Revised Wall Foundation Investigation (WFI) Report

Windy Hill Road-Terrell Mill Road Connector GDOT P.I. No. 0013967 Cobb County Project No. X2401 HNTB Project No. 64327 MC² Project No. A121503.122 Marietta, Cobb County, Georgia

Prepared For: Anthony Prevost, P.E.

Project Manager

HNTB

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Project No.: A121503.122

Prepared: February 2019 (Revised April 2019)





February 8, 2019 (Revised April 25, 2019)

Anthony Prevost, P.E. Project Manager HNTB 191 Peachtree Street, NE, Suite 3300 Atlanta, GA 30303

Subject: Revised Wall Foundation Investigation (WFI) Report

Windy Hill Road-Terrell Mill Road Connector

GDOT P.I. No. 0013967

Cobb County Project No. X2401

HNTB Project No. 64327 MC² Project No. A121503.122 Marietta, Cobb County, Georgia

Dear Mr. Prevost:

MC Squared, Inc. (MC²) is pleased to present this Revised Wall Foundation Investigation (WFI) Report for the proposed Windy Hill Road-Terrell Mill Road Connector in Marietta, Cobb County, Georgia. The original WFI (submitted February 8, 2019) was performed in general accordance with the latest GDOT guidance document for wall foundation investigation. The report summarizes our findings, the subsurface conditions we encountered and our conclusions and recommendations as they relate to the project design and construction. Per your direction, we revised the WFI to reflect updates for Walls 3, 5 and 8 in accordance with your e-mail, dated April 19, 2019.

Thank you for giving us the opportunity to work with HNTB for Cobb County. Please let us know if you have any comments or require additional information.

Respectfully submitted,

 MC^2

Amir Moussly Staff Engineer

Akli Hibouche, Ph.D. Project Engineer

Prashanth Vaddu, P.E. Project Manager

P.E. No. 039820

Sam Moussly CEO

Attachments:

Wall Foundation Investigation (WFI) Report Summary 7 Pages Figures: Project Location Map Sheet 1 **Boring Location Map** Sheets 2 through 11 **Appendix I: Subsurface Boring Profiles** Sheets 12 through 21 Legend Sheet 22 Soil Profiles (gINT) 40 Pages **Appendix II:** Summary of Laboratory Results 2 Pages Atterberg Limits' Results 1 Page Grain Size Distribution 1 Page Corrosion Test Results 1 Page **Appendix III:** Detail of Rock Cut 1 Page Berm Detail for Cuts or Fills over 35 Feet 1 Page Benching Detail 1 Page Standup Test Photographs 4 Pages Seismic Refraction Survey Report 18 Pages **Appendix IV (MSE Walls):** Global Stability Analysis – Wall 1 2 Pages Global Stability Analysis – Wall 4 1 Page Global Stability Analysis – Wall 5 2 Pages Global Stability Analysis – Wall 8 1 Page Appendix V (Soil Nail Walls): Global Stability Analysis – Wall 6 3 Pages Global Stability Analysis – Wall 7 4 Pages

Appendix VI:

Rock Core Photographs 18 Pages

RETAINING WALL FOUNDATION REPORT Windy Hill Road-Terrell Mill Road Connector MC² Project No. A121503.122 Marietta, Cobb County, Georgia

1. Location

This project is for the construction of the Windy Hill Road-Terrell Mill Road Connector, connecting Windy Hill Road with Terrell Mill Road. The project begins at Sta. 103+00 and continues east to Sta. 155+00. The project lies within the city limits of Marietta in Cobb County. This report is to assist in the design of two Soil Nail walls (Wall Nos. 6 and 7) and four Mechanically Stabilized Earth (MSE) walls (Wall Nos. 1, 4, 5 and 8) as tabulated below:

Table 1: Summary of Walls

| Wall ID | Approx. Location Approx. Length (ft.) Assumed Max Heig (ft.) | | Assumed Max Height* (ft.) | Wall Type(s) |
|---------|--|------|---------------------------|--------------------------------|
| Wall 1 | 112+80, 60' LT to 121+06, 48' LT | 826 | 30 | MSE and GDOT Standard |
| Wall 3 | 121+78, 55' RT to 123+82, 72' RT | 234 | 15 | GDOT Standard |
| Wall 4 | 122+55, 48' LT to 125+00, 48' LT | 245 | 35 | MSE |
| Wall 5 | 124+54, 96' RT to 141+58, 37' RT | 1704 | 30 | MSE and GDOT Standard |
| Wall 6 | 126+06, 48' LT to 132+90, 42' LT | 684 | 20 | Soil Nail and GDOT Standard |
| Wall 7 | 134+25, 42' LT to 137+75, 42' LT | 350 | 17 | Soil Nail and GDOT Standard |
| Wall 8 | 138+25, 42' LT to 142+10, 42' LT | 385 | 20 | MSE |

*Note: Wall cross-sections provided by **HNTB** in an e-mail dated December 22, 2018. Based on information provided by **HNTB**, Wall 2 (Sta. 112+88, 43' RT to Sta. 115+20, 55' RT) is a GDOT standard wall; hence, it was not evaluated in this report. Similarly, Wall 3 is a type 6S concrete side barrier wall (per e-mail dated Apr 19, 2019).

2. Geology

This project will be geologically sited in a Biotitic Gneiss / Mica Schist / Amphibolite rock type in the Georgia Piedmont Region.

3. Subsurface and Groundwater Information

Subsurface information for the walls were obtained from thirty (30) Standard Penetration Test (SPT) Borings, as generally summarized in the table below.

Table 2: General Subsurface Conditions Summary

| Wall ID | Location | Borings | General Soils Description |
|------------|--|--|---|
| Wall 1 | 112+80, 60' LT to 121+06, 48' LT | B-03, B-04, B-06, WB3-02, WB3-03, WB3-04 | Predominantly loose to very dense SM with pockets of stiff MH. AR*/Top of Rock Elevation Range: 946 feet to 891 feet (Mica Schist) |
| Wall 3 | 121+78, 55' RT to 123+82, 72' RT | B-10, WB4-02, WB4-03, WB5-06 | Alternating layers of predominantly medium dense to very dense SP-SM and loose to very dense SM. AR*/Top of Rock Elevation Range: 914 feet to 899 feet (Mica Schist) |
| Wall 4 | 122+55, 48' LT to 125+00, 48' LT | WB3-05, WB3-06 | Predominantly medium dense to very dense SM with pockets of very dense SP-SM, firm to stiff CL and MH. AR*/Top of Rock Elevation Range: 894 feet to 893 feet (Mica Schist) |
| Wall 5 | 124+54, 96' RT to 141+58, 37' RT | WB5-06, B-12, WB5-01, WB5-03, B-21, WB5-04 | Predominantly very loose to very dense SM with pockets of medium dense to very dense SP-SM. AR*/Top of Rock Elevation Range: 930 feet to 895 feet (Mica Schist) |
| Wall 6 | 126+06, 48' LT to 132+90, 42' LT | WB-01, B-13, B-12, WB3-08, B-15, WB- 02 | Predominantly very loose to very dense SM with pockets of very loose SC and dense SP-SM. Very stiff to very hard ML layer (6'-15.2') present around Sta. 128+00, 40' L. AR*/Top of Rock Elevation Range: 930 feet to 914 feet (Mica Schist) |
| Wall 7 | 134+25, 42' LT to 137+75, 42' LT | B-17, WB3-10, B- 18, B-19, WB3-12 | Alternating layers of predominantly loose to very dense SM with pockets of dense to very dense SP-SM/SP, loose SC and stiff ML. AR*/Top of Rock Elevation Range: 924 feet to 913 feet (Mica Schist) |
| Wall 8 | 138+25, 42' LT to 142+10, 48' LT | WB3-16, WB3-13, WB3-14 | Predominantly very loose to very dense SM with pockets of very loose to loose SC and firm CH. AR*/Top of Rock Elevation Range: 929 feet to 922 feet (Mica Schist) |

^{*} AR – Auger refusal to hollow stem auger advancement with drill rig in the vicinity of wall.

Refer to individual soil profiles (**Appendix I**) for details.

Groundwater table (GWT) was encountered in only five of the borings listed in the table above (WB5-03, WB5-04, WB3-10, WB3-13 and WB3-16). Within those five borings, GWT measurements ranged from 7 feet below ground surface (BGS) to 23.5 feet BGS. GWT elevations are summarized in the table below.

Table 2a: Subsurface GWT Elevations Summary

| Boring | Location | GWT Elevation (ft.) |
|--------|-------------------|------------------------|
| WB3-10 | Sta. 134+65, 45'L | 906.5 |
| WB5-03 | Sta. 136+70, 65'R | 903.0 |
| WB3-16 | Sta. 139+00, 39'L | 933.0 |
| WB3-13 | Sta. 140+47, 43'L | 943.5 |
| WB5-04 | Sta. 140+50, 38'R | 937.8 |

Weathered rock, may be encountered at the stations noted below at or above cut elevations. It may be removed by using heavy equipment and/or light blasting. Rock qualities, types and elevations vary across the project site. Accordingly, contingency for removal of good quality hard rock must be accounted for during construction. Rock was encountered near the bottom of the proposed cut wall elevations at the following locations:

| Station to Station | <u>Location</u> |
|---------------------------------------|-----------------|
| $1\overline{22+00\pm}$ to $123+82\pm$ | Rt. |
| $128+50\pm$ to $131+00\pm$ | Lt. |

If competent rock is encountered, the attached detail for rock cut should be used (see Detail of Rock Cut in **Appendix III**). Refer to the Soil Survey report, there are some minor discrepancies of proposed cut elevations between the approved Soil Survey report and this WFI report, as cross-sections have been updated since the approval of the former.

All surface waters should be properly drained away from walls during and post construction.

Test boring WB3-06 completed in the vicinity of Wall 4 (Sta. 124+94, 73' L) encountered CL and MH layers in the top 4 feet below ground surface (BGS). If similar soils are encountered within the MSE Wall (Wall 4 – 122+55, 48' LT to 125+00, 48' LT) footprint, they must be over-excavated and replaced with suitable soils (SM, SC, SP and SP-SM).

4. Soil Parameters

The following soil (granular engineered fill material) design parameters are recommended for use for the proposed MSE walls:

| Cohesion | C=0 psf |
|---------------------------------|--------------------|
| Soil Unit Weight, | γ = 120 pcf |
| Angle of Internal Friction | φ= 32 ° |
| Coefficient of Sliding Friction | μ = 0.4 |

5. Slopes Maximum 2

Maximum 2:1 slopes will be safe for this project.

6. Standup Tests

In order to evaluate the standup time of the in-situ soil for the construction of Soil Nail walls, a total of three (3) excavations, each measuring approximately 2 feet wide, 6 feet long and 6 feet deep, were performed. Excavations remained stable for approximately 9 days (Refer to Standup Test Photographs in **Appendix III** for details). A summary of the Standup Test locations is tabulated below.

Table 3: Standup Test Locations

| Standup Test ID | Station/Offset | | | | |
|-----------------|----------------|--|--|--|--|
| ST-01 | 129+00, 40' L | | | | |
| ST-02 | 129+45, 45' L | | | | |
| ST-03 | 134+00, 60' L | | | | |

7. Evaluations

MSE Walls

The maximum allowable soil bearing pressure is 3000 psf. If the MSE wall design pressure exceeds the maximum allowable pressure, then the wall should be constructed to a height equivalent to the allowable bearing pressure, and after a 30-day waiting period, the wall may be constructed to its final height. Most of the settlement is estimated to occur during construction. Refer to the table summarizing our estimates in the Analyses and Assumptions section of this report.

All surface waters should be properly drained away from walls during and post construction.

Soil Nail Walls

Critical sections for each wall identified by HNTB were evaluated as indicated in **Appendix V**. We estimate that soil nail lengths equal to the height of the wall would be sufficient from a global stability standpoint.

- At locations where strict wall movement criteria exist, additional measures to limit deflections (such as closer spacing of nails and/or variable nail patterns) may be required.
- The existence of utilities and communication lines behind the wall must be evaluated for potential conflicts with the location, inclination, and length of soil nails, particularly in the upper rows. Additionally, the locations of the utilities must be accurately delineated.

The contractor must evaluate internal stability of the walls.

8. Analyses and Assumptions

Analyses – MSE Walls

External stability analyses against possible failure by bearing, sliding and overturning, as well as overall stability analyses were assessed for the proposed MSE Walls 1, 4, 5 and 8 using the latest cross-sections provided to us via e-mail by **HNTB** on December 22, 2018. If the configuration of walls were to change, our analyses would require reassessment. Global stability was completed using GeoStudio Slope/W software, 2012. Potential failure surfaces were computed using limiting equilibrium method of analysis developed by Spencer. Stability analyses against bearing, sliding and overturning were completed in accordance with AASHTO Standard Specifications for Highway Bridges, 17th edition, 2002. Walls were analyzed using ASD methodology.

For MSE walls, strap lengths were assumed to be equal to 100% of the wall height, where failure slip surface initiation points are assumed to start past the end of the strap's length, away from the wall.

Fill soil design parameters used in analysis can be found in Section 4 of this report. Where applicable, a live load of 250 psf was used to account for future roadway traffic. Based on our analysis, the minimum required (per AASHTO 2002) factors of safety, 1.5 (sliding and global stability), 2.0 (overturning in soil) and 3.0 (bearing capacity in soil) are achieved, as summarized in the table below.

