DALTON–WHITFIELD
JOINT DEVELOPMENT AUTHORITY

ADDENDUM NO.1 – FEBRUARY 7, 2025

For

PROJECT:

Hamilton Street Workforce Housing Initiative

ATTACHMENTS

1. **Questions and Answers**
2. **Report of Geotechnical Exploration**

ADDENDUM NO. 1

Pre4-Bid Meeting 1/30/2025
Questions and answers for:
Hamilton Street Workforce Housing Initiative

Below are pre-bid questions and responses. We appreciate your patience and look forward to your favorable bids. Project administration contacts are below.

Questions Submitted 1/30/2024
Answers Submitted 2/7/2025

1. Is the concrete included in the package, sidewalks, pads, and conduit for streetlights?
    a. Interior sidewalks to be owned and maintained by the HOA and perimeter sidewalks that are located in the "City of Dalton Property Easement" that adjoin existing city owned right of way are to be constructed under this contract. Conduit for power, fiber & streetlights will be the responsibility of the owner, JDA, and not part of this contract.
2. On the plans it notes irrigation will have its own meter for each unit? Clarify main line, tap, and meter count and locations, common area irrigation.
    a. There will be one meter per lot and irrigation to each lot shall be serviced from the single meter. An irrigation plan has been provided for common areas and an alternate pricing line item has been included on the bid form.
3. Ensure driveway and sidewalk location and how will concrete installation timing be handled
    a. Driveway installation will be done at time of vertical construction and will not be part of this contract.
4. Will the driveway openings be to city standard, i.e. taper, apron, valley gutter?
   Would you consider an L-Back curve?
    a. Driveway's are not part of this project scope. "L-back" curb or "high back" will only be permitted as shown on drawings. There will not be any curb cuts associated with this project. It will be one continuous curb.
5. Will you allow an alternate storm trap manufacturer that allows the same capacities? Does this change specs, quotes, and footprint?
    a. As a base bid, alternates to underground detention will not be accepted. Once contract is awarded, we'll entertain value engineering options relative to underground detention.
6. Is this a unit price project or lump sum project, concrete?
    a. Contract will be executed on a unit price basis. Any incidental items not listed specifically on bid form but needed for proper installation per plans and specifications shall be incorporated in associated.
7. Is this classified or unclassified?
    a. Is a rock clause included for import, export, allowance, etc.?
    b. Provide soil boring addendum.
        i. Contract will be executed on a classified basis. Any unsuitable material or rock excavation encountered will be determined by a third party geotechnical engineer and will be remediated at their discretion. The owner, JDA, is responsible for hiring the 3rd party

8. Have tap fees and permit prices been guaranteed? Who covers the cost, can we define actual costs, and counts for this development? Is there a detailed spec for this development? Meter box, backflow, and stub install/fee requirements.
    a. The site work contractor under this scope of work is responsible for the installation of all water and sewer taps for each lot being developed. Developers may purchase materials from DU to ensure compliance with utility specifications. There will be no additional tap fees charged by DU for both water and sewer for this project.
9. What is required for materials testing? Pad certification, utility testing, and pricing?
    a. The only testing that would be required from the contractor would be testing utilities to Dalton Utilities requirements. Compaction testing will be provided by owner.
10. Where the utilities cross the road, will they be required to backfill with stone up to subgrade?
    a. Backfill of utilities shall conform with the specifications provided in the plan set.
11. It shows an owner allowance but is not included.
    a. The owner refers to the JDA. Cash allowance shall be reserved for owner directed work. Please write in on bid form Item No. 49 Cash Allowance the amount of $50,000 for a unit price and $50,000 for the total price.
12. Would we allow more than 24 weeks? What is considered abnormal to be flexible?
    a. For bidding purposes, please assume the contract duration is to not exceed 24 weeks. Contract extensions can be granted for rightful reasons.
13. Who will handle the cost and relocation of poles?
    a. Any cost associated with the relocation of power poles will be at the JDA expense.
14. Where are the sewer tap locations? Explain how to tap into the existing main and to homes on streets, and water meter locations? Note water access to interior and exterior streets.
    a. Sewer tap locations are shown on the utility plans for the project. Standard engineering details for sew and water taps can be found on link below
    b. Utility Resources in Dalton, GA | Dalton Utilities- https://www.dutil.com/resources/
15. Does the perimeter curbing stay, who is responsible for replacing this?
    a. Will the city be repaving around the lots?
    b. Please refer to sheet C-201 for installation of new curb & gutter. Any unnecessary damage to existing curb during the construction process will be at the expense of the contractor.
        i. The City of Dalton will not be performing any paving associated with this contract.
16. Who is the contract with for payouts, project administrator?
    a. JDA-contact below
17. Can we alleviate the 24-week lead time as long as the entirety of the project is on schedule? For example wait for road install, etc. How can we make this most efficient?
    a. Contract is to be complete within 24 weeks. Please refer to question 12 relating to contract extensions.
18. Can we put in a binder course for patching, mobilization
    a. The full paving spec is to be installed under this contract and within the 24 week contract duration.
19. Can we provide utility fee information to be provided for fair bid pricing?

    a. Developer to install water and sewer taps, there will be no additional tap fees for from DU.

20. Clarify common area ownership, streetlights, any other right of way, and easements.
    a. Any common areas inside the development will be owned by HOA, elements such as the streets and perimeter easement will be owned or maintained by the City of Dalton. Please refer to sheet C-204 for a portion of the clarifications.
21. Specify street light locations, and conduit locations.
    a. Streetlights will be handled in coordination of the owner and Dalton Utilities. No cost associated with streetlights shall be allocated for under this contract.
22. Explain best way to finish grade, pad grade expectations (for slab foundations, no sub-grade detail), grass areas for drainage. Is there a grading clause?
    a. Provided finish grade shall be within +/- 0.1 vertical feet of elevations provided on sheet C-202. Finished floor elevations provided on sheet C-202 are pad subgrade elevations.

Project Administration:

Carl Campbell (First point of contact)
Dalton-Whitfield County Joint Development Authority
706-260-1761
campbell@daltonchamber.org

Chad Townsend
City of Dalton, Public Works Director
ctownsend@daltonga.gov

September 3, 2024

Dalton-Whitfield Joint Development Authority
100 S Hamilton St.
Dalton, GA 30720

ATTENTION: Ms. Anna Young Adamson
anna@flooringcapitaldevelopment.org

Subject: **REPORT OF GEOTECHNICAL EXPLORATION**
Proposed Residential Development
902 S Hamilton Street
Dalton, Georgia
UES Project No. A24110.00652

Dear Ms. Adamson:

UES Professional Solutions 19, LLC (UES) is submitting the results of the geotechnical exploration performed for the subject project. The geotechnical exploration was performed in general accordance with the UES Proposal dated August 14, 2024. The following report presents our findings and recommendations for the proposed residential development in Dalton, Georgia.

UES sincerely appreciates the opportunity to serve as your geotechnical consultant. Should you have any questions regarding this report, or if we can be of any further assistance, please contact us at your convenience.

Sincerely,
UES Professional Solutions 19, LLC

Anna E. Thomas
Geotechnical Professional

GEORGIA REGISTERED No. PE049811 PROFESSIONAL 9-3-24 ENGINEER WILLIAM M. HESTERLEE

William M. Hesterlee, P.E.
Geotechnical Department Manager
GA No. PE049811

REPORT OF GEOTECHNICAL EXPLORATION

S Hamilton Street Residential Development

902 S Hamilton Street
Dalton, Georgia

UES Project No. A24110.00652

Submitted to:

Dalton-Whitfield Joint Development Authority
100 S Hamilton St.
Dalton, GA 30720

Submitted by:

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UES™

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this geotechnical exploration was to characterize the subsurface conditions for the design and construction of the proposed residential development at 902 S Hamilton Street in Dalton, Georgia. This report provides recommendations for general site preparation, excavation and fill requirements, foundation recommendations, slab-on-grade construction recommendations, and pavement recommendations for the proposed residential development.

1.2 PROJECT INFORMATION AND SITE DESCRIPTION

Project information, including a site plan prepared by Kronberg Urbanists Architects and dated October 30, 2023, was provided by Ms. Anna Adamson with Flooring Capital Development Corporation. UES understands that a new residential development is planned for 902 S Hamilton Street in Dalton, Georgia. The site is bordered by an existing building to the south, by S Hamilton Street to the east, by Nichols Street to the north, and by Cherokee Street to the west. The ±3.17-acre site currently exists as a vacant mostly grass covered with parcel with graveled areas along the southern and eastern borders. Based on a review of historical imagery, it appears site was previously developed but any structures have since been demolished sometime between the years of 2010 and 2013. Based on the topographic information provided, the site gently slopes downward from west to east with elevations ranging from approximately 734 feet in the southern portion of the site to approximately 727 feet on the eastern portion of the site. Grading plans were not yet available at the time of this report; however, based on the existing grades, we anticipate minimal earthwork cuts and fills (less than 5 feet) may be required to establish suitable finish grades.

Based on the provided site plan, we understand the project will consist of the construction of forty (40) new residential units consisting of single-family homes and townhomes along with the associated infrastructure. We also understand that there is the potential for an underground detention system on the southern portion of the site. Detailed structural information was not available at this time; however, based the

provided information and our experience with similar residential construction, we anticipate the structures will be multi-story wood-framed construction supported on conventional shallow foundations with a concrete slab-on-grade. Additionally, we anticipate maximum column loads will be on the order of 75 kips or less and maximum continuous wall loads are anticipated at 2 to 4 kips per linear foot. This information is summarized in Table 1 below.

