KinderCare Wake Forest

Geotechnical Engineering Report

Wake Forest, North Carolina

October 28, 2025 | Terracon Project No. 70255202

Prepared for:

Quattro Development, LLC
1100 Jorie Boulevard, Suite 140
Oak Brook, Illinois 60523

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October 28, 2025

Quattro Development, LLC
1100 Jorie Boulevard, Suite 140
Oak Brook, Illinois 60523

Attn: Owen England
E: owen@quattrodevelopment.com

Re: Geotechnical Engineering Report
KinderCare Wake Forest
1005 Stadium Drive
Wake Forest, North Carolina
Terracon Project No. 70255202

Dear Mr. England:

We have completed the scope of Geotechnical Engineering services for the above-referenced project in general accordance with Terracon Proposal No. P70255202 dated August 27, 2025. This report presents the findings of the subsurface exploration and provides geotechnical recommendations 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

NORTH CAROLINA PROFESSIONAL SEAL 19331 ENGINEER THOMAS M. SCHIPPOREIT
10/28/2025

Gunnar H. Goslin
Project Manager

Tom Schipporeit, P.E., BC.GE
Senior Geotechnical Engineer

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Note: This report was originally delivered in a web-based format. **Blue 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 Terracon logo will bring you back to this page. For more interactive features, please view your project online at **client.terracon.com**.

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 KinderCare to be located at 1005 Stadium Drive in Wake Forest, North Carolina. The purpose of these services was to provide the following information and recommendations:

- Boring logs with field and laboratory data
- Stratification based on visual soil classification
- Groundwater levels observed during and after the completion of drilling
- Site Location and Exploration Plans
- Subsurface exploration procedures
- Description of subsurface conditions
- Recommended foundation options and engineering design parameters
- Estimated settlement of foundations
- Recommendations for design and construction of interior floor slabs
- Seismic site classification
- Earthwork recommendations including site/subgrade preparation
- Recommended pavement sections

The geotechnical engineering Scope of Services for this project included the advancement of Standard Penetration Test (SPT) borings, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and exploration 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 in the **Exploration and Laboratory 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	Email communication with RFP and site plan provided on August 22, 2025. We also received a Grading Plan prepared by McAdams dated October 7, 2025.

Item	Description
Project Description	The site is to be improved with a new KinderCare school with associated pavements.
Proposed Structure	Structures associated with the project include a 12,000 square-foot single-story school building.
Building Construction	The building will be slab-on-grade and is anticipated to be steel framed.
Finished Floor Elevation	Elevation 376.3 feet
Assumed Maximum Unfactored Service Loads	The anticipated structural loads were not provided. In the absence of information provided by the design team, we used the following maximum loads to develop foundation recommendations based on our experience with similar projects: ▪ Columns: 80 kips ▪ Walls: 5 kips per linear foot (klf) ▪ Slabs: 100 pounds per square foot (psf)
Allowable Foundation Settlements	We assume that tolerable building settlements are 1 inch total and ½ inch differential within a horizontal distance of 50 feet.
Grading/Slopes	The grading plan indicates maximum cut depths of 3 feet and maximum fill depths of 10 feet. An existing slope in the northern portion of the site adjacent to Stadium Drive is up to approximately 12 feet high at a maximum inclination of about 2.5H:1V (Horizontal: Vertical). The project includes minor regrading of the slope and construction of a ramped sidewalk with two site retaining walls up to about 3 feet high. (Our scope of services did not include drilling borings, analysis of, nor recommendations for the existing slope's stability, the proposed slope's stability, or the site retaining walls.)
Pavements	We assume the pavements will include light-duty asphalt (parking spaces), and concrete (dumpster pad and dumpster apron). We also assume traffic will be limited to personal vehicles, garbage trucks, and occasional delivery trucks.
Building Code	2024 North Carolina State Building Code

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

Site Conditions

The following description of site conditions is derived from information provided to us, our site visits on September 11, 2025, September 24, 2025, and our review of publicly available information.

Item	Description
Parcel Information	The project is located at 1005 Stadium Drive in Wake Forest, North Carolina. 2.19 acres Latitude/Longitude (approximate) 35.9894°N, -78.5288°W See **Site Location**
Existing Improvements	None
Current Ground Cover	Bare ground, grass, weeds, bushes, trees
Existing Topography	The site plan indicates that the ground surface elevations range from 362 feet to 391 feet.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

Geotechnical Characterization

Soil Conditions

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 and Laboratory 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	**Residuum 1**	Soft to Stiff Clay, Loose to Medium Dense Silty Sand (N<=15 bpf)
2	**Residuum 2**	Very Stiff Clay, Medium Dense to Dense Silty Sand (15 bpf<N<30 bpf)
3	**Residuum 3**	Medium Dense Silty Sand (N<=15 bpf)

The borings generally encountered 3 inches of topsoil just below the ground surface. However, based on our experience with construction on similar sites, root mat in wooded areas likely extends down through the topsoil into the underlying soils to an average depth of approximately 12 inches.

Groundwater Conditions

The borings were advanced in the dry using hollow stem augers, which allows for short-term groundwater observations to be made at the completion of drilling. Groundwater seepage was not encountered within the maximum drilling depth at the time of our field exploration. Mapping by the Natural Resources Conservation Service (NRCS) indicates a seasonal high groundwater level approximately 6 to 7 feet below the ground surface.

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 exploration. Installation of piezometers and long-term groundwater level monitoring were outside the scope of services for this project. Evaluation of seasonal high water table conditions was also not in our scope of services.

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. Based on the materials encountered in the explorations and the standard penetration test N-values, we recommend use of **Seismic Site Classification D** for this project per ASCE 7-16. Subsurface explorations at this site were extended to a maximum depth of 20 feet. The site properties below the maximum exploration depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area.

Geotechnical Overview

Subgrade stabilization will likely be necessary in localized areas of the site based on the loose silty sands encountered in some of the SPT borings.

Mitigation of potentially expansive soils will be required for this project.

Based on the subsurface conditions encountered and provided loads, the proposed building can be supported on conventional continuous or spread footings.

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

The following sections provide recommendations for use in the preparation of site drawings and specifications for this project. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for the project.

Expansive Soils

The on-site high plasticity Fat Clay (CH) is a potentially expansive soil, exhibiting the potential to swell with increased water content and shrink upon drying. Construction of the project by revising site drainage, in addition to future weather conditions, creates the potential for gradual changes in water contents within the expansive soils. Increases in water content could cause the expansive soils to swell and drying of the expansive soils could cause them to shrink, resulting in damage to the foundations, floor slabs, hardscaping, and pavements. Potentially expansive soils, if present under shallow foundations, should be removed and replaced with suitable material to a depth of at least 1 foot below the footing bearing elevations. To reduce the shrink/swell potential to less than about 1 inch, the upper 1 foot of subgrade soils below the base course layers under floor slabs, pavements, and hardscaping should consist of low-plasticity soil.

Based on the assumed site grades relative to the frequency and depths at which these soils were encountered in the borings, we anticipate that construction efforts to ensure this separation will be necessary in localized areas at the site, not across the entire site.

Site Preparation

Vegetation, topsoil, and root mat should be removed completely from the proposed construction areas. Topsoil was encountered in the explorations to depths of approximately 1 to 3 inches. We anticipate that root mat extends to an average depth of approximately 12 inches in the wooded areas of the site.

The Geotechnical Engineer should field-verify the stripping depth during construction.

Stripped materials consisting of soil with organic material should be removed from the site or placed in non-structural areas to be landscaped. Roots from the excavated root mat zone material can be removed by raking or screening if the material is to be re-used as topsoil in areas to be landscaped.

Although no evidence of existing fill was observed and no below-grade obstructions were encountered during the exploration and site reconnaissance, existing fill, obstructions, and/or debris could be encountered during construction. If unexpected fills, debris, underground facilities, or obstructions are encountered, such materials and features should be removed, with the resulting excavations backfilled with structural fill.

Subgrade Preparation

Proofrolling should be performed after stripping, after mitigation of expansive soils, and prior to placing fill in fill areas. Proofrolling should be performed after stripping, and after excavating to design subgrade elevations, and after mitigation of expansive soils in cut areas. 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 observation of the Geotechnical Engineer. Areas excessively deflecting and/or pumping under the proofrolling should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should be stabilized by overexcavation of unsuitable or unstable soil and replacement with structural fill. If unstable subgrade soils with elevated moisture content are relatively shallow, then disking and drying might be an option to undercut and replace.

Based on the subsurface conditions encountered in the borings and the provided design grades, we anticipate that undercutting of unstable subgrades prior to fill placement will be required in the area represented by Boring B-3, in addition to other localized areas away from or between the boring locations.

Excavation Considerations

Excavatability

We anticipate that excavation of soil can generally be accomplished with conventional earthmoving equipment.

Excavation Safety

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.

Excavations or other activities resulting in ground disturbance have the potential to affect nearby structures, pavements, and utilities. 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 should be monitored or instrumented for potential ground movements that could negatively affect nearby structures, pavements, and utilities.

Excavation should not be conducted below a downward 1H:1V projection from the bottom edges of existing wall footings or column footings without engineering review of shoring/underpinning requirements and geotechnical observation during construction.