Table 4: MSE Wall Analyses Summary

| Wall ID | Assumed Max Height (ft.) | Wall Type | Global Stability (FS>1.5) | Estimated Total Settlement (in.) | Sliding (FS>=1.5) | Overturning (FS>=2) | Bearing Capacity (FS>=3) |
|--------------------|--------------------------------|--------------|---------------------------------|----------------------------------|----------------------|------------------------|--------------------------------|
| Wall 1 (B-09) | 30 | MSE | 1.60 | 7.0 | 2.2 | 9.0 | 8.1 |
| Wall 1 (WB3-03) | 30 | MSE | 1.59 | 10.0 | 2.2 | 9.0 | 8.1 |
| Wall 4 | 35 | MSE | 1.51 | 1.7 | 2.2 | 9.0 | 14.2 |
| Wall 5 | 30 | MSE | 1.68 | 3.0 | 2.2 | 9.0 | 8.1 |
| Wall 8 | 20 | MSE | 1.62 | 1.4 | 2.2 | 9.0 | 5.3 |

<u>Analyses – Soil Nail Walls</u>

Global stability analyses were assessed for the proposed soil nail walls using the latest cross-sections provided by **HNTB** via an e-mail dated December 22, 2018. Global stability was completed using GeoStudio Slope/W software, 2018. Potential failure surfaces are computed using limiting equilibrium method of analysis developed by Spencer.

Soft soils were not encountered at the base of each proposed wall. As such, lateral sliding, basal heave and lateral squeeze analyses were not assessed for the proposed soil nail walls.

Where applicable, a live load of 250 psf was applied to the top of the wall to account for future roadway traffic. Additionally, at the critical section analyzed at Wall 6 (Sta. 130+00, L), a dead load of 2500 psf was applied near the top of the wall to account for an existing structure to remain in place. Based on our analysis, the minimum required (per FHWA GEC 007 "Soil Nail Walls Reference Manual", 2015) factor of safety of 1.5 for global stability is achieved. Walls were analyzed using ASD methodology.

Assumptions

The following table summarizes the assumed strap lengths (for MSE walls) and nail vertical spacing (for Soil Nail walls) used for analyses:

Table 5: Summary of Assumptions

| Wall ID | Wall Type | Wall Height (ft.) | Section Analyzed | Strap Length/ Nail Vertical Spacing (ft.) |
|---------|-----------|----------------------|------------------|---|
| 1 | MSE | 30 | 119+00 | 30 |
| 4 | MSE | 35 | 123+00 | 35 |
| 5 | MSE | 30 | 138+00 | 30 |
| 6 | Soil Nail | 20 | 130+00 | 5 |
| 7 | Soil Nail | 17 | 136+00 | 5 |
| 8 | MSE | 20 | 139+50 | 20 |

References:

MSE Walls: Applicable Design Standard/Guidance: AASHTO Standard Specifications for Highway Bridges, 17th edition, 2002.

Soil Nail Walls: Soil Nail Wall Reference Manual, FHWA GEC 007, Publication no. FHWA-NHI-14-007, February 2015.

Géotechnique,."A Method of Analysis of the Stability of Embankments Assuming Parallel Inter-Slice Forces". Spencer, E., 1967.

9. Corrosion

Soil Conditions (Soil Nail Walls)

Selected samples from borings nearby the proposed soil nail walls were tested for corrosivity series, including chlorides (AASHTO T-291-13), sulfates (AASHTO T-290-16), pH (ASTM D1293) and resistivity (ASTM G57). Laboratory results of the samples indicate non-aggressive soil conditions. Refer to **Appendix II** for Corrosion Test Results.

10. Special Conditions

A. Numerous structures are located very close to the construction limits of this project. The evaluations in this report assume that existing structures and utilities are not very sensitive to deflections. Vibration monitoring of existing facilities will likely be required due to construction activities which may cause some concern with property owners and damage to existing utilities. GDOT Special Provision (SP) 154 may be used as a guideline to determine location of seismographs, crack gauges, etc. Pre- and post-construction crack survey reports recording observations of structural distresses shall be completed.

Prepared By: Amir Moussly

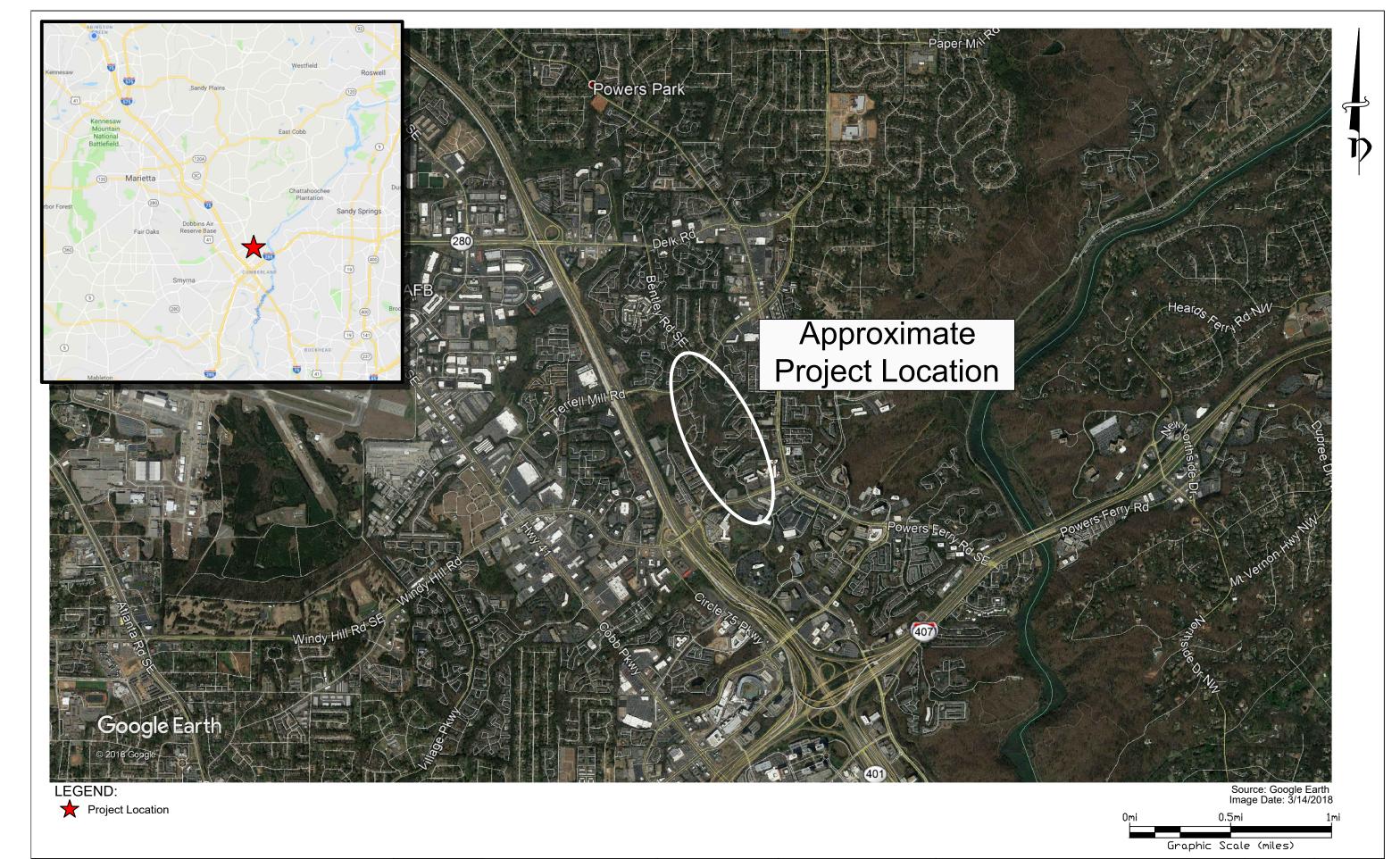
Akli Hibouche, Ph.D.

Reviewed By: Prashanth Vaddu, P.E.

Winston Stewart, P.E.

