Express Oil Change

Geotechnical Engineering Report

Fairhope, Alabama

September 9, 2024 | Terracon Project No. EK245056

Prepared for:

Express Oil Change, LLC
1800 Southpark Drive
Birmingham, AL 35244

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September 9, 2024

Express Oil Change, LLC
1800 Southpark Drive
Birmingham, AL 35244

Attn: Justin Duck
P: (205) 397-1142
E: justin.duck@expressoil.com

Re: Geotechnical Engineering Report
Express Oil Change
State Route 181 and State Route 104
Fairhope, Alabama
Terracon Project No. EK245056

Dear Justin Duck:

We have completed the scope of Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. PEK245056 dated July 17, 2024. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavements 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

ALABAMA LICENSED No. 52017 PROFESSIONAL ENGINEER Benjamin G. Weinberg Jr.
09/09/2024

Benjamin G. Weinberg, P.E.
Project Engineer

Matt McCullough, P.E.
Senior Engineer

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Refer to each individual Attachment for a listing of contents.

Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed Express Oil Change to be located at State Route 181 and State Route 104 in Fairhope, Alabama. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

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

The geotechnical engineering Scope of Services for this project included the advancement of soil borings, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown on the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs in the **Exploration Results** section.

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	An email request for proposal was provided by Justin Duck with Express Oil Change on July 8th, 2024. On July 18, 2024, a concept plan, "Test Fit 1, Expression Oil Change, Fairhope, Alabama" dated July 16, 2024.
Project Description	The project includes the construction of a new Express Oil changed located on State Route 181 in Fairhope, Alabama.
Proposed Structure	The structure associated with the project is a 5,747 square foot single-story building with a below-grade oil change pit.

Item	Description
Building Construction	We have assumed that the building will be constructed using steel framing
Finished Floor Elevation	FFE: El 116.5
Maximum Loads	Anticipated structural loads were provided by the client in the request for proposal. ▪ Columns: 25 kips ▪ Walls: 2.5 kips per linear foot (klf) ▪ Slabs: 150 pounds per square foot (psf)
Grading/Slopes	We assumed that minimal grading will be required, less than 2 feet of cut or fill
Below-Grade Structures	Oil change "Pit" area under the center bay of the building.
Pavements	We have assumed that asphalt/concrete will be utilized for the project. The anticipated ACI traffic categories and daily truck traffic for rigid pavements will be assumed to consist of: ▪ **Automobile Parking**: (Category A) Car parking areas and access lanes, 10 truck per day ▪ **Drive Lanes/Entrances/Exits**: (Category B) Entrance and truck service lanes, 50 trucks per day ▪ **Dumpster Pad:** (Category E) Garbage or fire truck lanes, 1 truck per day For flexible asphalt concrete pavement, the assumed traffic classification and daily truck traffic will consist of: ▪ **Automobile Parking**: (Class I) Parking stalls for autos and pickup trucks ▪ **Drive Lanes/Entrances/Exits:** (Class III) Delivery lanes with up to ten 3-axle trucks per day The pavement design period is 20 years.
Building Code	2018 IBC

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

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 is located northwest of the intersection State Route 181 and State Route 104 in Outparcel 7 of the Planter's Pointe Shopping Center in Fairhope, Alabama. 1 acre Latitude/Longitude (approximate) 30.5483° N, 87.8529° W See **Site Location**
Existing Improvements	The has been cleared and mass graded.
Current Ground Cover	Grass
Existing Topography	Based on a furnished topographic survey, the site is relatively flat with elevations ranging from 113 feet to 118 feet across the property.

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 the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	**Loose / Soft Surficial**	Possible Fill - clayey sand; moist, very loose to loose; sandy lean clay; moist, soft to medium stiff
2	**Cohesive**	Clayey sand (SC); moist, loose to medium dense; Sandy lean clay (CL); moist, stiff
3	**Sand**	Poorly graded sand with silt (SP-SM), silty sand (SM); medium dense

After 48 hours, groundwater was observed at a depth of 19 feet below the existing ground surface Boring B-2, as shown in the GeoModel.

Groundwater conditions may be different at the time of construction. Groundwater conditions may change because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time of drilling. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Seismic Site Class

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 observed at the site and as described on the exploration logs and results, our professional opinion is for that a **Seismic Site Classification of D** be considered for the project. Subsurface explorations at this site were extended to a maximum depth of 25 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.

Geotechnical Overview

Based on the results of the geotechnical investigation, the following **Geotechnical Hazards** were identified and will require mitigation for this project:

- Existing Fill
- Unstable subgrade potential

Very loose to loose clayey sands and soft to medium stiff sandy lean clays were encountered in the planned building and pavement to depths ranging from 2 to 4 feet (GeoModel Layer 1). Mitigation efforts should be anticipated for these areas. Mitigation efforts for the identified geotechnical hazards are provided in the **Earthwork** section. The **Shallow Foundations** section addresses support of the building bearing on medium dense or better clayey sands, silty sands, or poorly graded sands, or new engineered fill, after overexcavation of the loose clayey sands or soft sandy lean clay. The **Floor Slabs** section addresses slab-on-grade support of the building.

Flexible and rigid pavement systems are feasible for this site. The **Pavements** section addresses the design of pavement systems.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

Earthwork

Earthwork is anticipated to include excavations and engineered 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, floor slabs, and pavements.

Site Preparation

Prior to placing fill, existing vegetation, topsoil, and root mats should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas.

The surficial soils across the site may be possible fill from past grading activities. Although no evidence of underground facilities (such as tanks, basements, and utilities) was observed during the exploration and site reconnaissance, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Geotechnical Hazards

As discussed in the **Geotechnical Overview**, the following sections provide mitigation recommendations for the identified Geotechnical Hazards.

Existing Fill

As noted in **Geotechnical Characterization**, borings B-1 through B-7 encountered possible fill from past mass grading to depths ranging from about 2 to 4 feet. We have no records to indicate the degree of control. Support of foundations, floor slabs, and pavements on or above existing fill soils is discussed in this report. However, even with the recommended construction procedures, inherent risk exists for the owner that compressible fill or unsuitable material, within or buried by the fill will, not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

If the owner elects to construct on the existing fill to reduce initial construction costs in exchange for increased potential longer-term distress, the following protocol should be followed. After the planned grading has been completed, the entire area should be proofrolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. Once unsuitable materials have been remediated, and the subgrade has passed the proofroll test, backfill to finished subgrade elevation can begin. The existing undocumented fill that was removed can be evaluated for reuse as Engineered Fill.

Unstable Subgrade Potential

As noted in **Geotechnical Overview**, very loose to loose clayey sands and soft to medium stiff sandy lean clays were generally encountered throughout the site to a depth of about 2 to 4 feet below existing grades (GeoModel Layer 1). No preliminary grading plan was provided prior to publishing this report, but we have assumed up to 2 feet of engineered fill will be placed in the building pad and paved areas. After stripping and grubbing but prior to placing fill, the exposed subgrade should be evaluated to confirm the presence and extent of unstable soils. It should be anticipated that unstable soils will be present upon initial stripping and grubbing and mitigation of the soils will be required. Mitigation within the building pad should consist of over-excavating the unstable soils to a stable material, then backfilling the excavation with engineered fill as specified in **Fill Material Types** and **Fill Placement and Compaction Requirements**. On-site soils appear suitable for re-use as engineered fill provided it is moisture conditioned prior to placement and compaction.

