Henderson Industrial Park Phase III
Clearing and Grading
The City of Henderson, Tennessee
TLM Job No.: J-7056

ADDENDUM NO.: 2

07/22/2024

This Addendum shall apply to the Drawings and Specifications for the above-referenced project and shall be bound into and made a part of the Construction Documents issued by TLM Associates, Inc., titled as indicated above.

Item No. 1: The full geotechnical report for the site has been attached to this addendum.

Please acknowledge receipt of this Addendum in the appropriate location on the Bid Form.

Sincerely,

TLM ASSOCIATES, INC.
Architects + Engineers

Robert J. Safin, P.E.
Project Manager

CML
CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

May 3, 2024

Mr. Bob Safin, P.E.
TLM Associates, Inc.
117 E. Layfayette St.
Jackson, TN 38301

Re: Soil Boring & Report
Henderson Industrial Park Phase III Grading – 2023 SDG Grant
Henderson, TN

Dear Mr. Safin:

Enclosed are the results of a soil investigation and geotechnical report for the Henderson Industrial Park Phase III Grading in Henderson, Tennessee.

We appreciate the opportunity of performing the testing requirements on this project. If you have any questions concerning this report, please do not hesitate to call.

Yours truly,

Matthew D. Evans, P.E.
CONSTRUCTION MATERIALS LABORATORY, INC.

41 Heritage Square Jackson, Tennessee 38305
(731) 668-3585
Fax (731) 668-3586

HENDERSON INDUSTRIAL PARK PHASE III – 2023 SDG GRANT

GEOTECHNICAL REPORT

US HIGHWAY 45N
HENDERSON, TENNESSEE

Construction Materials Laboratory, Inc.
41 Heritage Square
Jackson, Tennessee 38305

Job No. 052401
May 2024

1. *INTRODUCTION*

1.1 Project Overview

This report prepared by Construction Materials Laboratory (CML) of Jackson, Tennessee, details the subsurface geotechnical investigation for the proposed Phase III Industrial Park in Henderson, Tennessee. The preliminary drawings indicate a 240’ x 420’ warehouse, 110’ x 60’ office portion as well as large heavy duty truck docks and aprons and light duty parking.

2. *SITE CHARACTERISTICS*

2.1 Site Topography

The proposed building is located at the west side of the existing gravel drive and cul-de-sac, west of Highway 45. The majority of the pad has been cleared and is relatively flat around elevation 436-438. The southeast portion of the site is undisturbed and still wooded, and slopes down from northwest to southeast from elevation 437 down to 412. Based on the preliminary grading plan the pad will be cut to elevation 430, requiring 7-8 feet of cut across the majority of the pad, with only the southeast edge needing fill material. Beyond the pad and drives, the site will be sloped at 3:1 with some areas around the north and west needing deeper fill.

2.2 Geologic Profile and Seismic Concerns

This region typically consists of shallow fine-grained loess deposits from the Pleistocene Age including lean clays and silty clays. The fine-grained deposits transition into undisturbed Holly Springs sands of the Wilcox Group. The depth of the upper fine-grained deposits is typically based on the proximity to the Mississippi River, and in this area the thickness is typically 10-20 feet. The nearest source of significant seismic activity is the New Madrid Seismic Zone approximately 70-80 miles to the northwest.

Considering the soil characteristics and average N values through the depth of the investigation as well as the knowledge of the area; the IBC site designation should be **Site Class D (stiff soil)**. Based on the assumed loading conditions, the groundwater levels, soil type, relative densities, and N values; there is no significant potential for liquefaction or a loss of strength at this site.

2.3 Summary Subsurface Investigation

The subsurface investigation was conducted by performing soil borings with a hollow stem auger and subsequent Standard Penetration Tests (SPT) at specified depth intervals. The standard penetration test consists of counting the number of blows (N value) required for a 140-pound drop hammer falling 30 inches

to cause a 2-inch O.D. split spoon sampler to penetrate the soil a distance of one foot in accordance with ASTM D – 1586.

Based on the project size; 14 soil borings were located in the project area, up to the southeast wood line. Borings were located by Surveying Services Inc. A schedule of the borings, including depth, location, elevation, groundwater conditions and summary of the soil profile is shown in **Table 1** below. Detailed drilling logs for each boring are found in **Appendix A.**