Table 1 – Design Information Summary

Subject	Design Information / Assumptions
Number of Stories	2-3[1]
Usage	Residential
Assumed Column Loads	75 kips or less (Full Dead and Factored Live)[1]
Assumed Wall Loads	2 to 4 klf[1]
Finished Floor Elevation	Not available

Note[1]: Information is assumed based on experience with similar construction.

Once final grading and structural loading information becomes available, UES should be allowed to review and revise the recommendations contained herein, if necessary.

1.3 SCOPE OF STUDY

This geotechnical exploration involved a site reconnaissance, field exploration, laboratory testing, and engineering analysis. The following sections of this report present discussions of the field exploration, site conditions, and conclusions and recommendations. Following the text of this report, Appendix A presents figures and test boring records, and Appendix B presents the laboratory test results.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, subsurface water, or air, on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

2.0 EXPLORATION AND TESTING PROGRAMS

2.1 FIELD EXPLORATION

The site subsurface conditions were explored with a total of eleven (11) soil test borings (B-1 through B-11). Each of the eleven borings (B-1 through B-11) were spread evenly throughout the proposed residential development. Boring locations and depths were selected by UES personnel. The boring locations were located and staked in the field by City of Dalton personnel. The boring locations were slightly adjusted from the original locations provided by UES. Approximate boring locations based on the staked locations in the field are shown on the Boring Location Plan, Figure 3 presented in Appendix A. The drilling was performed on August 20, 2024. The depths reference the ground surface elevations at the site that existed at the time of the exploration. The elevations provided reference the ground surface elevations at the site that existed at the time of exploration based on the provided topographic information. The borings were advanced using 2.25-inch inside diameter hollow stem augers (HSA) with a truck-mounted drill rig. The drill crew worked in general accordance with ASTM D6151 (HSA Drilling). Sampling of overburden soils was accomplished using the standard penetration test procedure (ASTM D1586). The borings were backfilled with soil cuttings before leaving the site. Detailed test boring records are presented in Appendix A.

In split–spoon sampling, a standard 2-inch O.D. split-spoon sampler is driven into the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the last 12 inches of the standard 18 inches of total penetration is recorded as the Standard Penetration Resistance (N-value). These N-values are indicated on the boring logs at the testing depth and provide an indication of the relative density of granular materials and strength of cohesive materials.

2.2 LABORATORY TEST PROGRAM

Soil samples collected during drilling were transported to our laboratory for visual classification and laboratory testing. The following laboratory testing was performed on select samples to determine various properties of the soil:

- Atterberg Limits (ASTM D4318): Two (2) Atterberg limits tests were performed for this project.

This test helps us to confirm our visual classifications according to the Unified Soil Classification System (USCS). The plastic limit and liquid limit represent the moisture content at which a cohesive soil changes from a semi-solid to a plastic state and from a plastic state to liquid state, respectively.

- Natural Moisture Content (ASTM D2216): Moisture content determinations were performed on fifty (50) samples for this project. The natural moisture content is defined as the ratio of the weight of water present in the soil to the dry weight of soil.

The test results for the soil samples obtained during the field exploration are presented on a Laboratory Summary Sheet, presented in Appendix B.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGIC CONDITIONS

The project site, and most of Northwest Georgia, lies in the Appalachian Valley and Ridge Physiographic Province. The province is characterized by elongated, northeasterly-trending ridges formed on highly resistant sandstones and shales. Between ridges, broad valleys and rolling hills are formed primarily on less resistant limestones, dolomites and shales.

Published geologic information indicates that the site is underlain by the upper and middle units of the Chickamauga Group. The Chickamauga Group in this area includes Moccasin Limestone and the Bays Formation. Moccasin Limestone in this area is comprised of gray fossiliferous limestone, calcareous, greenish-gray, and grayish-red mudstone, red claystone, and impure limestone. The Bays Formation consists mainly of maroon, calcareous, mudstone and siltstone. The amount of calcium carbonate in this mudstone is low at the base of the Bays but increases upward in the section. The upper portions of the Bays also contain light-gray sandstone beds and metabentonite.

Since the bedrock formation at the site may contain limestone, the site is susceptible to the typical carbonate hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes. Carbonate rock, while appearing very hard and resistant, is soluble in slightly acidic water. This characteristic, plus differential weathering of the bedrock mass, is responsible for the hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging to overlying soil supported structures. In Northwest Georgia, sinkholes occur primarily due to differential weathering of the bedrock and “flushing” or “raveling” of overburden soils into the cavities in the bedrock. The loss of solids creates a cavity or “dome” in the overburden. Growth of the dome over time or excavation over the dome can create a condition in which rapid, local subsidence or collapse of the roof of the dome occurs.

3.2 SEISMIC CONDITIONS

International Building Code, 2018

The project site is located approximately 289 miles from the New Madrid seismic source zone as designated by the United States Geologic Survey. In accordance with the International Building Code (IBC 2018) and ASCE/SEI 7-16, we are providing the following seismic design information. After evaluating the SPT N-value data from the soil test borings and considering the changes to the site and foundation types, it was determined that the subsurface conditions at the site most closely matched the description for "Seismic Site Class C" or "Very Dense Soil or Soft Rock". Table 2 provides the spectral response accelerations for both short and 1-second periods, which may be used for design.

Table 2 – Seismic Conditions Summary

Structure	S_s g	S_1 g	S_{DS} g	S_{D1} G
S Hamilton Street Residential Development	0.515	0.122	0.444	0.122

The short and 1-second period values indicate the structure should be assigned a Seismic Design Category "C" using the published information. The provided values are based on the results of our field exploration and the assumption that the structure will be designed utilizing a Risk Category I, II or III. If these assumptions are incorrect, we should be contacted to reevaluate the seismic design information.

3.3 SUBSURFACE CONDITIONS

The following subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included with this report should be reviewed for specific information at individual locations. The depth and thickness of the subsurface strata indicated on the boring cross-sections were generalized from and interpolated between test locations. The transition between materials will be more or less gradual than indicated and may be abrupt. Information on actual subsurface conditions exists only at the specific boring locations and is relevant to

the time the exploration was performed. Variations may occur and should be expected between boring locations. The stratification lines were used for our analytical purposes and, unless specifically stated otherwise, should not be used as the basis for design or construction cost estimates.

3.3.1 Surficial Materials

A surficial layer of topsoil ranging from 3 to 4 inches was encountered in nine of the eleven borings (B-1, B-3, B-4, and B-6 through B-11). A surficial layer of gravel ranging from 2 to 3 inches was encountered in two of the eleven borings (B-2 and B-5). We note the surficial material thickness will vary away from the boring locations, and the contractor should determine the topsoil thickness prior to construction and bidding. Beneath the existing surficial materials, existing fill soils and residual soils were encountered to boring termination or auger refusal depths ranging from 11.5 to 20 feet.

3.3.2 Existing Fill Soils

Beneath the surficial materials in two of the eleven borings (B-1 and B-5), existing fill soils were encountered to depths ranging from 2 to 3 feet. Fill is generally classified as material that has been transported and placed by man. The fill soils generally consisted of brown, tan, gray, red brown, and dark brown clays with varying amounts of rock fragments, sand, root structure, and black mottling. The N-values of the fill soils were 11 blows per foot (bpf), indicating a consistency of stiff. The natural moisture contents of the existing fill ranged from 16 to 21 percent.

3.3.3 Residual Soils

Beneath the surficial materials in nine of the eleven borings (B-2 through B-4 and B-6 through B-11) and beneath the existing fill soils in two of the eleven borings (B-1 and B-5), residual soils were encountered to boring termination or auger refusal depths ranging from 11.5 to 20 feet. Residual soils are generally classified as soils which have been formed in place from the weathering of the underlying bedrock. The residual soils generally consisted of brown, tan, dark red brown, red brown, and gray clays with varying amounts of shale fragments, sand, black mottling, and chert fragments. A large portion of the residuum presented a shale structure. The N-values of the residuum ranged from 5 blows per foot (bpf) to 50 blows per one inch of penetration, indicating a consistency of firm to very hard. The residuum was generally stiff to very hard in consistency. The firm soils were isolated to surficial samples (just below the ground surface

or the existing fill) in borings B-1, B-7, and B-8. The natural moisture contents of the residual soils ranged from 6 to 31 percent. Atterberg limits testing on two select samples of the residuum revealed liquid limits (LL) of 32 and 51 percent and plasticity indices (PI) of 13 and 30 percent, respectively. These soils are classified as CL (lean clay) and CH (fat clay) in general accordance with the Unified Soil Classification System.

3.3.4 Subsurface Water

Subsurface water was not observed in any of eleven borings at the time of drilling. Subsurface water levels may fluctuate due to seasonal changes in precipitation amounts. Additionally, discontinuous zones of perched water may exist within the overburden and/or at the contact with bedrock. The groundwater information presented in this report is the information that was collected at the time of our field activities.