Mitigation is anticipated to consist of undercutting areas to receive pavement to about 2 feet below existing grades, and up to about 4 feet in the building pad. However, the actual limits and depth of undercutting should be determined based on the Geotechnical Engineer's observation at the time of grading which may include proof-rolling, probing, or test pits. Unstable material is anticipated to be removed during excavation for the service pit area. The exposed subgrade should then be densified using a heavy smooth drum vibratory compactor having a gross weight of not less than 22,000 pounds at the drum. The surface should be compacted by making a minimum of 5 overlapping passes in a perpendicular direction to each other. Should the stability of the clayey sand/sandy lean clay worsen during densification, the densification process should cease until the pore water pressure has dissipated. After the exposed subgrade has been densified, the entire pavement and building area should be proof-rolled to observe for the presence of weak, yielding or pumping soils.

Subgrade Preparation

We recommend that the soils within the footprint of the proposed structures and pavements be mitigated as described in **Geotechnical Hazards**. Prior to placing fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas.

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.

No root balls from the trees should be left in the ground after the site clearing process. The root ball should be excavated such that the roots remaining in the ground are smaller that ½-inch in diameter. The voids left behind by the removal of the root balls should be replaced with engineered fill as outlined in this report.

After stripping, the exposed 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 observation of the Geotechnical Engineer or representative. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Probing or test pits may also be utilized in the Geotechnical Engineer’s evaluation. Mitigation might include processing to remove excess moisture, overexcavation/densification and backfilling as described in the previous section, or chemical stabilization/ modification with geotextile reinforcement in paved areas. Should mitigation of wet and pumping soils be required, our office should be notified so that appropriate mitigation can be prescribed by the Geotechnical Engineer.

Excavation

We anticipate that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Fill Material Types

Reuse of On-Site Soil: Excavated on-site soil may be reused as fill. Material property requirements for on-site soil for use as Engineered Fill are noted in the table below:

Property	General or Structural Fill
Composition	Free of deleterious material Organic content less than 3%
Fines content	Not Limited
Plasticity	Not limited
GeoModel Layer Expected to be Suitable [1,2]	1,2,3
Soil Types	SP-SM, SM, SC, CL

1. Based on subsurface exploration. Actual material suitability should be determined in the field at time of construction.
2. Moisture conditioning (drying) is anticipated for on-site soils to be re-used as engineered fill.

Imported Fill Materials: Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

Soil Type [1]	USCS Classification	Acceptable Parameters
Low Plasticity Cohesive	CL	10 ≤ Plasticity Index (PI) ≤ 25 Liquid Limit (LL) ≤ 45
Granular [2]	SW, SP, SP-SM, SM, SC	Less than 30% passing No. 200 sieve
Below-Grade Wall Backfill	GP	Material meeting material requirements for ALDOT No. 57 Stone Less than 5% passing No. 200 sieve

Soil Type [1]	USCS Classification	Acceptable Parameters

1. Engineered fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. 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. The contractor should expect difficulties with controlling the soil's moisture content to near optimal levels in order to achieve adequate density of the compacted soil. Cement modification may be necessary for highly silty soils to maintain stability.

Fill Placement and 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 maximum dry density with stability present
Water Content Range [1]	Within -2% to +2% of optimum

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 content. Materials not amenable to density testing should be placed and compacted to a stable condition observed by the Geotechnical Engineer or representative.

Utility Trench Backfill

Any soft or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with Engineered Fill or bedding material in accordance with public works specifications for the utility being supported. This recommendation is particularly applicable to utility work requiring grade control and/or in areas where subsequent grade raising could cause settlement in the subgrade supporting the utility. Trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

On-site materials are considered suitable for backfill of utility and pipe trenches from 1 foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

Utility trench backfill should consist of engineered fill as described in **Fill Placement and Compaction Requirements**.

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, which typically occur between September and May. 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 water content prior to construction of grade-supported improvements such as floor slabs and pavements. 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.

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.

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.

Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review of available final grading information or consider potential temporary grading performed by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/ precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and pavements), evaluation and remediation of existing fill materials, as well as proofrolling and mitigation of unsuitable areas delineated by the proofroll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended 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 and 10,000 square feet in pavement areas. Where not specified by local ordinance, one density and water content test should be performed for every 150 linear feet of compacted utility trench backfill and a minimum of one test performed for every 12 vertical inches of compacted backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, 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]	GeoModel Layer 2 and/or 3, or New Engineered Fill
Minimum Foundation Dimensions	Per IBC 1809.7
Ultimate Passive Resistance[4] (equivalent fluid pressures)	360 pcf (granular backfill) 290 pcf (cohesive backfill)
Sliding Resistance [5]	0.35 allowable coefficient of friction - granular material
Minimum Embedment below Finished Grade [6]	18 inches

Item	Description
Estimated Total Settlement from Structural Loads [2]	Less than 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. 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**. Additional geotechnical consultation will be necessary if higher loads are anticipated.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in **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. Assumes no hydrostatic pressure. Apply a factor of safety of at least 1.5 when designing for lateral force resistance.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Frictional resistance for granular materials is dependent on the bearing pressure which may vary due to load combinations. For fine-grained materials, lateral resistance using cohesion should not exceed ½ the dead load.
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 noted for equivalent-loaded foundations and bearing elevation as measured over a span of 50 feet.

Trees or other vegetation whose root systems can remove excessive moisture from the subgrade and foundation soils should not be planted next to critical structures. Trees and shrubbery should be kept away from the exterior edges of the foundation element a distance at least equal to 1.5 times their expected mature height.

Design Parameters – Overturning and Uplift Loads

Shallow foundations subjected to overturning loads should be proportioned such that the resultant eccentricity is maintained in the center-third of the foundation (e.g., $e < b/6$, where b is the foundation width). This requirement is intended to keep the entire foundation area in compression during the extreme lateral/overturning load event. Foundation oversizing may be required to satisfy this condition.

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils with consideration to the IBC basic load combinations.

Item	Description
Soil Moist Unit Weight	120 pcf
Soil Effective Unit Weight[1]	58 pcf
Soil weight included in uplift resistance	Soil included within the prism extending up from the top perimeter of the footing at an angle of 20 degrees from vertical to ground surface

1. Effective (or buoyant) unit weight should be used for soil above the foundation level and below a water level. The high groundwater level should be used in uplift design as applicable.

Floor Slabs

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. 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[1]	▪ Subgrade per recommendations in **Earthwork** ▪ Minimum 6 inches of crushed aggregate compacted to at least 98% of ASTM D 698 [1, 2]
Estimated Modulus of Subgrade Reaction [2]	150 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs may be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. 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.