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.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below or within 10 feet of structures, pavements, retaining walls, utilities, or constructed slopes. General fill is material used to achieve grade outside of these areas.

Fill Properties: Material property requirements for on-site soil and imported soil for use as general fill and structural fill are given in the following table:

Property	General Fill	Structural Fill
Composition	Free of deleterious material	Free of deleterious material
Maximum particle size	6 inches (or 2/3 of the lift thickness)	3 inches
Fines content	Not limited	Not limited
Plasticity	Not limited	Maximum plasticity index of 30 in upper 1 foot below design subgrade Not limited more than 1 foot below design subgrade
Standard Proctor Maximum Dry Unit Weight	Not limited	At least 90 pcf

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.

A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site. Additional geotechnical consultation should be provided prior to use of uniformly graded gravel (GP) on the site.

Reuse of On-Site Materials: Excavated on-site soil may be selectively reused as general fill and structural fill with the previously listed limitations regarding deleterious materials, fines content, plasticity, maximum particle size, and dry unit weight. Please note, however, that moisture-conditioning (drying and/or wetting) of on-site soils will likely be required to achieve adequate compaction. Existing fill, if present at the site, may be selectively reused as structural fill or general fill, provided it is free of deleterious material (e.g., organics, debris) and is segregated to meet the maximum particle sizes and plasticity values given in the previous table.

Imported Fill Materials: Imported fill materials should meet the material property requirements previously given for Structural Fill. In some cases, imported select granular fill may be needed for subgrade stabilization. If used, select granular fill should consist of NCDOT Class II, Type 1 Select Material, which is a fine aggregate material consisting of crushed stone screenings (washed or unwashed) meeting the grading requirements in Table 1016-1 of the NCDOT Standard Specifications.

Fill Placement and Compaction Requirements

Structural and general fill should meet the following compaction requirements.

Item	Structural Fill	General Fill
Maximum Lift Thickness	10 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 6 inches in loose thickness when hand-guided equipment (e.g., trench roller, jumping jack, or plate compactor) is used	Same as structural fill
Minimum Compaction Requirements [1,2]	95% of the material's standard Proctor maximum dry density (ASTM D698) more than 1 foot below subgrade. 98% of the material's standard Proctor maximum dry density (ASTM D698) in upper 1 foot of structural fill.	92% of the material's standard Proctor maximum dry density (ASTM D698).
Water Content Range [1]	Low plasticity fine-grained soil (PI<30): -3% to +3% of optimum High plasticity fine-grained soil (PI>=30): 0 to +3% of optimum Coarse-grained soil (SM, SC): -3% to +3% of optimum Coarse-grained clean sand (SP, SW): -5% to +5% of optimum	As required to achieve min. compaction requirements

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D698).
2. Materials not amenable to density testing should be placed and compacted to a stable condition observed by the Geotechnical Engineer or representative.

Where fill is placed on existing slopes steeper than 5H:1V, benches should be cut into the existing slopes prior to fill placement. The benches should have a minimum vertical face height of 1 foot and a maximum vertical face height of 3 feet and should be cut wide enough to accommodate the compaction equipment. This benching will help provide a positive bond between the fill and natural soils and reduce the possibility of failure along the fill/natural soil interface.

Pipe Bedding and Trench Backfill

Pipe bedding and trench backfill should be in accordance with the applicable public works agency's standard details and specifications for the type of pipe to be supported. (For example, the NCDOT has published standard pipe bedding and backfilling details for flexible and rigid pipe for normal earth foundation, rock foundation, and unsuitable material foundation conditions.) Backfill materials, placement, and testing should be in accordance with the publics works agency's specifications or the earthwork recommendations given in this report, whichever are more stringent. If open-graded materials, such as No. 78 or No. 57 stone, are used, they should be completely wrapped in a woven geotextile that can be used for both separation and filtration (e.g., Mirafi HP270).

Grading and Drainage

All grades must provide effective drainage away from the building(s) during and after construction and should be maintained throughout the life of the structure(s). Water retained next to the building(s) 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 resulting in cracked slabs and walls.

Subgrade Protection and Repair

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 surface water from ponding 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 and pavement construction.

Construction Observation and Testing

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proofrolling, placement and compaction of structural fill, backfilling of excavations, and just prior to construction of building floor slabs and pavements.

The earthwork efforts should be observed by the Geotechnical Engineer (Terracon). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil), as well as proofrolling and mitigation of unsuitable areas delineated by the proofrolling.

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 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. Where not specified by local ordinance, one density and water content test should be performed for every 100 linear feet of compacted utility trench backfill and a minimum of one test performed for every 12 vertical inches of compacted backfill.

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

The proposed structure can be supported by 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 and Lateral Loads

Item	Description
Maximum Net Allowable Bearing Pressure [1, 2]	3,000 psf
Required Bearing Stratum [3]	Undisturbed low-plasticity (PI<30) native soils or structural fill. Footing excavations should be overexcavated, as necessary, such that the footings bear on at least 1 foot of low-plasticity (PI<30) soil.
Minimum Foundation Dimensions [4]	Columns: 2 ft width and 2 ft length Walls: 2 ft width
Ultimate Passive Resistance [5] **(Equivalent fluid pressure)**	145 psf/ft

Item	Description
Sliding Resistance [6]	0.30 ultimate coefficient of friction
Minimum Embedment below Finished Grade [7]	Columns: 2 feet Walls: 2 feet
Estimated Total Settlement from Structural Loads [2]	Less than about 1 inch under sustained gravity loads
Estimated Differential Settlement [2, 8]	Less than about 1 inch under sustained gravity loads

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. The allowable bearing pressure can be increased by ⅓ for use with the alternative load combinations given in Section 1605.3.2 of the 2018 North Carolina Building Code. Please note, however, that additional foundation settlement will occur under these load combinations. The project structural engineer should select the appropriate footing width to maintain a bearing pressure not exceeding that recommended in this table, and to maintain an appropriate clear distance between footings to prevent overlap of soil stress distributions. Values assume that exterior grades are no steeper than 20 percent within 10 feet of structure(s).
2. Values provided are for maximum unfactored service loads noted in **Project Description**. Additional geotechnical consultation will be necessary if higher loads are anticipated.
3. Unsuitable, unstable, very soft to soft soil, and/or very loose to loose soil should be overexcavated and replaced per the recommendations presented in **Earthwork**.
4. Minimum footing dimensions required to achieve recommended allowable bearing pressure with a factor of safety of at least 2.5.
5. 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 structural fill be placed against the vertical footing face. Assumes no hydrostatic pressure. Horizontal movement of the foundation must occur to mobilize full passive resistance values. Apply a factor of safety of at least 2.0 to this value when designing for lateral force resistance.
6. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Frictional resistance is dependent on the bearing pressure which may vary due to load combinations. Horizontal movement of the foundation must occur to mobilize the frictional resistance.
7. Embedment necessary to minimize the effects of seasonal water content variations, and to achieve recommended allowable bearing pressure with a factor of safety of at least 2.5. Finished grade is the lowest adjacent grade for perimeter footings and final building pad grade for interior footings. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
8. Differential settlements are for equivalent-loaded foundations and bearing elevation as measured over a span of 50 feet.

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	110 pcf
Soil Effective Unit Weight[1]	48 pcf
Soil weight included in uplift resistance	Soil included within the prism extending up from the top perimeter of the footing vertically 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.

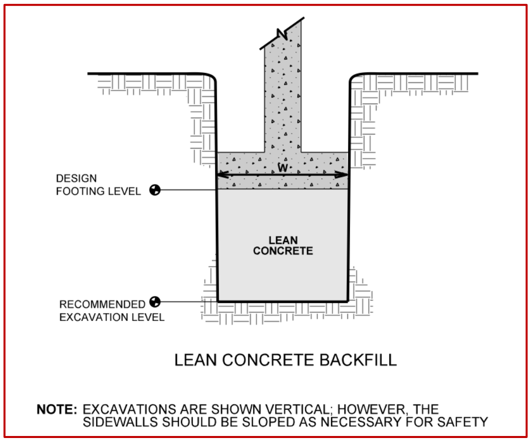
Foundation Construction Considerations

The shallow foundation bearing soils should be evaluated by the Geotechnical Engineer. A representative of the Geotechnical Engineer should use a combination of hand auger borings and dynamic cone penetrometer (DCP) testing to determine the suitability of the bearing materials for the design bearing pressure. DCP testing should be performed to a depth of 3 to 5 feet below the bottom of the foundation excavation. If unsuitable foundation bearing conditions are observed, the Geotechnical Engineer should recommend mitigation options.

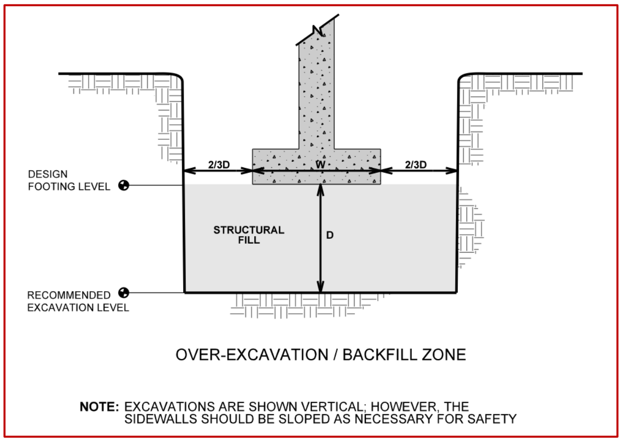
The base of all foundation excavations should be free of water and disturbed or uncompacted soil at the foundation bearing elevation prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loosened/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

Disturbed or uncompacted exposed at the surface of footing excavations may require surficial compaction with hand-held dynamic compaction equipment prior to placing structural fill, steel, and/or concrete. Disturbed or uncompacted soil that cannot be adequately compacted should be remediated as described in the following paragraphs.