FIGURES

- Project Location Map Sheet 1
- Boring Location Map Sheets 2 through 11



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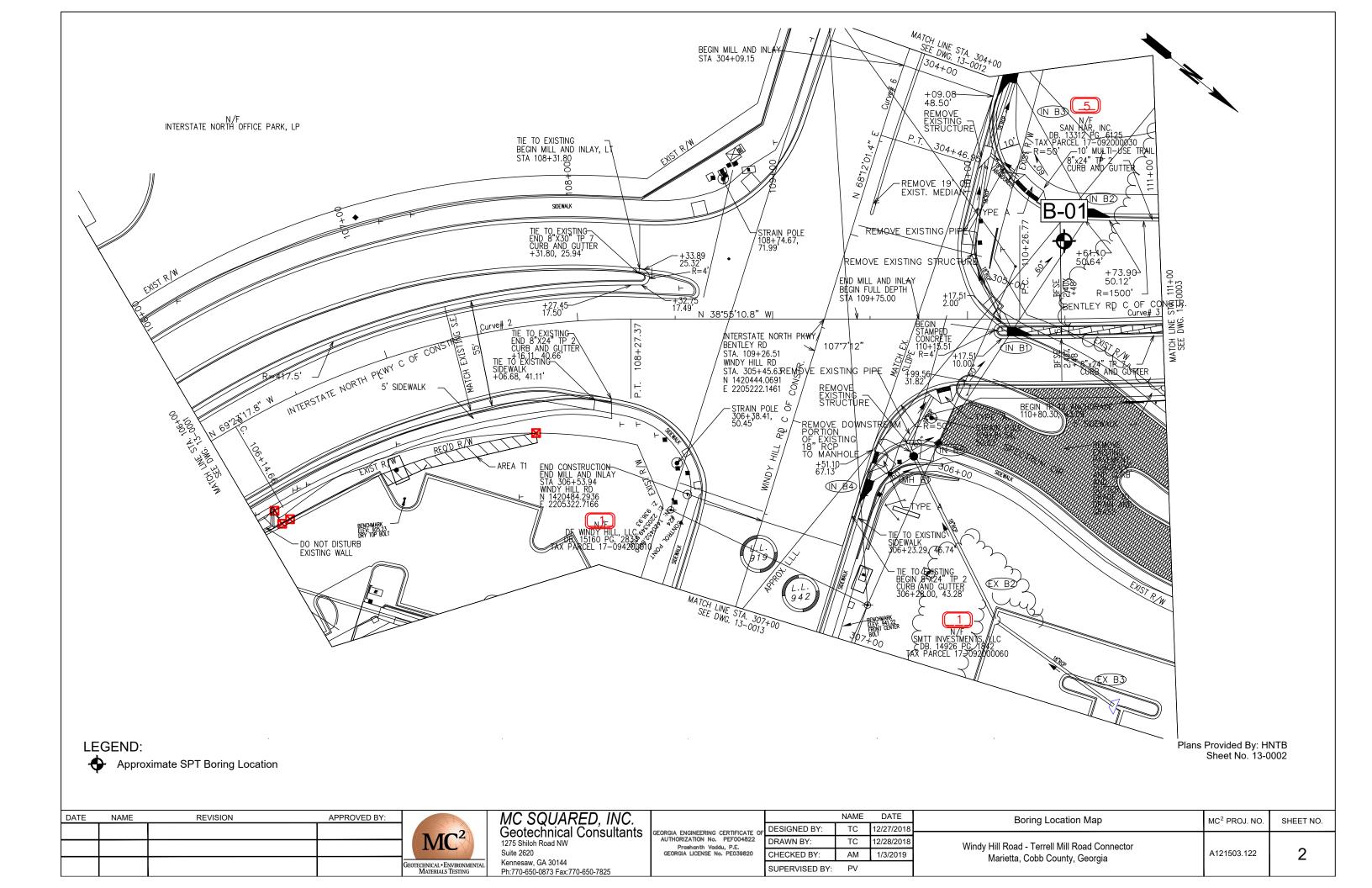
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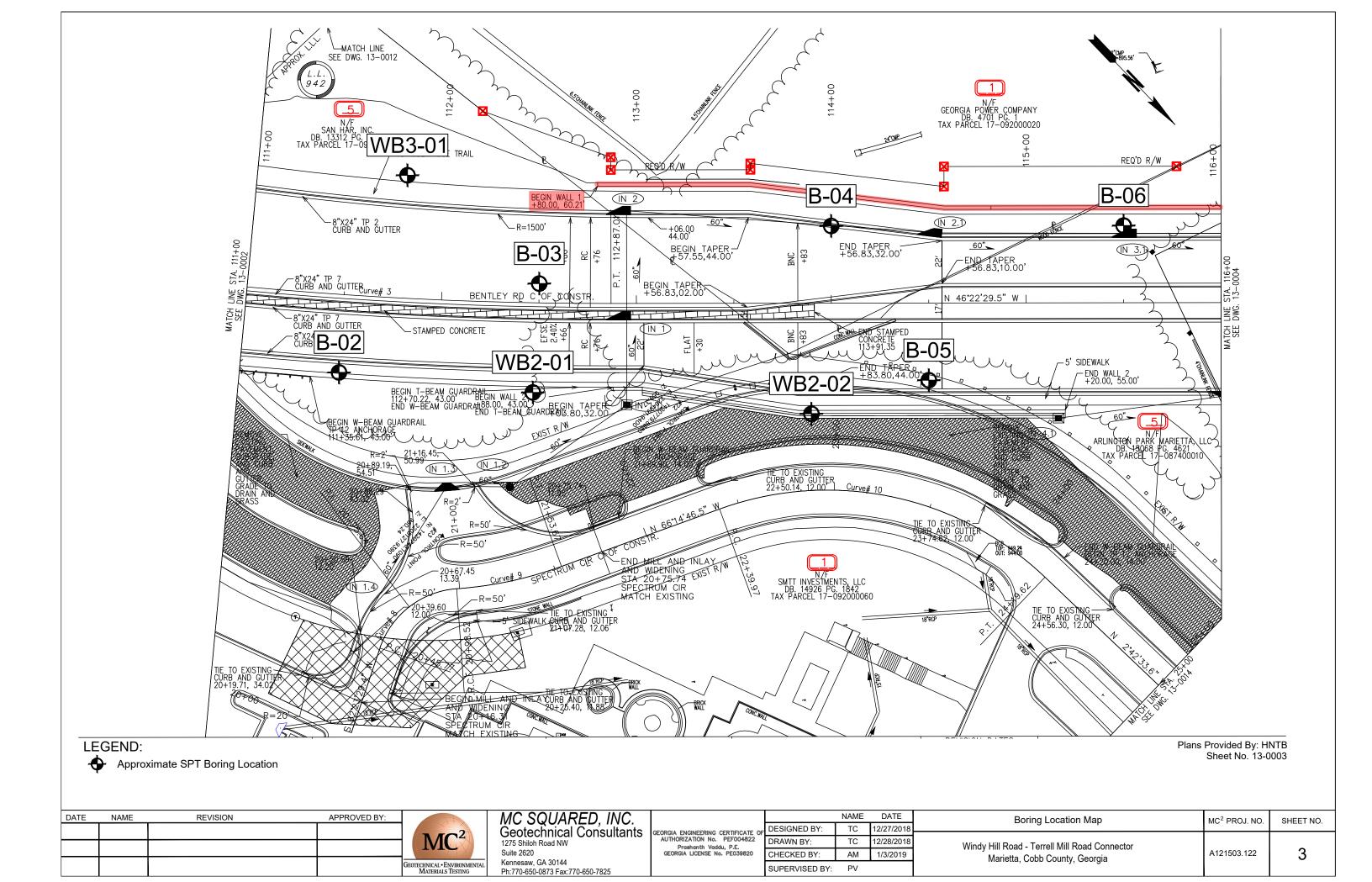
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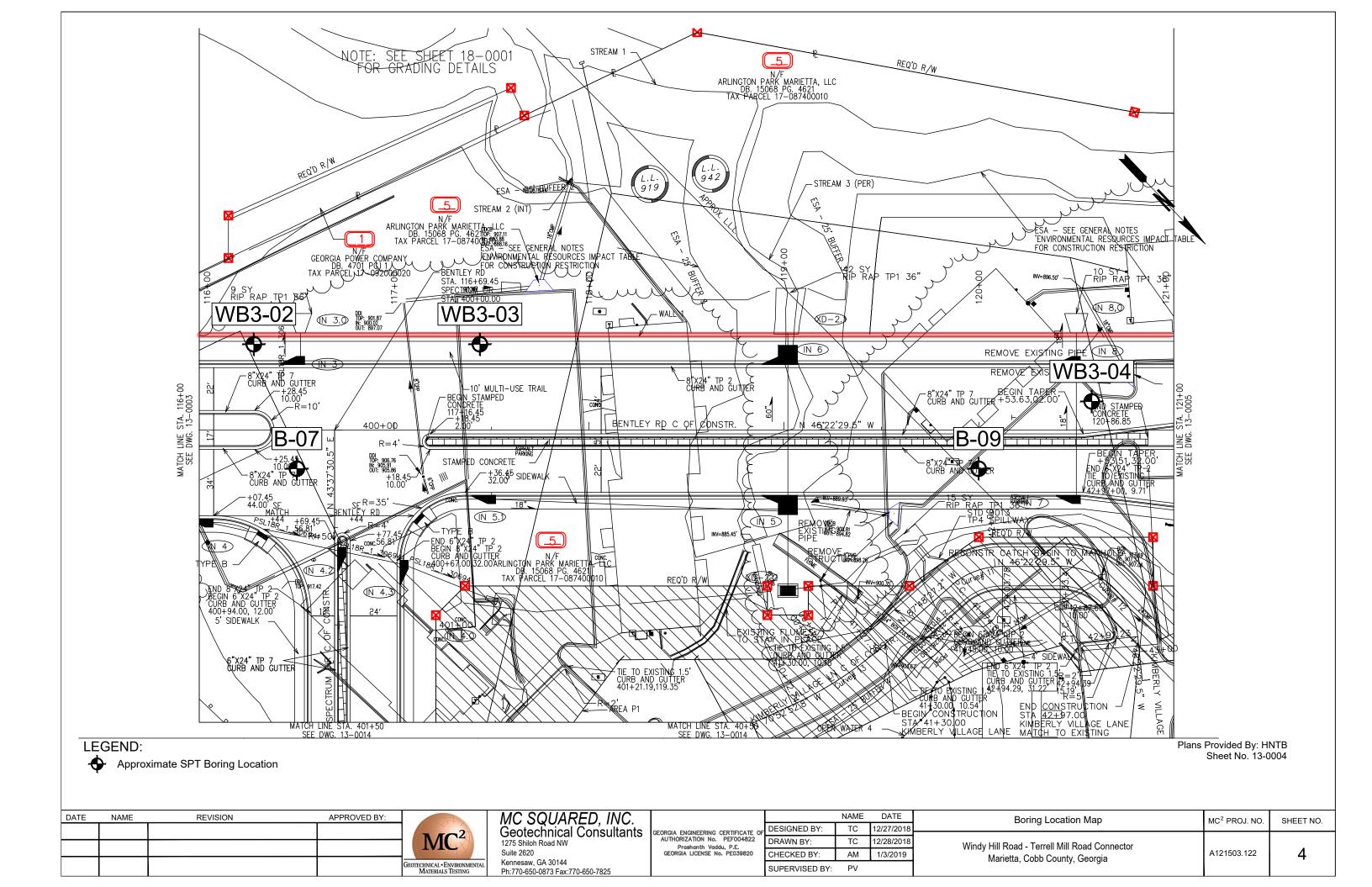