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, when the project includes humidity-controlled areas, 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 contraction 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 waterproof, 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.

Floor Slab Construction Considerations

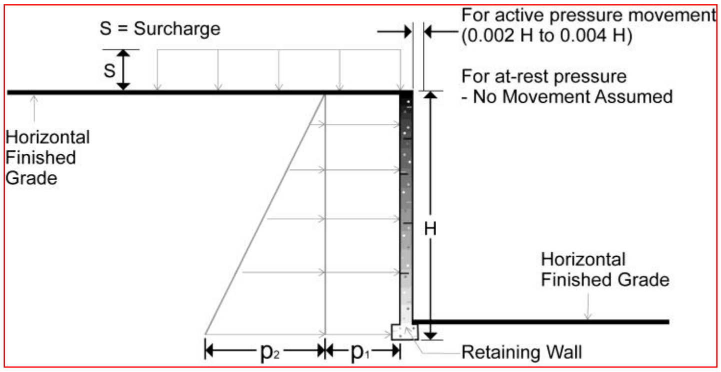
Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor 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 observe 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.

Lateral Earth Pressures

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction, and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



Lateral Earth Pressure Design Parameters

Earth Pressure Condition [1]	Coefficient for Backfill Type [2]	Surcharge Pressure [3] p_1 (psf)	Equivalent Fluid Pressures (psf) [2,4]	
			Unsaturated [5]	Submerged [5]
Active (Ka)	Granular - 0.33 Fine Grained - 0.41	(0.33)S (0.41)S	(42)H (48)H	(83)H (85)H
At-Rest (Ko)	Granular - 0.47 Fine Grained - 0.58	(0.50)S (0.58)S	(63)H (68)H	(94)H (95)H

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance. Fat clay or other expansive soils should not be used as backfill behind the wall.
2. Uniform, horizontal backfill, compacted to at least 98% of the ASTM D 698 maximum dry density, with a maximum unit weight of 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. To achieve "Unsaturated" conditions, follow guidelines in **Subsurface Drainage for Below-Grade Walls** below. "Submerged" conditions are recommended when drainage behind walls is not incorporated into the design.

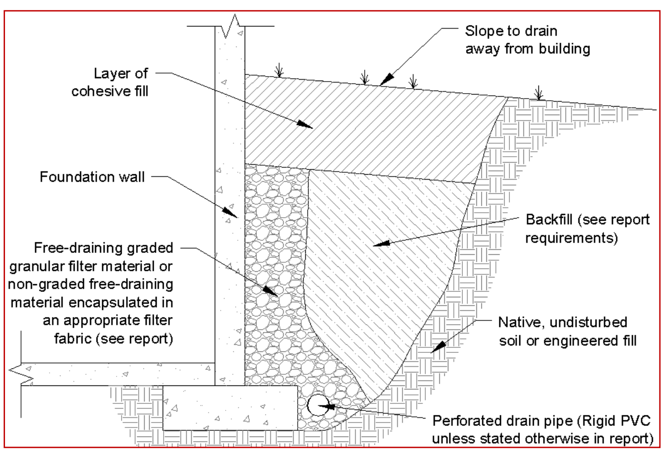
Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 degrees from vertical for the active case.

Footings, floor slabs or other loads bearing on backfill behind walls may have a significant influence on the lateral earth pressure. Placing footings within wall backfill and in the zone of active soil influence on the wall should be avoided unless structural analyses indicate the wall can safely withstand the increased pressure.

The lateral earth pressure recommendations given in this section are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block - geogrid reinforced backfill walls (also termed MSE walls). Recommendations covering these types of wall systems are beyond the scope of services for this assignment. However, we would be pleased to develop a proposal for evaluation and design of such wall systems upon request.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system. Compacted on-site clayey sand (SC) or sandy lean clay (CL) should be suitable for the cohesive fill layer shown in the figure below.



As an alternative to free-draining granular fill, a prefabricated drainage structure may be used. A prefabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion and is fastened to the wall prior to placing backfill. Prefabricated drainage structures are typically proprietary products that require installation in accordance with manufacturer's installation instructions.

Below-Grade Structures

The project will require excavation 12 to 14 feet below natural grade. The primary geotechnical considerations affecting the design and construction of the service pit is excavation stability and providing reliable drainage of the underdrain system to prevent hydrostatic uplift conditions. Uplift of the service pit from hydrostatic forces is perhaps the governing factor in design of the proposed structure, and not bearing capacity or settlement. Although our extended groundwater level readings were observed at elevations below the proposed pit bottom, it is possible that groundwater seepage at shallower depth or infiltration from the ground surface could occur over the design life of the structure. The soils at the site are considered low permeability, so the rate of groundwater infiltration into and out of the service pit excavation should be low. The post construction settlement of the service pit should be minimal.

Typically, subsurface features like the service pit, should be designed to provide at least a factor of safety of 1.2 for uplift with groundwater considered to be at the top of ground, unless a reliable means to maintain the groundwater below the service pit is provided. It is understood that a gravel underdrain system will be provided below the service pit to collect water that infiltrates into the service pit area to prevent a hydrostatic uplift condition. The bottom of the service pit excavation should be sloped to drain water to a collection gallery and a duplex pump system in a sump designed to remove the water to the storm drain system. The underdrain gravel should consist of crushed clean No. 57 gravel that is contained within a non-woven geotextile fabric (Mirafi 140 N or equivalent).

The soil placed above the drainage layer should consist of a compacted, imported lean clay or on-site clayey sand or sandy lean clay to provide an effective low permeability blanket to minimize surface water infiltration. The soil should be compacted as recommended for General Fill in the **Earthwork** section of this report. The surface grades above the service pit should be appropriately sloped to drain water from the area.

Pavements

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

An estimated California Bearing Ratio (CBR) of 3 was used for the subgrade for the asphaltic concrete (AC) pavement designs. An estimated modulus of subgrade reaction of 40 pci was used for the Portland cement concrete (PCC) pavement designs. The value was empirically derived based upon our experience with the clayey sand/sandy lean clay subgrade soils and our expectation of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 550 psi was used in design for the concrete (based on correlations with a minimum 28-day compressive strength of 4,000 psi).

Pavement Section Thicknesses

The following table provides our opinion of minimum thickness for AC sections:

Asphaltic Concrete Design

Layer	Thickness (inches)	
	Automobile Parking (Class I) [1]	Drive Lanes/Entrances/Exits (Class III) [1]
AC [2, 3]	3	3
Aggregate Base	6	8

1. See **Project Description** for more specifics regarding traffic assumptions.
2. All materials should meet the current State of Alabama Department of Transportation (ALDOT) Standard Specifications for Road and Bridge Construction, 2022 Edition or equivalent specifications.
   - Asphaltic Surface –ALDOT Section 424 A (ESAL Range A/B)
   - Asphaltic Base – ALDOT Section 424 B (ESAL Range A/B)
   - Aggregate base course should consist of an ALDOT Section 825B Crushed Aggregate Base. Aggregate base course should be compacted to 100 percent of its maximum dry density as determined by ASTM D-698.
3. A minimum 1.5-inch surface course should be used on AC pavements.

