GEOTECHNICAL EVALUATION REPORT

512 EAST MAIN STREET
DALLAS, NORTH CAROLINA
GASTON COUNTY, NORTH CAROLINA

EXCEL PROJECT NO. 2022163

DATE SUBMITTED: DECEMBER 20, 2022

Prepared For:

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CERTIFICATION: ______________________
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1.0 INTRODUCTION AND PURPOSE

It is the understanding of Excel Civil and Environmental Associates, PLLC (Excel), that plans are underway for construction of a residential development to be located on one parcel located at 512 East Main Street located inside the city limits of Dallas, Gaston County, North Carolina (see **Figure 1**).

Six specific boring locations were placed at various locations on the property to evaluate existing subsurface conditions as recommended by Excel (see **Figure 2**).

The purpose of the investigation as conducted by Excel is as follows: (1) to determine soil and bedrock conditions in the proposed construction area; (2) to locate any unsuitable material within the boring termination depth at all drilling locations; (3) to evaluate pertinent physical properties of the soils encountered, and (4) after analyses of available field data, to develop guideline recommendations related to potential design and construction.

2.0 FIELD ACTIVITIES

Subsurface soil conditions at the project site were evaluated by means of six soil borings completed with a truck-mounted drill-rig at the general locations shown on **Figure 2**. The borings were advanced to terminal depths of approximately 15-feet below grade level (fbgl) at which time the target depth was achieved. Boring logs of the soil describing the soil profile encountered at each location are shown in **Appendix A**.

In order to determine the soils capable bearing capacity, six soil borings were completed utilizing a truck-mounted drill-rig and tested at approximately two-foot depth intervals. The number of strikes required by the hammer to drive the point through three increments of 1¾ inch is recorded as the penetration resistance at that depth. Field personnel visually examined the samples collected from the borings to estimate the distribution of grain sizes, plasticity, organic content, moisture condition and color. The observations for soil samples collected from select borings are summarized on the attached Boring Logs included in **Appendix A**.

In addition to DCP testing, Excel was able to determine the presence or absence of underlying rock at the boring locations and assess if unsuitable soils may be encountered during site grading and/or installation of underground utilities. The subsurface conditions encountered on December 8, 14 and 19, 2022, by Excel are as follows:

- *The subsurface soils located in the vicinity of borings B-1 thru B-6 at the site were observed to be generally uniform with the predominant soils encountered from grade* to *a depth of approximately 6-fbgl composed of primarily sand-clay and silt clay mixtures with blow counts ranging from 4 to 16 blows per increment and from 6-fbgl to the boring termination depth composed of primarily sand-silt mixtures with blow counts ranging from 11 to greater than 25 blows per increment. Average topsoil thickness was observed to be approximately eight inches for borings B-1 thru B-6. Groundwater was not encountered during drilling activities at any boring location to the boring termination depth of approximately 15-fbgl. Bedrock was not encountered during drilling activities at any boring location to the boring termination depth of approximately 15-fbgl.*

3.0 LABORATORY INVESTIGATION

The physical properties of the soils encountered during this investigation were evaluated by means of laboratory soil tests. In an investigation of this type, the classification, plasticity, maximum dry unit weight and optimum moisture content of soils are of primary importance. Laboratory tests conducted to determine these soil properties included the Standard Proctor Compaction Test. This laboratory tests were performed in accordance with recognized American Society of Testing Materials Standards and Procedures in our laboratory facility. Results from the laboratory investigations are included in the following paragraphs and **Appendix B**.

In order to determine the maximum dry unit weight and optimum moisture content of the onsite encountered soils one Standard Proctor Compaction Test was completed for the onsite soil from a sample collected from borings B-3 through B-6 at an approximate depth of 3-fbgl. The Standard Proctor Compaction Test is used to determine the maximum dry unit weight and optimum moisture content, which can be obtained for specification of field compaction. The Standard Proctor Compaction Test was conducted in general accordance with ASTM Method D698. The soils were determined to be a yellow brown sandy lean CLAY (CL) with the maximum dry unit weight of the onsite soils at **102.3-pounds per cubic foot (pcf)** with an optimum moisture content of **22.1-%** (refer to **Appendix B** for the laboratory results).

4.0 GENERAL SOIL CONDITIONS

4.1 Regional Geology

According to the *Soil Survey of Gaston County, North Carolina,* borings B-1 through B-6 at the subject site is located on soils classified as Cecil-Urban land complex (CfB) with estimated slopes between two and eight percent (2% - 8%). Typical characteristics of these soils include a sandy clay loam surface layer with generally clayey subsoil with a clayey loam located at a depth of approximately four feet. The Cecil Series soils are well drained and are listed as being of a low runoff class. The water table is not reported within a depth of six feet and the depth to bedrock reported as more than six feet. The hydrologic soil group is reported as type B.

4.2 Site Geology

The project site is located within Gaston County, North Carolina, which lies within the Inner Piedmont Belt of the Piedmont Physiographic Province of the eastern United States. Broad, rolling ridges formed on the stronger bedrock of the area characterizes the province.

Primarily metamorphic rocks, chiefly quartz-sericite schist and metavolcanics of the late Proterozoic age underlie Lincoln County. There are large masses of plutonic igneous rock, mainly Pennsylvania to Permain granite, in form of intrusion within the metamorphic rock.

The soils weathered from the parent bedrock generally consist of an upper layer of fine grained silt or clay underlain by medium sandy silt or silty sand. The sand content appears to generally increase with depth. A region of partially weathered rock is generally encountered above bedrock.

4.3 Site Hydrogeology

Groundwater was not encountered at the subject site during drilling activities. However, it should be realized that the water content of the near surface soils at the site could significantly change between the time our report is submitted and construction is initiated at the site.