3.3.5 Auger Refusal Conditions

Auger refusal materials were encountered in nine of the eleven borings (B-2, B-3, and B-5 through B-11) at depths ranging from 11.5 to 18 feet, during field exploration. Refusal is a designation applied to any material that cannot be penetrated by the power auger. Auger refusal may indicate dense gravel or cobble layers, boulders, rock ledges or pinnacles, or the top of continuous bedrock. Rock coring was beyond the scope of this exploration. As such, the character and continuity of the refusal materials could not be determined. A summary of the auger refusal depths encountered in the borings is shown below:

Table 3 – Auger Refusal Summary

Boring No.	Auger Refusal Depth (Feet)	Auger Refusal Elevation (Feet)
B-2	11.5	718.5
B-3	17.0	712.0
B-5	12.5	716.5
B-6	12.0	717.0
B-7	13.0	714.0
B-8	14.0	716.0
B-9	16.0	712.0
B-10	11.5	719.5
B-11	18.0	712.0

Note: Depths and elevations reference the existing ground elevations at the time of the exploration.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 SITE ASSESSMENT

The results of the field exploration indicate that the site is adaptable for the proposed construction; however, there are some challenges associated with the development of this site. These challenges include the existing fill soils, the firm surficial residual soils, the potentially difficult excavations, and the karst geology. Once site grading and structural information are finalized for the proposed development, UES should be given an opportunity to review this information and adjust any recommendations, if necessary.

4.1.1 Existing Fill Soils

Existing fill was encountered in two of the eleven borings (B-1 and B-5) to depths ranging from 2 to 3 feet. We are not aware of, nor have we been provided with testing records for the fill. Accordingly, there are certain risks associated with construction on these types of fill. The risk primarily consists of excessive and/or non-uniform settlement caused by extensive zones or pockets of soft, loose, or uncompacted material.

The boring data indicates the fill soils generally consisted of brown, tan, gray, red brown, and dark brown clays with varying amounts of rock fragments, sand, root structure, and black mottling. The N-values of the fill soils were 11 blows per foot (bpf), indicating a consistency of stiff. Typically, an engineered fill would have N-values in excess of 8 to 10 bpf and would be generally free of deleterious material. Based on our observations, the fill appears to have been subjected to adequate compactive efforts and is relatively free of deleterious material We anticipate that the majority of these existing fill soils can be utilized for structural support of the proposed structure; however, some remediation may be needed throughout the project site.

If any existing fill that is soft to firm in consistency and/or contains deleterious material (heavy organics or wood) is encountered within the building footprints or beneath proposed foundations, then these materials should be undercut and replaced with structural soil fill or compacted dense graded aggregate. As mentioned previously, detailed grading information was not yet available at the time of this report. It

is possible that a portion of the existing fill soils will be removed during normal grading and/or foundation excavation activities. Undercut and replacement observations should be performed by a UES geotechnical engineer, or their qualified representative, so that the recommendations provided in this report are consistent with the site conditions encountered. This is of elevated importance to ensure that sufficient but not excessive material is removed.

We anticipate that the existing fill will provide adequate support of any proposed pavements; however, some remediation (i.e. undercut and replacement) may be required. It has been our experience that existing fill can change abruptly and may contain isolated pockets of unsuitable materials. As such, we recommend that the existing fill soils be subjected to a detailed proofroll prior to placement of new fill (in fill areas) or at final subgrade elevation (in cut areas) under the supervision of the geotechnical engineer or their qualified representative. Any areas judged to perform unsatisfactory during the proofroll should be remediated at the engineer's discretion. Remedial measures typically include undercutting and replacement with structural soil fill or dense graded aggregate.

4.1.2 Firm Surficial Residual Soils

Firm surficial residual soils (N-values of 5 to 8 bpf) were encountered from below the existing surficial materials in two of the eleven borings (B-7 and B-8) and from below the existing fill materials in one of the eleven boring (B-1). These firm residual soils extended to approximate depths ranging from 3 to 6 feet. Depending on when the construction is performed, there is a possibility that the upper softer residual soils may need to be scarified, dried, and recompacted or undercut prior to placement of new fill over these areas or if they are at planned subgrade elevations. Additionally, if foundation excavations bear near the levels of these softer soils undercutting, or some other form of remediation, will likely be required. There is the potential of encountering softer, saturated soils between the boring locations. This is particularly true if the grading/construction is performed between November and March.

4.1.3 Potentially Difficult Excavations

Auger refusal materials were encountered in nine of the eleven borings (B-2, B-3, and B-5 through B-11) at depths ranging from 11.5 to 18 feet during field exploration. Additionally, multiple borings encountered hard to very hard materials within the upper 10 feet of the soil profile. A detailed grading plan was not

yet available at the time of this report; however, based on the existing grades, we anticipate that portions of these hard to very hard materials may be near planned excavations for proposed foundations and/or underground utilities including the proposed underground detention system. This is especially likely if excavations exceed 5 feet. It is likely that these hard to very hard materials consist of weathered shale and can likely be ripped using conventional equipment but will take additional time and effort. If auger refusal materials are encountered, these materials will likely require difficult excavation techniques such as excavators with rock teeth, hoe-ramming, or blasting.

4.1.4 Moderate Plasticity Soil Considerations

Based on our experience in the Northwest Georgi area, soils with plasticity indices (PI) less than 30 percent have a slight potential for volume changes with changes in moisture content, and soils with a PI greater than 50 percent are highly susceptible to volume changes. Between these values, we consider the soils to be moderately susceptible to volume changes. The laboratory test results indicate that portions of the soils at this site are moderately susceptible with PI values ranging from 13 to 30 percent.

At sites that have moderate to high plasticity soils, certain precautions should be considered to minimize or eliminate the potential for volume changes. We recommend the soils directly beneath the pavement and slab sections undergo rigorous plasticity testing during construction to determine the plasticity of the underlying soils. Once this has been completed, recommendations for the required depth of removal can be provided, if needed. If removal of the highly plastic soils is not desirable, then measures should be taken to protect the soils from excessive amounts of wetting or drying.

Several construction considerations may reduce the potential for volume changes in the subgrade soils. Foundations should be excavated, checked, and concreted in the same day to prevent excessive wetting or drying of the foundation soils. The subgrade should be protected from excessive drying and wetting by covering the subgrade prior to slab construction. The site should be graded in order to drain surface water away from the area both during and after construction. Installing moisture barriers around the perimeter of the slab will help limit the moisture variation of the soil and reduce the potential for shrinking or swelling.

4.1.5 Karst Geology

A certain degree of risk with respect to sinkhole formation and subsidence should be considered with any site located within geologic areas underlain by potentially soluble rock units. While a rigorous effort to assess the potential for sinkhole formation on this site was beyond the scope of this evaluation, our borings did not encounter obvious indications of sinkhole development. Additionally, a review of the USGS topographic map of the area did not reveal the presence of any closed depressions, which may denote past sinkhole activity, in the vicinity of the project site. Based on these findings and our experience with this formation at other sites, we consider that this site has no greater risk for sinkhole activity than other sites in the immediate vicinity of this site.

4.2 SITE PREPARATION

4.2.1 Subgrade

Gravel, topsoil, asphalt, concrete, rock fragments greater than 6 inches, and other debris should be removed from the proposed construction areas. In previously developed areas, it is often common to find buried zones of construction debris. If these materials are encountered, they should be undercut and replaced at the discretion of the geotechnical engineer.

After completion of any stripping operations and any required excavations to reach subgrade level, we recommend that the subgrade be proofrolled with a fully-loaded, tandem-axle dump truck or other pneumatic-tired construction equipment of similar weight. The geotechnical engineer or their qualified representative should observe proofrolling. Areas judged to perform unsatisfactorily should be remediated at the geotechnical engineer's discretion. As such, there is a high probability that portions of these surficial fill soils will need to be scarified, dried, and recompacted or undercut prior to placement of new fill over these areas. There is a good likelihood that the upper soils currently covering the site may require some scarifying and drying due to exposure to weather (precipitation and freeze/thaw) for an extended period of time.

4.2.2 Structural Soil Fill

Material considered suitable for use as compacted fill should be clean soil free of organics, wood, trash, and other deleterious material, containing no rock fragments greater than 6 inches in any one dimension. Preferably, borrow material to be used as structural soil fill should have a standard Proctor maximum dry density of 90 pounds per cubic foot (pcf) or greater and a plasticity index (PI) of 35 percent or less. All material being used as soil fill should be tested and confirmed by the geotechnical engineer to be in accordance with the project requirements before being placed. Based on limited laboratory testing, we anticipate the on-site soils are suitable for use as structural soil fill, provided that any deleterious materials are removed and any necessary moisture conditioning is performed. Fine-grained soils are moisture sensitive and can prove difficult to place/compact during wet weather. The grading contractor should be prepared to moisture condition (including scarifying/drying) these soils as conditions warrant. Otherwise, chemical treatment (lime/soil cement) may be needed during extended periods of cooler/wet weather.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 95 percent of maximum dry density per the standard Proctor method (ASTM D698) and within the range of minus 2 percent to plus 3 percent of the optimum moisture content. Each lift should be compacted and tested by geotechnical personnel to confirm that the contractor's method is capable of achieving the project requirements before placing any subsequent lifts. Any areas which have become soft or frozen should be removed before additional structural fill is placed. This information is summarized in Table 4 below.