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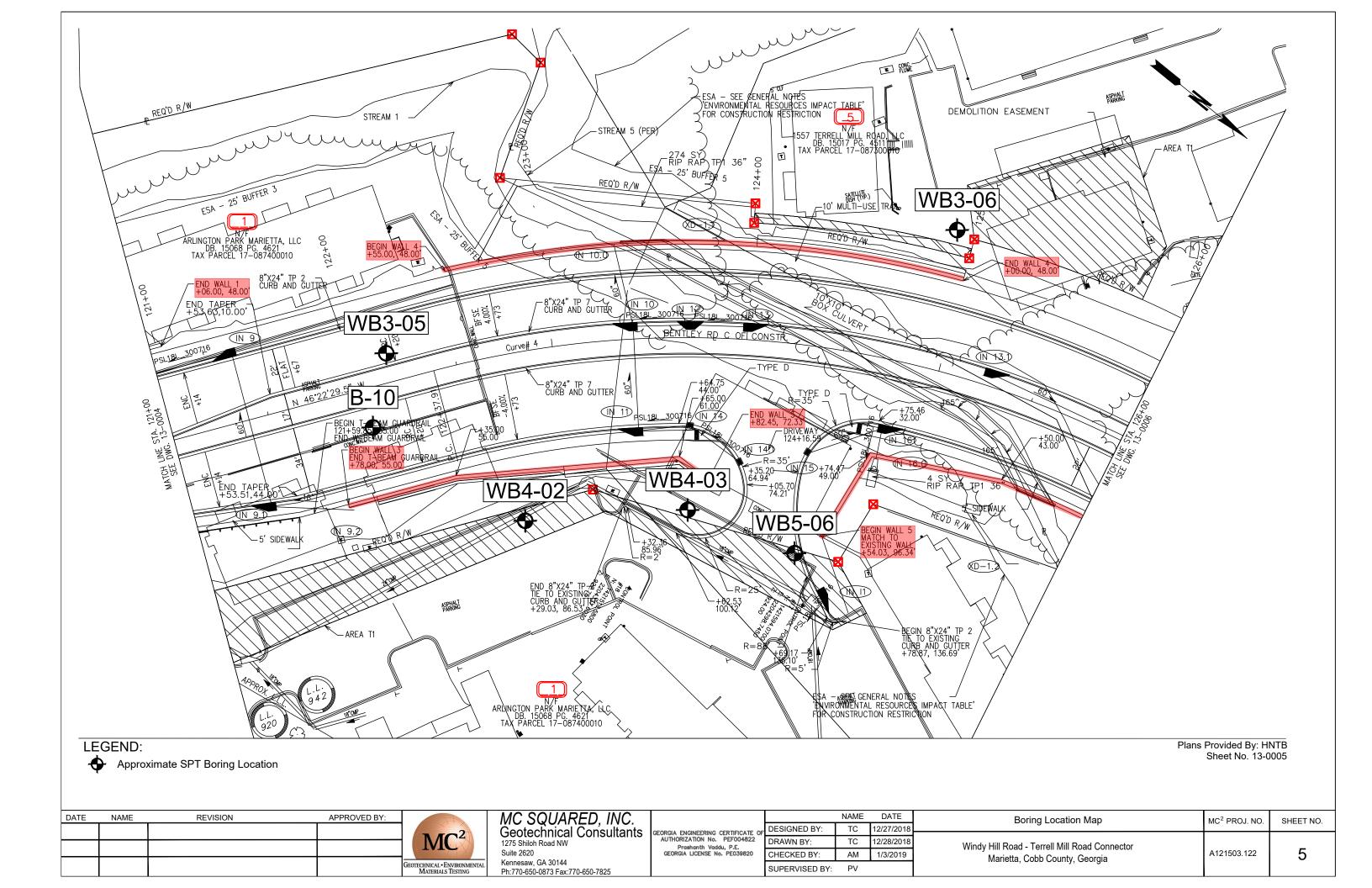
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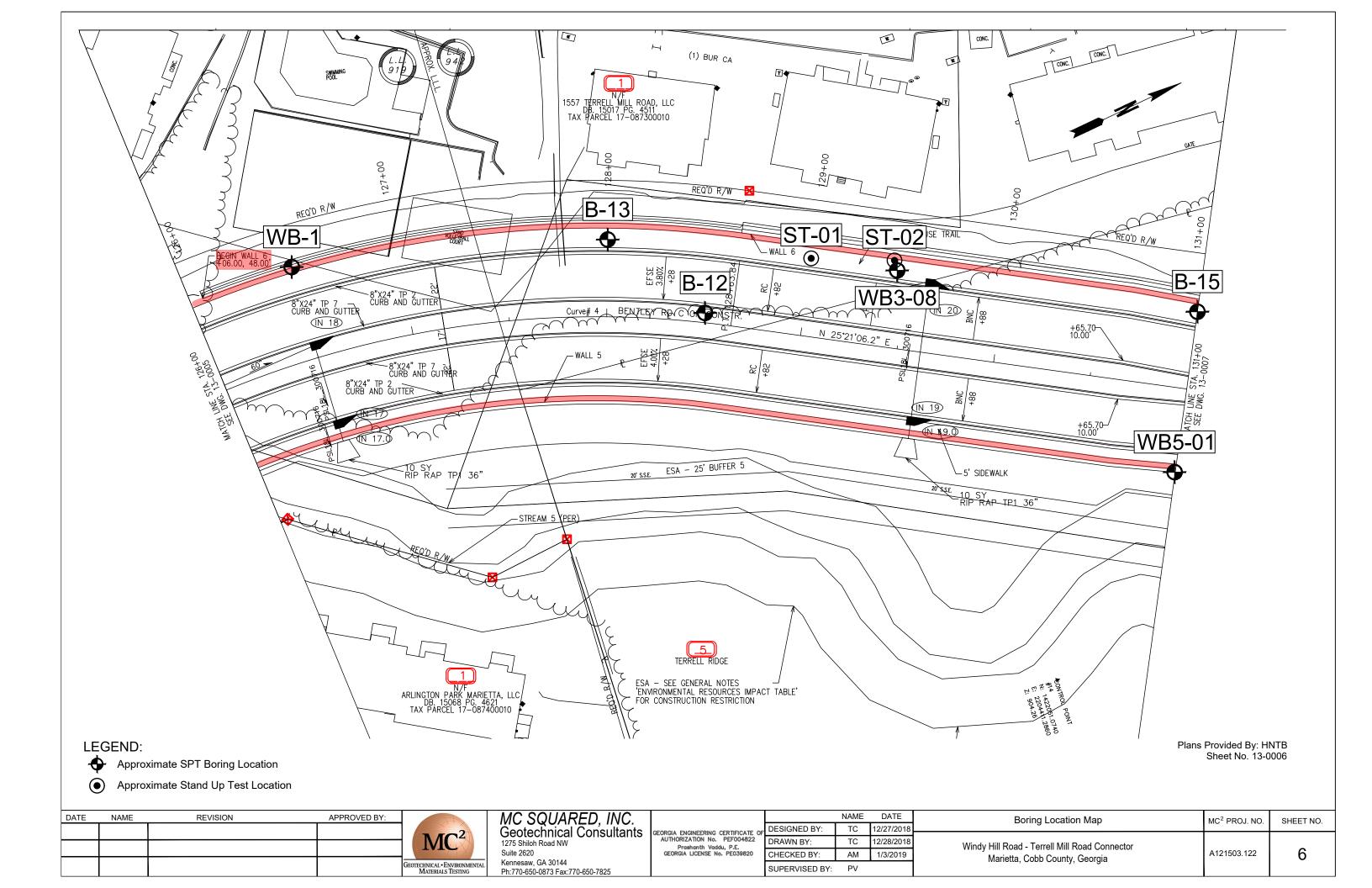
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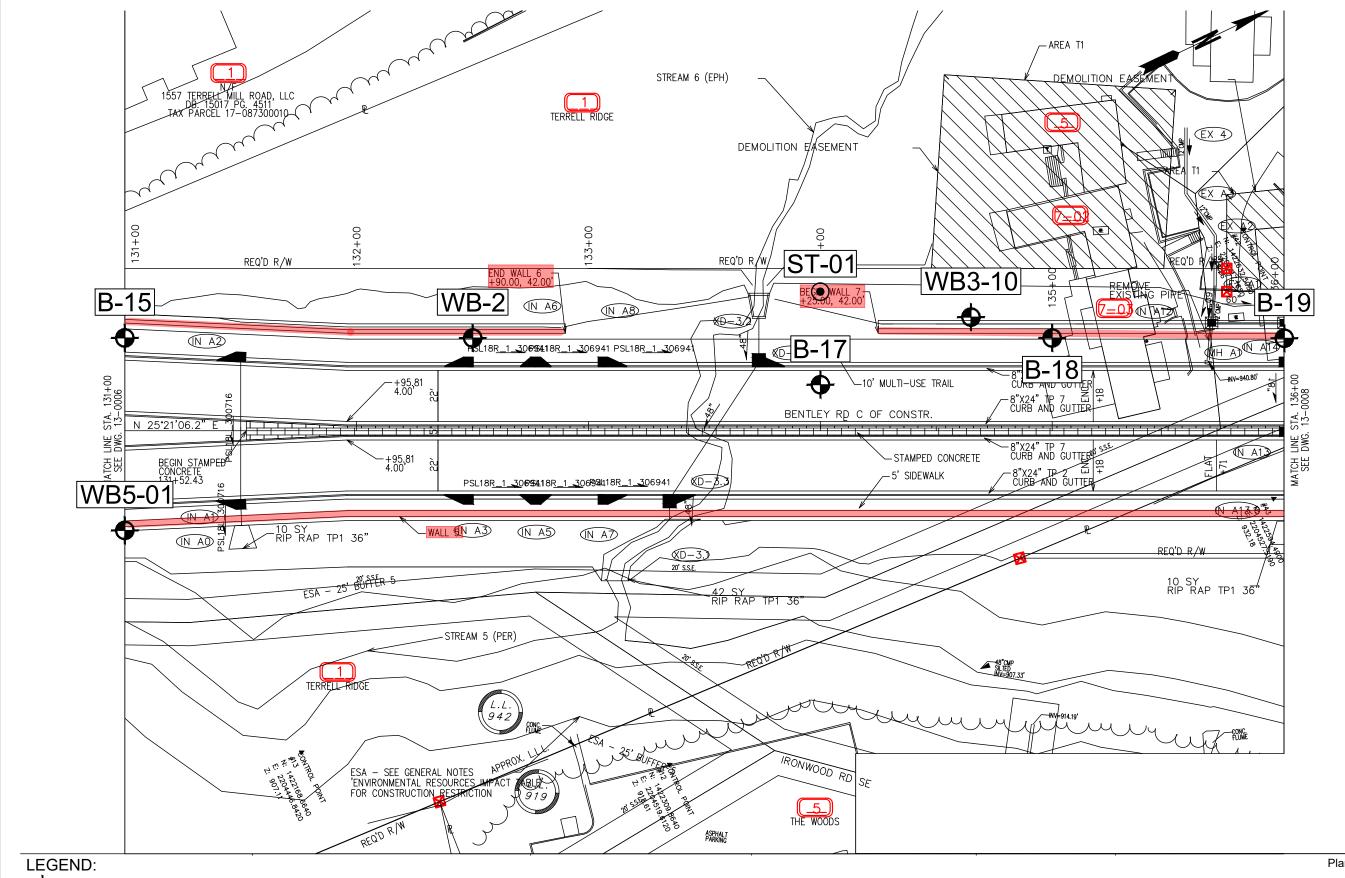