Table 1. Schedule of Soil Borings

Soil Boring	Boring Depth	Location	Elevation	Groundwater	Topsoil	Soil Remarks
B-0	15	NE Perimeter Road	438	Dry	0” topsoil	
B-1	15	North Light Duty Parking	437	Dry	0” topsoil	Dense Ironstone 1-3’
B-2	15	North Light Duty Parking	438	Dry	0” topsoil	Sand with Ironstone 1-5’ Dense ironstone at 4’
B-3	15	North Light Duty Parking	438	Dry	0” topsoil	Sandy Ironstone 8-11’
B-4	20	NE Bldg. Corner	437.5	Dry	0” topsoil	Dense ironstone from 2-5’ moved several times
B-5	20	SE Bldg. Corner	436.5	Dry	0” topsoil	
B-6	15	SE Office Area	436	Dry	0” topsoil	Slightly loose sand 3-5’
B-7	15	North Center	438	Dry	0” topsoil	
B-8	15	North Wall	437.5	Dry	0” topsoil	Sand with Ironstone 1-3’
B-9	15	South Wall	437.5	Dry	0” topsoil	
B-10	20	Center of Bldg.	438	Dry	0” topsoil	Sand with Ironstone 4-5’
B-11	15	North Wall	435	Dry	0” topsoil	
B-12	15	South Center of Bldg.	438	Dry	0” topsoil	
B-13	20	South bldg. area at wood line	437.5	Dry	0” topsoil	Sand with Ironstone 1-3’
B-14	20	South bldg. area at wood line	437	Dry	0” topsoil	

3. *SUBSOIL INVESTIGATION RESULTS*

3.1 Laboratory Testing Results

Soil samples recovered by the split spoon sampler were sealed and returned to the lab for further analysis. In addition to visual classifications, each soil sample was tested for moisture content and pocket penetrometer readings (PPR). Moisture content and pocket penetration values are located on the driller's logs in **Appendix A**. Certain samples recovered by the split spoon sampler were further analyzed for Atterberg limits, grain size analysis and classification according to the Unified Soils Classification System (USCS). The Atterberg limits consist of the liquid and plastic limits of the soil sample and are index tests that help to further characterize the nature of the soil. All laboratory test results are found in **Appendix B**.

3.2 Soil Profile

Through the depths investigated this site generally consists of two primary soil layers, designated strata A -B. Soil strata and classifications are based on SPT results, visual-manual inspection of the samples and Atterberg limits of selected samples.

Stratum A is a mixture of firm to very stiff, red, orange, and brown silty sand (SM) and sand with silt and clay (SP-SC, SP-SM). These soils generally have 15-30% fines, with slight to moderate cohesion (PPR 0.5-3.0). SPT N values range widely from 16-100+ blows/ft. Layers of ironstone were present around the north side, generally in the top 5 feet. Some of the ironstone is thin layers that was able to be penetrated, although several of the holes reached refusal of the drill. This stratum varies in depth based on the previous grading, and is only several feet thick in the previous cut area, but 8-10+ feet thick in areas with no previous excavation (B-11). We would expect this stratum to be 10+ feet thick on the southeast wooded area.

Stratum B is a transition to a cleaner sand layer (SP, SP-SM) extending thorough 20 feet. This cleaner sand layer was less dense, with SPT N values ranging from 13-30 blows/ft. Fines content is less than 10% and samples were mostly dry with no cohesion.

3.3 Groundwater Levels

Groundwater levels were monitored throughout the course of drilling as well as at completion. No groundwater was encountered in any of the borings and should not be a concern for grading operations or the building construction.

4. *SITE FEASIBILITY*

4.1 Foundation Analysis from Subsoil Conditions

Based on the soil profile and the typical loading for this type of project, the proposed building can be supported by conventional shallow footings and a floor slab on grade. In the majority of the building the footings will mostly encounter a mix of clayey sand and clean sand that can provide adequate shallow bearing capacity. However, the contractor should be aware that the cleaner sand may need to be watered, re-compacted and the footings formed during hot dry weather. The building pad was generally dry and we do not expect any undercut of weak soils, however the wooded southeast portion could not be accessed during this investigation.

Presence of Ironstone:

The north portion of the site encountered sand with thin ironstone layers as well as occasional areas of thicker denser sandstone. This sandstone was generally contained in the top 5 feet and this area is highlighted on the attached soil boring location map. The thickest sandstone was at B-1, B-2, and B-4 where SPT N values reached 100+ blows/ft. Based on the preliminary grading plan the deep cut in these areas will require removal of these layers, and some of the thickest sandstone will likely need a hammer to break apart. The center and southeast portions of the pad did not encounter any sandstone.

4.2 Surface Preparation

The majority of the site has no topsoil, and there is clayey sand at the surface. We would assume the southwest wooded area has 8-10" of topsoil and significant roots that will have to be removed. Prior to any fill the area should be proof rolled with a loaded dump truck. Any weak areas detected should be processed and recompacted or undercut and replaced. Some areas of clean sand might need to be replaced with a lift of on-site clayey sand / sandy clay to help stabilize the site and allow construction traffic.

4.3 Fill Material

Any proposed fill material should contain no topsoil, organic material, or solid particles over 2 inches in diameter. Fill material should have a liquid limit less than 40 and a plasticity index less than 20. On site or haul-in material should meet these specifications and should be approved by a soil laboratory prior to use.