It should be noted that some of the material excavated from soil borings B-2 through B-6 on the property was classified as being either moist or saturated. This condition may be due to recent precipitation and these areas should be monitored during construction activities for any moisture-related problems related to excessive moisture in the soil. This can create a situation in which water is absorbed into spaces between the soil particles and the soil becomes less dense, which reduces its ability to support a load.

5.0 GEOTECHNICAL EVALUATION AND RECOMMENDATIONS

5.1 General Evaluation

Site preparation for site construction should include, as a minimum, the relocation and/or removal of all subterranean utilities and existing drainage structures, the removal of all topsoil within the construction limits and the removal of any other objectionable materials at or near the existing ground surface. Objectionable materials that should be removed from the foundation area and/or pavement areas include standing water, organic matter, rubble, construction debris, stumps, roots, and plastic clays. Soft soils were located in the vicinity of borings B-3 and B-5 from grade level down to an approximate average depth of 1 ½-fblg and the subgrade may require removal and replacement in these areas.

The soils encountered at the site appear consistent as clays, silts and sands. Due to the limited number of borings at the site, subsurface variations may occur and affect the construction requirements. The areas where unsuitable materials are excavated should be backfilled in accordance with compaction recommendations described later in this report.

5.2 Spread Footings

The residual soils encountered by our borings may be considered suitable for supporting shallow spread foundations of low bearing capacity provided that all fill soils containing large amounts of organic matter be excavated prior to footing construction. The existing subgrade should be proofrolled to detect any soft or yielding areas prior to fill placement. Soft areas should be undercut and backfilled with requirements stated herein.

An allowable design soil pressure of 2,000-pounds per square foot may be used, at all boring locations (unless otherwise noted) that displayed appropriate test results for the above-mentioned bearing capacities, for shallow spread and continuous foundations as applicable for the property, in new compacted fill soils placed in accordance with recommendations as described herein. Exposure of the subgrade materials to the environment may weaken these soils at the foundation bearing level. If the foundation excavations remain open for long periods of time, or during inclement weather, reevaluation of the subgrade materials by a geotechnical engineer must be performed prior to steel, concrete or stone placement.

Minimum wall (strip) and column footing plan dimensions of 16 and 24 inches, respectively, should be maintained to reduce the possibility of a localized, "punching" type shear failure. Exterior foundations and foundations in unheated areas should be designed to bear at least 18 inches below finished grades for frost protection.

We recommend that the foundation be concreted as soon as possible after evaluation to minimize potential disturbance of the bearing soils. If the subgrade soils must remain exposed overnight or during inclement weather, we recommend that a 2-4 inch "mud-mat" of "lean" (1,000 psi) concrete be placed on the bearing soils. We recommend that a qualified geotechnical engineer evaluate the bearing surfaces prior to fill or concrete placement.

5.3 Settlements

Settlement of foundations designed and installed in accordance with the above recommendations, and supporting maximum loads listed in Section 5.2 should not exceed one-half to five-eighths of an inch. Settlements will occur rapidly, with approximately 50 to 60 percent of the quoted settlements occurring during construction.

In regards to grading for structural foundations, previously filled areas will experience little additional settlement, while areas initially without fill may settle up to three-eighths to one-half of an inch under the maximum fill load. This differential settlement could adversely affect the foundation if settlement takes place following construction. Therefore, we strongly recommend that structural site grading fill be placed as far in advance of other construction as possible, preferably at least one to two weeks.

5.4 Slab-on-Grade

Floor slabs may be soil supported in accordance with the recommendations for soil bearing foundations as outlined. A modulus of subgrade reaction of 75 psi/inch may be used for design of slabs bearing on properly compacted structural fills. Depending on the weather, construction activities, soil conditions of the at-grade soils and disturbance of the soils during construction may require undercutting, replacement or recompaction of the materials immediately prior to placing slab stone. The support capabilities of these materials can be evaluated during proofrolling. A thorough evaluation as to the suitability of the slab-on-grade soils during stone, vapor barrier or concrete placement should be conducted. If a poly vapor barrier is proposed during design, concerns with proper slab concrete curing outlined in ACI 302 should be evaluated. The grade slabs should have an adequate number of joints to minimize slab cracking.

With regards to the stone base, we recommend that a minimum 4 inches of Aggregate Base Course (ABC) stone (or approved equivalent) be placed immediately beneath the floor slab to provide a capillary barrier and to increase the load distribution capabilities of the floor slab system. If site construction will carry over into the more inclement and colder winter months, consideration should be given to increasing the stone thickness to 6 inches.

5.5 Seismic Design

Based on a review of the North Carolina Building Code and the subsurface conditions encountered in the soil borings, we recommend using a site class "D" for seismic design. However, consideration could be given to considering site classification by measuring the shear wave velocity of the subsurface soils. Measuring shear wave velocities does not guarantee that the site would change to a more favorable site classification, but it does provide more accurate information which may lead to a more favorable seismic classification.

5.6 Compacted Fill Recommendations

Where fill operations are required, representative samples of each engineered fill material should be collected and tested to determine its moisture-density characteristics including the maximum dry density, optimum moisture content, and plasticity. These tests are needed for quality control of the compacted fill and to determine if the fill material is acceptable. In general, soils containing more than five percent (by weight) fibrous, organic material, or those having a plasticity index (PI) greater than 20, or those having a maximum dry density less than 90 pounds per cubic foot should not be used as structural fill.

Fill material should be placed in loose lifts less than eight inches thick. The moisture content of the fill soils should be within plus or minus five percent of the optimum moisture content based on the standard effort maximum dry density test (ASTM D-698). The in-place dry density should equal or exceed 95 percent of the standard effort maximum dry density, unless otherwise specified.