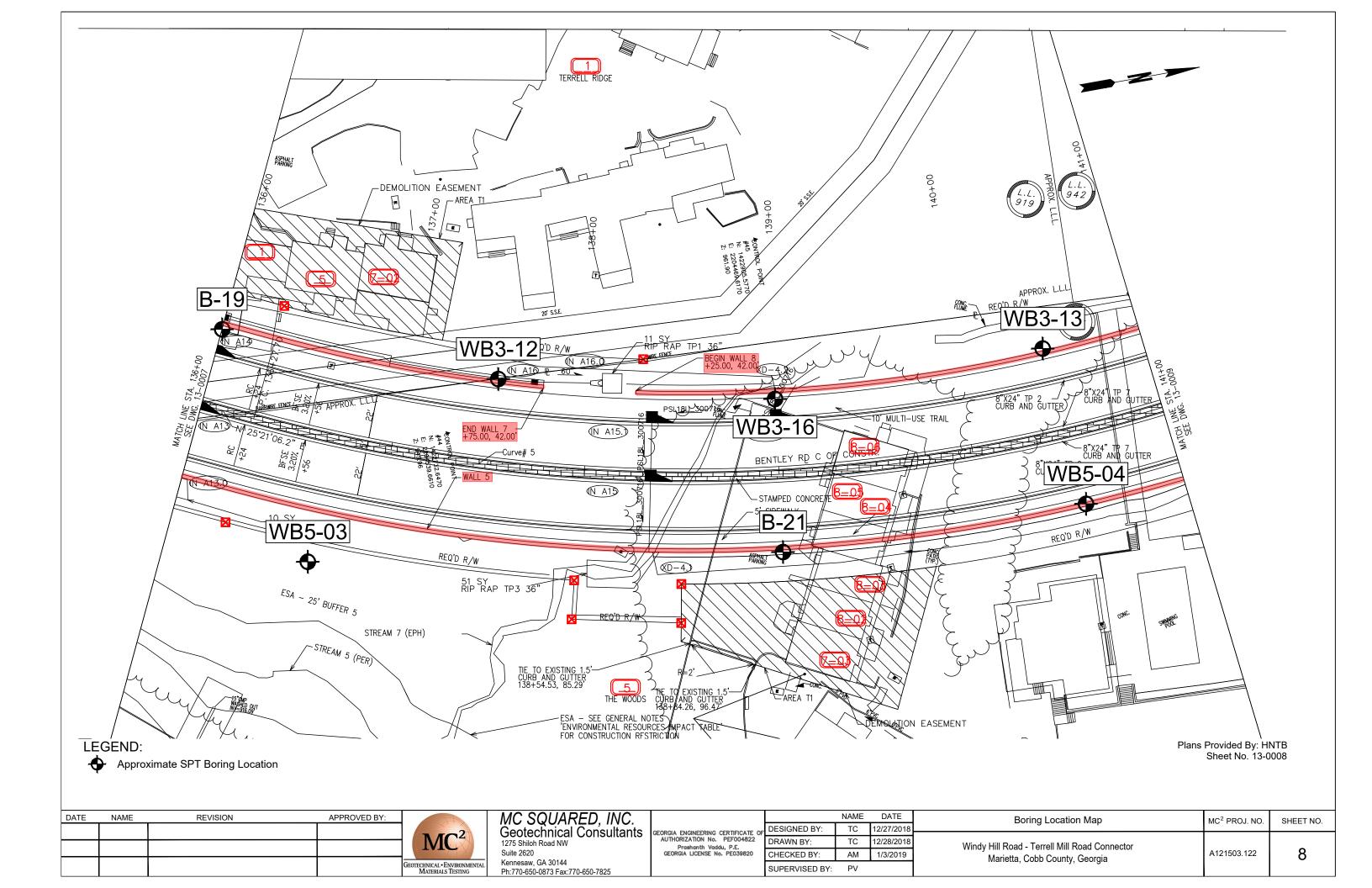
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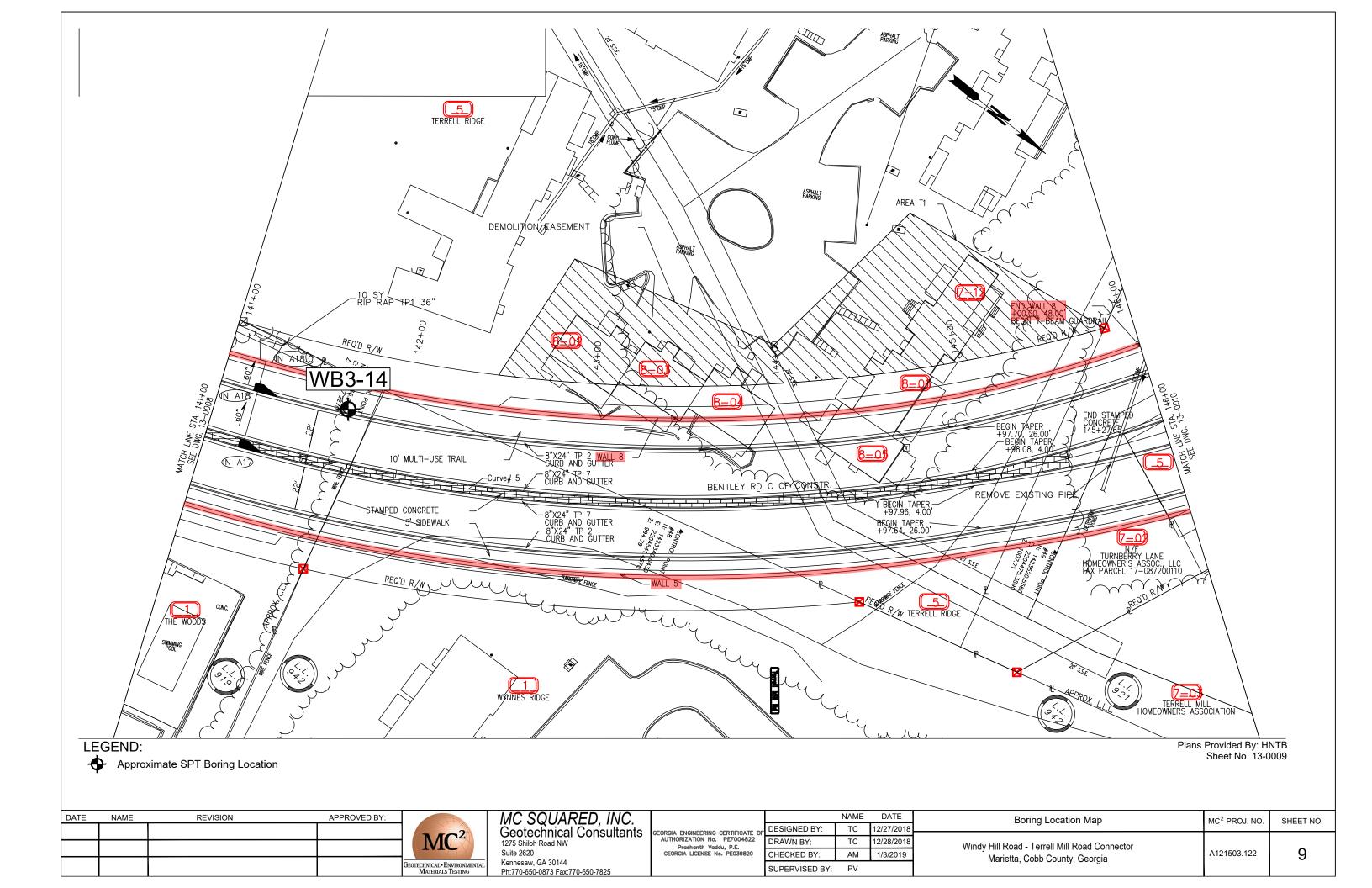
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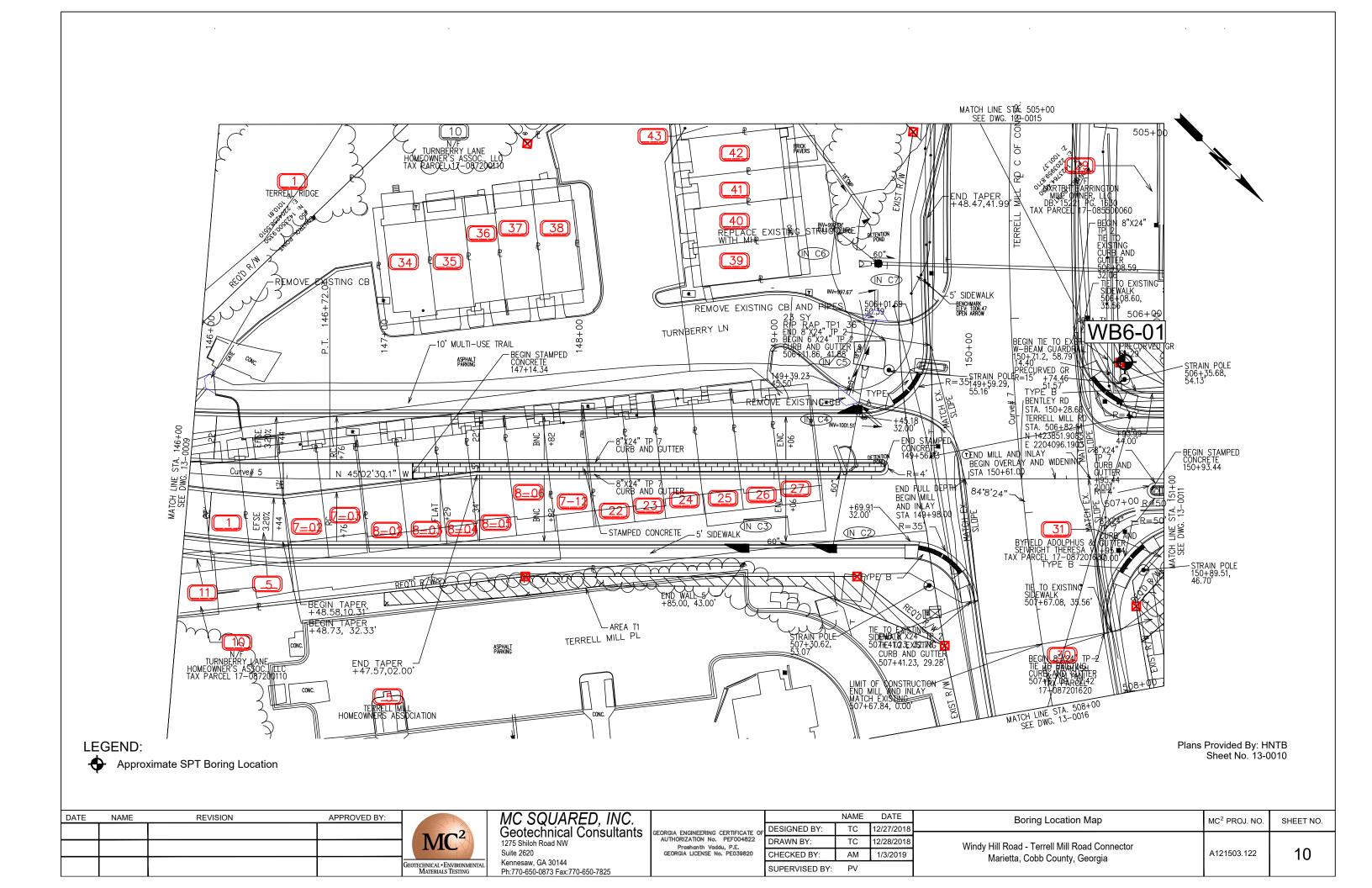
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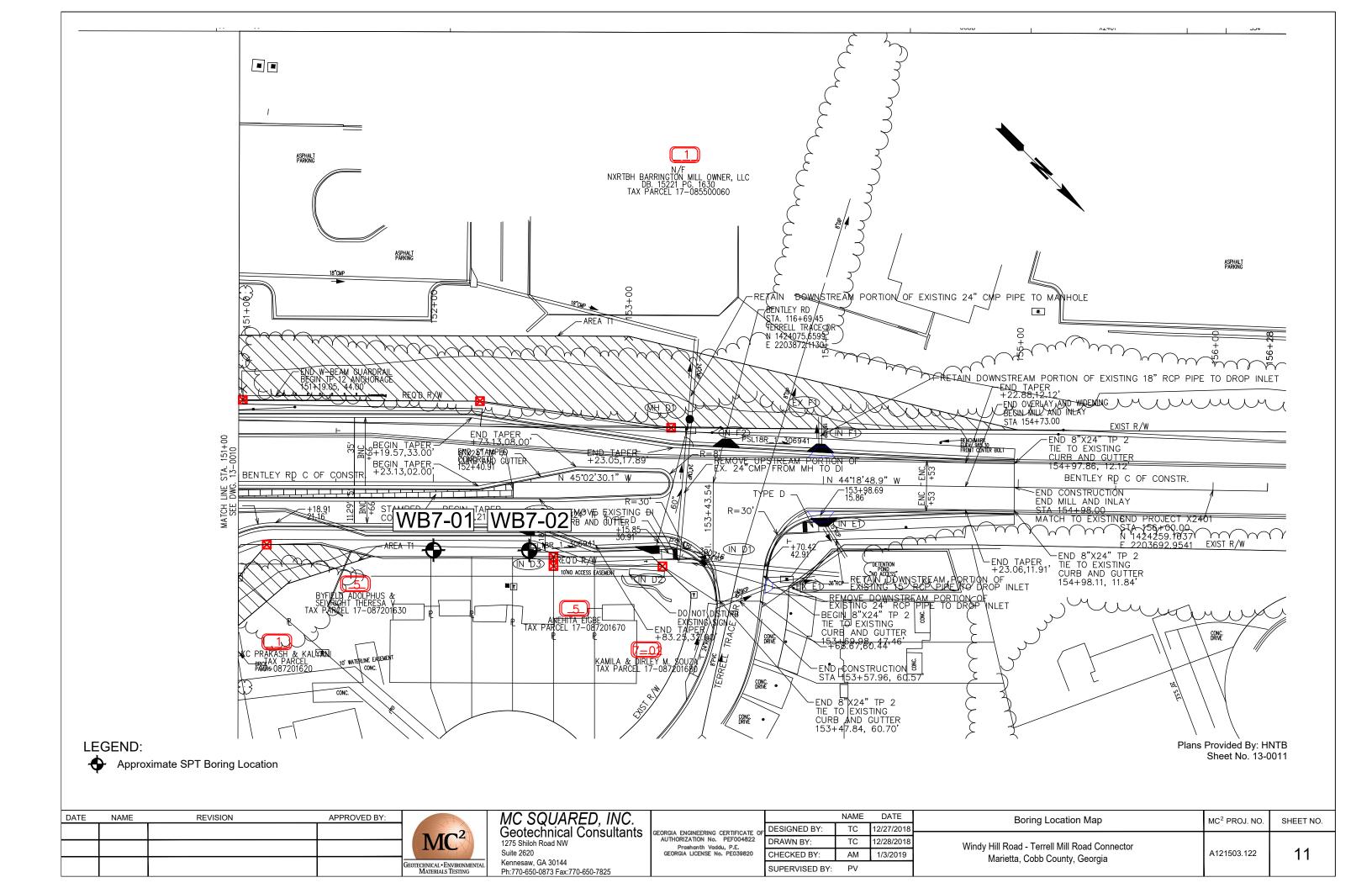
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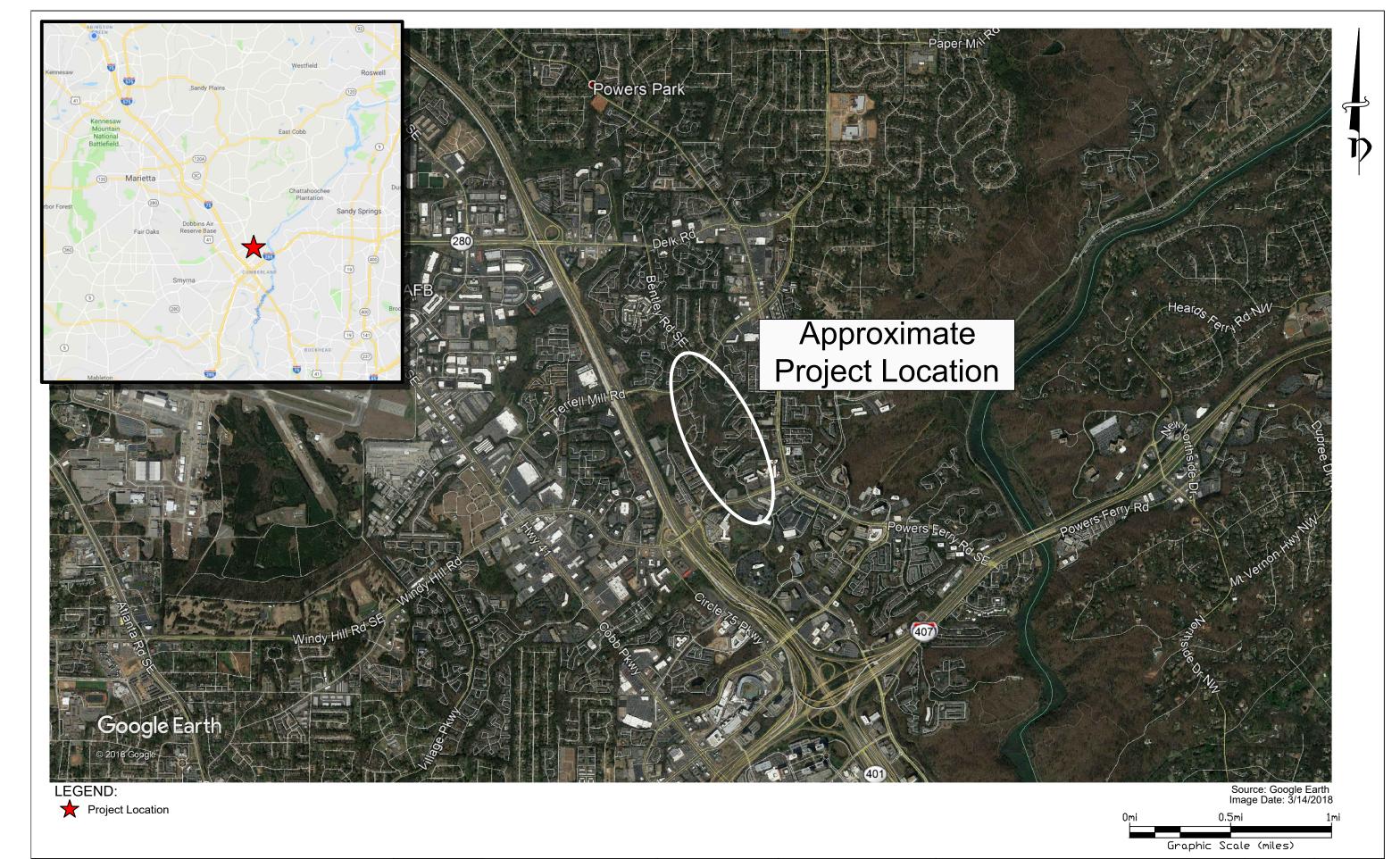