Table 4 – Structural Soil Fill Recommendations

Subject	Property
Maximum Dry Density	90 pcf or greater
Plasticity Index	35% or less
Maximum Particle Size	6 inches
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction	95% of Maximum Dry Density
Moisture Content	-2 to +3% of the soil’s optimum moisture content
Lift Thickness	8 inches or less

4.2.3 Compacted Crushed Stone Fill

Compacted crushed stone fill should be Group 1 Aggregates in accordance with Section 815 of the Georgia Department of Transportation specifications. The crushed stone fill should be placed in loose, horizontal lifts not exceeding 10 inches in loose thickness. Each lift should be compacted to at least 98 percent of maximum dry density per the standard Proctor method (ASTM D698). Each lift should be compacted and tested by geotechnical personnel to confirm the contractor's method is capable of achieving the project requirements before placing any subsequent lifts.

4.3 FOUNDATIONS

As previously mentioned, no grading or structural information was available at the time of this exploration. Once site grading and structural information are finalized for the proposed development, UES should be given an opportunity to review this information, perform an additional settlement analysis, and adjust any recommendations, if necessary.

4.3.1 Shallow Foundations

Foundations for the proposed structures are anticipated to bear in stiff or better (existing or newly placed) fill soils, residual soils, or remediated soils. The recommended allowable bearing pressure for the design of the foundations is 2,500 psf. We recommend that continuous foundations be a minimum of 18 inches wide and isolated spread footings be a minimum of 24 inches wide to reduce the possibility of a localized punching shear failure. All exterior footings should be designed to bear at least 12 inches below finished exterior grade to protect against frost heave.

Foundation subgrade observations should be performed by a UES geotechnical engineer, or their qualified representative, so that the recommendations provided in this report are consistent with the site conditions encountered. This is of elevated importance due to the existing fill soils and firm residual soils encountered at the site. A dynamic cone penetrometer (DCP) is commonly utilized to provide information that is compared to the data obtained in the geotechnical report. Where unacceptable materials are encountered, the material should be excavated to stiff, suitable soils or remediated at the geotechnical engineer's direction. Typical remedial measures consist of undercutting, overexcavation, or combinations thereof.

4.3.2 Slabs-on-Grade

For slab-on-grade construction, the site should be prepared as described previously. We recommend the subgrade be topped with a minimum 4-inch layer of crushed stone (mineral aggregate base or a dense graded aggregate base) in the building area to act as a capillary moisture layer. The subgrade should be proofrolled and approved prior to the placement of the crushed stone. Based on the conditions encountered on this site, we recommend the floor slabs bearing in soil be designed using a subgrade modulus of 125 pounds per cubic inch (pci). This modulus is based on a 1 foot by 1 foot area and should be adjusted for wider loads.

4.3.3 Settlement

We have estimated the total and differential settlements expected at this site based on the Federal Highways Administration (FHWA) Empirical Settlement Analysis Procedure. This FHWA empirical method allows the use of the SPT N-values in this calculation and includes the type of soil encountered. Based on the conditions encountered in our borings, the assumed structural loading, and the assumption that the existing soils are remediated as outlined; maximum total settlements of less than 1 inch and maximum differential settlements of less than ¾ inches in 40 feet should be expected. If the loads vary greatly from those assumed at the time of this analysis, UES should be contacted to provide updated anticipated settlements.

4.4 PAVEMENT DESIGN RECOMMENDATIONS

Our recommendations are based upon the assumption that the subgrade has been properly prepared as described in previous report sections and that any off-site soil borrow to be used to backfill to the final subgrade meets the requirements for structural soil fill.

All paved areas should be constructed with positive drainage to direct water off-site and to minimize surface water seeping into the pavement subgrade. The subgrade should have a minimum slope of 1 percent. In down grade areas, the basestone should extend through the slope to allow any water entering the basestone a path to exit. For rigid pavements, water-tight seals should also be provided at formed construction and expansion joints.

4.4.1 Flexible Pavement Design

AASHTO flexible pavement design methods have been utilized for pavement recommendations. Our recommendations are based on the assumptions that the subgrade has been properly prepared as described previously. Traffic loading had not been provided at the time this report was prepared; however, we anticipate that it will be mainly passenger cars with occasional delivery trucks and garbage trucks. Based on our experience with similar projects with flexible pavement, we recommend the following light duty and medium duty flexible pavement sections:

Table 5 – Flexible Pavement Section Summary

Recommended Thickness (Inches)		
Pavement Materials	**Light Duty**	**Medium Duty**
Bituminous Asphalt Surface Mix	1.5	1.5
Bituminous Asphalt Base Mix	2.0	2.5
Compacted Crushed Aggregate Base	6.0	8.0

We recommend a base stone equivalent to a Group 1 Aggregate in accordance with Section 815 of the Georgia Department of Transportation specifications. The bituminous asphalt pavement should be 9.5mm Super Pave as per Section 400 for the surface mix and 19mm Super Pave as per Section 400 for the binder mix. Compaction requirements for the crushed aggregate base and the bituminous asphalt pavement should generally follow Georgia Department of Transportation specifications.

The recommended pavement thickness' presented in this report section are considered typical and minimum for the assumed parameters in the general site area. We understand that budgetary considerations sometimes warrant thinner pavement sections than those presented. However, the client, the owner, and the project designers should be aware that thinner pavement sections may result in increased maintenance costs and lower than anticipated pavement life.

4.4.2 Rigid Pavement Design

If areas could possibly be subjected to heavy vehicle loads, these areas may require the use of rigid pavement. If rigid pavement is required, we recommend the following rigid pavement section:

Table 6 – Rigid Pavement Section Summary

Pavement Materials	Recommended Thickness (Inches)
4,000 psi Type I Concrete	5.0
Compacted Crushed Aggregate Base	6.0

Consideration should be given to adjusting the thickness of the compacted crushed aggregate base to match the total thickness of the adjacent asphalt areas so that the soil subgrade is at the same elevation for both the concrete and medium duty asphalt pavement. Also, consideration should be given to extending any concrete dumpster pads the full length of the garbage truck, so the all the tires of the truck are able to sit on the concrete pad while dumping the dumpster. Concrete should be reinforced with welded wire fabric or reinforcing bars to assist in controlling cracking from drying shrinkage and thermal changes. Sawed or formed control joints should be included for each 225 square feet of area or less (15 feet by 15 feet). Saw cuts should not cut through the welded wire fabric or reinforcing steel and dowels should be utilized at formed and/or cold joints.

4.5 LATERAL EARTH PRESSURES

We are not aware of any retaining wall structures; however, we understand that this is a possibility. Therefore, we are providing equivalent fluid pressures for three backfill conditions for cantilever-type walls. These are 1) active earth pressure for granular backfill (clean sand or gravel), 2) at-rest earth pressure for granular backfill, and 3) at-rest earth pressure for fine-grained (silt or clay) backfill.

Condition 1 - The active earth pressure for granular backfill (free draining) will result in an equivalent fluid pressure of 30 pounds per cubic foot (pcf). If the granular backfill is to develop active earth pressure

conditions, walls must be flexible and/or free to rotate or translate at the top approximately one inch laterally for every 20 feet of wall height.

Condition 2 - The at-rest earth pressure for granular backfill (free draining) will result in an equivalent fluid pressure of 45 pcf. For retaining walls that will not rotate or translate, such as building walls or other walls rigidly connected to structures, at-rest conditions will develop.

Condition 3 - Walls backfilled with fine-grained material (silt or clay) should be designed using the at-rest earth pressure whether restrained at the top, or not. Fine-grained soils typically creep over time which produces additional lateral stresses to the wall. The equivalent fluid pressure for this case is 70 pcf.

In all cases, forces from any expected surcharge loading including sloping backfill should be added to the equivalent fluid pressures. The walls should be properly drained to remove water or hydrostatic pressure should be added to the design pressure. Also, all backfill for the walls should be placed in accordance with the structural fill recommendations described hereinafter.

Table 7 – Earth Pressure Summary

Earth Pressure Condition	Backfill Type	Unit Weight (pcf)	Earth Pressure Coefficient
Active (Ka)	Granular	105	0.271
	On-Site Silts and Clays	120	0.390
At-Rest (Ko)	Granular	105	0.426
	On-Site Silts and Clays	120	0.562
Passive (Kp)	Granular	105	3.690
	On-Site Silts and Clays	120	2.561

Note: In each instance the earth pressure coefficients provided are unfactored.

For rigid, cast-in-place concrete walls, a friction factor of 0.35 between foundation concrete and the bearing soils may be used when evaluating friction. If a stone leveling course is utilized beneath the foundation, a friction factor of 0.50 between foundation concrete and the dense graded aggregate base

may be used when evaluating friction. Also, an ultimate passive earth pressure resistance of well-compacted soil fill can be utilized to resist sliding (in conjunction with friction). However, to limit deformation when relying on passive strength, we recommend using a minimum safety factor of 3.0 applied to the ultimate passive resistance value. Additionally, this is based on the upper 2 feet of soil being neglected during the calculation of passive resistance.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 EXCAVATIONS

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually solely responsible for site safety. This information is provided only as a service and under no circumstances should UES be assumed to be responsible for construction site safety.

Auger refusal materials were encountered in nine of the eleven borings (B-2, B-3, and B-5 through B-11) at depths ranging from 11.5 to 18 feet during field exploration. Additionally, multiple borings encountered hard to very hard materials within the upper 10 feet of the soil profile. A detailed grading plan was not yet available at the time of this report; however, based on the existing grades, we anticipate that portions of these hard to very hard materials may be near planned excavations for proposed foundations and/or underground utilities including the proposed underground detention system. This is especially likely if excavations exceed 5 feet. It is likely that these hard to very hard materials consist of weathered shale and can likely be ripped using conventional equipment but will take additional time and effort. If auger refusal materials are encountered, these materials will likely require difficult excavation techniques such as excavators with rock teeth, hoe-ramming, or blasting.