If unsuitable bearing soils are observed 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. Alternatively, the footings could bear on lean concrete backfill placed in the excavations. The lean concrete replacement zone is illustrated in the sketch below.



Another option is overexcavation for structural fill placement below footings, which should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation with structural fill placed as recommended in the **Earthwork** section. If poorly-graded gravel (e.g., No. 57 stone) is used, it should be wrapped in a woven geotextile that can be used for both separation and filtration (e.g., Mirafi HP270).



Based on the subsurface conditions encountered in the borings and the provided design grades, we anticipate that undercutting of shallow foundations will be required in the area represented by Boring B-1, in addition to other localized areas away from or between the boring locations.

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 building(s).

The on-site soils include high plasticity Fat Clay (CH) that is potentially expansive, exhibiting the potential to swell with increased water content and shrink upon drying. Construction of the floor slabs and revising site drainage creates the potential for gradual changes in water contents within the expansive soils. Increases in water content could cause the expansive soils to swell and damage the floor slabs. Drying of the expansive soils could cause them to shrink and damage the floor slabs. To reduce the swell potential to less than about 1 inch, the upper 1 foot of subgrade soils below the floor slabs (excluding the aggregate base course) should consist of low-plasticity soil.

Floor Slab Design Parameters

Item	Description
Floor Slab Support	Subgrade compacted to recommendations in **Earthwork** For slabs above exterior grades, use 4 inches of base course meeting material specifications of ACI 302 and the 2018 North Carolina Building Code[1]. The base course material should consist of compactable, easy-to-trim granular fill that will remain stable and support construction traffic. Suitable materials include SP, SW, SM, and well-graded gravel (GW or ABC)[2].
Estimated Modulus of Subgrade Reaction [3]	125 pounds per square inch per inch (psi/in) for point loads

1. A base course is not required by the 2024 NC Building Code nor ACI 302 for floor slabs above exterior grade. However, it is good design and construction practice to include a base course to provide uniform support and improve constructability, especially over fine-grained subgrade soils.

Item	Description
	2. Per ACI 360R-12, ABC produces more uniform support and provides an all-weather working surface to speed construction during inclement weather. 3. 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 only. 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 concrete floor slabs and wet environments.

Floor slabs should be structurally independent of footings to reduce the possibility of floor slab cracking caused by differential movements between the slab and footings (unless the slab is structurally designed to accommodate the stresses from the potential differential footing-slab settlements). 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

On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade may not be suitable for placement of base course and concrete, and corrective action will be required to repair the damaged areas.

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 structural 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 base 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.

Pavements

General Pavement Comments

Pavement section thicknesses 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 section thicknesses noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

A California Bearing Ratio (CBR) of 5 was used to estimate resilient modulus for use in asphalt and concrete pavement section thickness analyses. This CBR value is based on empirically derived values, and on our expectation of the quality of the subgrade as prescribed in **Earthwork**.

Pavement Sections

The following table provides our opinion of minimum thickness for AC sections for private streets, drives, and parking areas:

Asphalt Pavement Sections

Layer [2]	Thickness (inches)	
	Light Duty [1]	Heavy Duty [1]
Asphalt Surface Course	3 [3]	1.5
Asphalt Intermediate Course	--	2.5
Aggregate Base Course (ABC)	6	8

Layer [2]	Thickness (inches)	
	Light Duty [1]	Heavy Duty [1]

1. See **Project Description** for more specifics regarding traffic information and assumptions.
2. All materials should meet the current North Carolina Department of Transportation (NCDOT) Standard Specifications for Highway and Bridge Construction.
   - Asphalt Surface - NCDOT Type S9.5B Asphaltic Cement Concrete: Division 6, Section 610
   - Asphalt Intermediate Course – NCDOT Type 19.0C Asphaltic Cement Concrete: Division 6, Section 610
   - Aggregate Base Course – NCDOT ABC: Division 10, Section 1005
3. Placed in two equal-thickness lifts Placed in two equal lifts

The following table provides our estimated minimum thickness of concrete pavements for private streets, drives, and parking areas:

Concrete Pavement Sections

Layer [2]	Thickness (inches)	
	Medium Duty [1]	Heavy Duty [1]
Concrete [3]	6	7
Aggregate Base Course (ABC)	4	4

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current North Carolina Department of Transportation (NCDOT) Standard Specifications for Highway and Bridge Construction.
   - Concrete Pavement - NCDOT Portland Cement Concrete: Division 7, Section 710 and Division 10, Section 1000.
   - Aggregate Base Course – NCDOT ABC: Division 10, Section 1005
1. Concrete Pavement – Air entrained with a minimum compressive strength of 4,000 psi after 28 days of laboratory curing per ASTM C31.
2. Medium duty concrete pavement recommended for dumpster pads.

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 base course layer is recommended under concrete pavements 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 concrete 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.

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.

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.

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 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.

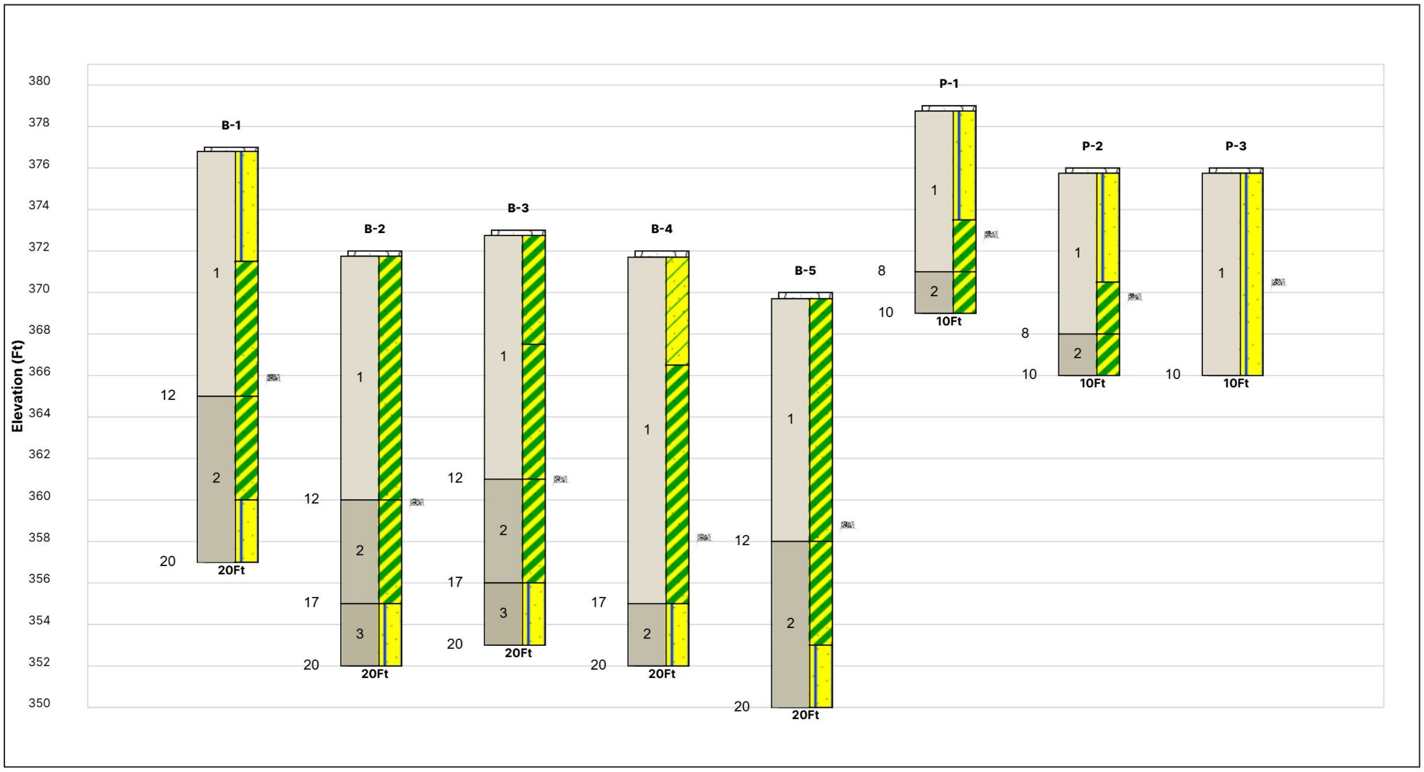
Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation 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:

GeoModel

GeoModel



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

#	Layer Name	General Description
1	Residuum 1	Soft to Stiff Clay, Loose to Medium Dense Silty Sand (N<=15 bpf)
2	Residuum 2	Very Stiff Clay, Medium Dense to Dense Silty Sand (15 bpf<N<30 bpf)
3	Residuum 3	Medium Dense Silty Sand (N<=15 bpf)

Legend

TOPSOIL	Silty Sand
Sandy Fat Clay	Sandy Lean Clay

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.