The on-site material is a mixture of sand (SP-SC) and silty and clayey sand (SM, SC) and is suitable for use as fill material on this project or others in the industrial park.

Any fill material should be placed in 8-10-inch loose lifts and compacted to at least 95% of the maximum dry density as defined by the ASTM D-698 (standard Proctor density). In place compacting moistures should be ± 2% of the optimum moisture. Moisture density tests should be performed every 3,000 ft^2 for every lift of fill.

4.4 Site Drainage and Slopes

Positive drainage away from the building should be established and maintained to prevent ponding and excessive water intrusion into the load bearing subgrade material. In order to prevent erosion and maintenance problems, and maintain proper slope stability, 3(H): 1(V) or flatter slopes are recommended. We would advise the design engineer and contractor that for areas where the slopes are a cleaner sand, to plan on installing a top layer of sandy clay / topsoil, followed by a double net erosion blanket or Turf Reinforcement Mat (TRM) that can be pinned or anchored down. Either of these will help better protect the slopes from continued erosion and establish vegetation, with the TRM providing the best long-term solution if warranted.

5. *FOUNDATION TREATMENT*

5.1 Shallow Foundation Design

Bearing Capacity and Minimum Size: Following the recommendations for surface preparation and foundation inspection, isolated (column) footings can be designed for a maximum bearing pressure of 2,800 pounds per square foot (psf), and continuous strip (wall) footings for a maximum of 2,500 psf. Bearing pressure is defined as the vertical bearing load divided by the footing area**.** Regardless of the bearing capacity, isolated footings should be at least 3 feet wide and strip footings at least 2 feet wide for stability. The maximum bearing pressure may be increased by 1/3 for temporary transient loading conditions. The bottom of the exterior footings should be placed at a minimum depth of 2 feet below the subgrade to provide proper erosion prevention and frost protection.

Inspections and Potential Undercut: Prior to placement of the reinforcing steel a competent technician under the supervision of the project geotechnical engineer should inspect every footing base for suitable soil conditions. If any weak or unstable material is encountered, the footing should be undercut to a stable soil layer and backfilled with either No. 57 stone or lean concrete.

Lateral and Stem Wall Factors: For lateral loading considerations active (K_A) and passive (K_P) earth pressure coefficients of 0.32 and 3.60 respectively can be used. A passive pressure reduction factor of 2 is generally recommended since large movement is required to mobilize the full passive strength in this type of soil. For braced or restrained walls, including any stem walls for the loading dock, an at-rest earth pressure coefficient (K_O) of 0.48 should be used. The unit weight of on-site soil or compacted fill can be taken as 125 lbs/ft^3. Alternately, if No. 57 stone is used for all of the backfill from the base of the stem wall back into the building at a 1.5(H): 1(V) or flatter slope, then a reduced at-rest earth pressure (K_O) of 0.41 and a unit weight

of 110 lbs/ft^3 can be used. Equivalent fluid pressures are calculated by multiplying the K-values by the corresponding unit weight. A base sliding friction coefficient of 0.35 can be applied to the dead load. This is an allowable sliding factor and is based on an effective friction angle and has already been reduced by a safety factor of 1.5.

Settlement: If the recommendations and procedures concerning site preparation, new fill placement, bearing capacity and quality control are adhered to, a total settlement of less than 1 inch and a differential settlement of less than 3/4 inch are anticipated for shallow footings across a 50-foot column span.

5.2 Floor Slab Design

Light Duty

For any office areas, we recommend a 4-inch layer of crushed, angular stone such as No 57 or 67 size limestone that will provide subgrade support as well as provide a moisture drainage layer for the slab-on-grade flooring. This blanket should be tamped smooth and topped with a textured polyethylene vapor barrier at least 10 mils thick. Based on the anticipated light floor slab loading and the requirements for proper subgrade preparation; a Subgrade Modulus of Reaction of 110 pci can be used for the structural slab design.

Heavy Duty

For more heavy-duty processing or storage areas we would recommend a 6-inch layer of compacted, crushed limestone base (Type A, Grading D) below the slab. For these areas with the 6-inch limestone base layer, a Subgrade Modulus of Reaction of 75 pci can be used for area dead loads up to 350 psf, and a Subgrade Modulus of Reaction of 230 pci can be used for wheel loading and rack point loads. If higher modulus values are needed, a thicker layer of limestone base should be used.

6. *PAVEMENTS*

6.1 Asphalt Pavements

Drainage and Inspection: Prior to placement of base material, the subgrade should be inspected by a competent technician and proof rolled. Positive drainage should be utilized in all pavement areas to prevent ponding and excessive water infiltration into the subgrade. Care should be taken not to allow water to pond in landscape islands or behind curbs prior to paving which could weaken the edge of the subgrade and base.