The following table provides our estimated minimum thickness of PCC pavements.

Portland Cement Concrete Design

Layer	Thickness (inches)		
	Automobile Parking (Category A) [1]	Drive Lanes/Entrances/Exits (Category B) [1]	Dumpster Pad (Category E) [1]
PCC [2]	5	6	8
Aggregate Base	4	4	4

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current State of Alabama Department of Transportation (ALDOT) *Standard Specifications for Highway Construction*, 2022 Edition or equivalent specifications.
   - Concrete Pavement – ALDOT SSHC (2022), Section 450
   - Aggregate base course should consist of an ALDOT Section 825B Crushed Aggregate Base. Aggregate base course should be compacted to 100 percent of its maximum dry density as determined by ASTM D-698.

Areas for parking of heavy vehicles, concentrated turn areas, and start/stop maneuvers could require thicker pavement sections. Edge restraints (i.e. concrete curbs or aggregate shoulders) should be planned along curves and areas of maneuvering vehicles.

Although not required for structural support, a minimum 4-inch thick base course layer is recommended to help reduce potential for slab curl, shrinkage cracking, and subgrade pumping through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer. PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with ACI 330 and ACI 325.

Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its "green" state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. Islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils are particular areas of concern. The civil design for the pavements with these conditions should include features to restrict or collect and discharge excess water from the islands. Examples of features are edge drains connected to the stormwater collection system, longitudinal subdrains, or other suitable outlets and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic upkeep should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.

- Place curb, gutter and/or sidewalk directly on subgrade soils rather than on unbound granular base course materials.

Stormwater

We understand a shallow stormwater system will be constructed at this site. The stormwater pond bottom is expected to be on the order of about 2 to 4 feet below the existing site grades. The exploration encountered primarily sandy lean clay which may not be suitable for subterranean recovery of stormwater runoff. The Drainage Engineer should use the information provided in the following table to evaluate the stormwater management facility, including a mounding analysis, with an appropriate factor of safety. As mentioned previously in the report, groundwater levels beneath the existing ground surface were 19 feet.

A laboratory infiltration rate of water was tested using a falling-head infiltration test on tube samples collected from the proposed pond areas to estimate the hydraulic conductivity of the subsurface soils. The test reports are provided in **Exploration Results** and summarized below:

Boring	Depth (feet)	Saturated Hydraulic Conductivity, K_{sat} (cm/sec)	Saturated Hydraulic Conductivity, K_{sat} (in/hr)	USCS Classification
B-8	2'-4'	2.14×10^{-7}	3.03×10^{-4}	CL
B-9	2'-4'	2.07×10^{-7}	2.93×10^{-4}	CL

Soil densification that often occurs due to heavy construction equipment may reduce the drainage characteristics of the subsoils. Care should be taken to limit the amount of surface compaction and densification that occurs during construction. Low ground pressure tracked equipment should be considered where practical.

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. 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 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.

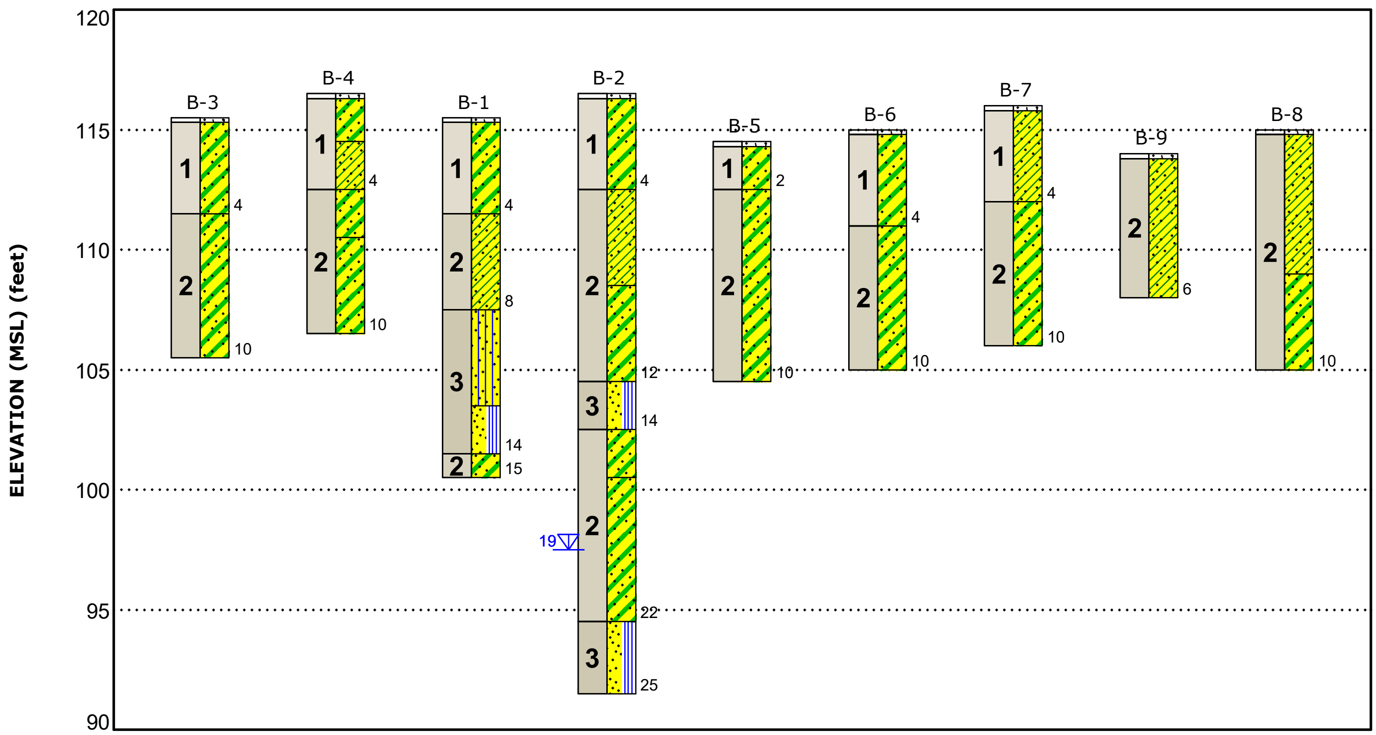
Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation 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. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. 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:

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

GeoModel



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	Loose / Soft Surficial	Possible Fill - clayey sand; moist, very loose to loose; sandy lean clay; moist, soft to medium stiff
2	Cohesive	Clayey sand (SC); moist, loose to medium dense; Sandy lean clay (CL); moist, stiff
3	Sand	Poorly graded sand with silt (SP-SM), silty sand (SM); medium dense

Legend

- Topsoil
- Clayey Sand
- Sandy Lean Clay
- Silty Sand
- Poorly-graded Sand with Silt

First Water Observation
Second 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	Approximate Boring Depth (feet)	Location
1 (B-2)	25	Building
1 (B-1)	15	
5 (B-3 to B-7)	10	Pavement
1 (B-8)	10	Detention Pond
1 (B-9)	6	

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were obtained by interpolation from a furnished topographic map. If elevations and a more precise boring layout are desired, we recommend borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted, rotary drill rig continuous flight hollow-stem auger technique. Five samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed sample. 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 last 12 inches of a normal 18-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, all borings were backfilled with auger cuttings after their completion.