First Water Observation

Second Water Observation

Third Water Observation

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 groundsurface.

Attachments

Exploration and Testing Procedures

Field Exploration

SPTs

Number of Borings	Approximate Boring Depth (feet)	Location
5	20	Proposed Building Area
3	10	Proposed Pavement Areas

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment and referencing existing site features (estimated horizontal accuracy of about ±20 feet). Approximate ground surface elevations were obtained by interpolation from the Preliminary Grading Plan, dated October 7, 2025, drawn by The John R. McAdams Company.

Subsurface Exploration Procedures: We advanced the borings with a rotary drill rig using hollow stem augers. Four split-spoon samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-spoon 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 was 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 the boreholes while drilling and at the completion of drilling for the presence of groundwater. The attached boring logs provide groundwater information, including groundwater depths, if boreholes were dry, and/or borehole cave-in depths.

For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information were recorded on the field boring logs. The samples were placed in appropriate containers and taken to our geotechnical laboratory for testing and classification by geotechnical staff. 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

Geotechnical staff reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Water content
- Atterberg limits
- Grain size analysis
- Moisture-density relationship (standard Proctor)
- California Bearing Ratio

The laboratory testing program included classification of soil by geotechnical staff. 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.

Photography Log

Northeastern view new B-3 on September 11, 2025

Western view near P-1 on September 11, 2025

Site Location and Exploration Plans

Contents:

Note: All attachments are one page unless noted above.

Site Location

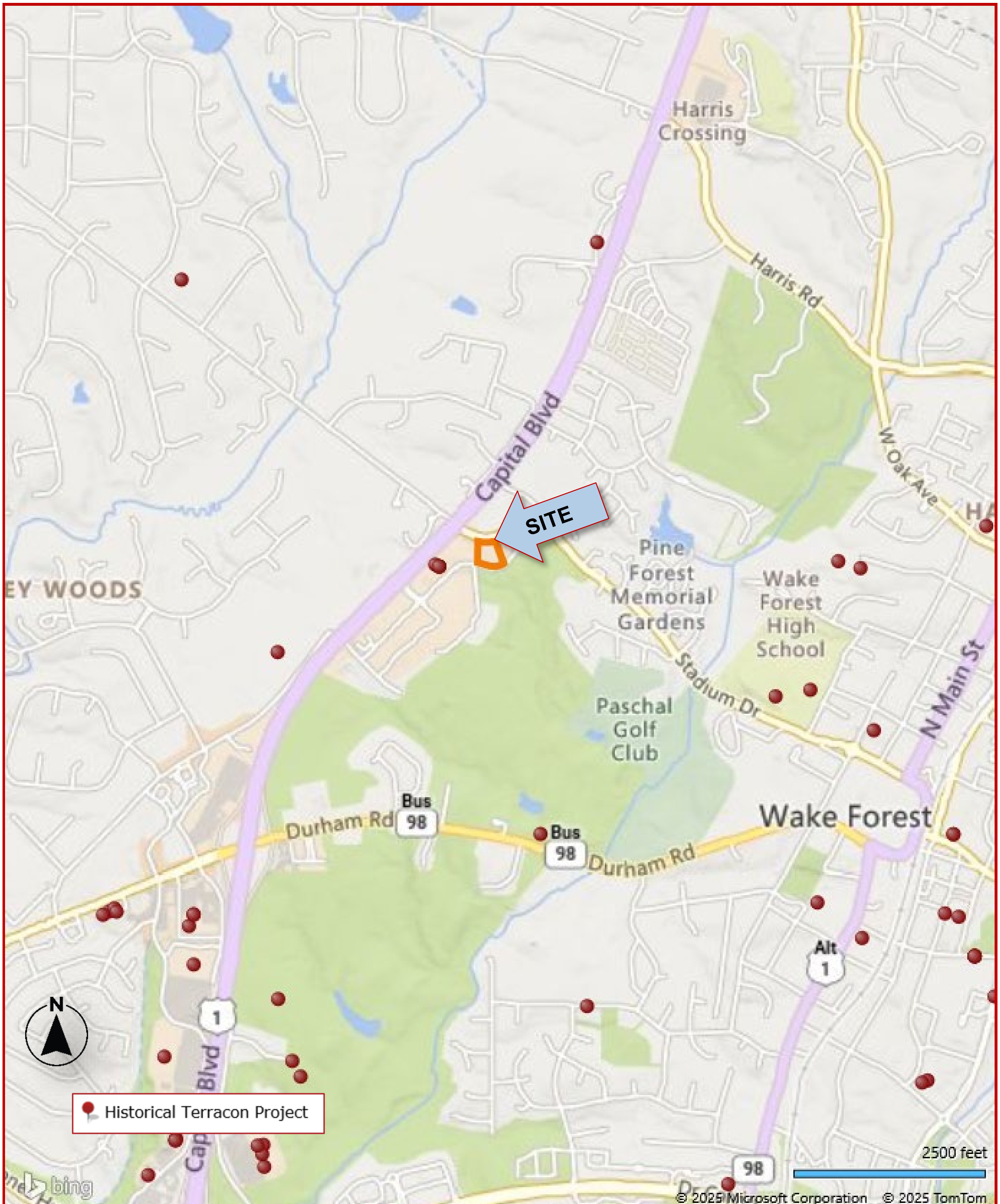


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES
MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan (Site Plan)

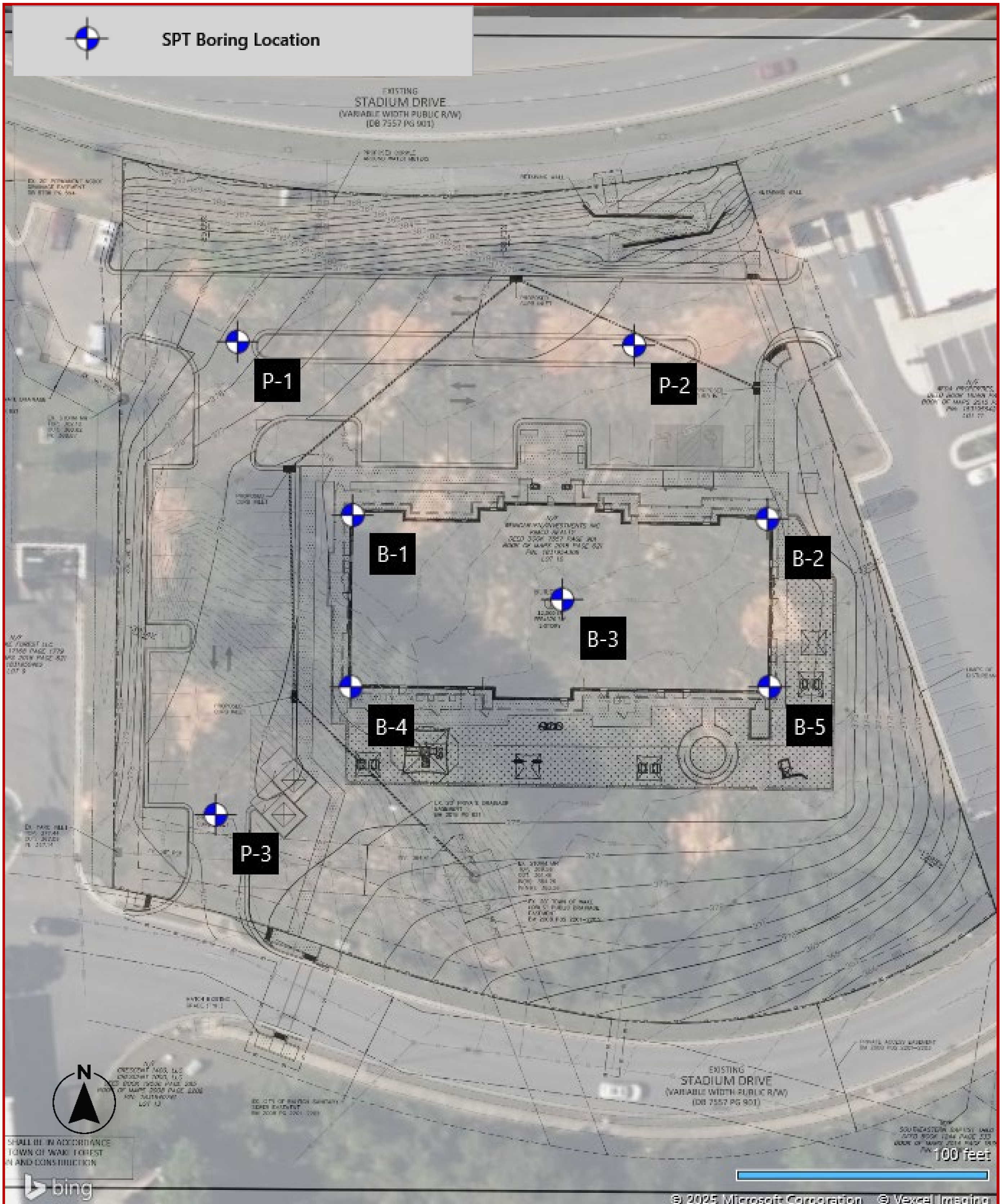


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES PLAN PROVIDED BY CLIENT

Exploration Plan (Aerial)

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.