Design Basis: Pavement recommendations are based on a 20-year pavement life in accordance with AASHTO design methods. Consideration to local practices and knowledge of local pavement performance with these soil conditions is also considered in the following pavement recommendations. The clayey sands at this site have an estimated CBR of 3-5. We anticipate 4-8 loaded tractor trailers per day for the heavy-duty areas.

Light Duty: For any passenger car traffic (<20,000 ESALs), a flexible pavement section should consist of a stabilized base course consisting of 6 inches of crushed limestone base (type A, grading C or D) or 8 inches of soil-cement (minimum 28-day compressive strength of 350 psi), either of which should be topped by at least 2.5 inches of asphalt surface mix.

Heavy Duty: For a preliminary heavy truck section, a 10-inch-thick soil-cement or 10-inch-thick crushed stone layer topped with 3 inches of binder and 2 inches of surface wearing course is recommended. Once additional project details are available this section can be modified based on the actual truck traffic.

In this type of soil, typically 8% type I Portland cement by weight is required to achieve the required soil cement strength. The strength should be verified with test compressive samples using the on-site subgrade soil and the anticipated type of cement by an experienced testing lab prior to use. For either crushed limestone or soil cement, the thickness should be verified, and moisture density tests should be performed approximately every 3,000 ft^2 to ensure a minimum compaction of 95% of a standard Proctor.

6.2 Concrete Pavements

Light Duty: Alternately a rigid pavement design could be used for the pavement areas. For passenger car areas, a full depth concrete pavement should include 5 inches of air-entrained, coarse limestone aggregate Portland cement concrete (minimum 4,000 psi at 28 days), underlain by either 4 inches of compacted crushed limestone base or a 6-inch layer of soil-cement (minimum 350 psi @ 28 days) to help better distribute stress and protect the joints.

Heavy Duty: For a heavier apron sections, a full depth concrete pavement option should include 8 inches of concrete, underlain by either 4 inches of compacted crushed limestone base or a 6-inch layer of soil-cement. This pavement section is based on the use of load transfer devices at all joints to increase the strength and service life of the rigid pavement. If dowels are used at construction joints for load transfer, they should be carefully inspected for vertical and horizontal alignment so they do not bind as the concrete expands and contracts which can lead to cracks around the dowels. Control joints should be saw cut soon after placement with proper spacing and depth per ACI requirements. We would recommend a maximum joint spacing of 15 feet for the heavy-duty section, and 12 feet for the light duty section. At any free edges of the concrete or near isolation joints that might receive heavy traffic, we would recommend increasing the edge thickness by 2 inches for better strength against cracking. This transition should occur for the final 3-4 feet of the edge. The base section should be tested as outlined in section 6.1 and test cylinders should be cast by an experienced testing lab.

7. *INSPECTION AND CONTINGENCIES*

7.1 Inspection and Quality Control

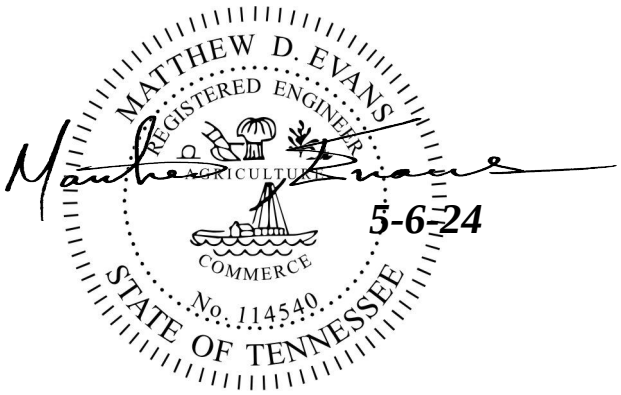
All modifications to the site should be monitored and inspected by a competent technician. This includes excavations, undercutting, fill operations, and foundation preparation. Prior to fill placement; proposed on-site or haul in fill material should be evaluated for suitable attributes, and ASTM D-698 moisture density tests (Proctor tests) should be performed on every type of fill used on site. Moisture density tests of compacted fill should be checked at a minimum of 1 test per 3,000 square feet for each layer of compacted fill. All building floor slab subgrades and pavement area subgrades should be inspected by a competent technician prior to placement of concrete or other structural material. If these areas are in a cut area, the entire areas should be proof rolled with a loaded dump truck and closely monitored by a technician for any potential weak areas. As previously mentioned, all foundation excavations should be inspected by a technician for suitable bearing capacity prior to concrete placement and effort should be made to prevent excavations from staying open for extended periods of time. Areas of high construction traffic on fine grained material should be limited and controlled to prevent pumping and a loss of stability.