Once placement of fill begins, a qualified soils technician should perform a sufficient number of field density tests to document the degree of compaction being obtained in the field as well as to verify the moisture content is within specifications.

The contractor must exercise care after these soils have been compacted. If water is allowed to stand on the surface, these soils will become saturated. The movement of construction traffic on saturated subgrades causes rutting that destroys the fill's integrity. Once the integrity of the subgrade is destroyed, mobility of construction traffic becomes difficult or impossible. Therefore, the fill surface should be sloped to achieve positive drainage and to minimize water from ponding on the fill surface. If the surface becomes excessively wet, fill operations should be halted and monitoring by a geotechnical engineer is essential for an acceptable structural fill.

5.7 Excavation Recommendations

Foundation and utility trench excavations may extend through low consistency fill soils that can generally be removed with a backhoe. It should be noted that deleterious material present within the fill and high groundwater conditions usually require that special methods or equipment be used for excavation.

Depending on proposed grade modifications and physical improvements for site development, existing soils may require excavation. Depending on the depth, horizontal limits of the organic soil, and proximity of nearby slopes and structures, earth-retaining structures may be required to provide slope stability and maintain safe working conditions. Geotechnical inspection will be required during the excavation process to monitor slope stability and determine excavation depths.

Vertical cuts in the onsite fill and residual soils would be considered unstable and present a significant hazard because they can fail without warning. Therefore, temporary construction slopes up to 10 feet high should not be inclined steeper than one and a half horizontal to one vertical (1½H: 1V) and excavated material should not be placed within 10 feet of the crest of any excavated slope. If construction slopes greater than 10 feet in height are required, a specific geotechnical evaluation will be required. In addition, runoff should be diverted away from the crest of excavated slopes to prevent erosion and sloughing. Unbraced excavations may experience some minor localized instability (i.e., sloughing). To mitigate sloughing, all excavated slopes should be covered with polyethylene for protection from rainfall and moisture changes. Excavation into the toe of embankments should proceed with caution and slope stability during construction should be the responsibility of the contractor. All excavations should conform to applicable OSHA regulations. Also, construction activities should not be allowed to induce surcharge loads to the uphill portion of the embankment.

5.8 Groundwater

Based on the results of the subsurface investigation, groundwater seepage was not encountered. Therefore, based on the limited number of borings and onsite subsurface conditions, Excel does not anticipate that dewatering techniques such as well points or pumping from sumps will be required to permit excavation or backfill operations less than 15-fbgl within these areas.

However, based on the regional geology, it should be noted that some sites located within this region may have the tendency to display high water tables or perched water tables due to the low permeability characteristics of the subsurface materials. This should be considered during construction activities so that excavations are not allowed to remain open for extended periods of time and especially during predicted or possible rain events.

5.9 Below Grade Walls

We recommend that backfill placed against retaining and foundation walls consist of self-compacting, free-draining, uniformly sized stone, such as size No. 57 (as per ASTM D-448). The stone should be placed in the form of a wedge that extends outward from the wall at least one half the wall heights. The upper two feet of the backfill should consist of a relatively impervious soil. Soil compaction may be accomplished with vibratory sled compactors and lift thickness should not exceed eight inches. A pipe or an outlet at the base of the wall should positively drain the stone backfill. Provided that the backfill conforms to the criteria noted herein, the at-rest and active lateral earth pressures acting against the wall can be calculated assuming the following coefficients:

K_o= 0.48 (Non-Yielding Walls)

K_a = 0.32 (Yielding Cantilever Walls)

γ = 120 Pounds per Cubic Foot (Wet Unit Weight)

The free-draining stone can be assumed to have a unit weight of 130-pcf. The coefficient against sliding between the soil and the concrete at the base of the wall can be assumed to be tan δ = 0.34. Onsite topsoil materials should not be used for backfill behind below grade walls or retaining walls. It should be noted that cohesive soil backfill, sloping grades behind the walls, concentrated point loads, or other surcharge loads behind the wall will increase lateral load magnitudes. Specific loading conditions should be addressed on a case-by-case basis.

5.10 Parking Areas

Based on field data and observation, residual soils or properly compacted structural fill can provide adequate support for a pavement structure designed for the appropriate subgrade strength and traffic characteristics provided all objectionable material is removed from the subgrade. Proofrolling of the resultant subgrade should be performed to locate objectionable soils that should be removed. Areas exhibiting deflection or rutting should be removed or improved in-place. The surface drainage of the parking areas should be designed for proper drainage such that the areas are fast draining, quick drying and puddle free to prevent deformation. The subgrade should not be uncompacted, disturbed, muddy or frozen when paving begins. At the time of paving, the subgrade should have a moist, dense firm and uniformly smooth surface. Provided that the subgrade conforms to the criteria noted herein, the asphalt pavement may be placed as follows:

Standard Duty Asphalt Paving:

6’’ Aggregate Base Course
1 ½’’ Initial Course (Type S9.5B)
1 ½’’ Final Course (Type S9.5B)

Heavy Duty Asphalt Paving:

8’’ Aggregate Base Course
1 ½’’ Initial Course (Type S9.5B)
1 ½’’ Final Course (Type S9.5B)

6.0 CONCLUSIONS AND RECOMMENDATIONS

In order to determine the maximum dry unit weight and optimum moisture content of the onsite encountered soils one Standard Proctor Compaction Test was completed for the onsite soil from a sample collected from borings B-3 through B-6 at an approximate depth of 3-fbgl. The Standard Proctor Compaction Test is used to determine the maximum dry unit weight and optimum moisture content, which can be obtained for specification of field compaction. The Standard Proctor Compaction Test was conducted in general accordance with ASTM Method D698. The soils were determined to be a yellow brown sandy lean CLAY (CL) with the maximum dry unit weight of the onsite soils at **102.3-pounds per cubic foot (pcf)** with an optimum moisture content of **22.1-%** (refer to **Appendix B** for the laboratory results).

