Types

Fill required to achieve design grade should be classified as engineered fill. Earthen materials used for engineered fill should meet the following material property requirements:

Soil Type [1]	USCS Classification	Acceptable Parameters (for Engineered Fill)
Granular [2]	SP, SM, SC, SC-SM, SP-SM, SP-SC	PI ≤ 25 LL ≤ 45
Low Plasticity Cohesive	CL	10 ≤ PI ≤ 25 LL ≤ 45
On-Site Soils [2]	SM, SP	PI ≤ 25 LL ≤ 45

1. Engineered fill should consist of approved materials free of organic matter and debris. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. High silt content soils are extremely sensitive to variations in moisture content and can lose strength rapidly with increases in moisture. It should be noted that the moisture content of the silt must be closely controlled in order to achieve the desired degree of compaction. Drying of soils excavated from deeper cut areas of the site should be anticipated prior to use as engineered fill.

Fill Compaction Requirements

Engineered fill should meet the following compaction requirements.

Item	Engineered Fill
Maximum Lift Thickness	9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used
Minimum Compaction Requirements [1, 2]	98% of the material's standard Proctor maximum dry density (ASTM D 698), with stability present
Moisture Content Range [1, 2]	Within -2% to +2% percent of optimum moisture content as determined by the standard Proctor test at the time of placement and compaction.

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).
2. If the granular material is a coarse sand or gravel, or of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. In this case, granular materials should be compacted to at least 70% relative density (ASTM D 4253 and D 4254) at workable moisture levels.

All trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction.

Grading and Drainage

All grades must provide effective drainage away from the building during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the building.

Exposed ground should be sloped and maintained at a minimum 5% away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

The near-surface soils are sensitive to increases in moisture content and have a tendency to lose strength and stability as the moisture content increases or as a result of construction traffic. We suggest earthwork construction take place during generally dryer months of the year. Wet season earthwork has an increased risk that may require additional mitigation measures beyond that which would be expected during the drier summer and fall months.

Shallow excavations for the proposed structure are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of foundations and floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

The groundwater table could affect overexcavation efforts, especially for over-excavation and replacement of lower strength soils. A temporary dewatering system consisting of sumps with pumps could be necessary to achieve the recommended depth of over-excavation.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Any excavations adjacent to existing foundations should extend vertically to the bottom of the existing grade beam/footing. Below that depth, the excavation should be sloped no steeper than two vertical to one horizontal (2V:1H). Excavation and backfill along existing foundations should be performed in sections that allow for excavation and backfill full depth of the section to the bottom of the adjacent foundation within a working day. We recommend excavation sections adjacent to existing foundations not extend greater than 50 linear feet along the existing structure. Excavations adjacent to existing foundations should not be allowed to remain open overnight.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proofrolling, and mitigation of areas delineated by the proofroll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 5,000 square feet of compacted fill in the building areas (minimum of 2 tests). One density and water content test should be performed for every 150 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

Item	Description
Maximum Net Allowable Bearing pressure [1, 2]	2,000 psf
Required Bearing Stratum [3]	Medium dense or better native soils or engineered fill. Bearing stratum should be verified by Terracon.
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 18 inches
Ultimate Passive Resistance [4] **(equivalent fluid pressures)**	250 pcf
Ultimate Coefficient of Sliding Friction [5]	0.32
Minimum Embedment below Finished Grade [6]	18 inches
Estimated Total Settlement from Structural Loads [2]	About 1 inch
Estimated Differential Settlement [2, 7]	About ½ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be over-excavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted engineered fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

Construction Adjacent to Existing Building

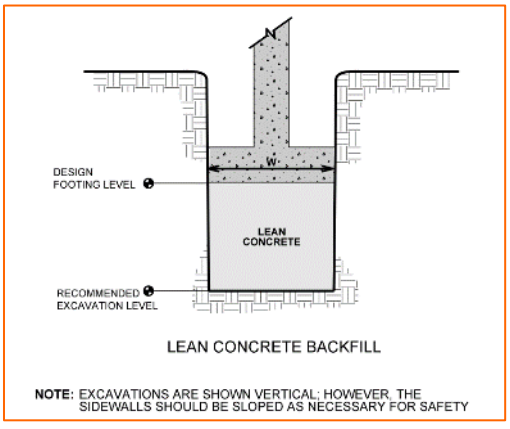
Differential settlement between the additions and the existing building is expected to approach the magnitude of the total settlement of the addition. Expansion joints should be provided between the existing building and the proposed addition to accommodate differential movements between the two structures. Underground piping between the two structures should be designed with flexible couplings and utility knockouts in foundation walls should be oversized, so minor deflections in alignment do not result in breakage or distress. Care should be taken during excavation adjacent to existing foundations, to avoid disturbing existing foundation bearing soils.