5.2 MOISTURE SENSITIVE SOILS

The fine-grained soils encountered at this site will be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. Construction traffic patterns should be varied to prevent the degradation of previously stable subgrade. In addition, plastic soils which become wet, may be slow to dry and thus significantly retard the progress of grading and compaction activities. We caution if site grading is performed during the wet weather season, methods such as discing and allowing the material to dry will be required to meet the required compaction recommendations. It will, therefore, be advantageous to perform earthwork and foundation construction

activities during dry weather. Climate data for Dalton, Georgia obtained from Weatherbase indicate in the following table the average monthly precipitation. The average amount of precipitation does not vary much throughout the year. However, December through March is typically the difficult grading period due to the limited drying conditions that exist.

Table 8 – Average Precipitation Summary

Month	Monthly Precipitation Average (Inches)	Month	Monthly Precipitation Average (Inches)
January	5.6	July	5.2
February	5.2	August	4.1
March	5.8	September	4.4
April	4.6	October	3.1
May	4.4	November	4.4
June	4.5	December	4.8

5.3 DRAINAGE AND SURFACE WATER CONCERNS

To reduce the potential for undercut and construction induced sinkholes, water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, subsurface water, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

5.4 MODERATE PLASTICITY SOIL CONSIDERATIONS

Based on our experience in the Northwest Georgia area, soils with plasticity indices (PI) less than 30 percent have a slight potential for volume changes with changes in moisture content, and soils with a PI greater than

50 percent are highly susceptible to volume changes. Between these values, we consider the soils to be moderately susceptible to volume changes. The laboratory test results indicate that portions of the soils at this site are moderately susceptible with PI values ranging from 13 to 30 percent.

At sites that have moderate to high plasticity soils, certain precautions should be considered to minimize or eliminate the potential for volume changes. We recommend the soils directly beneath the pavement and slab sections undergo rigorous plasticity testing during construction to determine the plasticity of the underlying soils. Once this has been completed, recommendations for the required depth of removal can be provided, if needed. If removal of the highly plastic soils is not desirable, then measures should be taken to protect the soils from excessive amounts of wetting or drying.

Several construction considerations may reduce the potential for volume changes in the subgrade soils. Foundations should be excavated, checked, and concreted in the same day to prevent excessive wetting or drying of the foundation soils. The subgrade should be protected from excessive drying and wetting by covering the subgrade prior to slab construction. The site should be graded in order to drain surface water away from the area both during and after construction. Installing moisture barriers around the perimeter of the slab will help limit the moisture variation of the soil and reduce the potential for shrinking or swelling.

5.5 SINKHOLE CONSIDERATIONS

There is some inherent risk associated with building on any site underlain by carbonate rock. This risk can be reduced but not eliminated by preparing the site as described in this report. At this site, control of surface water during construction and over the project life will be very important to reduce the potential for sinkhole development. If a sinkhole develops, the appropriate corrective action is dependent on the size and location of the sinkhole. As described herein, UES should be retained to observe site and subgrade preparation activities. If sinkhole conditions are observed, the type of corrective action is most appropriately determined by UES on a case-by-case basis.

6.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only, and no environmental assessment efforts have been performed. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

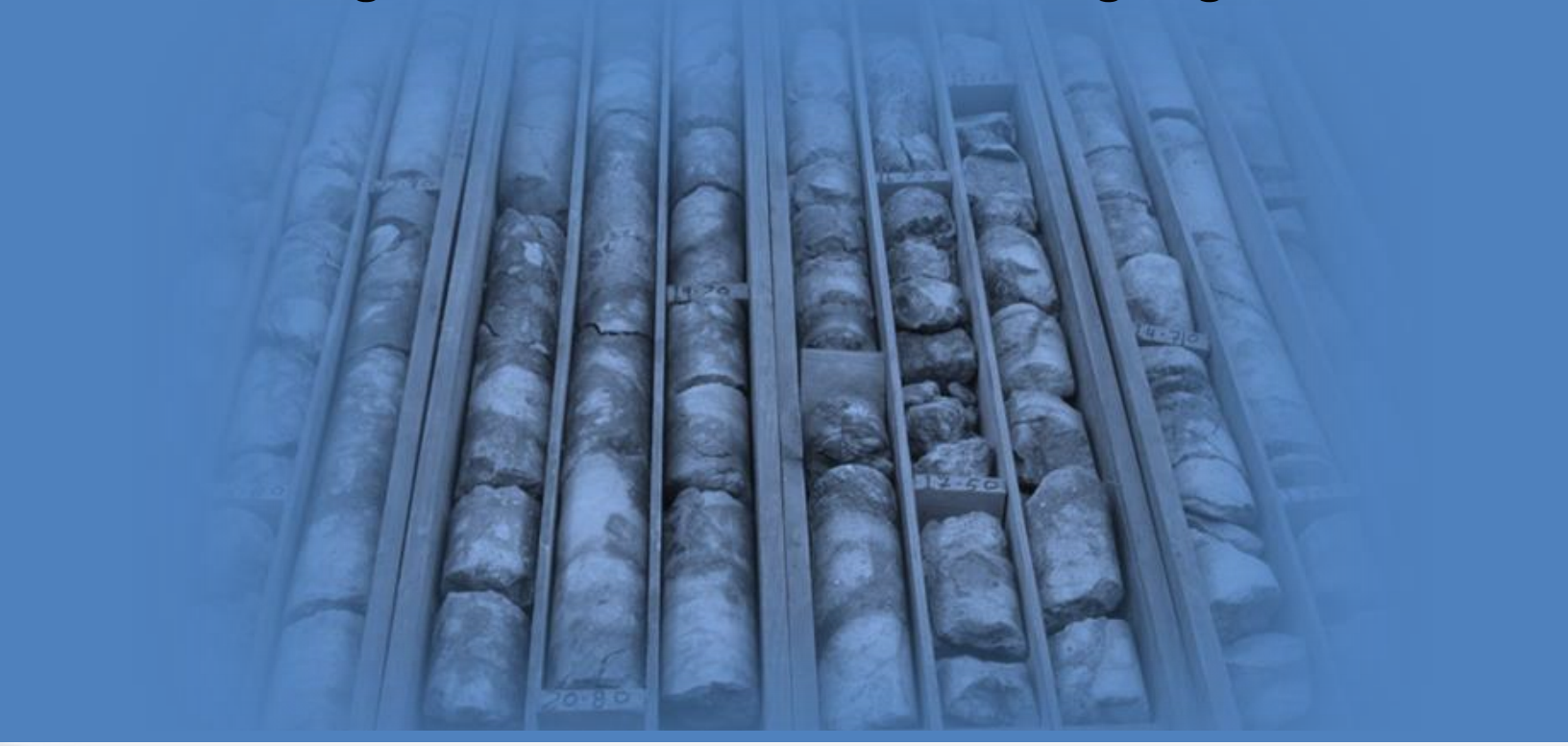
The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the borings will not become evident until construction. We recommend that UES be retained to observe the project construction in the field. UES cannot accept responsibility for conditions which deviate from those described in this report if not retained to perform construction observation and testing. If variations appear evident, then we will re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the project are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and conclusions modified or verified in writing. Also, if the scope of the project should change significantly from that described herein, these recommendations may have to be re-evaluated.