The subsurface soils located in the vicinity of borings B-1 through B-6 at the site were observed to be generally uniform with the predominant soils encountered from grade to a depth of approximately 6-fbgl composed of primarily sand-clay and silt clay mixtures with blow counts ranging from 4 to 16 blows per increment and from 6-fbgl to the boring termination depth composed of primarily sand-silt mixtures with blow counts ranging from 11 to greater than 25 blows per increment. Average topsoil thickness was observed to be approximately eight inches for borings B-1 through B-6. Groundwater was not encountered during drilling activities at any boring location to the boring termination depth of approximately 15-fbgl. Bedrock was not encountered during drilling activities at any boring location to the boring termination depth of approximately 15-fbgl.

After review of field data and the information obtained for this report, Excel recommends the following pertaining to the above referenced site:

- *We recommend the subsurface soils at all locations in the vicinity of the soil borings be stabilized, such as proof rolled during onsite construction to assist in supporting the subsequent bearing capacity and to assist in locating any unsuitable areas;*

- *Site preparation should include the removal of all organic-laden soil and organic matter, the removal or buffering of the existing plastic clays and the removal of any debris. Soft soils were located in the vicinity of borings B-3 and B-5 from grade level down to an approximate average depth of 1½-fblg and the subgrade may require removal and replacement in these areas;*

- *We recommend monitoring the areas that were classified as being either moist or saturated (see **Appendix A**) as this condition can create moisture-related problems as water is absorbed into the spaces between the soils particles reducing the soils ability to support a load;*

- *We recommend that a geotechnical engineer inspect the subgrade by method of proofroll prior to the placement of structural fill. Compaction testing is to be conducted during structural filling activities at a minimum of every one-foot interval of fill unless otherwise instructed by a geotechnical engineer.*

No other recommendations are suggested or can be given at this time due to the lack of information pertaining to the construction specifics at the subject property. Changes of the groundwater table can occur with passage of time due to variations in rainfall, temperature, and other factors. In addition, this report does not include quantitative information on rates of flow of groundwater into excavations, on pumping capacities necessary to dewater the excavations or on methods of dewatering excavations. If this type of information becomes necessary, tests such as permeability and pumping tests will be required.

7.0 LIMITATIONS

The surface soils encountered at this site are of a type that will soften significantly if the soil water content should be increased for any reason. Such increases in soil water content normally cause difficulties in proper soil compaction. Sources of increased water content in the surface soils could include, but are not limited to, rainwater, improper surface drainage during earthwork or site grading, and broken or leaking utility lines. At the time of our field investigation for the study reported here, the soils at borings B-1 through B-6 from grade to approximately 15-fbgl were judged to be generally acceptable for proper compaction with low to moderate moisture content with the exceptions as noted in previous sections. However, it should be realized that the water content of the near surface soils at the site could significantly change between the time our report is submitted and construction is initiated at the site.

Unanticipated soil conditions at a construction site are commonly encountered and cannot be fully predicted by soil samples, test borings or test pits. Such unexpected conditions frequently require that additional expenditures be made by the owner to attain a properly designed and constructed project. Therefore, provisions for some construction contingency funds are recommended to accommodate such potential extra cost.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our field investigation, a limited number of soil borings and further on the assumption that the exploratory borings are representative of the subsurface conditions throughout the site, that is, that the subsurface conditions everywhere are not significantly different from those displayed by the borings at the time they were completed. If, during construction, different subsurface conditions from those encountered in our borings are observed, or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary. If there is a lapse of time of more than one year between submission of this report and start of the work at the site, if conditions have changed due either to natural causes or to construction operations at or adjacent to the site, or if building locations, structural loads or finish grades are changed, we urge that we be promptly informed, and retained to review our report to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse.

Further, we request that our firm be retained to review those portions of the plans and specifications for this particular project that pertain to earthwork and foundations as a means to determine whether the plans and specifications are consistent with the recommendations contained in this report. In addition, we are available to observe construction, particularly the construction of foundations as recommended in this report, and such other field observations as might be necessary.

This report has been prepared for the exclusive use by *NuHomes Capital Management* for specific application to subsurface conditions associated with the proposed construction project located at 512 East Main Street, Dallas, North Carolina. The only warranty made by us in connection with the services provided do reputable members of our profession practicing in the same or similar locality exercise that we have used that degree of care and skill ordinarily under similar conditions. No other warranty, expressed or implied, is made or intended.