New footings should bear at or near the bearing elevation of immediately adjacent existing foundations. Depending upon their locations and current loads on the existing footings, footings for the new addition could cause settlement of adjacent walls. To reduce this concern and risk, clear distances at least equal to the new footing widths should be maintained between the addition's footings and footings supporting the existing building.

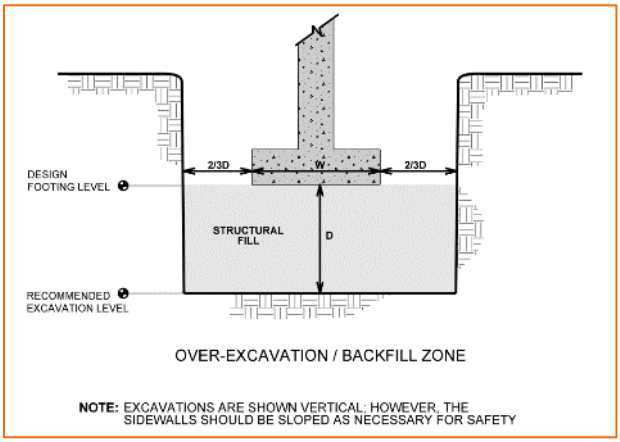
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Over-excavation for engineered fill placement below footings should be conducted as shown below. The over-excavation should be backfilled up to the footing base elevation, with engineered fill placed, as recommended in the **Earthwork** section.



SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties encountered at the site and as described on the exploration logs and results, it is our professional opinion that the **Seismic Site Classification is D**. Subsurface explorations at this site were extended to a maximum depth of 20 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

FLOOR SLABS

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support	Minimum 6 inches of crushed aggregate compacted to at least 98% of ASTM D 698 [1, 2]
Estimated Modulus of Subgrade Reaction [1]	100 pounds per square inch per inch (psi/in) for point loads

1. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
2. Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Mitigation measures, as noted in **Earthwork**, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams and/or post-tensioned elements.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed and engineered fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there

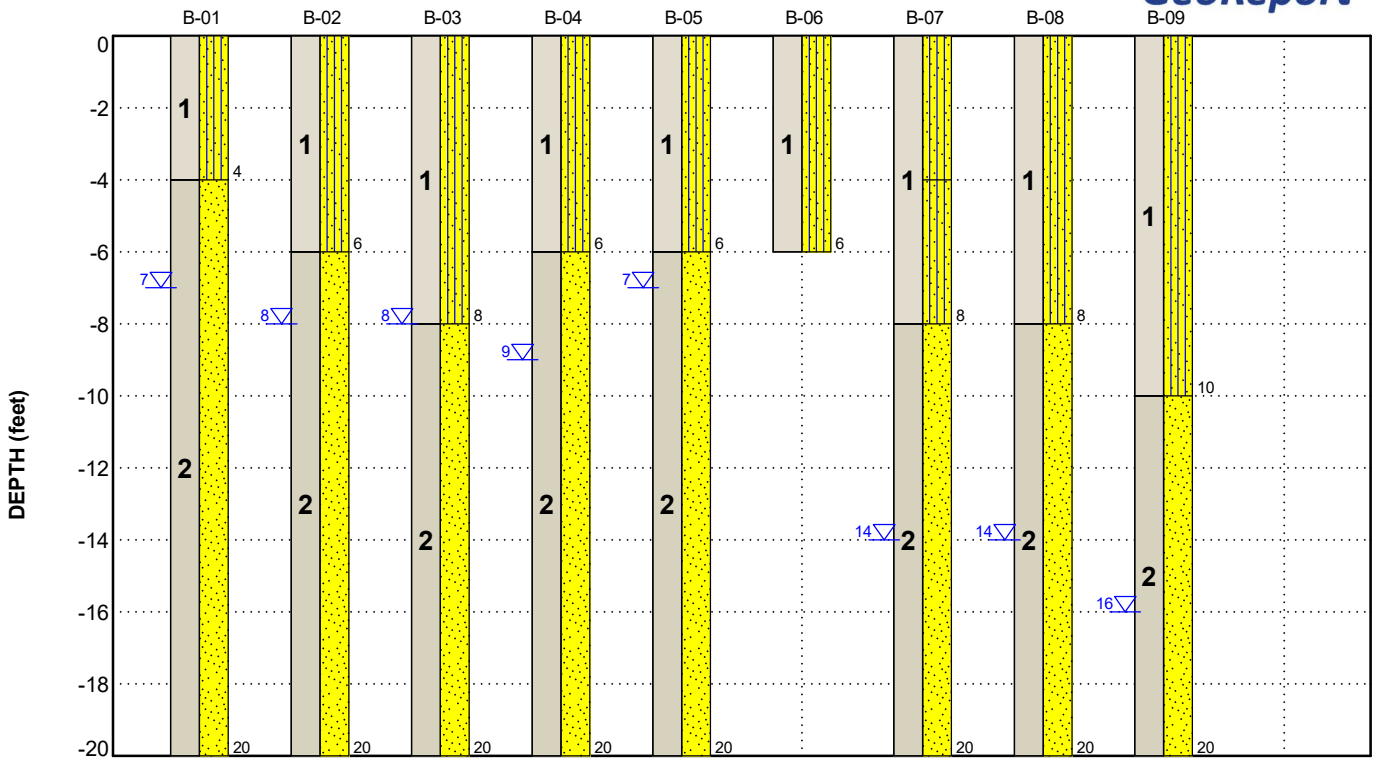
may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