We also observed the boreholes while drilling and at the completion of drilling for the presence of groundwater. The groundwater levels are shown on the attached boring logs.

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 observed 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. The laboratory testing program included the following types of tests:

- Moisture content
- Grain size analysis
- Permeability

Based on the results of our field and laboratory programs, 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

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

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

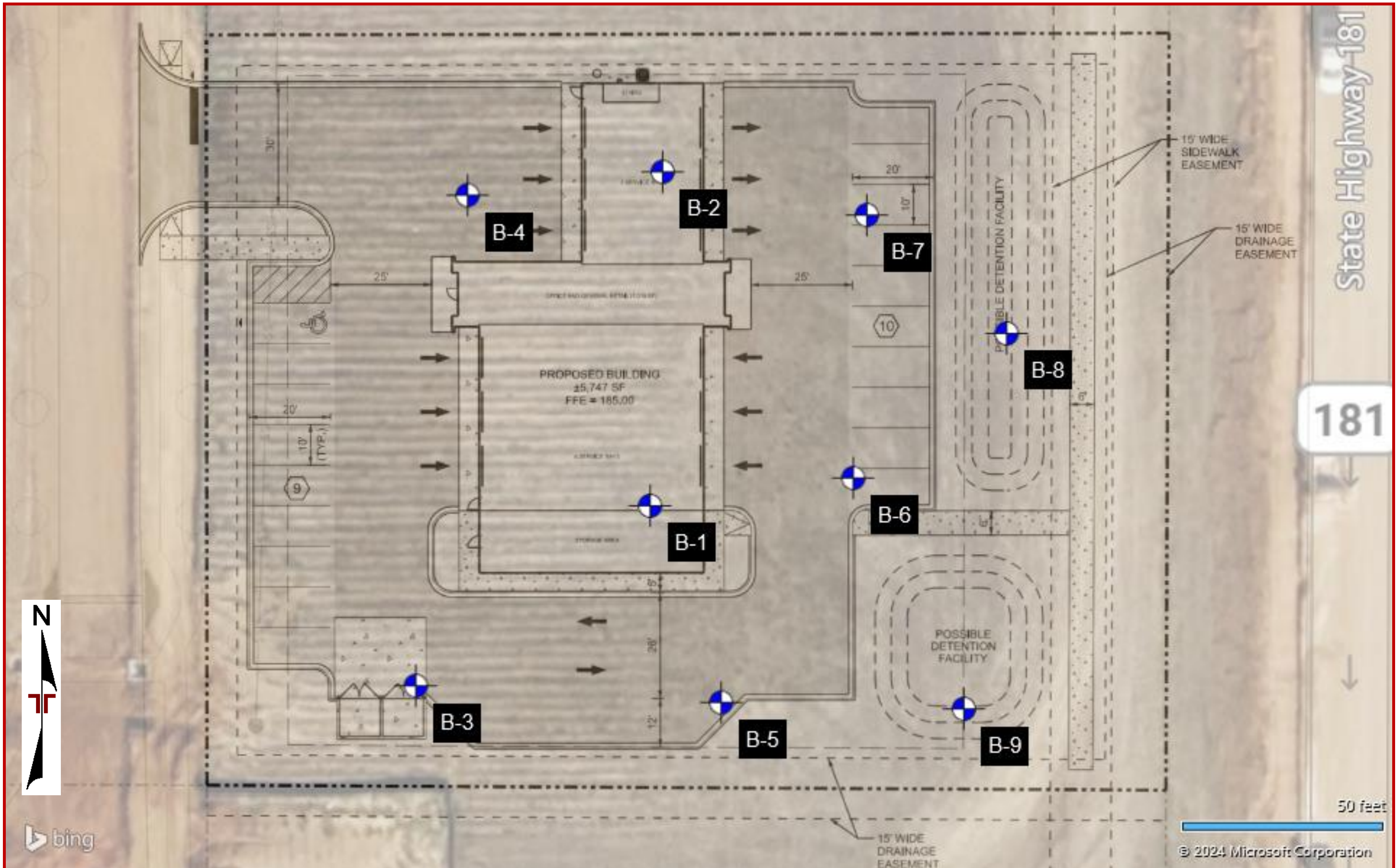


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Note: All attachments are one page unless noted above.

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-1

Location: See Exploration Plan

Latitude: 30.5483° Longitude: -87.8529°

Model Layer	Graphic Log	Depth (Ft.)	Material Description	Elevation: 115.5 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
		0.2	**TOPSOIL**	115.3						
1		4.0	**POSSIBLE FILL - CLAYEY SAND (SC)**, brown and red, loose	111.5			X	6-3-1-1 N=4		
							X	1-2-3-2 N=5	22.8	48
2		8.0	**SANDY LEAN CLAY (CL)**, brown and red, stiff	107.5	5		X	2-4-6-7 N=10	27.7	
			very stiff at 6 feet				X	5-7-10-16 N=17	33.2	65
3		12.0	**SILTY SAND (SM)**, brown and red, medium dense	103.5	10		X	9-15-13-13 N=28	12.2	20
		14.0	**POORLY GRADED SAND WITH SILT (SP-SM)**, red, medium dense	101.5			X	3-5-5-6 N=10	8.7	8
2		15.0	**CLAYEY SAND (SC)**, red and gray, medium dense	100.5	15					

Boring Terminated at 15 Feet

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-2

Location: See Exploration Plan

Latitude: 30.5485° Longitude: -87.8529°

Elevation: 116.5 (Ft.) +/-

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
	0.2	**TOPSOIL**	116.3					
1		**POSSIBLE FILL - CLAYEY SAND (SC)**, brown and red, loose			X	4-5-3-1 N=8		
1	4.0	very loose at 2 feet	112.5		X	1-1-1-1 N=2	24.0	
2		**SANDY LEAN CLAY (CL)**, brown and red, stiff			X	1-3-5-7 N=8	27.1	62
2	8.0		108.5		X	4-6-8-1 N=14	30.3	
2	12.0	**CLAYEY SAND (SC)**, red and gray, medium dense	104.5		X	7-16-12-14 N=28	18.4	39
3	14.0	**POORLY GRADED SAND WITH SILT (SP-SM)**, brown and red, medium dense	102.5		X	4-7-4-3 N=11	8.3	5
2	16.0	**CLAYEY SAND (SC)**, gray and red, medium dense	100.5					
2	22.0	**CLAYEY SAND (SC)**, red, loose	94.5	▽ (approx. 19 ft)	X	3-2-2-4 N=4	28.2	
3	25.0	**POORLY GRADED SAND WITH SILT (SP-SM)**, brown and red, medium dense	91.5		X	3-10-10-12 N=20		

Boring Terminated at 25 Feet

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
▽ during drilling
▽ After 48 hours

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-3

Location: See Exploration Plan

Latitude: 30.5481° Longitude: -87.8531°

Model Layer	Graphic Log	Depth (Ft.)	Description	Elevation: 115.5 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
		0.2	**TOPSOIL**	115.3						
1			**POSSIBLE FILL - CLAYEY SAND (SC)**, red and brown, loose					8-5-3-3 N=8	12.2	48
			trace gravel at 2 feet					2-2-3-4 N=5	22.6	
		4.0		111.5						
2			**CLAYEY SAND (SC)**, red and brown, medium dense		5			2-4-6-7 N=10	22.5	
								4-8-11-12 N=19		
								10-11-13-15 N=24		
		10.0		105.5	10					
			Boring Terminated at 10 Feet							

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.

Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Boring Log No. B-4

Location: See Exploration Plan

Latitude: 30.5485° Longitude: -87.8531°

Elevation: 116.5 (Ft.) +/-

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
1	0.2	**TOPSOIL**	116.3					
1	2.0	**POSSIBLE FILL - CLAYEY SAND (SC)**, red and brown, loose	114.5			5-3-2-2 N=5	15.4	
1	4.0	**SANDY LEAN CLAY (CL)**, red and brown, soft	112.5			1-1-2-1 N=3	20.3	64
2	6.0	**CLAYEY SAND (SC)**, brown and red, loose	110.5			1-4-5-5 N=9	24.4	
2	10.0	**CLAYEY SAND (SC)**, brown and red, medium dense	106.5			6-5-8-7 N=13		
						8-8-10-12 N=18		

Boring Terminated at 10 Feet

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-5

Location: See Exploration Plan

Latitude: 30.5481° Longitude: -87.8529°

Elevation: 114.5 (Ft.) +/-

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)	Field Test Results	Water Content (%)	Percent Fines
1	0.2	**TOPSOIL**	114.3			
1		**POSSIBLE FILL - CLAYEY SAND (SC)**, red and brown, loose		5-3-2-3 N=5	17.9	
1	2.0		112.5			
2		**CLAYEY SAND (SC)**, red, medium dense		4-5-5-7 N=10	24.1	
2				6-6-5-10 N=11	22.2	
2		dense at 6 feet		7-10-20-17 N=30		
2		gray and red, medium dense at 8 feet		10-13-16-17 N=29		
2	10.0		104.5			
		Boring Terminated at 10 Feet				

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Notes

Water Level Observations
No free water observed

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-6

Location: See Exploration Plan

Latitude: 30.5483° Longitude: -87.8527°

Model Layer	Depth (Ft.)	Material Description	Elevation: 115 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
	0.2	**TOPSOIL**	114.8						
1		**POSSIBLE FILL - CLAYEY SAND (SC)**, trace gravel, red, loose				X	4-3-2-3 N=5	14.3	45
						X	3-4-4-5 N=8	20.9	
	4.0		111						
2		**CLAYEY SAND (SC)**, red and brown, medium dense		5		X	4-6-7-6 N=13	24.1	
						X	7-8-9-10 N=17		
						X	12-11-13-13 N=24		
	10.0		105	10					

Boring Terminated at 10 Feet

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.

Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-7

Location: See Exploration Plan

Latitude: 30.5485° Longitude: -87.8527°

Elevation: 116 (Ft.) +/-

Model Layer	Depth (Ft.)	Material Description	Elevation	Sample Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
	0.2	**TOPSOIL**	115.8						
1	4.0	**POSSIBLE FILL - SANDY LEAN CLAY (CL)**, red and brown, medium stiff	112				2-1-1-2 N=2	18.1	56
							2-3-3-5 N=6	23.3	
2	10.0	**CLAYEY SAND (SC)**, red and brown, medium dense	106	5			5-8-9-8 N=17	24.1	
							6-8-9-9 N=17		
				10			11-10-10-12 N=20		

Boring Terminated at 10 Feet

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Boring Log No. B-8

Location: See Exploration Plan

Latitude: 30.5484° Longitude: -87.8526°

Elevation: 115 (Ft.) +/-

Model Layer	Depth (Ft.)	Material Description	Elevation	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
	0.2	**TOPSOIL**	114.8						
2		**SANDY LEAN CLAY (CL)**, red and brown, stiff				SPT	9-6-2-3 N=8	18.0	53
						Shelby tube		22.2	
				5		SPT	2-3-5-7 N=8	26.6	52
	6.0		109						
		CLAYEY SAND (SC), brown and red, medium dense				SPT	3-5-8-10 N=13		
						SPT	4-4-6-7 N=10		
	10.0		105	10					

Boring Terminated at 10 Feet

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon
6215 Rangeline Rd Bldg 115
Theodore, AL

Boring Log No. B-9

Location: See Exploration Plan

Latitude: 30.5481° Longitude: -87.8527°

Elevation: 114 (Ft.) +/-

Model Layer	Graphic Log	Depth (Ft.)	Material Description	Elevation (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Percent Fines
		0.2	**TOPSOIL**	113.8						
2			**SANDY LEAN CLAY (CL)**, red and brown, stiff						22.6	57
					5			4-5-9-12 N=14	25.3	
		6.0		108						
			Boring Terminated at 6 Feet							

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.
Elevation Reference: Elevations were interpolated from a topographic site plan.

Water Level Observations
No free water observed

Drill Rig
CME-ATV

Hammer Type
Automatic

Driller
Challenge Testing

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
J. Rocker

Boring Started
08-07-2024

Boring Completed
08-07-2024

Terracon

Fixed-wall Permeability Determination

ASTM D4318 Atterberg Limits

Liquid Limit:	N/A
Plastic Limit:	N/A
Plasticity Index:	N/A

ASTM D1140 Wash 200

Percent Fines (%): 59.0

Project No.: **EK245056**
Project: **Express Oil Change Fairhope AL**
Sample No : ***B-8: 2' - 4'***
Description: ***Brown and Red Sandy Lean Clay with gravel***

SAMPLE PROPERTIES

Height (in.):	3.132	Area:	6.48	$in.^2$	*Moisture Content*			
Diameter (in.):	2.872	Volume:	20.29	$in.^3$		Initial	Final	
Sample Wt. (g):	881.97	Vs:	12.19	$in.^3$	Wet Wt.:	196.78	43.38	g
Ring Wt. (g):	222.35	Vv:	8.10	$in.^3$	Dry Wt.:	161.03	34.93	g
Dry Density (pcf):	101.3	pcf			Moisture:	22.2%	24.2%	
Gs:	2.7				Saturation:	90.3%	98.4%	

TEST PROPERTIES

Pressure (psi):	5.00	Gs(Permeant):	1.000
Pipet Dia. (cm.):	0.800		
Pipet Area ($cm.^2$):	0.503		