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9895°   Longitude: -78.5290°

BORING LOG NO. B-1

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
377(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results
1		0.2	**TOPSOIL**, 3 inches		376.8			
		5.5	**SILTY SAND (SM)**, fine grained, red and brown, loose, trace mica		371.5			2-3-5 N = 8 2-2-2 N = 4
		12.0	**SANDY FAT CLAY (CH)**, orange and red, medium stiff, trace mica	5 10	365.0			2-2-3 N = 5 2-3-4 N = 7
2		17.0	**SANDY FAT CLAY (CH)**, orange and red, very stiff, trace mica	15	360.0			6-9-12 N = 21
			SILTY SAND (SM), fine grained, brown, medium dense, trace mica					5-9-16 N = 25

Boring Terminated at 20 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
11.1 Ft. Dry Cave In

Advancement Method
0-20 Ft. 3.25" Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9895° Longitude: -78.5285°

BORING LOG NO. B-2

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
372(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results
		0.3	**TOPSOIL**, 3 inches		371.8			
1			**SANDY FAT CLAY (CH)**, orange and red, stiff, trace mica					7-6-6 N = 12
				5				4-5-5 N = 10
								3-4-7 N = 11
				10				3-4-7 N = 11
2		12.0	**SANDY FAT CLAY (CH)**, orange and red, very stiff, trace mica		360.0			
				15				8-8-8 N = 16
3		17.0	**SILTY SAND (SM)**, fine grained, red and brown, medium dense, trace mica		355.0			4-6-6 N = 12

Boring Terminated at 20 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
12.1 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9894° Longitude: -78.5288°

BORING LOG NO. B-3

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
373(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)	Percent Fines	Percent Sand	Percent Gravel	Atterberg Limits LL	PL	PI
		0.3	**TOPSOIL**, 3 inches		372.8											
1			**SANDY FAT CLAY (CH)**, red and brown, soft to medium stiff, trace gravel, trace mica						3-2-2 N = 4	29.4	59.4	39.7	0.9	59	29	30
									1-2-3 N = 5							
		5.5	**SANDY FAT CLAY (CH)**, fine grained sand, red and brown, stiff, trace mica	5	367.5				4-5-6 N = 11							
				10					3-4-6 N = 10							
2		12.0	**SANDY FAT CLAY (CH)**, fine grained, red and brown, very stiff, trace mica		361.0			12 Ft. Dry Cave In								
				15					7-11-16 N = 27							
3		17.0	**SILTY SAND (SM)**, fine grained, purple and red, medium dense, trace mica		356.0				5-5-5 N = 10							

Boring Terminated at 20 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
12 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9894° Longitude: -78.5288°

BORING LOG NO. B-3

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
373(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)	Percent Fines	Percent Sand	Percent Gravel	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI
1		0.3	**TOPSOIL**, 3 inches		372.8											
			SANDY FAT CLAY (CH), red and brown, soft to medium stiff, trace gravel, trace mica						3-2-2 N = 4	29.4	59.4	39.6	0.867	59	29	30
									1-2-3 N = 5							
		5.5	**SANDY FAT CLAY (CH)**, fine grained sand, red and brown, stiff, trace mica	5	367.5				4-5-6 N = 11							
				10					3-4-6 N = 10							
2		12.0	**SANDY FAT CLAY (CH)**, fine grained, red and brown, very stiff, trace mica		361.0			12 Ft. Dry Cave In								
				15					7-11-16 N = 27							
3		17.0	**SILTY SAND (SM)**, fine grained, purple and red, medium dense, trace mica		356.0				5-5-5 N = 10							

Boring Terminated at 20 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
12 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9893° Longitude: -78.5290°

BORING LOG NO. B-4

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
372(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results
		0.3	**TOPSOIL**, 3 inches		371.7			
1		5.5	**SANDY LEAN CLAY (CL)**, fine grained sand, red and brown, medium stiff to stiff, trace mica		366.5	X		2-7-7 N = 14
				5		X		6-2-4 N = 6
		17.0	**SANDY FAT CLAY (CH)**, red and orange, soft to medium stiff, trace mica		355.0	X		2-3-4 N = 7
				10		X		2-4-4 N = 8
				15		X	▽	2-1-2 N = 3
2			**SILTY SAND (SM)**, fine grained, orange and brown, dense, trace gravel			X		16-25-12 N = 37

Boring Terminated at 20 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
13.8 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9893° Longitude: -78.5285°

BORING LOG NO. B-5

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
370(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results	Water Content (%)
		0.3	**TOPSOIL**, 3 inches		369.7				
1			**SANDY FAT CLAY (CH)**, orange, brown, and red, medium stiff to stiff			X		5-5-4 N = 9	12.7
				5		X		3-3-4 N = 7	
						X		4-4-5 N = 9	
				10		X		3-4-6 N = 10	
							Dry Cave In		
2		12.0	**SANDY FAT CLAY (CH)**, orange and red, very stiff, trace mica, trace silt		358.0				
				15		X		8-13-17 N = 30	
		17.0	**SILTY SAND (SM)**, fine to medium grained, orange and red, medium dense		353.0				
						X		8-10-10 N = 20	

Boring Terminated at 20 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
11.2 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9896°   Longitude: -78.5292°

BORING LOG NO. P-1

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
379(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results	Water Content (%)	Percent Fines	Percent Sand	Percent Gravel	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI
1		0.3	**TOPSOIL**, 3 inches		378.8										
			SILTY SAND (SM), fine to medium grained, red and brown, loose			X		8-5-3 N = 8	22.8	49.0	46.8	4.1	45	28	17
						X		2-2-2 N = 4							
		5.5	**SANDY FAT CLAY (CH)**, fine grained, orange and brown, medium stiff, trace mica, trace silt	5	373.5	X	Cave In	2-3-4 N = 7							
2		8.0	**SANDY FAT CLAY (CH)**, fine grained, orange and brown, very stiff, trace mica		371.0	X		4-8-21 N = 29							

Boring Terminated at 10 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
6.2 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9896° Longitude: -78.5287°

BORING LOG NO. P-2

Terracon
3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation: 376(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results	Water Content (%)	Percent Fines	Percent Sand	Percent Gravel	Atterberg Limits LL	PL	PI
1		0.3	**TOPSOIL**, 3 inches		375.8										
			SILTY SAND (SM), fine to medium grained, red , brown and orange, loose to medium dense, trace mica			X		4-4-4 N = 8							
						X		3-5-5 N = 10	21.6	46.2	53.2	0.6	51	34	17
		5.5	**SANDY FAT CLAY (CH)**, purple and red, medium stiff, trace roots	5	370.5	X	Dry Cave In	2-3-2 N = 5							
2		8.0	**SANDY FAT CLAY (CH)**, trace gravel, orange and red, very stiff, trace mica		368.0	X		5-6-9 N = 15							

Boring Terminated at 10 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
6.2 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

KinderCare Wake Forest
1005 Stadium Drive, Wake Forest, NC,USA
Terracon Project No. 70255202

Latitude: 35.9891° Longitude: -78.5292°

BORING LOG NO. P-3

3150 Spring Forest Rd, Ste 100
Raleigh, NC 27616-2810

Surface Elevation:
376(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results	Water Content (%)
		0.3	**TOPSOIL**, 3 inches		375.8				
1			**SILTY SAND (SM)**, fine to medium grained, pink, brown, and orange, loose to medium dense, trace mica					7-7-7 N = 14	18.7
								3-3-3 N = 6	
				5					
								3-5-4 N = 9	
								3-3-7 N = 10	

Boring Terminated at 10 Ft

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
General Comments: 2.25 in. hollow stem augers