7.2 Contingencies and Limitations

All recommendations contained in this report are based on the interpretation of the subsurface soil boring investigation and current knowledge of the area. Although soil borings were conducted at relevant locations according to the proposed construction, it should be noted that the information obtained depicts the subsurface conditions at the specific boring locations at the particular time of the investigation. Although only minor deviations are expected, soil conditions could differ between boring locations as well as outside the area of the soil borings. Any significant deviations found during construction should be reported to this office in order to modify the geotechnical report and subsequent recommendations.

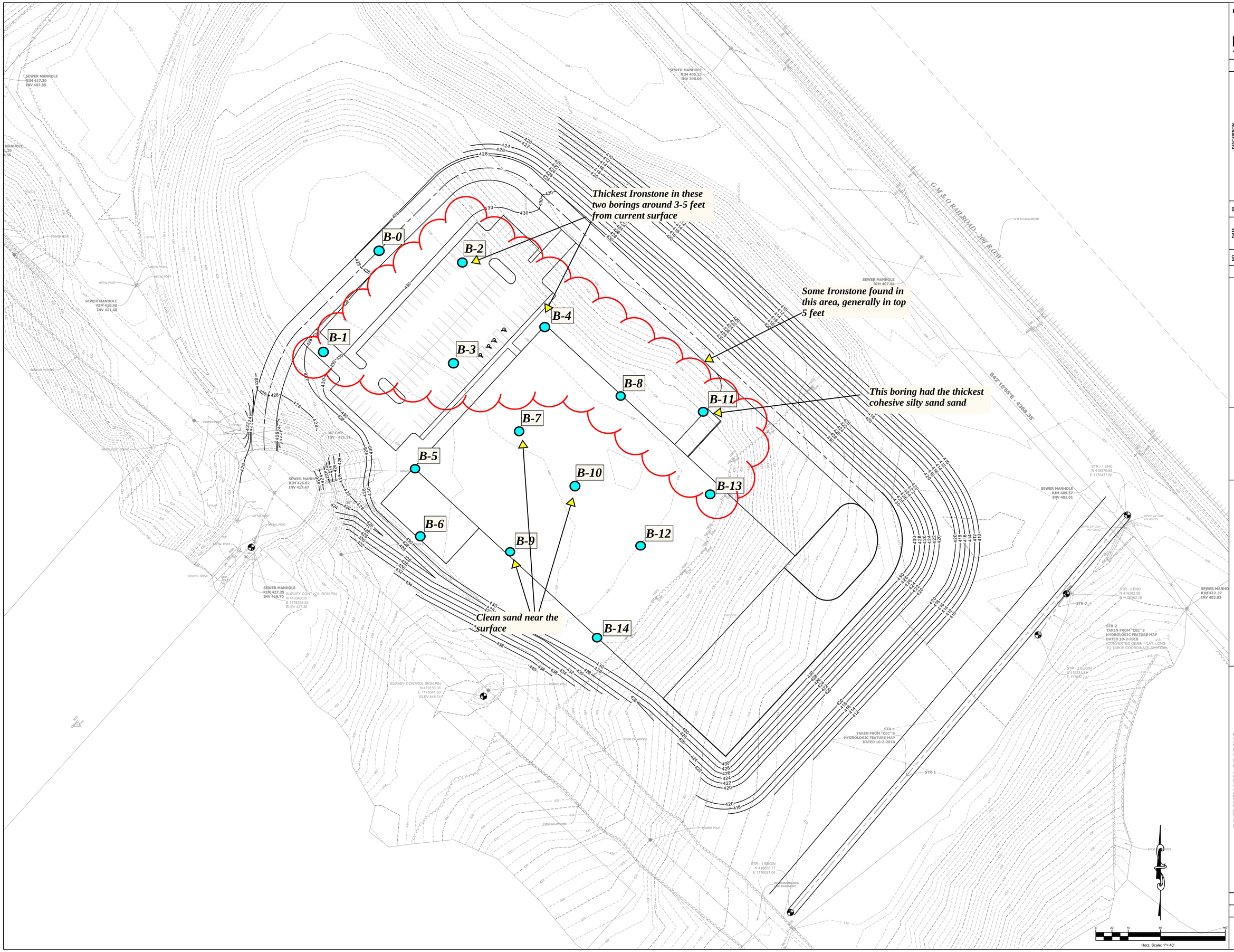
The scope of this report does not contain any environmental investigation or assessment of the site or any adjacent areas. This report does not address the corrosive potential or otherwise hazardous nature of any soil found in the exploration. Any statements contained in this report concerning the location or conditions of organic material are purely an assessment of the subsurface soil profile towards the evaluation of foundation treatment.