Date	Time	Reading (cm)	Temp. (deg. F)	Cum. Time Elapsed (hours)	Cum. Flow (cm^3)	K (cm/sec)	K(INCR) (cm/sec)	Gradient	PVR (%)
8/30/24	9:13	25.0	72	0.0					0.00
8/30/24	9:15	22.5	72	0.0	1.3	5.31E-06	5.31E-06	49	0.95
8/30/24	9:27	22.3	72	0.2	1.4	8.19E-07	7.10E-08	49	1.02
8/30/24	9:43	21.8	72	0.5	1.6	4.53E-07	1.33E-07	49	1.21
8/30/24	9:58	21.3	72	0.8	1.9	3.50E-07	1.42E-07	49	1.40
8/30/24	10:26	20.8	72	1.2	2.1	2.45E-07	7.64E-08	49	1.59
8/30/24	10:49	19.9	72	1.6	2.6	2.26E-07	1.68E-07	49	1.93
8/30/24	11:06	19.2	72	1.9	2.9	2.19E-07	1.77E-07	49	2.20
8/30/24	11:21	18.7	72	2.1	3.2	2.10E-07	1.43E-07	48	2.39
8/30/24	11:27	18.3	72	2.2	3.4	2.14E-07	2.87E-07	48	2.54

kavg (cm/s): 2.14E-07 cm/sec

Terracon

Fixed-wall Permeability Determination

Project No.: EK245056
Project: Express Oil Change Fairhope AL

Sample No : *B-9: 2' - 4'*
Description: *Brown and Red Sandy Lean Clay with gravel*

ASTM D4318 Atterberg Limits	
Liquid Limit:	N/A
Plastic Limit:	N/A
Plasticity Index:	N/A
ASTM D1140 Wash 200	
Percent Fines (%):	63.0

SAMPLE PROPERTIES

Height (in.):	3.181	Area:	6.43	$in.^2$		*Moisture Content*		
Diameter (in.):	2.861	Volume:	20.45	$in.^3$		Initial	Final	
Sample Wt. (g):	902.5	Vs:	12.46	$in.^3$	Wet Wt.:	160.72	38.45	g
Ring Wt. (g):	227.37	Vv:	7.99	$in.^3$	Dry Wt.:	131.33	30.94	g
Dry Density (pcf):	102.7	pcf			Moisture:	22.4%	24.3%	
Gs:	2.7				Saturation:	94.3%	102.3%	

TEST PROPERTIES

Pressure (psi):	5.00	Gs(Permeant):	1.000
Pipet Dia. (cm.):	0.800		
Pipet Area ($cm.^2$):	0.503		

Date	Time	Reading (cm)	Temp. (deg. F)	Cum. Time Elapsed (hours)	Cum. Flow (cm^3)	K (cm/sec)	K(INCR) (cm/sec)	Gradient	PVR (%)
8/30/24	9:10	25.0	72	0.0					0.00
8/30/24	9:15	23.9	72	0.1	0.6	9.55E-07	9.55E-07	48	0.42
8/30/24	9:27	23.6	72	0.3	0.7	3.57E-07	1.09E-07	48	0.54
8/30/24	9:43	23.0	72	0.6	1.0	2.63E-07	1.63E-07	48	0.77
8/30/24	9:58	22.4	72	0.8	1.3	2.35E-07	1.74E-07	48	1.00
8/30/24	10:26	21.7	72	1.3	1.7	1.89E-07	1.09E-07	48	1.27
8/30/24	10:43	20.5	72	1.6	2.3	2.11E-07	3.09E-07	48	1.73
8/30/24	10:50	19.8	72	1.7	2.6	2.27E-07	4.39E-07	48	2.00
8/30/24	11:06	19.5	72	1.9	2.8	2.07E-07	8.24E-08	48	2.11
8/30/24	11:21	18.8	72	2.2	3.1	2.07E-07	2.05E-07	48	2.38

kavg (cm/s): 2.07E-07 cm/sec

Supporting Information

Contents:

Note: All attachments are one page unless noted above.

General Notes

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING		WATER LEVEL		FIELD TESTS	
Auger	Split Spoon	Water Initially Encountered		(HP)	Hand Penetrometer
Shelby Tube	Macro Core	Water Level After a Specified Period of Time		(T)	Torvane
Ring Sampler	Rock Core	Water Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)
Grab Sample	No Recovery			(PID) Detector	Photo-Ionization
				(OVA)	Organic Vapor Analyzer

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.

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 PROPORTIONS 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