FIGURES

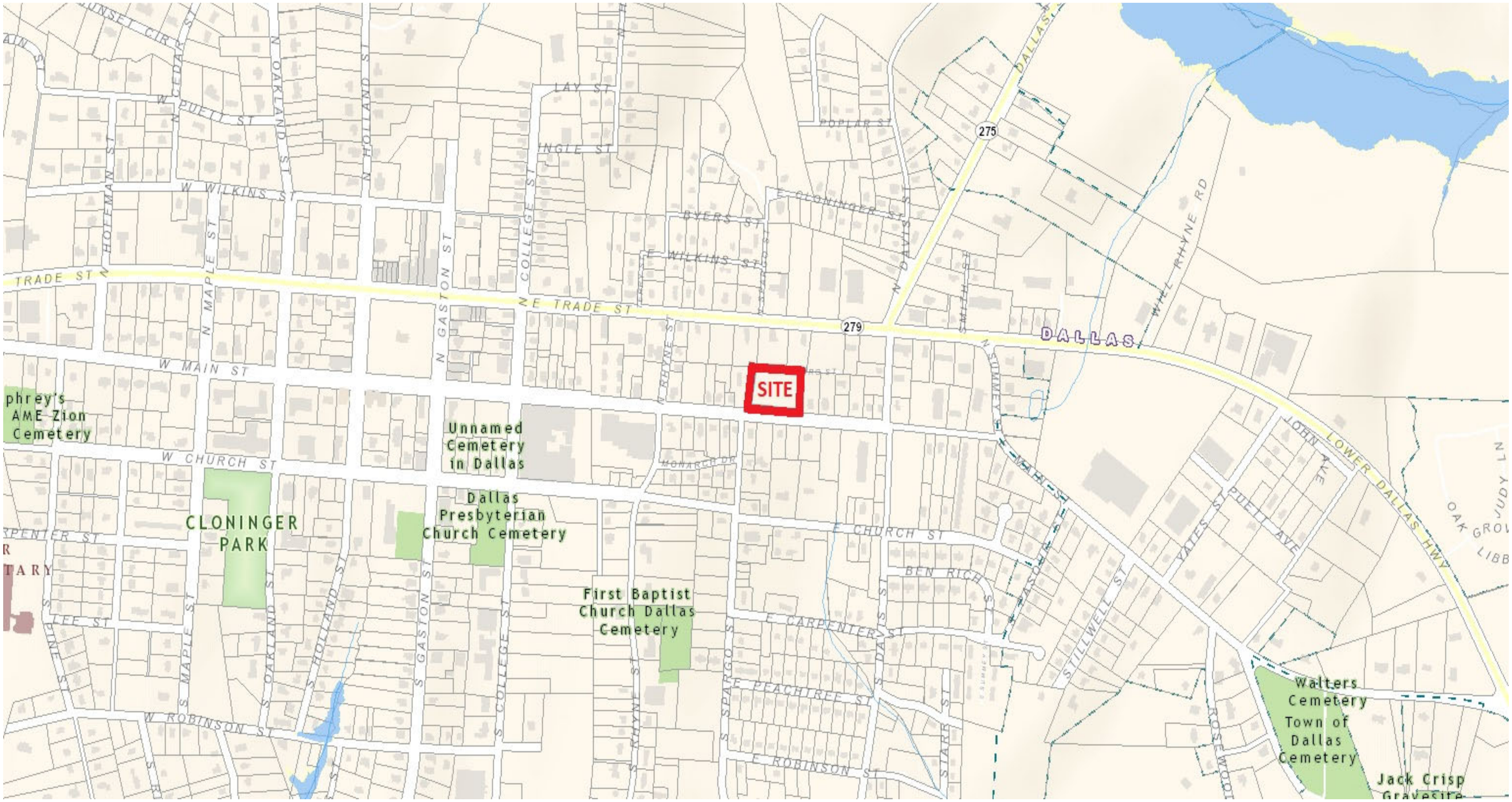

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Figure 1 - Site Vicinity Map

Excel No. 2022163

Source: Gaston County GIS

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Excel Civil & Environmental Associates, PLLC
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Gastonia, NC 28054

Figure 2 - Boring Locations Map

Excel No. 2022163

Source: Gaston County GIS

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APPENDICES

APPENDIX A

SOIL BORING LOGS

Boring Log

Well Construction Permit Number --NA--

I. D. Number:	B-1	**Purpose:**	Geotechnical Assessment
Project Name:	512 East Main Street Dallas NC	**Contractor:**	ECEA
Project No:	2022163	**Registration No:**	--
Field Personnel:	B. Payne, J. Espana	**Driller:**	B. Payne
Start Date:	8-Dec-22 **Complete Date:** 14-Dec-22	**Equipment:**	Earthprobe 2000 Truck-Mounted Rig

BORING ID #	DEPTH TESTED, (bgl)	BLOWS PER 1¾" INCREMENT	COMPARATIVE SPT VALUE	EXPECTED BEARING CAPACITY (PSF)	VISUAL SOIL CLASSIFICATION
B-1	0	--	--	--	Topsoil
	1'	10,12,12 (12)	8	3,000	@ 8" Reddish brown sandy CLAY, damp
	1.5'	--	--	--	Same As Above
	2'	--	--	--	Same As Above
	3'	10,10,10 (10)	7	2,500	Orange clayey SAND, damp
	4'	--	--	--	Same As Above
	5'	12,12,13 (12)	8	3,000	Tan sandy SILT, damp
	6'	--	--	--	Same As Above
	7'	8,13,14 (13)	9	3,200	Tan sandy SILT, dry
	8'	--	--	--	Same As Above
	9'	--	--	--	Same As Above
	10'	--	--	--	Tan sandy SILT, damp
	11'	--	--	--	Same As Above
	12'	--	--	--	Tan micacous sandy SILT, damp
	13'	--	--	--	Same As Above
	14'	--	--	--	Same As Above
	15'	--	--	--	Same As Above

Boring Log

Well Construction Permit Number --NA--

I. D. Number:	B-2	**Purpose:**	Geotechnical Assessment
Project Name:	512 East Main Street Dallas NC	**Contractor:**	ECEA
Project No:	2022163	**Registration No:**	--
Field Personnel:	B. Payne, J. Espana	**Driller:**	B. Payne
Start Date:	8-Dec-22 **Complete Date:** 14-Dec-22	**Equipment:**	Earthprobe 2000 Truck-Mounted Rig