APPENDIX I

- Subsurface Boring Profiles Sheets 12 through 21
 - Legend Sheet 22
 - Soil Profiles (gINT) 40 Pages



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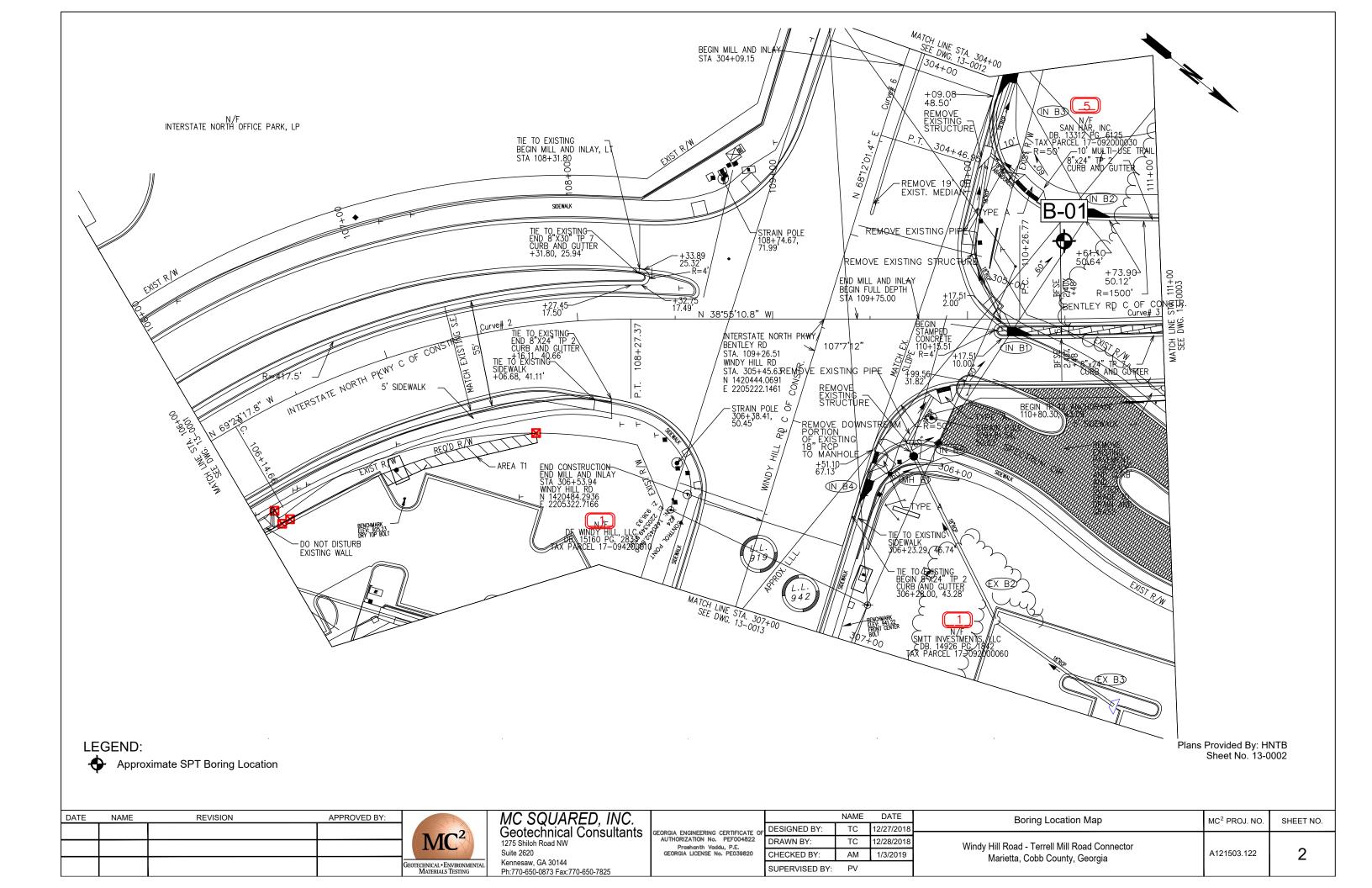
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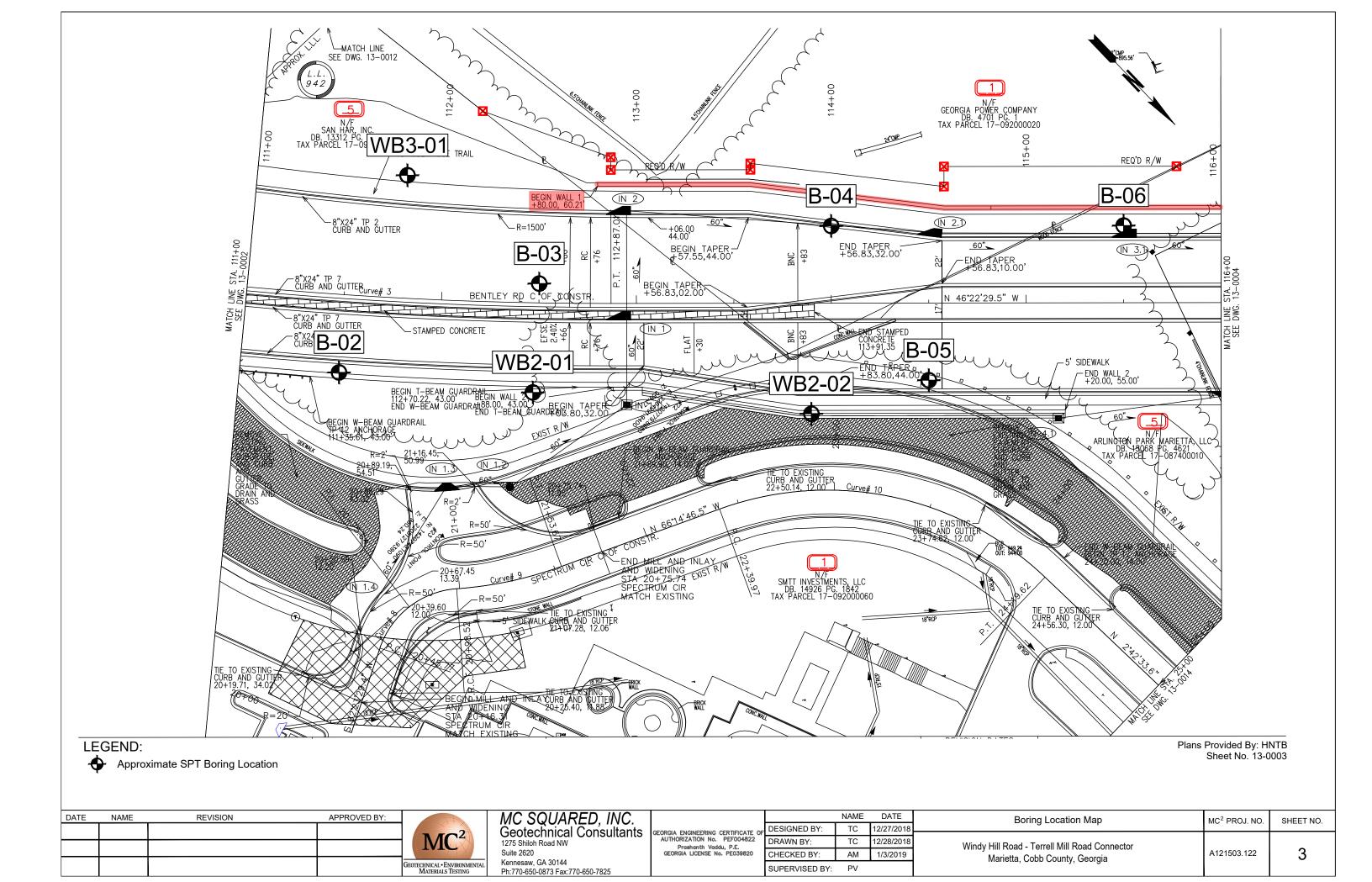