Contents:

GEOMODEL

Flomaton Elementary School Additions ■ Flomaton, Alabama
Terracon Project No. EK225004



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Silty sands	Silty Sand (SM) - very loose to loose
2	Lower Sands	Poorly Graded Sand (SP) trace/with gravel - loose to medium dense

LEGEND

Silty Sand

Poorly-graded Sand

▽ First Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet)	Planned Location
B-01 through B-06	6 [1] to 20	Planned classroom addition area
B-07 through B-09	20	Planned kitchen/cafeteria area

1. The location of Boring B-06 could not be access with the drill rig. Therefore, this boring was advanced to a depth of about 6 feet with hand-augering equipment.

Boring Layout: The boring locations are shown on the **Exploration Plan**, and the coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet).

Subsurface Exploration Procedures: We advanced the majority of the borings with a truck-mounted rotary drill rig using solid-stem continuous flight augers. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the middle 12 inches of a normal 24-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes and in accordance with Alabama State Regulations, all borings were backfilled with auger cuttings after their completion. Pavements were patched with cold-mix asphalt, as appropriate.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. The laboratory testing for this project included the following:

- Water content
- Grain size analysis

Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Note: All attachments are one page unless noted above.

SITE LOCATION

Flomaton Elementary School Additions ■ Flomaton, Alabama
March 8, 2022 ■ Terracon Project No. EK225004