BORING ID #	DEPTH TESTED, (bgl)	BLOWS PER 1¾" INCREMENT	COMPARATIVE SPT VALUE	EXPECTED BEARING CAPACITY (PSF)	VISUAL SOIL CLASSIFICATION
B-2	0	--	--	--	Topsoil
	1'	7,9,9 (9)	7	2,500	@ 6" Reddish brown sandy CLAY, moist
	1.5'	--	--	--	Same As Above
	2'	--	--	--	Orange sandy CLAY, damp
	3'	12,14,15 (14)	9	3,200	Orange clayey SAND, damp
	4'	--	--	--	Same As Above
	5'	16,16,16 (16)	10	3,500	Brown, orange sandy SILT, damp
	6'	--	--	--	Brown, orange sandy SILT, dry
	7'	15,18,22 (20)	12	4,000	Same As Above
	8'	--	--	--	Same As Above
	9'	--	--	--	Same As Above
	10'	--	--	--	Same As Above
	11'	--	--	--	Same As Above
	12'	--	--	--	Tan sandy SILT, damp
	13'	--	--	--	Same As Above
	14'	--	--	--	Same As Above
	15'	--	--	--	Brown sandy SILT with PWR, damp

Boring Log

Well Construction Permit Number --NA--

I. D. Number:	B-3	**Purpose:**	Geotechnical Assessment
Project Name:	512 East Main Street Dallas NC	**Contractor:**	ECEA
Project No:	2022163	**Registration No:**	--
Field Personnel:	B. Payne, J. Espana	**Driller:**	B. Payne
Start Date:	8-Dec-22 **Complete Date:** 14-Dec-22	**Equipment:**	Earthprobe 2000 Truck-Mounted Rig

BORING ID #	DEPTH TESTED, (bgl)	BLOWS PER 1¾" INCREMENT	COMPARATIVE SPT VALUE	EXPECTED BEARING CAPACITY (PSF)	VISUAL SOIL CLASSIFICATION
	0	--	--	--	Topsoil
	1'	9,6,7 (6)	5	1,700	@ 10" Tan, brown silty CLAY, moist
	1.5'	--	--	--	Same As Above
	2'	--	--	--	Reddish yellow sandy CLAY, damp
	3'	12,12,12 (12)	8	3,000	Same As Above
	4'	--	--	--	Same As Above
	5'	14,15,15 (15)	10	3,500	Reddish orange sandy SILT, damp
	6'	--	--	--	Reddish orange SAND, damp
B-3	7'	21,25+	13	4,500	Reddish orange sandy SILT, damp
	8'	--	--	--	Same As Above
	9'	--	--	--	Same As Above
	10'	--	--	--	Same As Above
	11'	--	--	--	Same As Above
	12'	--	--	--	Same As Above
	13'	--	--	--	Same As Above
	14'	--	--	--	Same As Above
	15'	--	--	--	Tan sandy SILT, damp

Boring Log

Well Construction Permit Number --NA--

I. D. Number:	B-4	**Purpose:**	Geotechnical Assessment
Project Name:	512 East Main Street Dallas NC	**Contractor:**	ECEA
Project No:	2022163	**Registration No:**	--
Field Personnel:	B. Payne, J. Espana	**Driller:**	B. Payne
Start Date:	8-Dec-22 **Complete Date:** 14-Dec-22	**Equipment:**	Earthprobe 2000 Truck-Mounted Rig

BORING ID #	DEPTH TESTED, (bgl)	BLOWS PER 1¾" INCREMENT	COMPARATIVE SPT VALUE	EXPECTED BEARING CAPACITY (PSF)	VISUAL SOIL CLASSIFICATION
B-4	0	--	--	--	Topsoil
	1'	12,12,13 (12)	8	3,000	@ 8" Tan clayey SAND, damp
	1.5'	--	--	--	Same As Above
	2'	--	--	--	Tan clayey SAND, damp
	3'	12,12,12 (12)	8	3,000	Same As Above
	4'	--	--	--	Same As Above
	5'	13,15,13 (14)	9	3,200	Tan sandy CLAY, moist
	6'	--	--	--	Same As Above
	7'	11,11,11 (11)	8	3,000	Reddish orange clayey SILT, moist
	8'	--	--	--	Same As Above
	9'	--	--	--	Tan sandy SILT, moist
	10'	--	--	--	Same As Above
	11'	--	--	--	Same As Above
	12'	--	--	--	Brown sandy SILT, damp
	13'	--	--	--	Same As Above
	14'	--	--	--	Same As Above
	15'	--	--	--	Same As Above

Boring Log

Well Construction Permit Number --NA--

I. D. Number:	B-5	**Purpose:**	Geotechnical Assessment
Project Name:	512 East Main Street Dallas NC	**Contractor:**	ECEA
Project No:	2022163	**Registration No:**	--
Field Personnel:	B. Payne, J. Espana	**Driller:**	B. Payne
Start Date:	8-Dec-22 **Complete Date:** 19-Dec-22	**Equipment:**	Earthprobe 2000 Truck-Mounted Rig

BORING ID #	DEPTH TESTED, (bgl)	BLOWS PER 1¾" INCREMENT	COMPARATIVE SPT VALUE	EXPECTED BEARING CAPACITY (PSF)	VISUAL SOIL CLASSIFICATION
B-5	0	--	--	--	Topsoil
	1'	7,3,5 (4)	3	500	@ 8" Tan clayey SAND, moist
	1.5'	--	--	--	Same As Above
	2'	--	--	--	Tan CLAY with sand, moist
	3'	8,9,9 (9)	7	2,500	Same As Above
	4'	--	--	--	Same As Above
	5'	10,10,10 (10)	7	2,500	Same As Above
	6'	--	--	--	Same As Above
	7'	13,18,21 (19)	11	3,800	Tan sandy SILT, damp
	8'	--	--	--	Same As Above
	9'	--	--	--	Same As Above
	10'	--	--	--	Same As Above
	11'	--	--	--	Same As Above
	12'	--	--	--	Brown sandy SILT, damp
	13'	--	--	--	Same As Above
	14'	--	--	--	Same As Above
	15'	--	--	--	Brown sandy SILT, moist