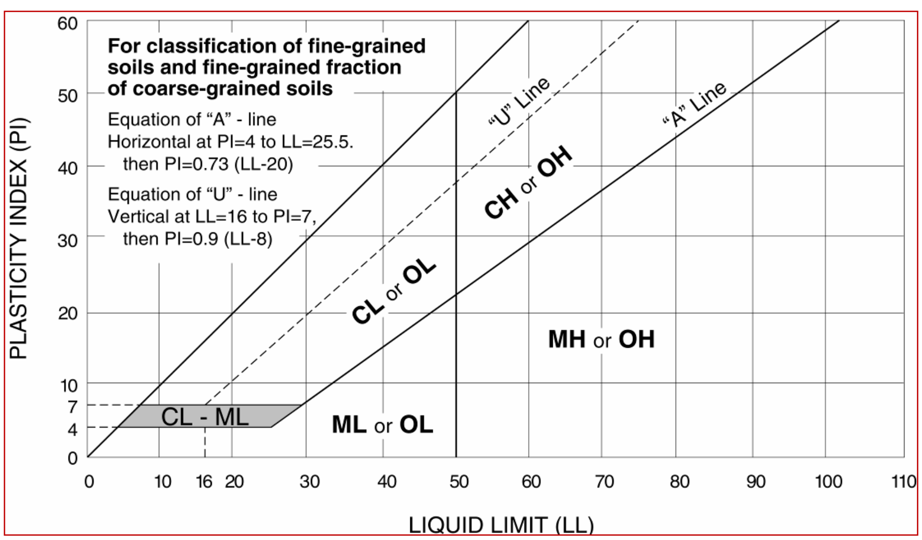
PLASTICITY DESCRIPTION

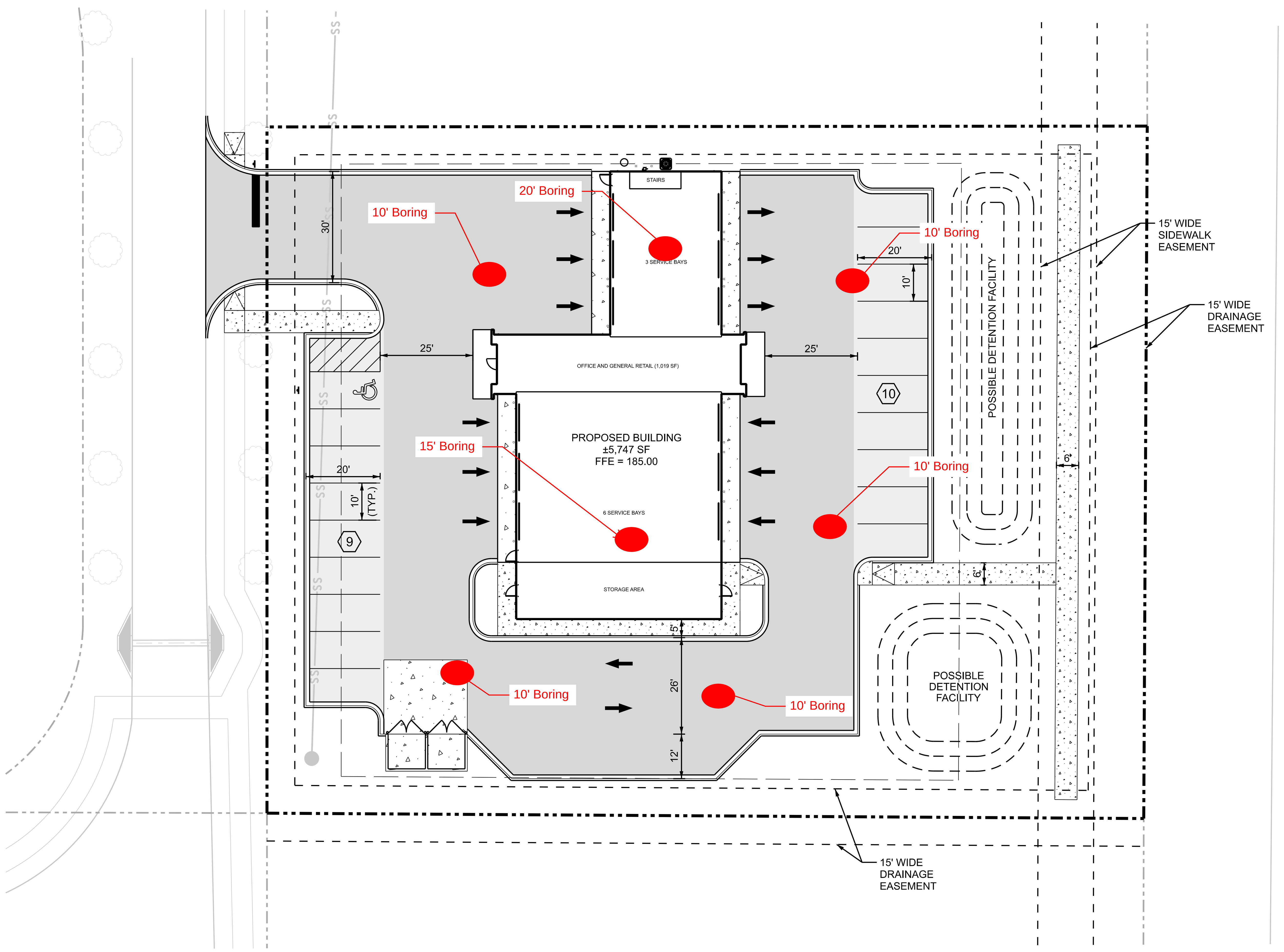
Term	Plasticity Index
Non-plastic	0
Low	1 – 10
Medium	11 – 30
High	> 30

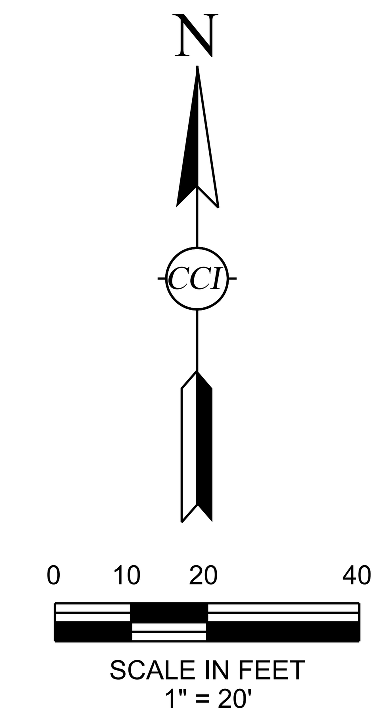
Unified Soil Classification System

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≥4 and 1≤Cc≤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≥6 and 1≤Cc≤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 above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					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:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					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] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[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.







SITE INFORMAITON:

ZONING: B-2 (GENERAL BUSINESS DISTRICT)
LOT SIZE= 0.99± AC
BUILDING SETBACK
HIGHWAY = 50'
FRONT = 20'

REQUIRED PARKING:
AUTOMOBILE SERVICE STATIONS
= 2 SPACES MIN. + 1 SPACE PER BAY (9) = 11 SPACES
GENERAL RETAIL AND OFFICE
= 4 SPACES FOR 1ST 400 SF + 1 SPACE PER ADDITIONAL 400 SF (1,019 SF) = 6 SPACES
TOTAL REQUIRED = 17 SPACES

PROVIDED PARKING = 18 TYPICAL SPACES
1 ADA VAN SPACE
19 TOTAL SPACES

EOC & BP CIVIL TEST FIT CHECKLIST:

- ☒ ALL EOC PLANS MUST USE EOC DOUBLE DUMPSTER ENCLOSURE.
- ☒ TRASH ENCLOSURE SIDE MUST BE EASILY ACCESSIBLE BY DUMPSTER TRUCK.
- ☒ 20' CONCRETE APRON SHOWN AT DUMPSTER ENCLOSURE ENTRANCE.
- ☐ HOW MAYN PARKING SPACES ARE DEDICATED TO EOC/BP? DO WE MEET PARKING CODE?
- ☐ MINIMUM 25 PARKING STALLS. PLEASE NOTE IF NOT ABLE TO MEET.
- ☒ SHOW 4" BOLLARDS BETWEEN ALL BAY DOORS AND BUILDING CORNERS WHERE PAVEMENT MEETS BUILDING.
- ☒ SHOW 5' CONCRETE APRON AT BAY DOORS.
- ☒ ADD ARROWS IN FRONT OF BAYS SHOWING FLOW OF TRAFFIC THROUGH OIL CHANGE BAYS AND ARROWS ENTERING SERVICE BAYS. ALSO, ADD ARROWS AROUND SITE TO DIRECT TRAFFIC.

CCI PLANNING & ENGINEERING
3528 Vann Road
Suite 105
Birmingham, AL 35235
Phone: (205) 655-1991
www.ccipe.com

ENGINEER'S SEAL:
ENGINEER OF RECORD
NICHOLAS OSTRIC, P.E.
ALABAMA REG. NO. 38782
NOT FOR CONSTRUCTION

TITLE:
TEST FIT 1
EXPRESS OIL CHANGE
FAIRHOPE, ALABAMA
FOR
EXPRESS OIL CHANGE & TIRE ENGINEERS

DATE:	PROJECT NO:	DRAWN BY:	CHECKED BY:	SCALE:
07/16/2024	EXPR0011	NJO	NJO	

REVISIONS

NO.	DESCRIPTION	BY	CHKED BY	REV. DATE
0	TEST FIT 1	NJO	NJO	7/16/2024

DRAWING NO.
TF1

EXHIBIT A-1

DRAWING SHOWING LOCATION OF PROSPECTIVE PREMISES