Report Submitted 6 May 2024



Matthew Evans

Registered Tennessee No. 114540



TLM ASSOCIATES
Architects + Engineers

REVISIONS

NO.	DATE	BY	DESCRIPTION

CONSULTANT

PRELIMINARY GRADING

HENDERSON INDUSTRIAL PARK PHASE III
2023 SDG GRANT

for

CITY OF HENDERSON
Henderson, Tennessee

TLM ASSOCIATES, INC.
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J-7056

SEPT 09, 2023

C1.0

LOGS OF BORINGS

APPENDIX A

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION DRILLER Eddie Malone

WATER LEVEL_____AT 24 HOURS

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Tan Clayey Sand	21	13.8		2.8
2	3.5	5.0			Red and Orange Clayey Sand with Ironstone	31	36.7		2.8
3	6.0	7.5			Pink, Orange, and Gray Clayey Sand	16	13.4		0/-
4	8.5	10.0			Pink, Orange, and Gray Clayey Sand	16	18.3		2.5
5	13.5	5.0			Red, Orange and Tan Sand	25	9.4		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-0 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL DRY AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange Sand with Ironstone	50/4"	12.2		1.5
2	3.5	5.0			Orange Sand with Ironstone	18	12.5		0/-
3	6.0	7.5			Orange Sand with Ironstone	27	10.9		0/-
4	8.5	10.0			Orange Sand	64	8.7		0/-
5	13.5	15.0			Orange Sand	65	8.9		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-1 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Brown Sand with Ironstone	50	10.9		0/-
2	3.5	5.0			Orange and Brown Sand with Ironstone	50/6"	8.2		0/-
3	6.0	7.5			Orange and Tan Sand	17	10.2		0/-
4	8.5	10.0			Red, Orange and Tan Sand	23	8.9		0/-
5	13.5	15.0			Orange and Tan Sand	27	13.6		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-2 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION _____ DATE 4-26-24 WEATHER _____

WATER LEVEL _____ AT _____ FIELD ENGINEER _____

WATER LEVEL DRY AT COMPLETION AT COMPLETION _____

DRILLER Eddie Malone _____

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Red and Orange Sand with	27	14.5		1.5
					Ironstone and Gray Clay Layers				
2	3.5	5.0			Orange, Tan and Gray Sandy	15	25		2.3
					Clay / Orange and Tan Sand				
3	6.0	7.5			Orange and Tan Sand	23	8.4		0/-
4	8.5	10.0			Orange Sand with Ironstone	50/6"	5.9		3.5
5	13.5	15.0			Orange, Tan Sand with	58	6.3		0/-
					Ironstone				

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-3 JOB No. _____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-23-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone_____

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange Clayey Sand w/ Ironstone	50/6"	12.2		0/-
					Ironstone @ 30'- Moved 3' North				
2	3.5	5.0			Orange Sand	50/4"	10.6		0/-
					*Ironstone @ 45'- Moved 3' N. Again				
3	6.0	7.5			Orange Sand	23	7.4		0/-
4	8.5	10.0			Red and Orange Sand	29	7.1		0/-
5	13.5	15.0			Orange and Tan Sand	11	14.6		0/-
6	18.5	20.0			Orange and Tan Sand	14	15.5		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil --- Ironstone encountered @ 3' - Moved 3' North

TESTING BORING RECORD

BORING No. B-4 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION _____ DATE 4-22-24 WEATHER _____

WATER LEVEL _____ AT _____ FIELD ENGINEER _____

WATER LEVEL DRY AT COMPLETION AT COMPLETION _____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Tan Sand	16	9.2		0/-
2	3.5	5.0			Orange and Tan Sand with Clay Layers	27	18.3		1.5
3	6.0	7.5			Orange and Tan Sand	28	6.5		0/-
4	8.5	10.0			Orange and Gray Sand	15	11.4		0/-
5	13.5	15.0			Orange and Gray Sand	35	12		0/-
6	18.5	20.0			Orange and Gray Sand	42	8.2		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-5 JOB No. _____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Tan Sand with	22	16.1		3.0
					Ironstone & Gray Clay Layers				
2	3.5	5.0			Orange and Tan Sand	11	9.7		0/-
3	6.0	7.5			Orange and Tan Sand with	15	25.5		2.3
					Gray Clay Layers				
4	8.5	10.0			Orange and Tan Sand with	12	15.5		1.5
					Clayey Layers				
5	13.5	15.0			Gray Sand	14	9.8		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-6 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Tan Sand with	17	23.7		1.3
					Ironstone & Gray Clay Layers				
2	3.5	5.0			Orange and Tan Sand	36	6.7		0/-
3	6.0	7.5			Orange and Tan Sand	37	7		0/-
4	8.5	10.0			Orange and Tan Sand	37	4.1		0/-
5	13.5	15.0			Orange and Tan Sand	35	6.6		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-7 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone_____