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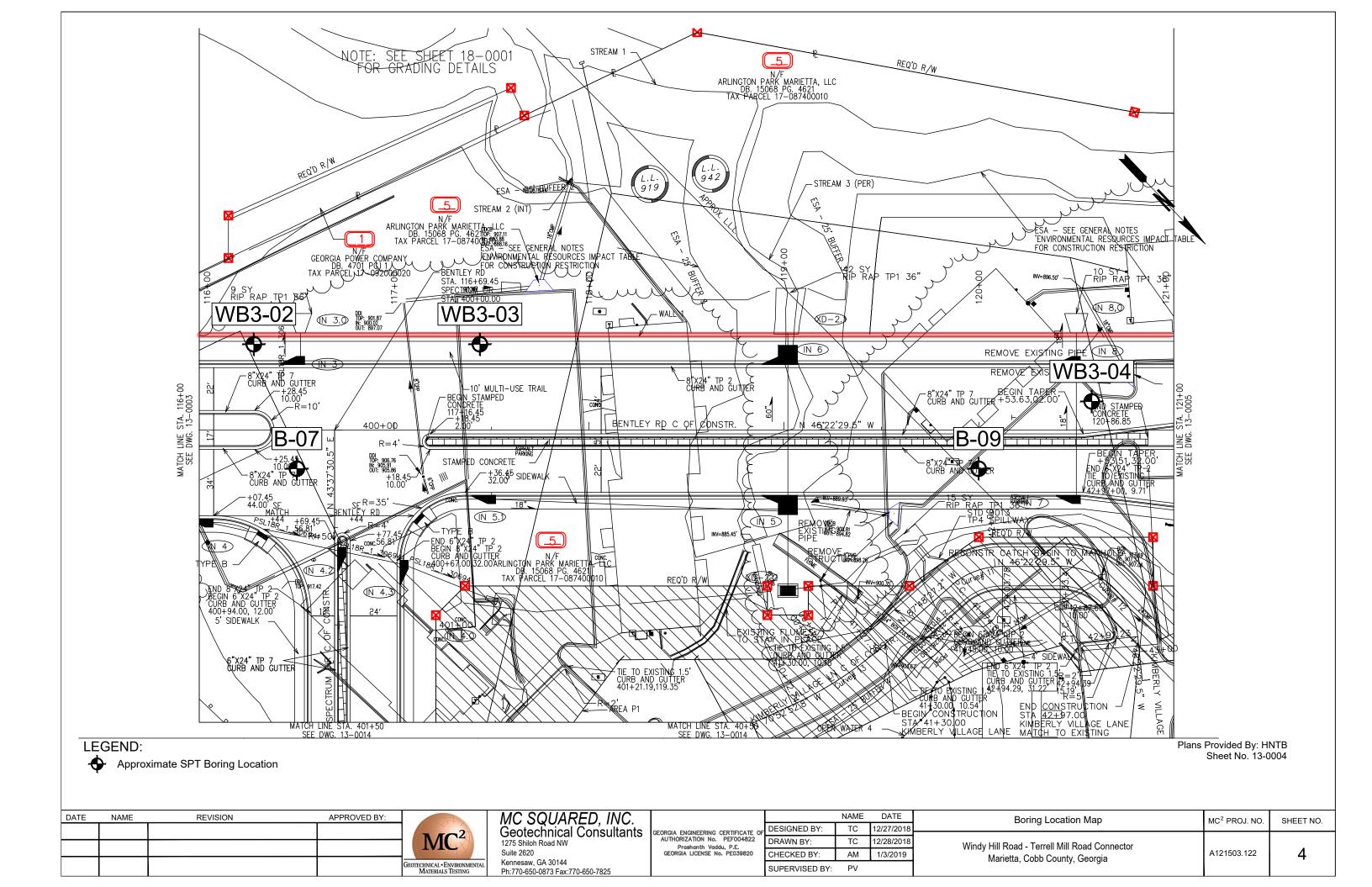
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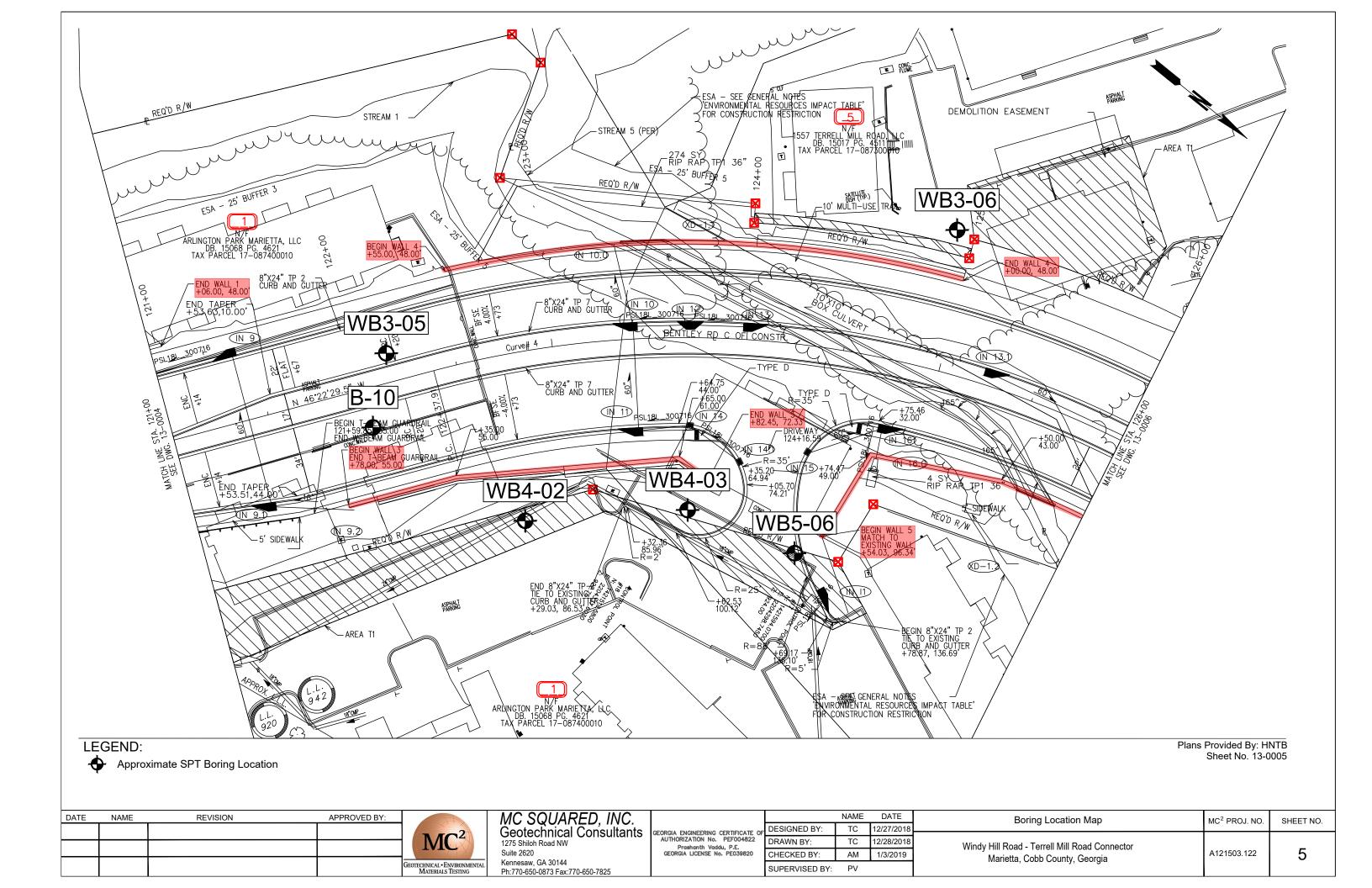
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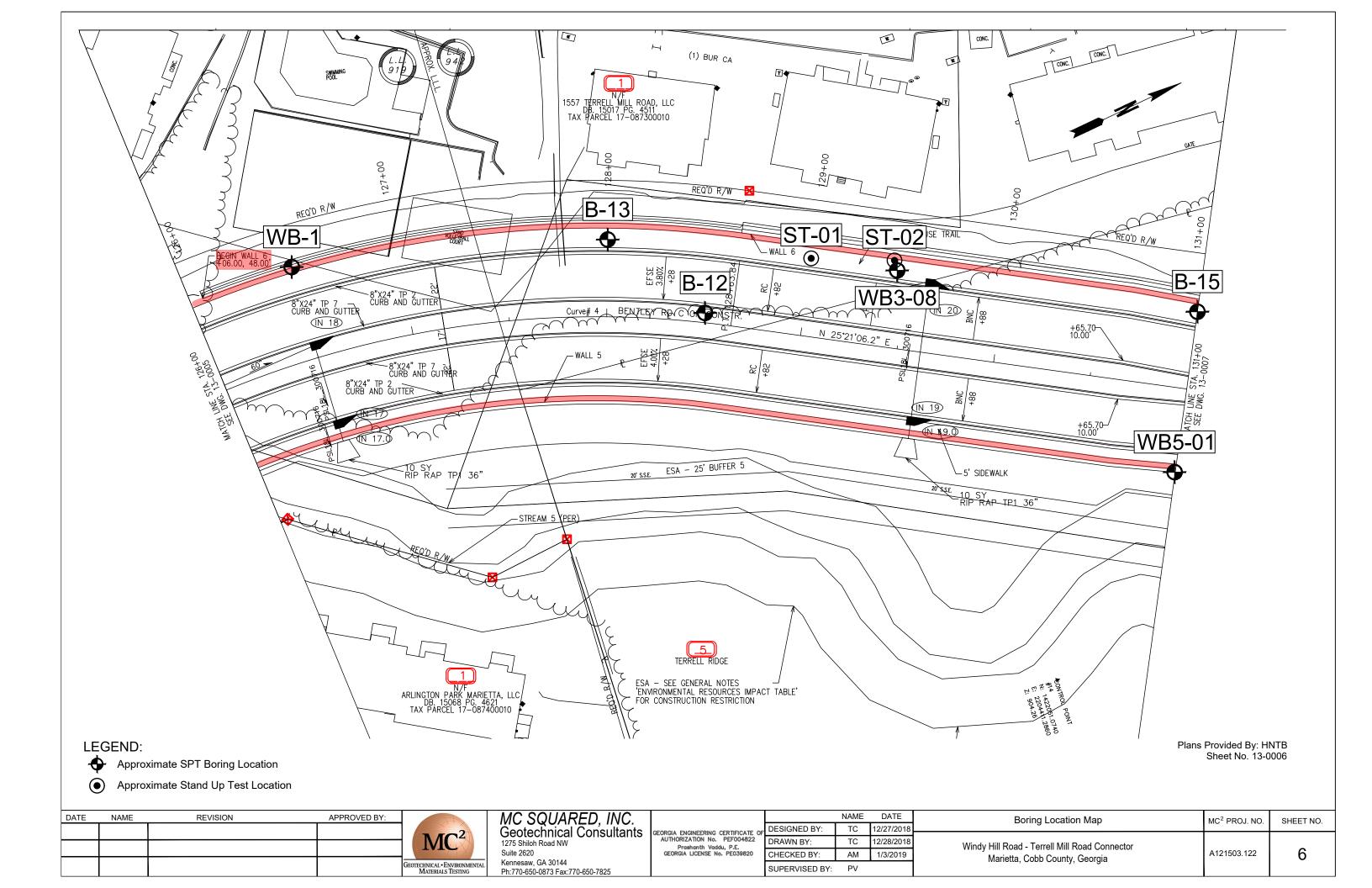
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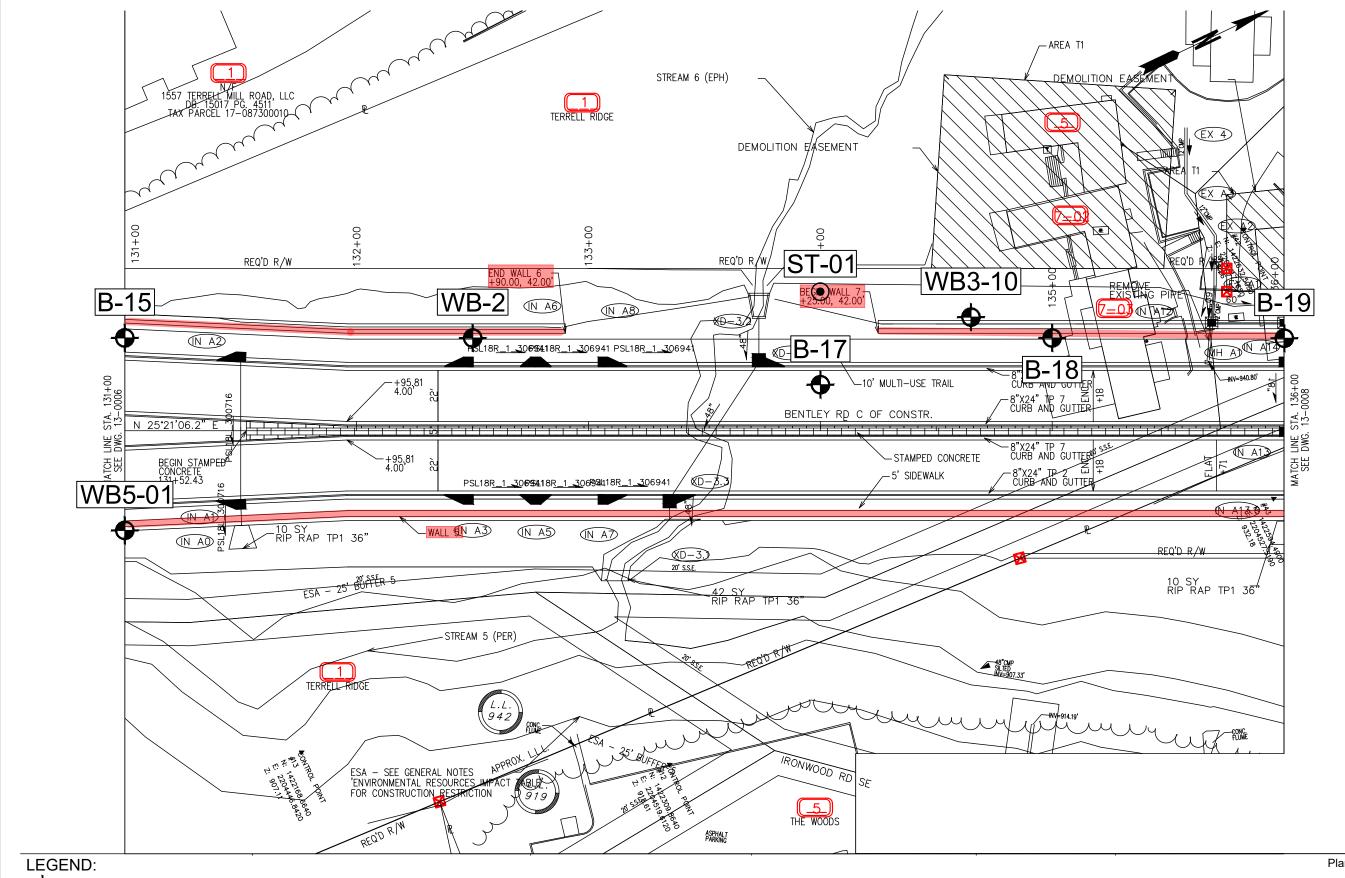