APPENDICES

UES™

APPENDIX A

Figures, General Notes, & Boring Logs



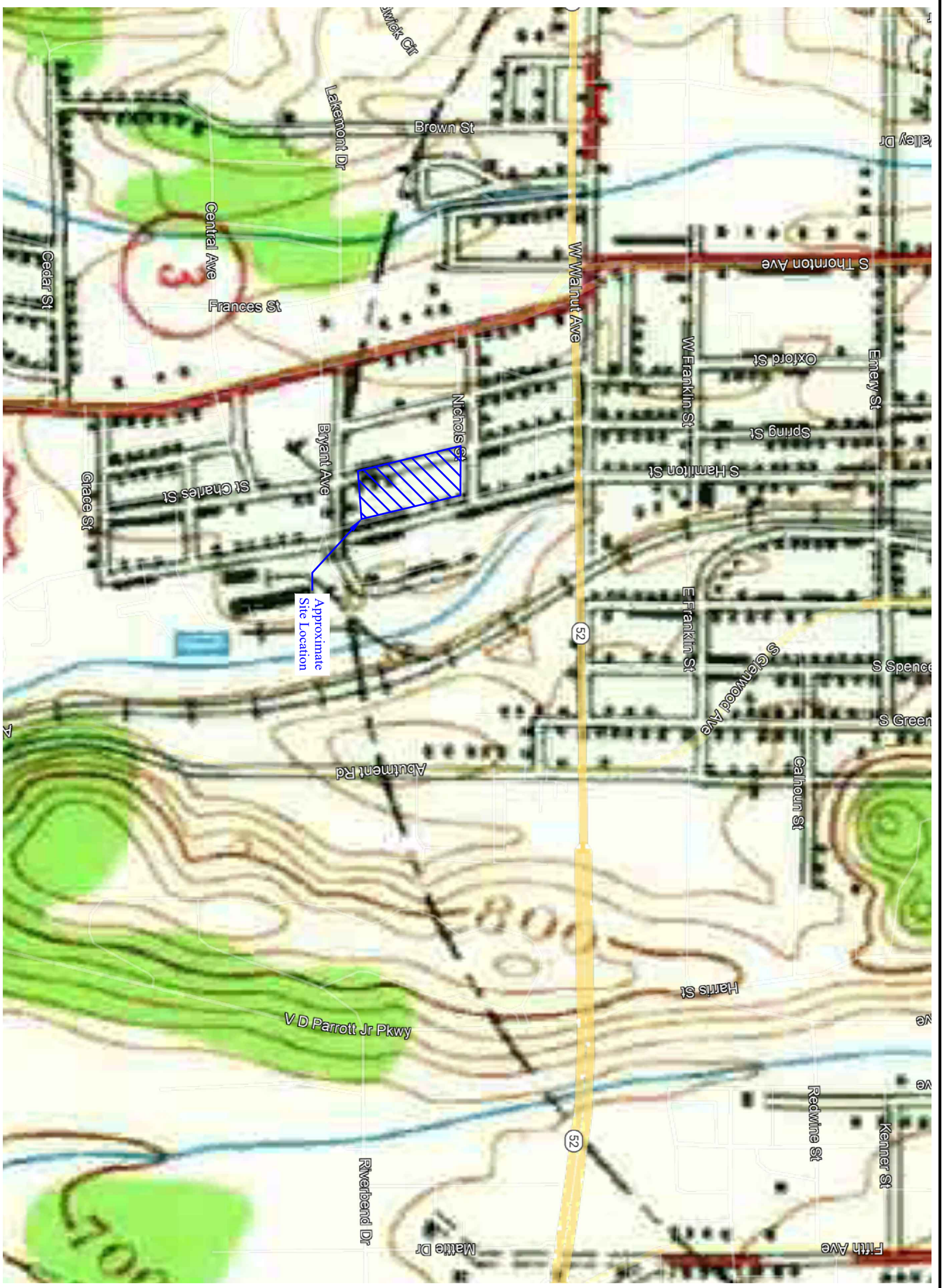


FIGURE 2

UES™

DRAWN BY:	LM
APPROVED BY:	DKK
SCALE:	NTS
JOB NO.:	A24110.00652
DATE:	08/15/2024

USGS TOPOGRAPHIC MAP
902 S Hamilton Street
Dalton, Georgia

NOTES:
1.) BASE MAP PROVIDED BY USGS TOPOGRAPHIC MAP (1938) - DALTON QUADRANGLE (GA-TN).

FIGURE 3

UES™

DRAWN BY:	:LM
APPROVED BY:	DKK
SCALE:	NTS
JOB NO.:	A24110.00652
DATE:	08/15/2024

BORING LOCATION PLAN

902 S Hamilton Street

Dalton, Georgia

NOTES:

1.) BORING LOCATIONS ARE SHOWN IN GENERAL ARRANGMENT ONLY.
2.) DO NOT USE BORING LOCATIONS FOR DETERMINATIONS OF DISTANCES OR QUANTITIES.
3.) BASE MAP PROVIDED BY KRONBERG URBANISTS ARCHITECTS.

LOCATION OF SOIL TEST BORING

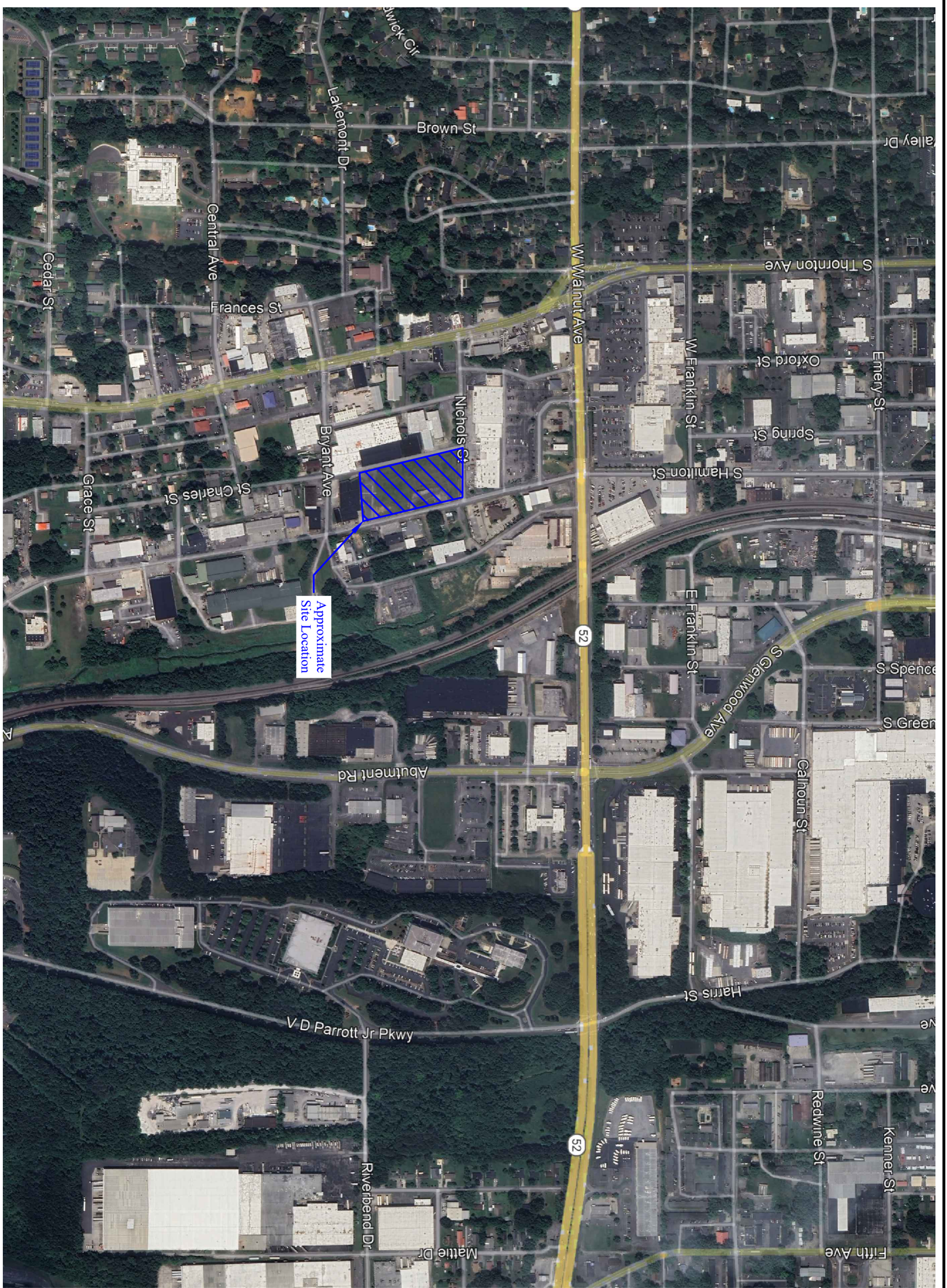


FIGURE 1

UES™

DRAWN BY:	LM
APPROVED BY:	DKK
SCALE:	NTS
JOB NO.:	A24110.00652
DATE:	08/15/2024

SITE VICINITY MAP
902 S Hamilton Street
Dalton, Georgia

NOTES:
1.) BASE MAP PROVIDED BY GOOGLE EARTH PRO (05/23/23).

GENERAL NOTES

FINE AND COARSE GRAINED SOIL PROPERTIES

PARTICLE SIZE

BOULDERS:	GREATER THAN 300 mm
COBBLES:	75 mm to 300 mm
GRAVEL:	4.74 mm to 75 mm
COARSE SAND:	2 mm to 4.74 mm
MEDIUM SAND:	0.425 mm to 2 mm
FINE SAND:	0.075 mm to 0.425 mm
SILTS & CLAYS:	LESS THAN 0.075 mm

COARSE GRAINED SOILS (SANDS & GRAVELS)

N-VALUE	RELATIVE DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
OVER 50	VERY DENSE

FINE GRAINED SOILS (SILTS & CLAYS)

N-VALUE	CONSISTENCY	Qu, PSF
0 - 2	VERY SOFT	0 - 500
3 - 4	SOFT	500 - 1000
5 - 8	FIRM	1000 - 2000
9 - 15	STIFF	2000 - 4000
16 - 30	VERY STIFF	4000 - 8000
OVER 31	HARD	8000 +

STANDARD PENETRATION TEST (ASTM D1586)

THE STANDARD PENETRATION TEST AS DEFINED BY ASTM D1586 IS A METHOD TO OBTAIN A DISTURBED SOIL SAMPLE FOR EXAMINATION AND TESTING AND TO OBTAIN RELATIVE DENSITY AND CONSISTENCY INFORMATON. THE 1.4 INCH I.D./2.0 INCH O.D. SAMPLER IS DRIVEN 3-SIX INCH INCREMENTS WITH A 140 LB. HAMMER FALLING 30 INCHES. THE BLOW COUNTS REQUIRED TO DRIVE THE SAMPLER THE FINAL 2 INCREMENTS ARE ADDED TOGETHER AND DESIGNATED THE N-VALUE. AT TIMES, THE SAMPLER CAN NOT BE DRIVEN THE FULL 18 INCHES. THE FOLLOWING REPRESENTS OUR INTERPRETATION OF THE STANDARD PENETRATION TEST WITH VARIATIONS.