Boring Log

Well Construction Permit Number --NA--

I. D. Number:	B-6	**Purpose:**	Geotechnical Assessment
Project Name:	512 East Main Street Dallas NC	**Contractor:**	ECEA
Project No:	2022163	**Registration No:**	--
Field Personnel:	B. Payne, J. Espana	**Driller:**	B. Payne
Start Date:	8-Dec-22 **Complete Date:** 19-Dec-22	**Equipment:**	Earthprobe 2000 Truck-Mounted Rig

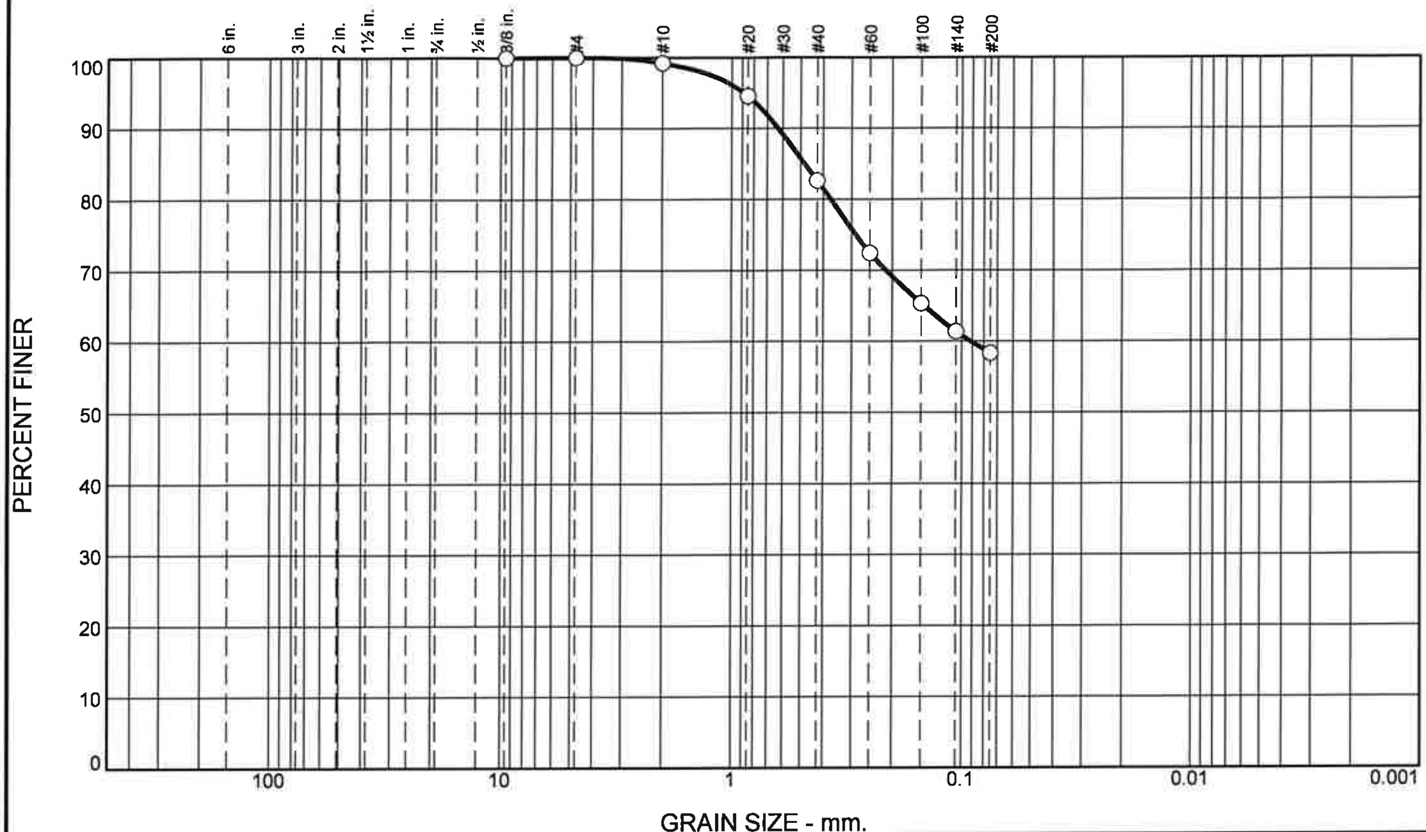
BORING ID #	DEPTH TESTED, (bgl)	BLOWS PER 1¾" INCREMENT	COMPARATIVE SPT VALUE	EXPECTED BEARING CAPACITY (PSF)	VISUAL SOIL CLASSIFICATION
B-6	0	--	--	--	Topsoil
	1'	9,10,10 (10)	7	2,500	@ 6" Reddish orange sandy CLAY, moist
	1.5'	--	--	--	Same As Above
	2'	--	--	--	Same As Above
	3'	11,11,12 (11)	8	3,000	Reddish yellow sandy CLAY, damp
	4'	--	--	--	Same As Above
	5'	10,10,10 (10)	7	2,500	Tan, yellow sandy CLAY, damp
	6'	--	--	--	Same As Above
	7'	13,16,17 (16)	10	3,500	Tan sandy SILT, damp
	8'	--	--	--	Same As Above
	9'	--	--	--	Same As Above
	10'	--	--	--	Same As Above
	11'	--	--	--	Same As Above
	12'	--	--	--	Brown sandy SILT, moist
	13'	--	--	--	Same As Above
	14'	--	--	--	Same As Above
	15'	--	--	--	Same As Above