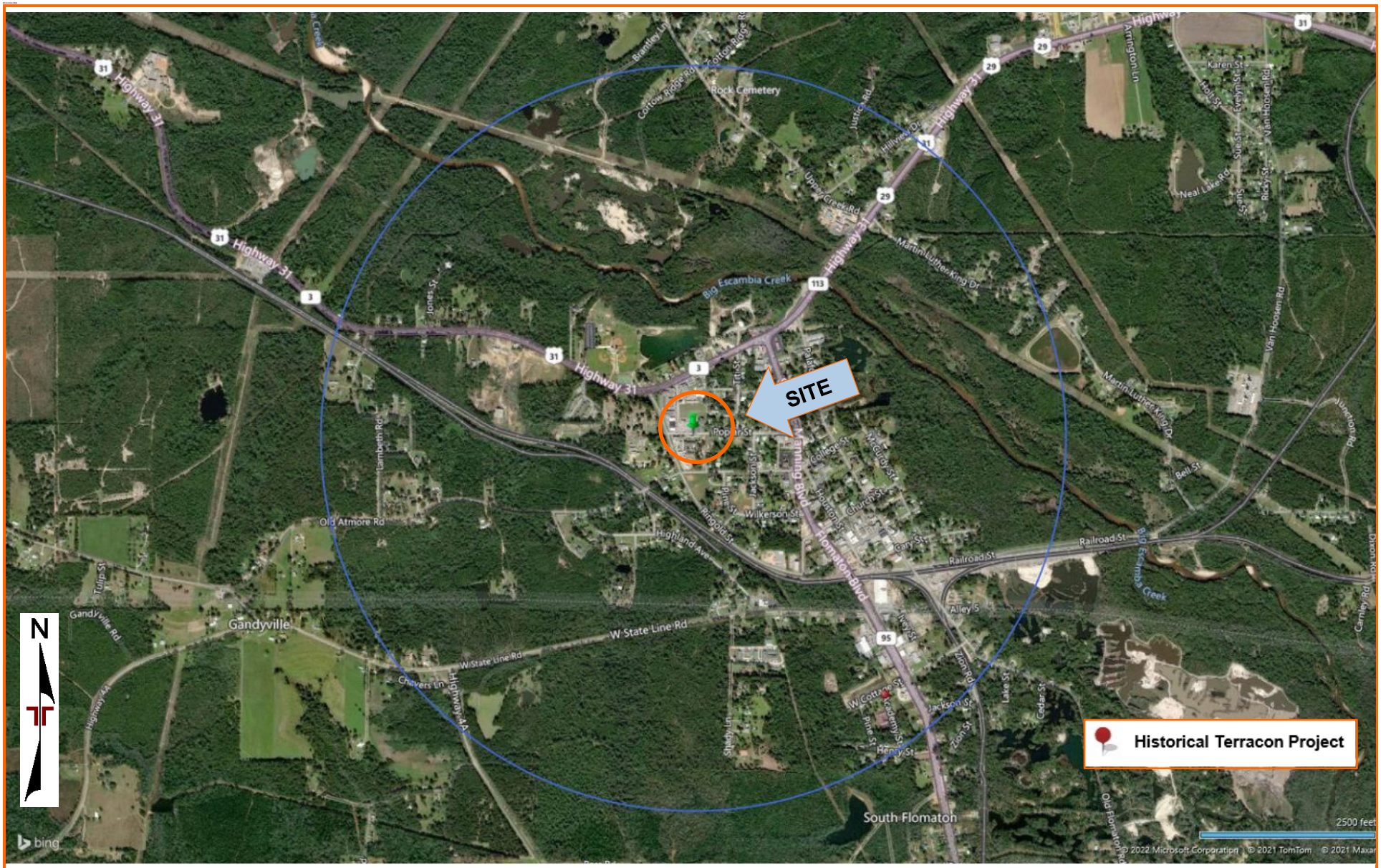


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Flomaton Elementary School Additions ■ Flomaton, Alabama
March 8, 2022 ■ Terracon Project No. EK225004

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Boring Logs (B-01 through B-09)

Note: All attachments are one page unless noted above.

BORING LOG NO. B-01

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0046° Longitude: -87.2681°

MODEL LAYER	GRAPHIC LOG	DEPTH	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0	**SILTY SAND (SM)**, light brown and light gray, loose			3-3-3-3 N=6	12.6	
						3-2-2-2 N=4	9.3	
		4.0						
2			**POORLY GRADED SAND (SP)**, light brown, loose			3-3-3-3 N=6	6.4	
				▽		3-3-3-4 N=6	21.3	
			- medium dense from 8' - 10'			4-5-6-6 N=11	11.2	
			- trace gravel below 8'					
						6-5-3-2 N=8	6.6	
			- medium dense below 18'			5-6-6-6 N=12	10.6	
		20.0						
			Boring Terminated at 20 Feet					

DEPTH (Ft.): 5, 10, 15, 20

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-02

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0045° Longitude: -87.2682°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, loose				2-2-4-3 N=6	12.1	
		- very loose from 2' - 4'				2-2-1-2 N=3	8.2	19
			5			2-2-2-3 N=4	6.1	
		6.0						
2		**POORLY GRADED SAND (SP)**, light brown, medium dense		▽		4-5-6-7 N=11	20.6	
						6-6-7-7 N=13	12.7	
			10					
		- trace gravel below 13'				3-2-2-2 N=4	6.5	
		- loose from 13' - 15'	15					
						12-12-13-14 N=25	8.5	
		20.0						
		Boring Terminated at 20 Feet	20					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-03

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0043° Longitude: -87.2679°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, loose				3-3-3-4 N=6	10.8	22
						5-4-5-5 N=9	8.6	
			5			5-3-3-4 N=6	17.3	
		8.0		▽				
2		**POORLY GRADED SAND (SP)**, trace gravel, light brown, medium dense				5-6-5-6 N=11	7.7	
			10					
		- loose from 13' - 15'				3-4-4-4 N=8	8.4	
			15					
						5-5-5-5 N=10		
		20.0	20					
		Boring Terminated at 20 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-04

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0043° Longitude: -87.2682°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, loose				4-3-2-2 N=5	16.3	
		- very loose from 2' - 4'				2-1-1-2 N=2	13.7	
			5			2-2-3-3 N=5	10.6	
		6.0						
2		**POORLY GRADED SAND (SP)**, with gravel, light brown, medium dense				4-5-6-6 N=11	11.7	2
				▽		10-10-10-10 N=20	12.0	
			10					
						5-6-9-10 N=15	12.0	
			15					
						5-7-8-9 N=15	10.8	
		20.0						
		Boring Terminated at 20 Feet	20					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-05