BLOWS/FOOT (N-VALUE)	DESCRIPTION
25	25 BLOWS DROVE SAMPLER 12" AFTER INITIAL 6" SEATING
75/10"	75 BLOWS DROVE SAMPLER 10" AFTER INITIAL 6" SEATING
50/PR	PENETRATION REFUSAL OF SAMPLER AFTER INITIAL 6" SEATING

SAMPLING SYMBOLS

ST:	UNDISTURBED SAMPLE
SS:	SPLIT SPOON SAMPLE
CORE:	ROCK CORE SAMPLE
AU:	AUGER OR BAG SAMPLE

SOIL PROPERTY SYMBOLS

N:	STANDARD PENETRATION, BPF
M:	MOISTURE CONTENT %
LL:	LIQUID LIMIT %
PI:	PLASTICITY INDEX %
Qp:	POCKET PENETROMETER VALUE, TSF
Qu:	UNCONFINED COMPRESSIVE STRENGTH, TSF
DUW:	DRY UNIT WEIGHT, PCF

ROCK PROPERTIES

ROCK QUALITY DESIGNATION (RQD)

PERCENT	QUALITY
90 TO 100	EXCELLENT
75 TO 90	GOOD
50 TO 75	FAIR
25 TO 50	POOR
0 TO 25	VERY POOR

ROCK HARDNESS

VERY SOFT:	ROCK DISINTEGRATES OR EASILY COMPRESSES TO TOUCH: CAN BE HARD TO VERY HARD SOIL.
SOFT:	ROCK IS COHERANT BUT BREAKS EASILY TO THUMB PRESSURE AT SHARP EDGES AND CRUMBLES WITH FIRM HAND PRESSURE.
MODERATELY HARD:	SMALL PIECES CAN BE BROKEN OFF ALONG SHARP EDGES BY CONSIDERABLE HARD THUMB PRESSURE: CAN BE BROKEN BY LIGHT HAMMER BLOWS.
HARD:	ROCK CAN NOT BE BROKEN BY THUMB PRESSURE, BUT CAN BE BROKEN BY MODERATE HAMMER BLOWS.
VERY HARD:	ROCK CAN BE BROKEN BY HEAVY HAMMER BLOWS.

UES™

SOIL BORING NUMBER: B-1

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 731 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.759604, -84.968036
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 20 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	731										
						TOPSOIL - 3 inches					
	730		SS	1		**LEAN CLAY** (CL) - with trace amounts of rock fragments and root structure - red brown, brown, tan, and gray - stiff - moist (**FILL**)	5-5-6 (11)	21			
						LEAN CLAY (CL) - with shale fragments, shale structure, and trace amounts of sand at depth - tan, brown, and dark red brown - firm to stiff - moist (**RESIDUUM**)					
			SS	2			3-3-5 (8)	30			
5											
	725		SS	3			3-5-8 (13)	31			
						LEAN CLAY (CL) - with trace amounts of sand and shale structure - dark red brown - stiff to firm - moist (**RESIDUUM**)					
			SS	4			2-6-5 (11)	22			
10											
	720										
			SS	5			2-3-5 (8)	31			
15											
	715					**LEAN CLAY** (CL) - with shale fragments, shale structure, and trace amounts of sand - dark red brown - very stiff - moist (**RESIDUUM**)					
			SS	6			2-10-10 (20)	23			
20						Boring terminated at 20'					

NOTES:

SOIL BORING NUMBER: B-2

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 730 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.759576, -84.967419
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 11.5

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	730					**GRAVEL** - 3 inches					
			SS	1		**LEAN CLAY** (CL) - with sand - red brown and brown - very stiff - moist (**RESIDUUM**)	9-13-7 (20)	6			
			SS	2		**LEAN CLAY** (CL) - with shale fragments and sand - dark red brown - hard to very hard - moist (**RESIDUUM**)	8-21-24 (45)	9			
5	725		SS	3			18-50 (50/4")	9			
			SS	4			20-50 (50/1")	13			
10	720					Auger refusal at 11.5'					

NOTES:

SOIL BORING NUMBER: B-3

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 729 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.759411, -84.967684
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▽ _____ **FINAL BORING DEPTH** 17 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	729					**TOPSOIL** - 3 inches					
			SS	1		**LEAN CLAY** (CL) - with sand - brown, tan, and red brown - very stiff - moist (**RESIDUUM**)	8-10-11 (21)	14			
	725		SS	2		**LEAN CLAY** (CL) - red brown and tan - stiff - moist (**RESIDUUM**)	5-6-6 (12)	23			
5			SS	3		**LEAN CLAY** (CL) - with sand and shale structure - dark red brown - hard to very hard - moist (**RESIDUUM**)	5-15-18 (33)	18	32	19	13
	720		SS	4			7-50 (50/4")	11			
10											
	715		SS	5			50 (50/5")	8			
15											

Auger refusal at 17'

NOTES:

SOIL BORING NUMBER: B-4

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 730 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.759129, -84.967900
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 20 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
0	730					**TOPSOIL** - 3 inches					
			SS	1		**LEAN CLAY** (CL) - with black mottling at depth - tan, brown, and gray - stiff to very stiff - moist (**RESIDUUM**)	3-5-5 (10)	20			
			SS	2			2-8-11 (19)	27			
5	725		SS	3		**LEAN CLAY** (CL) - with black mottling and a slight shale structure - tan and gray - very stiff to hard - moist (**RESIDUUM**)	3-11-14 (25)	25			
			SS	4			5-14-17 (31)	20			
10	720					**LEAN CLAY** (CL) - with trace amounts of sand and shale fragments - dark red brown - stiff to very stiff - moist to very moist (**RESIDUUM**)					
			SS	5			2-5-8 (13)	26			
15	715										
			SS	6			4-7-10 (17)	27			
20	710					Boring terminated at 20'					

NOTES:

SOIL BORING NUMBER: B-5

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 729 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.759260, -84.967295
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 12.5

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	729					**GRAVEL** - 2 inches					
			SS	1		**LEAN CLAY** (CL) - with rock fragments, black mottling, and sand - dark brown, brown, and tan - stiff - moist (**FILL**)	6-5-6 (11)	16			
						LEAN CLAY (CL) - with sand - brown, tan, and dark red brown - stiff to very stiff - moist (**RESIDUUM**)					
	725		SS	2			3-6-7 (13)	27			
5											
			SS	3			4-8-10 (18)	21			
						LEAN CLAY (CL) - with sand - dark red brown and brown - very hard - moist (**RESIDUUM**)					
	720		SS	4			5-50 (50/5")	16			
10											

Auger refusal at 12.5'

NOTES:

SOIL BORING NUMBER: B-6

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 729 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.758999, -84.967579
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 12 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	729					**TOPSOIL** - 3 inches					
			SS	1		**LEAN CLAY** (CL) - with trace amounts of sand - red, brown, and tan - very stiff to stiff - moist (**RESIDUUM**)	15-10-11 (21)	24			
	725		SS	2			8-7-8 (15)	26			
5			SS	3		**LEAN CLAY** (CL) - with sand - dark red brown - very hard - moist (**RESIDUUM**)	12-50 (50/3")	16			
	720		SS	4		NO RECOVERY	25-50 (50/2")				
10						Auger refusal at 12'					

NOTES:

SOIL BORING NUMBER: B-7

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 727 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.758880, -84.967191
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 13 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	727					**TOPSOIL** - 3 inches					
						FAT CLAY (CH) - with black mottling - brown, tan, and gray - firm to stiff - very moist (**RESIDUUM**)					
	725		SS	1			2-2-3 (5)	23			
			SS	2			5-7-7 (14)	26			
5						**LEAN CLAY** (CL) - with a slightly shale structure and shale fragments - brown and gray - hard - moist (**RESIDUUM**)					
	720		SS	3			6-13-20 (33)	18			
			SS	4		**LEAN CLAY** (CL) - with shale fragments, black mottling, and trace amounts of chert fragments - brown and gray - very hard - moist (**RESIDUUM**)	50 (50/5")	13			
10											
	715										

Auger refusal at 13'

NOTES:

SOIL BORING NUMBER: B-8

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 730 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.758642, -84.967754
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 14 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	730					**TOPSOIL** - 3 inches					
			SS	1		**LEAN CLAY** (CL) - with trace amounts of chert fragments - dark red brown, brown, and tan - firm - moist (**RESIDUUM**)	4-3-4 (7)	24			
			SS	2		**LEAN CLAY** (CL) - trace amounts of sand - dark red brown - firm - moist (**RESIDUUM**)	4-3-3 (6)	26			
5	725		SS	3		**LEAN CLAY** (CL) - with shale fragments - dark red brown - very hard - moist (**RESIDUUM**)	6-50 (50/3")	20			
			SS	4			35-50 (50/2")	10			
10	720										
			SS	5		NO RECOVERY	50 (50/1")				
						Auger refusal at 14'					

NOTES:

SOIL BORING NUMBER: B-9

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 728 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.758691, -84.967445
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 16 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	728					**TOPSOIL** - 3 inches					
			SS	1		**LEAN CLAY** (CL) - with root structure at surface and black mottling - brown, tan, and red brown - hard to very stiff - moist (**RESIDUUM**)	23-16-19 (35)	18			
	725										
			SS	2			27-12-15 (27)	19	51	21	30
5						**FAT CLAY** (CH) - brown, tan, and gray - very stiff - moist (**RESIDUUM**)					
			SS	3		**FAT CLAY** (CH) - with trace amounts of sand and shale fragments at depth - dark red brown - very stiff - moist (**RESIDUUM**)	20-14-16 (30)	23			
	720										
			SS	4			9-12-12 (24)	19			
10						**FAT CLAY** (CH) - with shale fragments, sand, and trace amounts of chert fragments - dark red brown - very hard - moist (**RESIDUUM**)					
	715										
			SS	5			19-50 (50/3")	9			
15											
						Auger refusal at 16'					

NOTES:

SOIL BORING NUMBER: B-10

PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 731 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.758398, -84.967539
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 11.5

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	731					**TOPSOIL** - 3 inches					
	730		SS	1		**LEAN CLAY** (CL) - with black mottling at surface, shale structure, and trace amounts of sand at depth - tan and gray - very stiff to very hard - moist (**RESIDUUM**)	15-13-16 (29)	21			
			SS	2			12-31-50 (50/2")	21			
5	725		SS	3		**LEAN CLAY** (CL) - with a slightly shale structure and shale fragments - brown and gray - very hard - moist (**RESIDUUM**)	14-50 (50/3")	15			
			SS	4			20-50 (50/1")	13			
10	720					Auger refusal at 11.5'					

NOTES:

SOIL BORING NUMBER: B-11

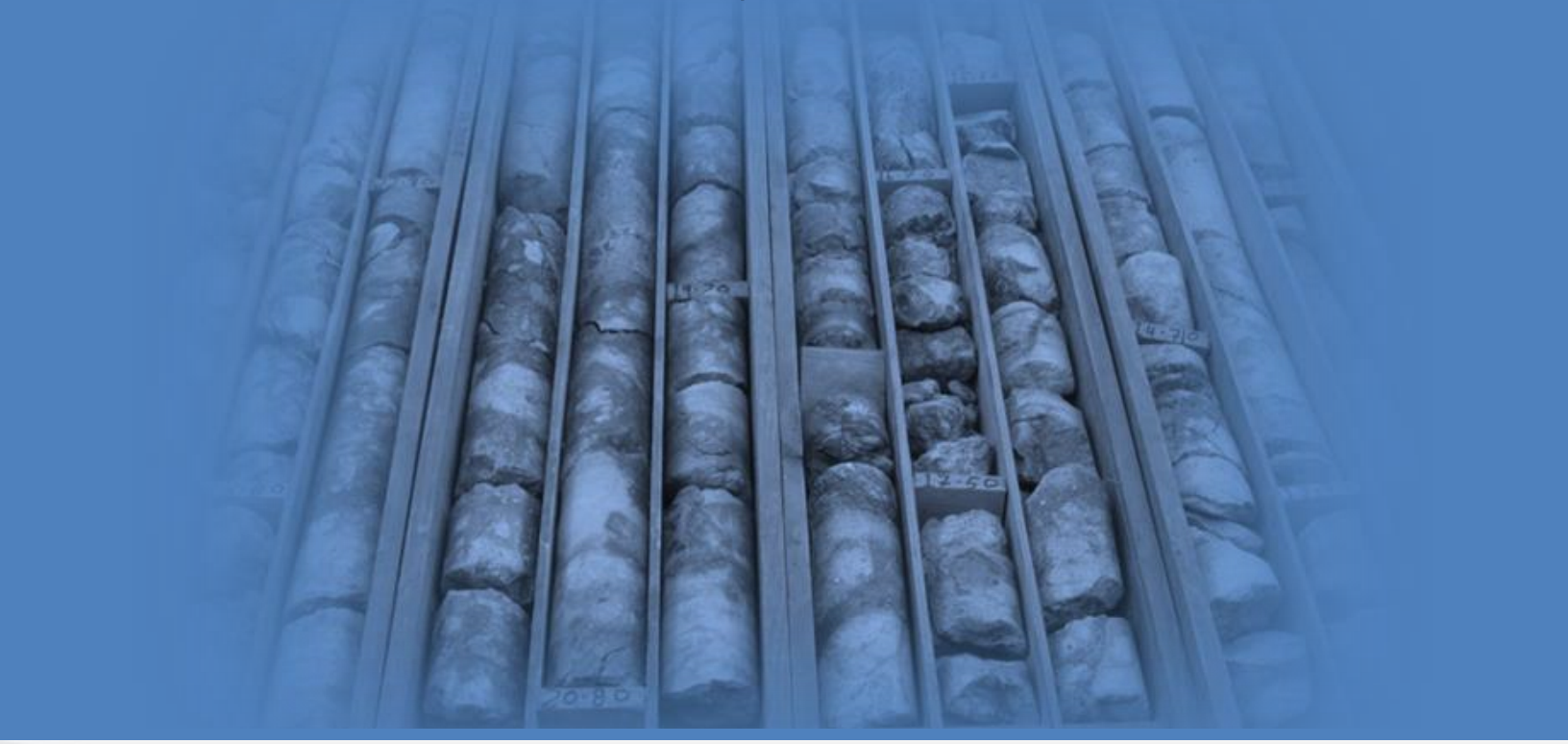
PROJECT NAME Proposed Residential Development - 902 S
PROJECT NUMBER A24110.00652
GROUND ELEVATION 730 feet **PROPOSED ELEVATION** N/A
PROJECT LOCATION Dalton, Georgia
DATE DRILLED 08/20/2024
LATITUDE / LONGITUDE 34.758447, -84.967173
DRILLING CONTRACTOR Southeast Drilling Solutions, LLC
DRILLING METHOD Hollow Stem Auger
GROUNDWATER: AT TIME OF DRILLING ▽ _____ **24 HOURS** ▼ _____ **FINAL BORING DEPTH** 18 feet

Depth (ft)	Elevation (ft)	Sample Graphic	Sample Type	Sample Number	Graphic Log	MATERIAL DESCRIPTION	Blow Counts (N/Refusal)	Lab: Moisture Content (%)	Lab: Liquid Limit	Lab: Plastic Limit	Lab: Plasticity Index
	730					**TOPSOIL** - 4 inches					
			SS	1		**LEAN CLAY** (CL) - brown, tan, and gray - stiff to very stiff - moist (**RESIDUUM**)	3-5-4 (9)	27			
			SS	2			7-8-10 (18)	25			
5	725		SS	3		**LEAN CLAY** (CL) - with trace amounts of sand and shale fragments - brown, tan, and gray - very hard - moist (**RESIDUUM**)	10-50 (50/2")	20			
			SS	4		**LEAN CLAY** (CL) - with sand and shale fragments - dark red brown - hard - moist (**RESIDUUM**)	32-14-20 (34)	6			
10	720										
			SS	5			15-18-22 (40)	21			
15	715										
						Auger refusal at 18'					

NOTES:

APPENDIX B

Laboratory Test Results



902 S Hamilton Streeet
Dalton, Georgia
A24110.00652
September 3, 2024

LABORATORY SUMMARY SHEET

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-1	1	1.0-2.5	20.6%				
	2	3.5-5.0	29.5%				
	3	6.0-7.5	30.8%				
	4	8.5-10.0	21.7%				
	5	13.5-15.0	31.4%				
	6	18.5-20.0	22.9%				
B-2	1	1.0-2.5	6.3%				
	2	3.5-5.0	8.7%				
	3	6.0-7.5	9.3%				
	4	8.5-10.0	13.1%				
B-3	1	1.0-2.5	14.3%				
	2	3.5-5.0	22.6%				
	3	6.0-7.5	17.6%	32	19	13	CL
	4	8.5-10.0	10.6%				
	5	13.5-15.0	8.1%				
B-4	1	1.0-2.5	19.6%				
	2	3.5-5.0	27.2%				
	3	6.0-7.5	24.7%				
	4	8.5-10.0	19.5%				
	5	13.5-15.0	25.5%				
	6	18.5-20.0	27.2%				
B-5	1	1.0-2.5	16.4%				
	2	3.5-5.0	26.6%				
	3	6.0-7.5	21.1%				
	4	8.5-10.0	15.8%				
B-6	1	1.0-2.5	23.9%				
	2	3.5-5.0	25.8%				
	3	6.0-7.5	15.9%				
B-7	1	1.0-2.5	22.8%				
	2	3.5-5.0	26.4%				
	3	6.0-7.5	17.6%				
	4	8.5-10.0	12.6%				

902 S Hamilton Streeet
Dalton, Georgia
A24110.00652
September 3, 2024

LABORATORY SUMMARY SHEET

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-8	1	1.0-2.5	23.8%				
	2	3.5-5.0	25.5%				
	3	6.0-7.5	19.6%				
	4	8.5-10.0	10.4%				
B-9	1	1.0-2.5	17.9%				
	2	3.5-5.0	19.0%	51	21	30	CH
	3	6.0-7.5	23.3%				
	4	8.5-10.0	19.4%				
	5	13.5-15.0	9.1%				
B-10	1	1.0-2.5	21.4%				
	2	3.5-5.0	21.1%				
	3	6.0-7.5	14.8%				
	4	8.5-10.0	12.9%				
B-11	1	1.0-2.5	27.4%				
	2	3.5-5.0	24.5%				
	3	6.0-7.5	19.8%				
	4	8.5-10.0	5.5%				
	5	13.5-15.0	20.9%				