Water Level Observations
5.5 Ft. Dry Cave In

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
408/Geoprobe 3230DT

Hammer Type
Automatic

Driller
S. Harig

Logged By
Gunnar Goslin

Boring Started
09/24/2025

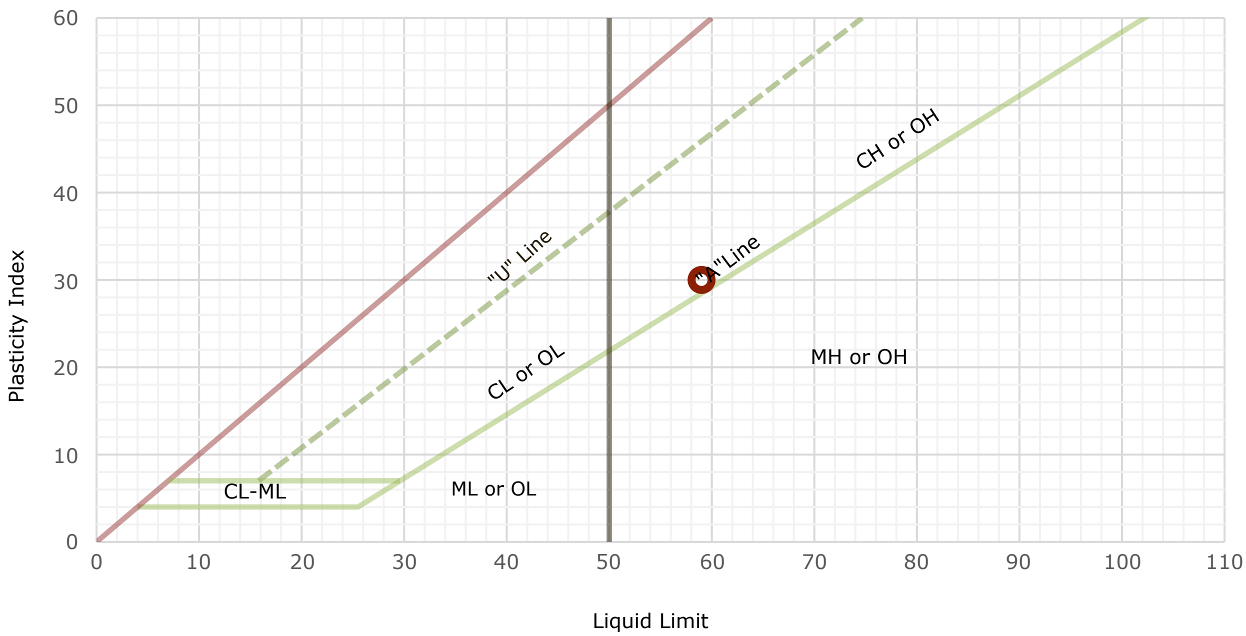
Boring Completed
09/24/2025

Facilities | Environmental | Geotechnical | Materials

100
Raleigh, NC 27616-2810

Liquid Limit, Plastic Limit and Plasticity Index of Soils

ASTM D4318



Boring ID	Depth (Ft)	LL	PL	PI	Fines (%)	Description	USCS
B-3	1-3	59	29	30	59.4	Red Sandy Fat Clay	CH

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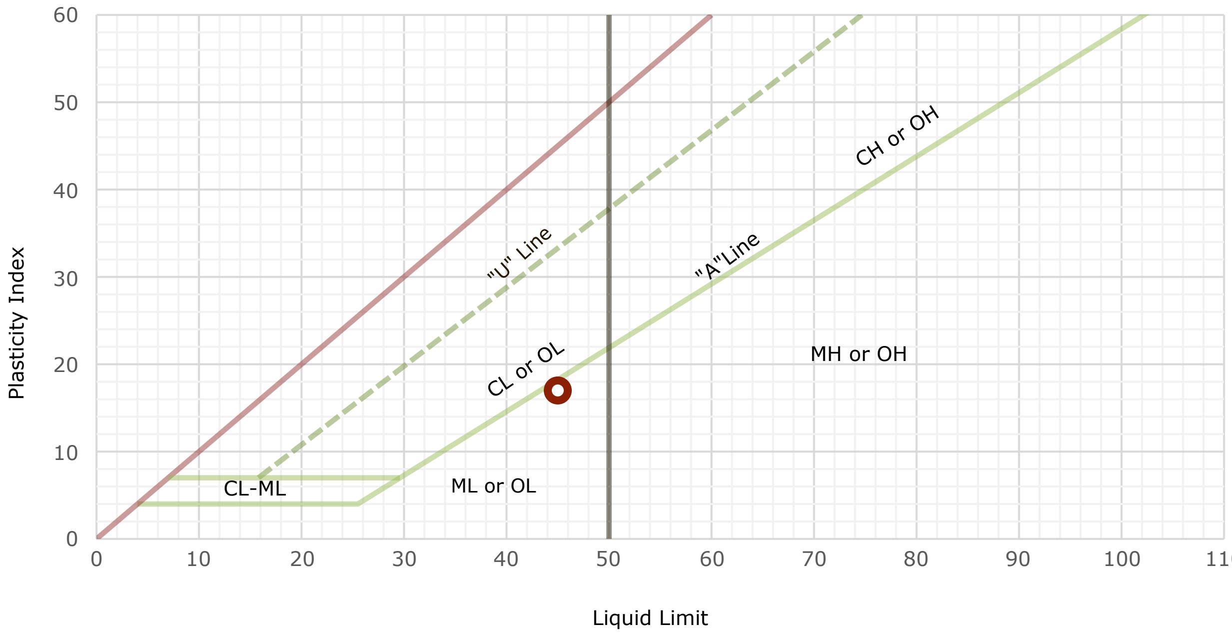
Liquid Limit, Plastic Limit and Plasticity Index of Soils

ASTM D4318



Boring ID	Depth (Ft)	LL	PL	PI	Fines (%)	Description	USCS
P-1	1-2.5	45	28	17	49.0	Brown-Red Silty Sand	SM

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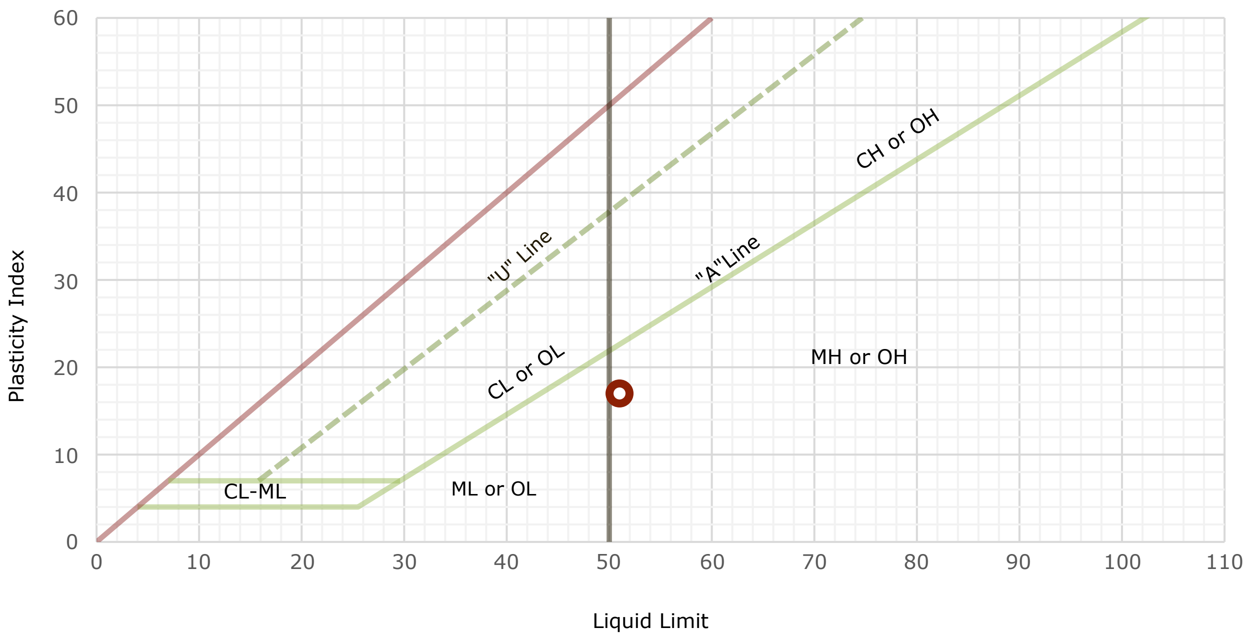
Liquid Limit, Plastic Limit and Plasticity Index of Soils

ASTM D4318



Boring ID	Depth (Ft)	LL	PL	PI	Fines (%)	Description	USCS
P-2	3.5-5	51	34	17	46.2	Red Silty Sand	SM

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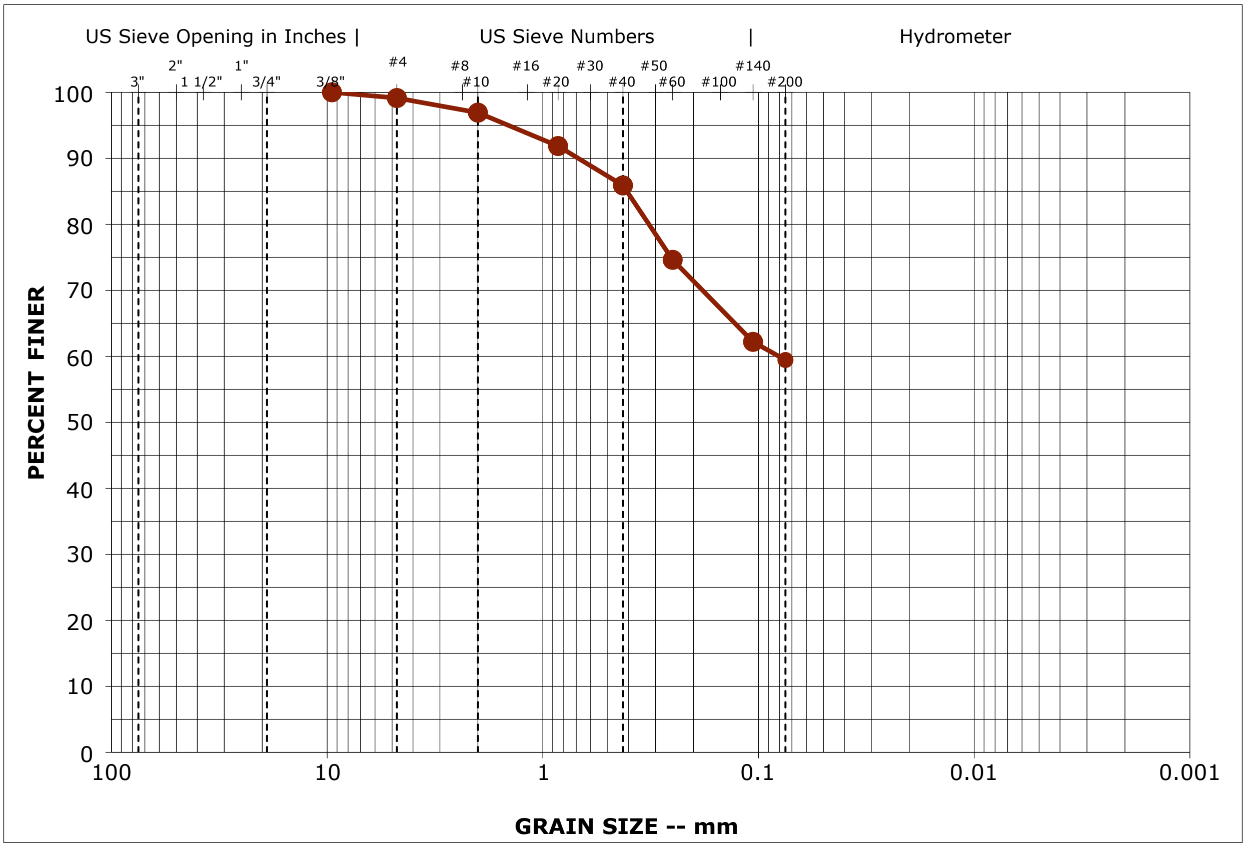
Particle-Size Distribution of Soils Using Sieve Analysis