APPENDIX B

GEOTECHNICAL LABORATORY DATA

Particle Size Distribution Report

ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.8	16.6	24.3	58.3	

Test Results (ASTM D6913)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
0.375	100.0			
#4	100.0			
#10	99.2			
#20	94.6			
#40	82.6			
#60	72.4			
#100	65.4			
#140	61.4			
#200	58.3			

* (no specification provided)

Material Description

Yellow-Brown Sandy Lean Clay

Atterberg Limits

PL= 28 LL= 49 PI= 21

Coefficients

D_{90}= 0.6287 D_{85}= 0.4827 D_{60}= 0.0915
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(10)

Test Remarks

Location: Bulk Sample #1

Sample Date: 12-13-22

Summit Engineering

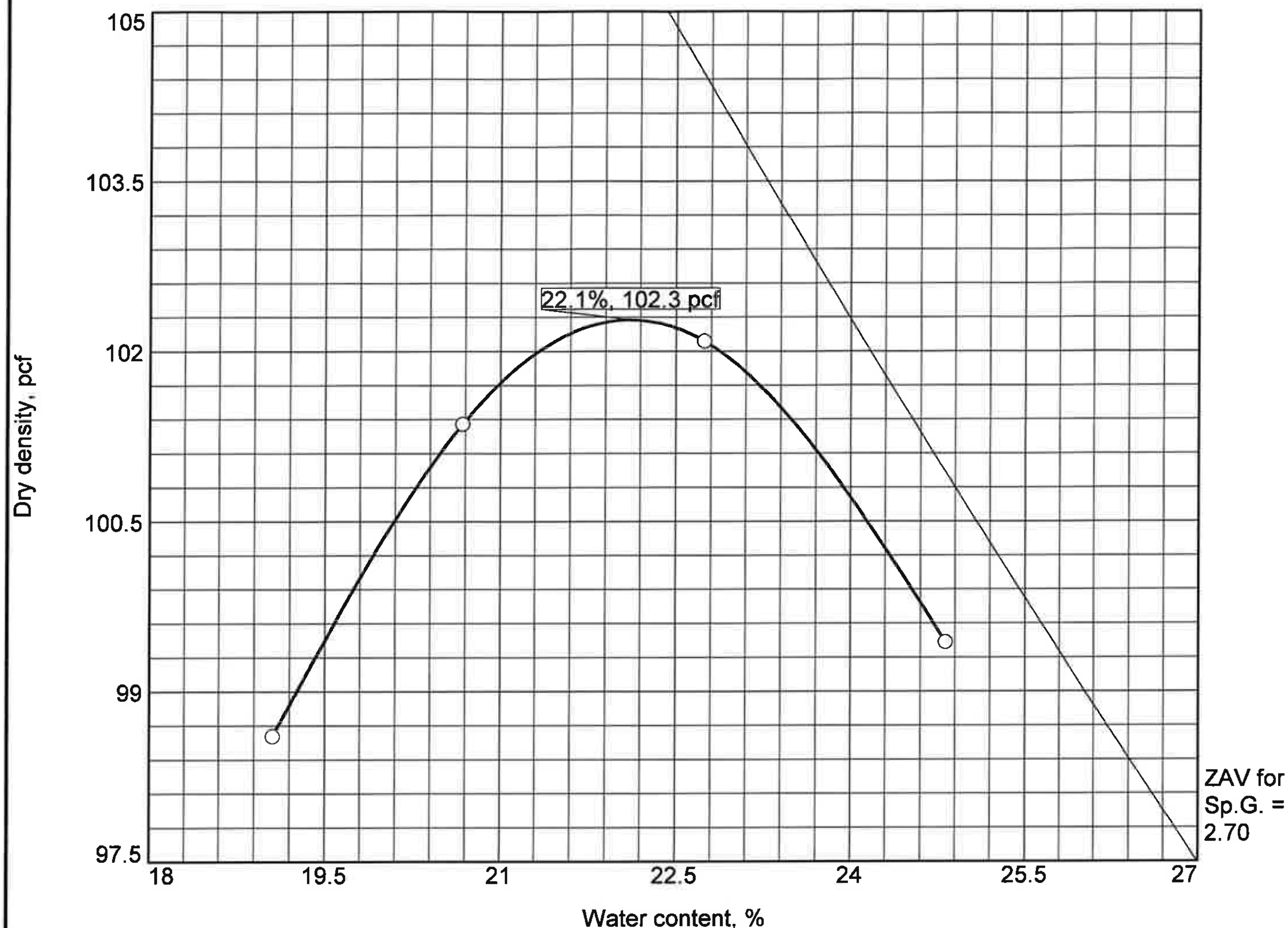
Ft. Mill, South Carolina

Client: ECEA
Project: Nu Homes
Dallas, North Carolina
Project No: 6515.L0041

Figure

Tested By: FG **Checked By:** MH

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	CL	A-7-6(10)			49	21	0.0	58.3

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 102.3 pcf Optimum moisture = 22.1 %	Yellow-Brown Sandy Lean Clay

Project No. 6515.L0041 **Client:** ECEA
Project: Nu Homes
Dallas, North Carolina **Date:** 12-12-22
○ **Location:** Bulk Sample #1

Summit Engineering

Ft. Mill, South Carolina

Remarks:

Figure

Tested By: FG **Checked By:** MH