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange Sand with Ironstone	50/6"	10.4		1.3
2	3.5	5.0			Orange Sand with Ironstone	44	9.9		2.0
3	6.0	7.5			Orange Sand	41	9.4		0/-
4	8.5	10.0			Orange and Tan Sand	13	10.6		0/-
5	13.5	15.0			Orange, Pink and Tan Sand	15	9.8		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-8 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange Sand with Gray Clay	18	8.6		0/-
					Layers				
2	3.5	5.0			Orange and Tan Sand	22	7.9		0/-
3	6.0	7.5			Orange and Tan Sand	28	4.4		0/-
4	8.5	10.0			Orange and Tan Sand	31	7.1		0/-
5	13.5	15.0			Orange and Tan Sand	33	3.6		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-9 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-23-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone_____

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange Sand	21	9.6		0/-
2	3.5	5.0			Orange Sand with Ironstone	33	18.6		2.0
3	6.0	7.5			Orange Sand	23	6.4		0/-
4	8.5	10.0			Orange and Tan Sand	46	5.1		0/-
5	13.5	15.0			Orange and Gray Sand	15	8.7		0/-
6	18.5	20.0			Orange and Gray Sand	19	7.9		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil_____

_____

_____

TESTING BORING RECORD

BORING No. B-10 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Tan Sandy Clay	18	18.2		4.5+
2	3.5	5.0			Orange and Tan Sandy Clay	24	16.6		3.5
3	6.0	7.5			Orange and Tan Sandy Clay	25	15		4.5+
4	8.5	10.0			Orange and Tan Sand	22	17.5		1.3
5	13.5	15.0			Orange and Tan Sand	24	15.4		1.3

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-11 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-26-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Red and Orange Clayey Sand	41	19.9		4.5+
2	3.5	5.0			Orange and Tan Sand	48	12.3		1.3
3	6.0	7.5			Orange and Tan Sand	49	11.7		0/-
4	8.5	10.0			Orange and Tan Sand	18	22.2		2.5
5	13.5	15.0			Orange and Tan Sand	20	15.5		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-12 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-23-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange, Red Clayey Sand	68	10.9		0.8
					with Ironstone				
2	3.5	5.0			Orange and Tan Sand with	27	16.6		1.5
					Clay Layers				
3	6.0	7.5			Red, Orange and Tan Sand	27	11.2		0/-
4	8.5	10.0			Red, Orange and Tan Sand	23	11.8		0/-
5	13.5	15.0			Pink, Orange, and Tan Sand	15	10.4		0/-
6	18.5	20.0			Pink, Orange, and Tan Sand	16	9.8		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-13 JOB No._____

Construction Materials Laboratory, Inc.

PROJECT: HENDERSON INDUSTRIAL PARK - PHASE III

ELEVATION_____ DATE 4-23-24 WEATHER_____

WATER LEVEL _____ AT _____ FIELD ENGINEER_____

WATER LEVEL DRY AT COMPLETION AT COMPLETION_____

DRILLER Eddie Malone_____

Sample No.	Sample Depth Feet From	To	Stratum Depth Feet From	To	Soil Classification	N	W	Qu	PPR
1	1.0	2.5			Orange and Tan Sand	37	10.6		2.0
2	3.5	5.0			Orange and Tan Sand	20	4.2		0/-
3	6.0	7.5			Orange and Tan Sand	24	6.8		0/-
4	8.5	10.0			Orange and Tan Sand	47	5.2		0/-
5	13.5	15.0			Orange and Tan Sand	38	6.2		0/-
6	18.5	20.0			Orange and Tan Sand	43	5.8		0/-

ALL SYMBOLS AND ABBREVIATIONS USED ARE DESCRIBED IN THE STANDARD LEGEND SHEET

REMARKS: 0" Topsoil

TESTING BORING RECORD

BORING No. B-14 JOB No._____

Construction Materials Laboratory, Inc.

LABORATORY TEST RESULTS

APPENDIX B

CML
CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: Henderson Industrial Park
Date:
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 3 SAMPLE # 1 DEPTH 1.0 - 2.5'

VISUAL DESCRIPTION OF SAMPLE: Red + Tan Silty Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0	Coarse Sand
No. 10	No. 40	41.6	Medium Sand
No. 40	No. 200	44.7	Fine Sand
No. 200	Pan	13.7	Combined Silty & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SM

41 HERITAGE SQUARE
JACKSON, TN 38305
PHONE: (731) 668-3585
FAX: (731) 668-3586

CML
CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: Henderson Industrial Park
Date:
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 6 SAMPLE # 1 DEPTH 1.0 - 2.5'

VISUAL DESCRIPTION OF SAMPLE: Tan Silty Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0	Coarse Sand
No. 10	No. 40	7.5	Medium Sand
No. 40	No. 200	61.1	Fine Sand
No. 200	Pan	31.4	Combined Silty & Clay