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0042° Longitude: -87.2680°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, loose				3-2-4-6 N=6	11.4	
						5-4-4-4 N=8	14.3	
			5			3-3-3-3 N=6	18.1	
		6.0						
2		**POORLY GRADED SAND (SP)**, light brown, loose		▽		4-4-4-4 N=8	23.2	
		- medium dense from 8' - 10'				5-5-5-5 N=10	19.2	
			10					
						3-4-5-5 N=9	14.0	
			15					
		- medium dense, trace gravel below 18'				5-6-7-7 N=13	13.6	
		20.0						
		Boring Terminated at 20 Feet	20					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-06

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0043° Longitude: -87.2678°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, loose to medium dense				--	17.8	
						--	17.2	37
						--	17.0	
						--	18.6	
			5			--	18.3	
		6.0						
		Boring Terminated at 6 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: Hand Auger | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-07

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0044° Longitude: -87.2693°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, very loose, (Possible Fill)				WOH N=0	16.0	36
						WOH N=0	10.4	
		4.0 **SILTY SAND (SM)**, light brown and light gray, loose	5			2-2-3-4 N=5	18.5	
		- medium dense below 6'				4-5-6-7 N=11	19.6	
		8.0 **POORLY GRADED SAND (SP)**, with gravel, light brown, medium dense				6-7-10-11 N=17	13.9	
			10					
2				▽		5-5-6-8 N=11	8.3	
			15					
						15-15-15-15 N=30	9.5	
		20.0						
		Boring Terminated at 20 Feet	20					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-08

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0043° Longitude: -87.2692°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, medium dense				7-7-6-5 N=13	6.8	
		- loose below 2'				5-4-2-2 N=6	11.9	
			5			2-2-2-2 N=4	15.0	
						3-3-3-3 N=6	16.9	
		8.0						
2		**POORLY GRADED SAND (SP)**, trace gravel, light brown, medium dense				5-6-7-7 N=13	18.5	
			10					
				▽		10-13-14-15 N=27	11.8	
			15					
						9-10-11-12 N=21	7.2	
		20.0						
		Boring Terminated at 20 Feet	20					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

BORING LOG NO. B-09

PROJECT: Flomaton Elementary School Additions

CLIENT: Lathan Associates Architects PC
Hoover, Alabama

SITE: 1634 Poplar Street
Flomaton, Alabama

LOCATION See Exploration Plan

Latitude: 31.0042° Longitude: -87.2693°

MODEL LAYER	GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**SILTY SAND (SM)**, light brown and light gray, medium dense				10-10-6-5 N=16	7.0	25
		- loose from 2' - 8'				6-5-3-3 N=8	10.1	
			5			3-3-4-4 N=7	16.5	
						6-6-7-8 N=13	18.6	
						5-6-6-8 N=12	19.8	
		10.0	10					
2		**POORLY GRADED SAND (SP)**, trace gravel, light brown, medium dense						
						9-14-16-18 N=30	17.1	
			15	▽				
						5-7-10-12 N=17	13.4	
		20.0	20					
		Boring Terminated at 20 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 20'

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Started: 02-01-2022 | Boring Completed: 02-01-2022

Drill Rig: SIMCO 2800 | Driller: Subcontract

Project No.: EK225004

SUPPORTING INFORMATION

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING


Auger


Split Spoon


Shelby Tube


Macro Core


Ring Sampler


Rock Core


Grab Sample


No Recovery

WATER LEVEL


Water Initially Encountered


Water Level After a Specified Period of Time


Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	**Hand Penetrometer**
(T)	**Torvane**
(b/f)	**Standard Penetration Test (blows per foot)**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 Sieve) Density determined by Standard Penetration Resistance. Includes gravels, sands and silts.			**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve). Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance.			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, tsf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 – 3	0 – 6	Very Soft	Less than 0.25	0 – 1	< 3
Loose	4 – 9	7 – 18	Soft	0.25 to 0.50	2 – 4	3 – 4
Medium Dense	10 – 29	19 – 58	Medium-Stiff	0.50 to 1.00	4 – 8	5 – 9
Dense	30 – 50	59 – 98	Stiff	1.00 to 2.00	8 – 15	10 – 18
Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 – 30	19 – 42
			Hard	> 4.00	> 30	> 42

RELATIVE PROPERTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 – 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 – 10
Medium	11 – 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.