ASTM D422-Method B



Boring ID	Depth (Ft.)	Description	USCS	Specific Gravity
B-3	1 - 3	Red Sandy Fat Clay	CH	N/A

% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay
0.0	0.9	39.7	59.4	N/A	N/A

Sieve	% Finer	Sieve	% Finer	Grain Size		Coefficients	
3"	100.0	#40	85.9	D_{100}	9.500	C_C	
2"	100.0	#60	74.6	D_{60}	0.080		
1 1/2"	100.0	#140	62.2	D_{30}		C_U	
1"	100.0	#200	59.4	D_{10}			
3/4"	100.0			Remarks			
3/8"	100.0						
#4	99.1						
#10	96.9						
#20	91.9						

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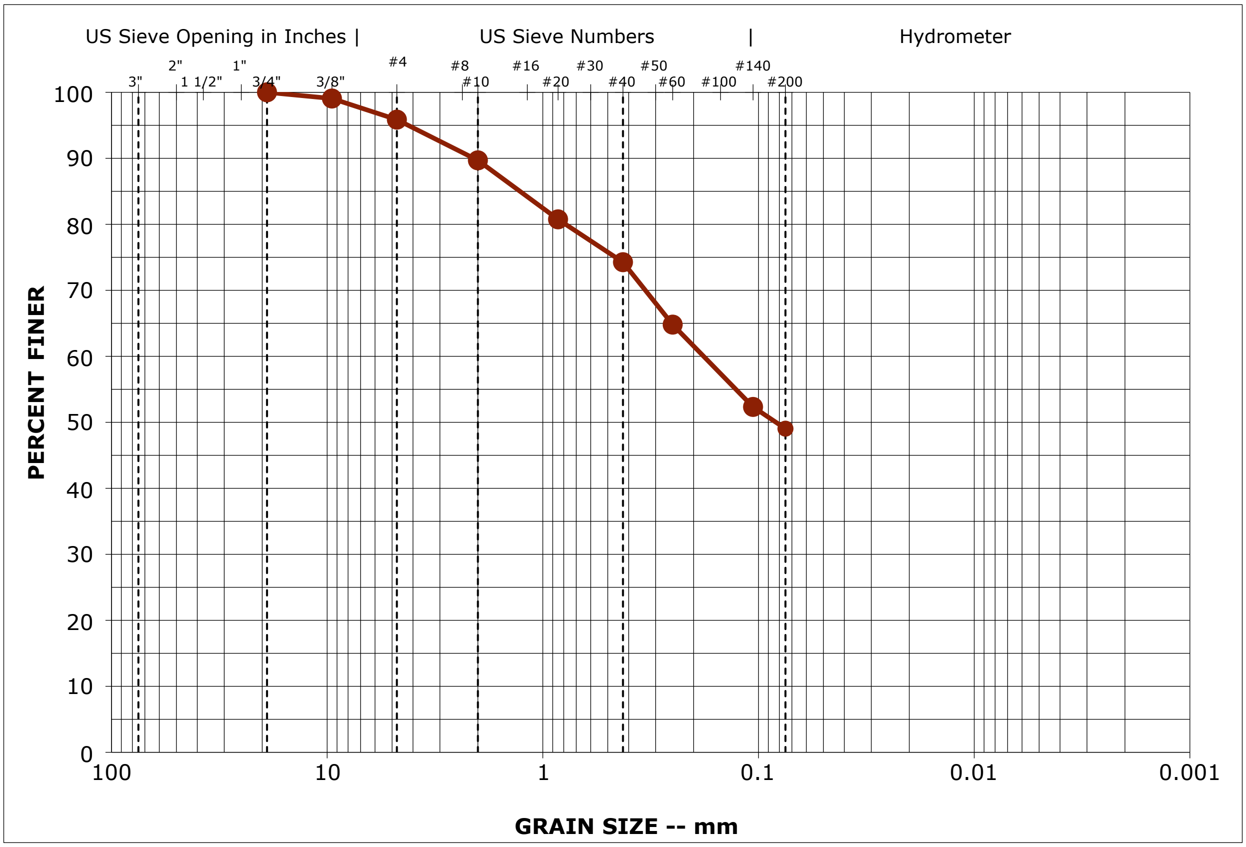
Particle-Size Distribution of Soils Using Sieve Analysis

ASTM D422-Method B



Boring ID	Depth (Ft.)	Description	USCS	Specific Gravity
P-1	1 - 2.5	Brown-Red Silty Sand		N/A

% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay
0.0	4.1	46.8	49.0	N/A	N/A

Sieve	% Finer	Sieve	% Finer	Grain Size		Coefficients	
3"	100.0	#40	74.3	D_{100}	19.000	C_C	
2"	100.0	#60	64.8	D_{60}	0.180		
1 1/2"	100.0	#140	52.3	D_{30}		C_U	
1"	100.0	#200	49.0	D_{10}			
3/4"	100.0			Remarks			
3/8"	99.1						
#4	95.9						
#10	89.7						
#20	80.8						

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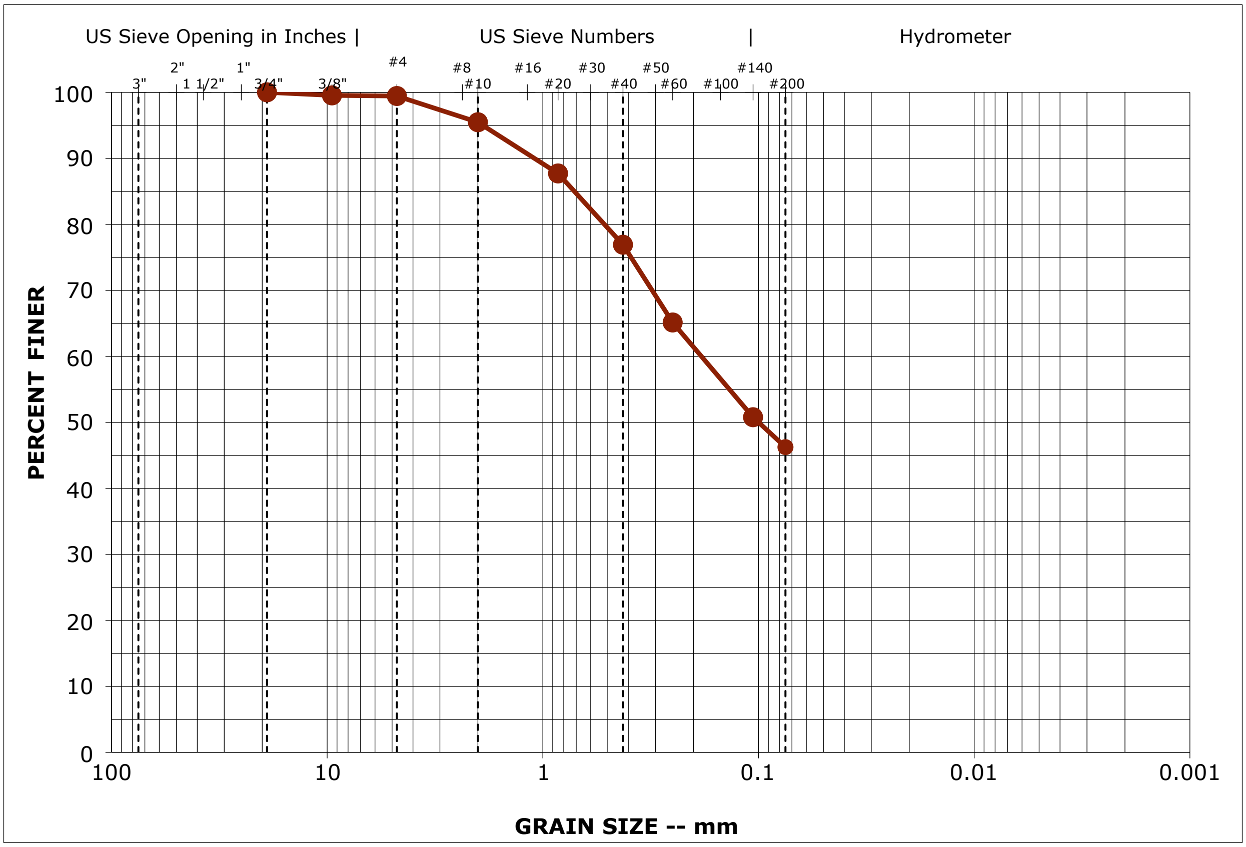
Particle-Size Distribution of Soils Using Sieve Analysis