LIQUID LIMIT: 34

PLASTIC LIMIT: 27

PLASTICITY INDEX: 7

UNIFIED CLASSIFICATION: SM

41 HERITAGE SQUARE
JACKSON, TN 38305
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CML
CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: Henderson Industrial Park
Date:
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 11 SAMPLE # 2-3 DEPTH 3.5 - 7.5'

VISUAL DESCRIPTION OF SAMPLE: Reddish Brown Silty Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0	Coarse Sand
No. 10	No. 40	1.3	Medium Sand
No. 40	No. 200	65.3	Fine Sand
No. 200	Pan	33.4	Combined Silty & Clay

LIQUID LIMIT: 36

PLASTIC LIMIT: 28

PLASTICITY INDEX: 8

UNIFIED CLASSIFICATION: SM

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CML
CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: Henderson Industrial Park
Date:
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 0 SAMPLE # 3 DEPTH 6.0 - 7.5’

VISUAL DESCRIPTION OF SAMPLE: Tan Silty Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0	Coarse Sand
No. 10	No. 40	11.8	Medium Sand
No. 40	No. 200	71.7	Fine Sand
No. 200	Pan	16.5	Combined Silty & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SM

41 HERITAGE SQUARE
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CML
CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: Henderson Industrial Park
Date:
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 1 SAMPLE # 3 DEPTH 6.0 - 7.5’

VISUAL DESCRIPTION OF SAMPLE: Tan Silty Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0	Coarse Sand
No. 10	No. 40	22.3	Medium Sand
No. 40	No. 200	62.8	Fine Sand
No. 200	Pan	14.9	Combined Silty & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SM

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CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: HENDERSON INDUSTRIAL PARK – PHASE III
Date: 4-2024
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING #__4__ SAMPLE #__2__ DEPTH__3.5 – 5.0__

VISUAL DESCRIPTION OF SAMPLE:__Brown Silty Clayey Sand__

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0.0	Coarse Sand
No. 10	No. 40	4.2	Medium Sand
No. 40	No. 200	79.7	Fine Sand
No. 200	Pan	16.1	Combined Silt & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SC – SM

41 Heritage Square **Jackson, Tennessee 38305**
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CML
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David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: HENDERSON INDUSTRIAL PARK – PHASE III
Date: 4-2024
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 5 SAMPLE # 6 DEPTH 18.5 – 20.0

VISUAL DESCRIPTION OF SAMPLE: Tan and Gray Clayey Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0.0	Coarse Sand
No. 10	No. 40	3.3	Medium Sand
No. 40	No. 200	83.5	Fine Sand
No. 200	Pan	13.2	Combined Silt & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SC

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Project: HENDERSON INDUSTRIAL PARK – PHASE III
Date: 4-2024
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING # 10 SAMPLE # 5 DEPTH 13.5 – 15.0

VISUAL DESCRIPTION OF SAMPLE: Tan Silty Sand

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0.0	Coarse Sand
No. 10	No. 40	5.2	Medium Sand
No. 40	No. 200	78.7	Fine Sand
No. 200	Pan	16.1	Combined Silt & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SM

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Project: HENDERSON INDUSTRIAL PARK – PHASE III
Date: 4-2024
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING #__13__ SAMPLE #__2__ DEPTH__3.5 – 5.0__

VISUAL DESCRIPTION OF SAMPLE:__Reddish Gray Clayey Sand__

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0.0	Coarse Sand
No. 10	No. 40	4.6	Medium Sand
No. 40	No. 200	77.4	Fine Sand
No. 200	Pan	18.0	Combined Silt & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SC

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CONSTRUCTION MATERIALS LABORATORY, INC.

David M. Evans, P.E. **Matthew D. Evans, P.E.**

Project: HENDERSON INDUSTRIAL PARK – PHASE III
Date: 4-2024
Lab No.:

Analysis of **SOIL CLASSIFICATION & PHYSICAL TEST CONSTANTS**
Contractor
Producer
Reported To

BORING #____14____ SAMPLE #____4____ DEPTH__8.5 – 10.0__

VISUAL DESCRIPTION OF SAMPLE:__Tan Poorly Graded Sand with Silt___

SIEVE ANALYSIS

PASSING	RETAINED ON	PERCENT	CHARACTERISTICS
No. 4	No. 10	0.0	Coarse Sand
No. 10	No. 40	8.4	Medium Sand
No. 40	No. 200	82.5	Fine Sand
No. 200	Pan	9.1	Combined Silt & Clay

LIQUID LIMIT: NP

PLASTIC LIMIT: NP

PLASTICITY INDEX: NP

UNIFIED CLASSIFICATION: SP – SM

41 Heritage Square **Jackson, Tennessee 38305**
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