ASTM D422-Method B



Boring ID	Depth (Ft.)	Description	USCS	Specific Gravity
P-2	3.5 - 5	Red Silty Sand	SM	N/A

% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay
0.0	0.6	53.2	46.2	N/A	N/A

Sieve	% Finer	Sieve	% Finer	Grain Size		Coefficients	
3"	100.0	#40	76.9	D_{100}	19.000	C_C	
2"	100.0	#60	65.1	D_{60}	0.184		
1 1/2"	100.0	#140	50.8	D_{30}		C_U	
1"	100.0	#200	46.2	D_{10}			
3/4"	100.0			Remarks			
3/8"	99.5						
#4	99.4						
#10	95.5						
#20	87.7						

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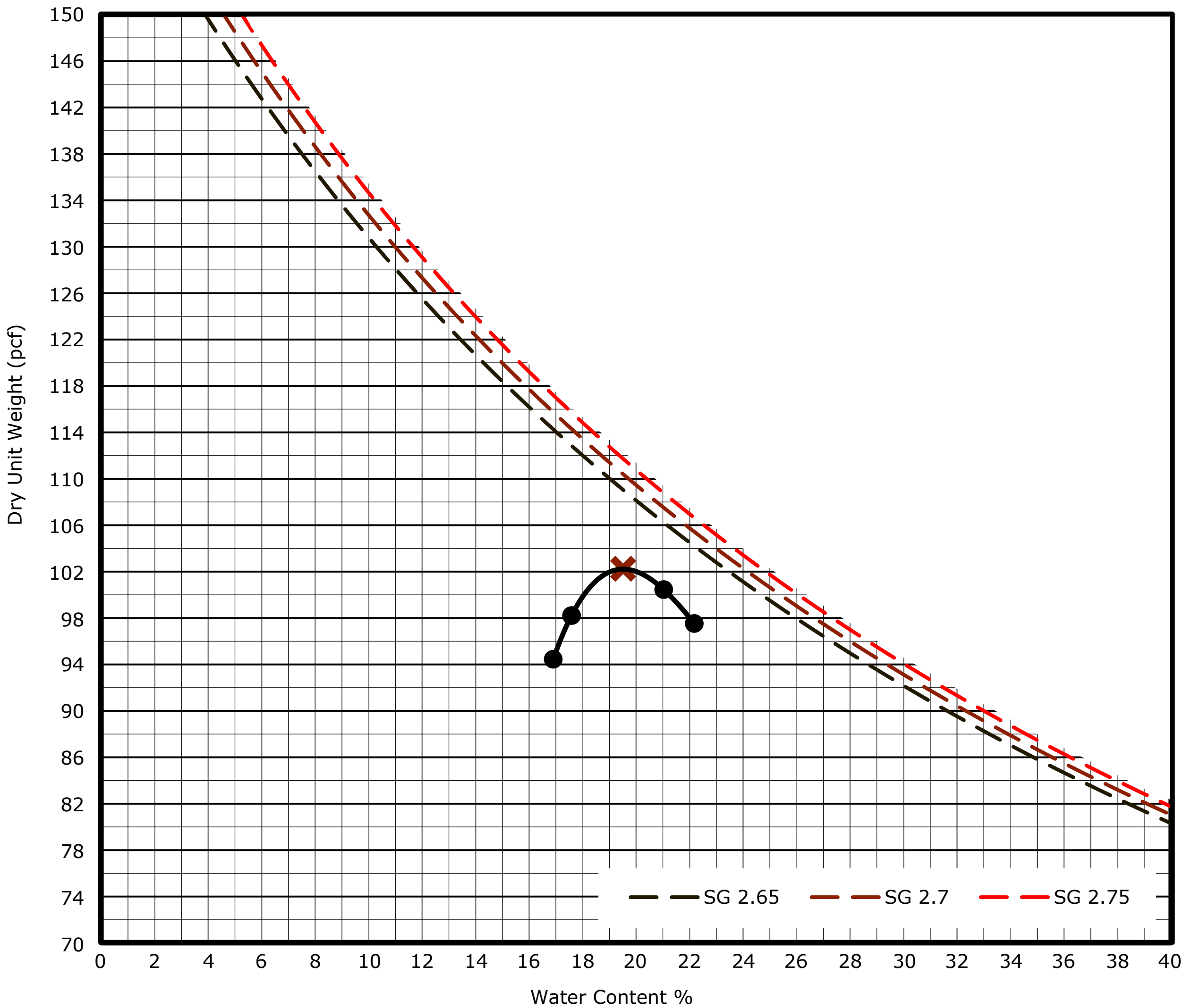
Laboratory Compaction Characteristics of Soil Using Standard Effort

ASTM D698



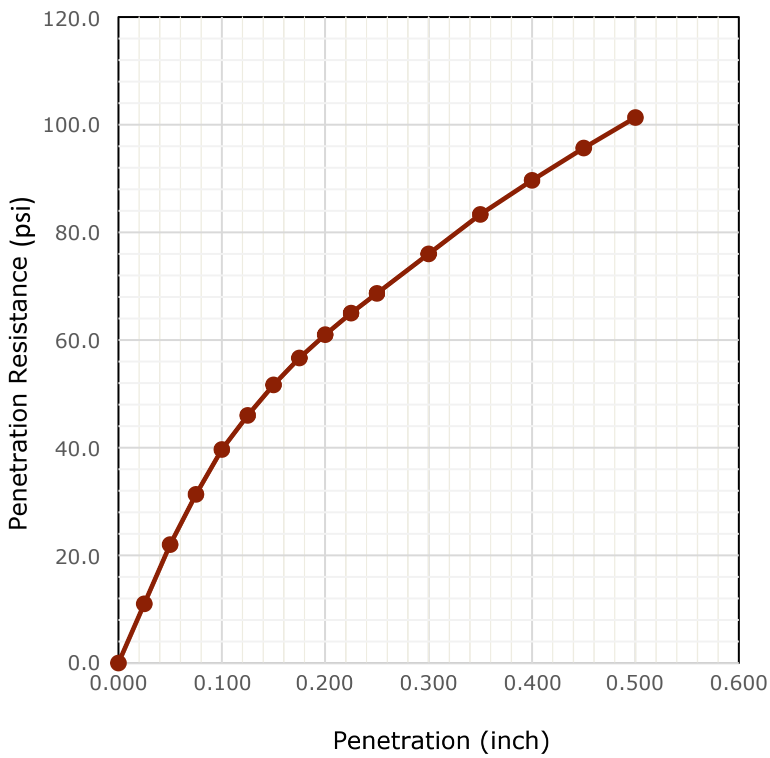
Boring ID	Depth (ft)	Description of Materials	USCS	Fines (%)	LL	PL	PI
B-3	1 - 3	Red Sandy Fat Clay	CH	59.4	59	29	30

Test Method	Sample Prep	Rammer	Max Dry Unit Weight (pcf)	Optimum Water Content (%)
A	Dry	Manual	102.2	19.5

California Bearing Ratio

ASTM D1883 - 1 PT Method

Sample Information					
Source of Material	B-3 at 1.0			**Proctor Method**	ASTM D698 - Method A
Maximum Dry Density (pcf)	102.2			**Optimum Moisture**	19.5
Atterberg Limits	**LL**	**PL**	**PI**	**Percent Fines**	59.4
	59	29	30		
Description of Material	Red Sandy Fat Clay			**Sample Condition**	Soaked



CBR Test Data	
Length of Soaking (hours)	96
Surcharge Weight (lbs)	10
Dry Density Before Soak (pcf)	95.8
Compaction of Proctor (%)	93.7
Moisture After Comp. (%	20
Top 1" After Soaking (%	25.4
Swell (%)	2
CBR Value at 0.100 inch	4
CBR Value at 0.200 inch	4.1
Remarks:	CBR #1

Supporting Information

Contents:

Note: All attachments are one page unless noted above.

Terracon
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General Notes

Sampling	Water Level	Field Tests
Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered 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.	N — Standard Penetration Test Resistance (Blows/Ft.) (HP) — Hand Penetrometer (T) — Torvane (DCP) — Dynamic Cone Penetrometer UC — Unconfined Compressive Strength (PID) — Photo-Ionization Detector (OVA) — Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. 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		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		
Relative Density	Standard Penetration or N-Value (Blows/Ft.)	Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	5 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	9 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	16 - 30
		Hard	> 4.00	> 30

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification: Group Symbol	Soil Classification: 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] $Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[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.