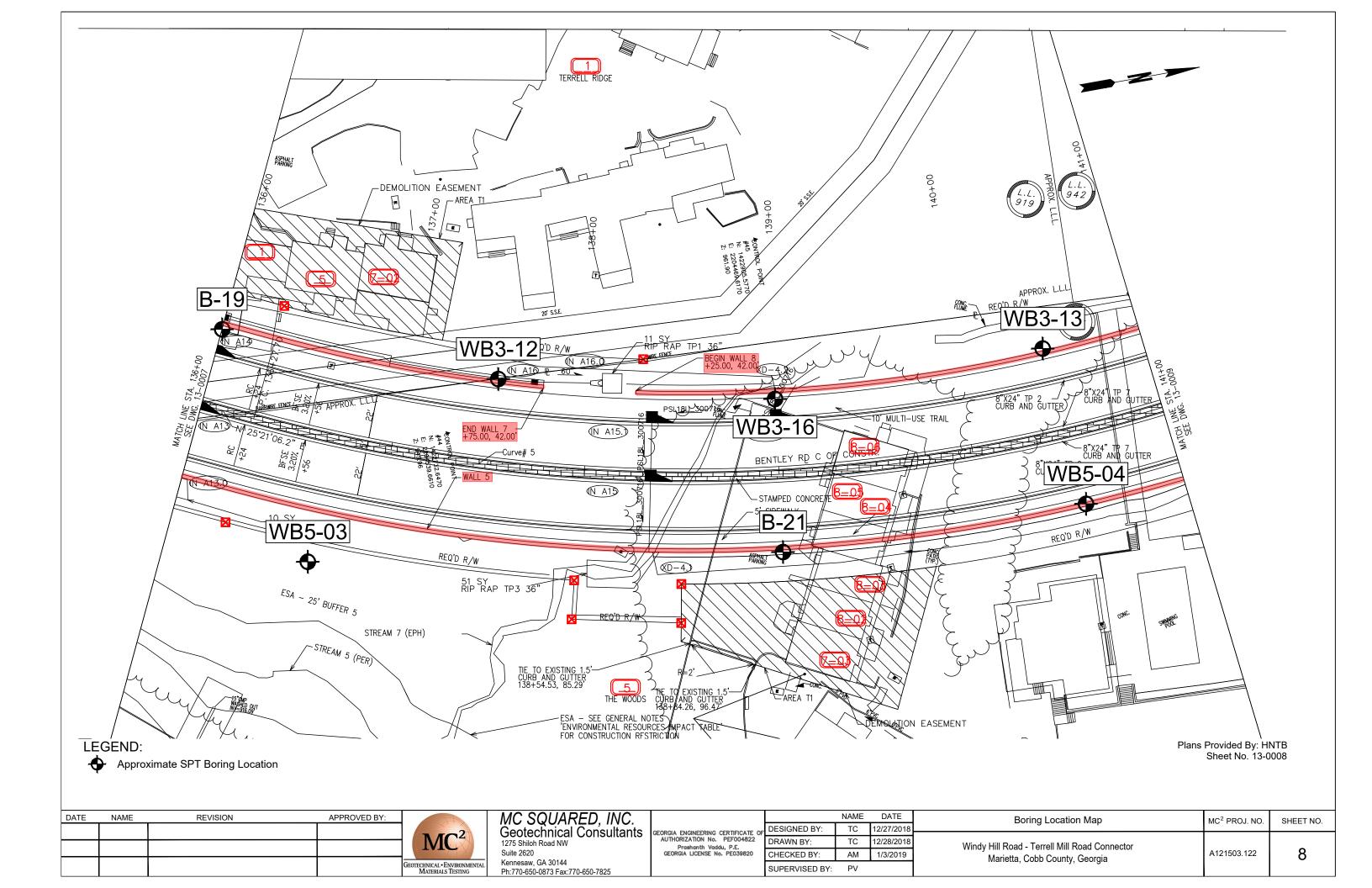
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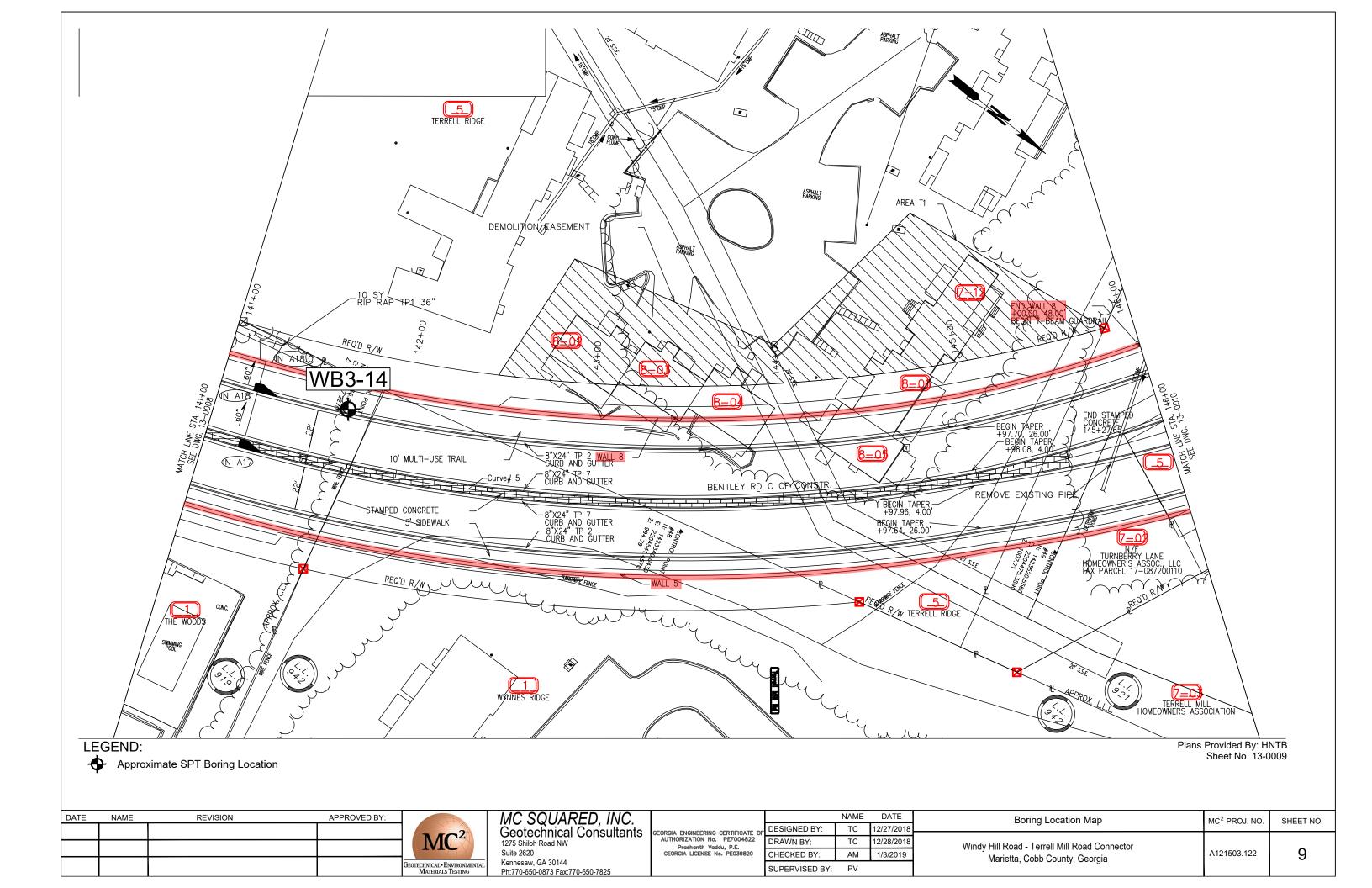
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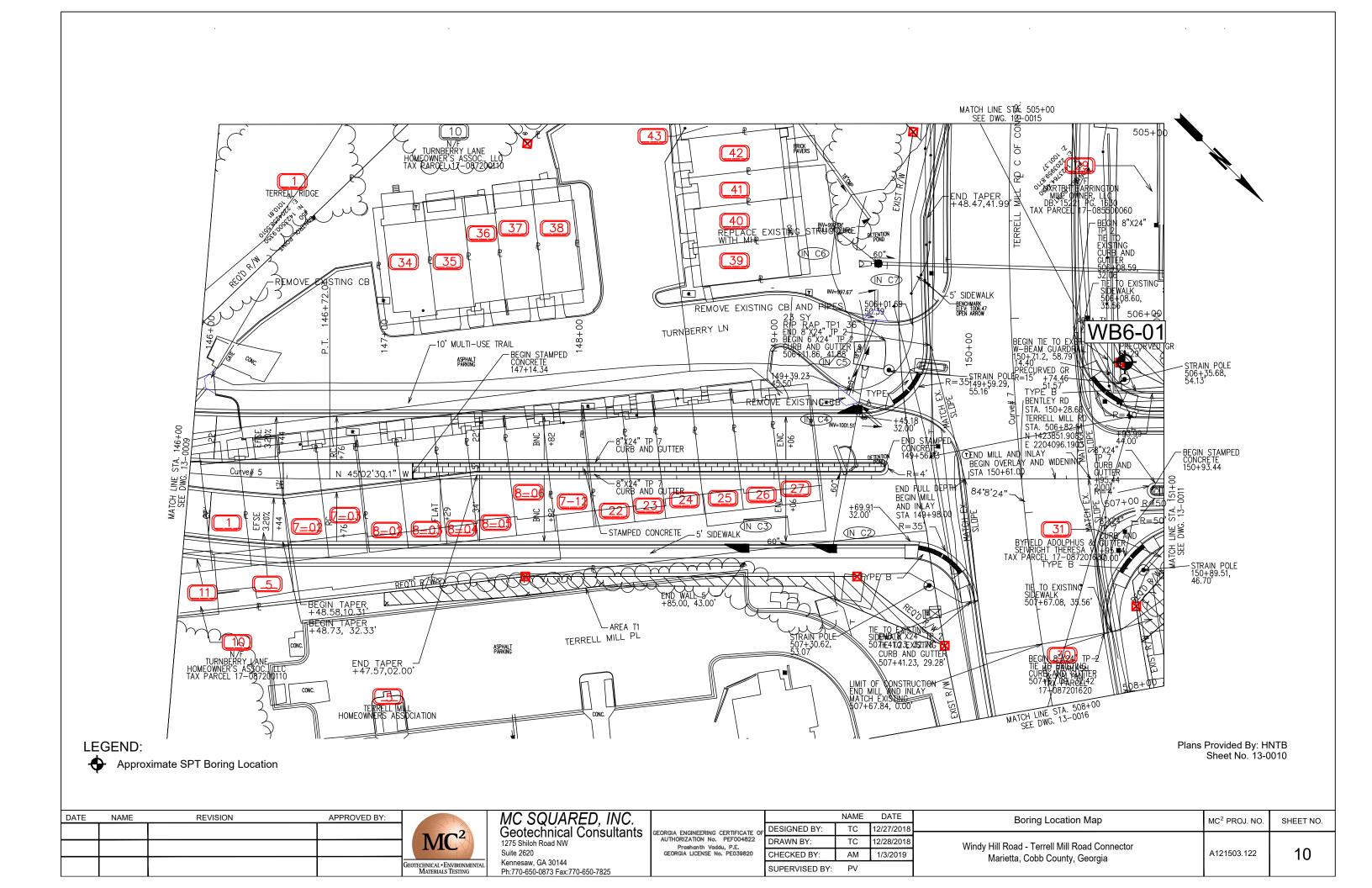
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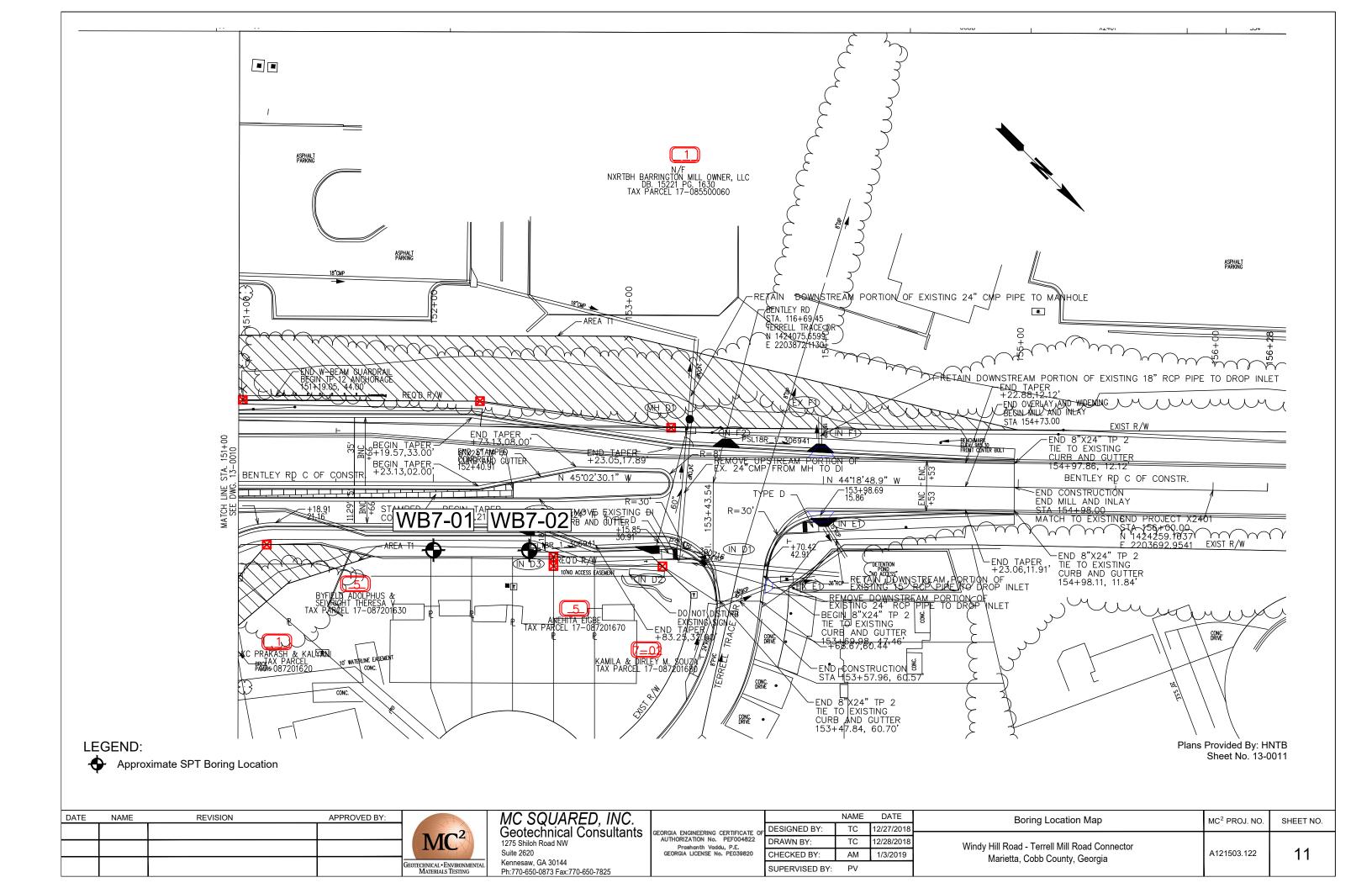
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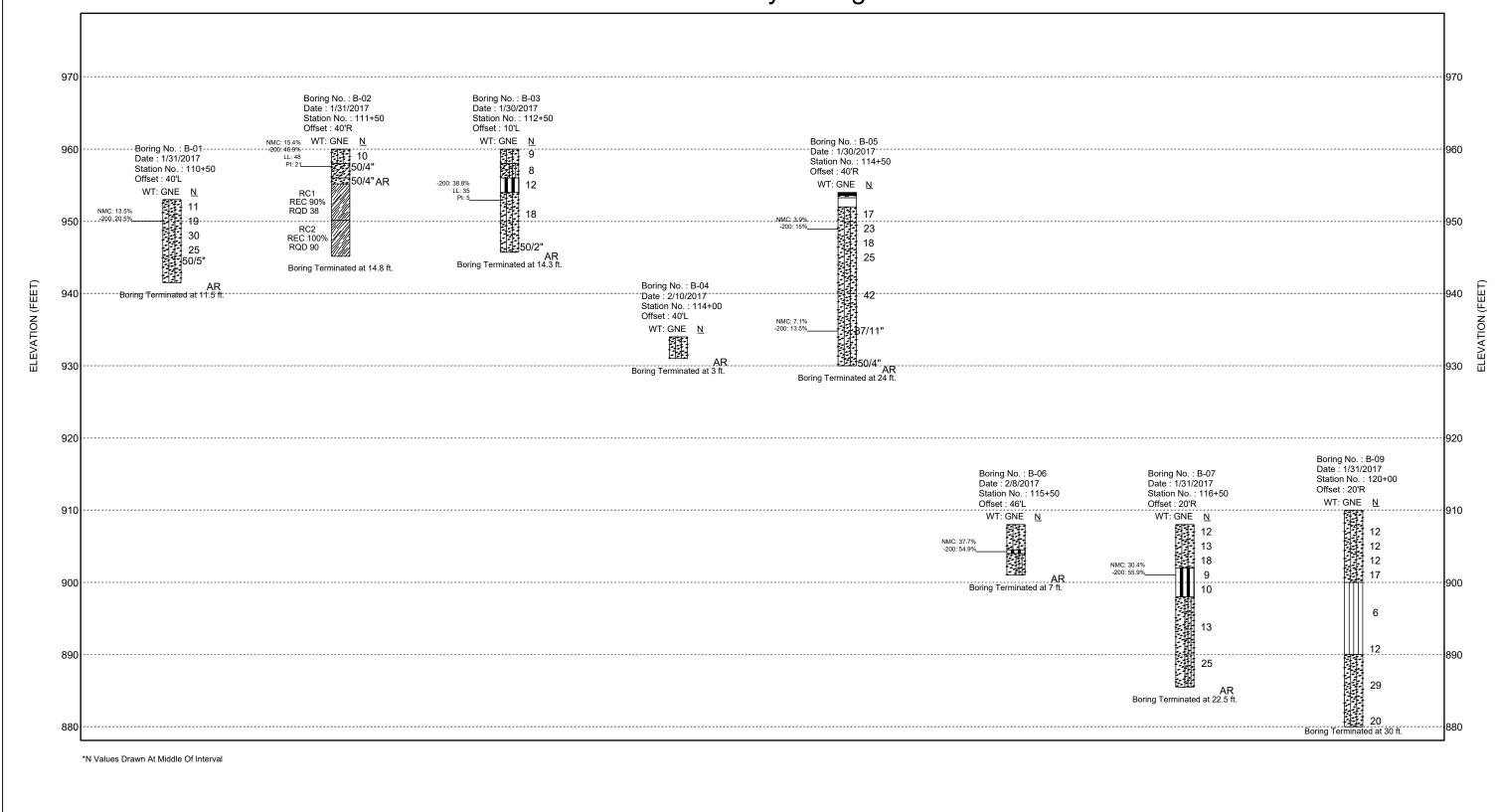








Soil Survey Borings



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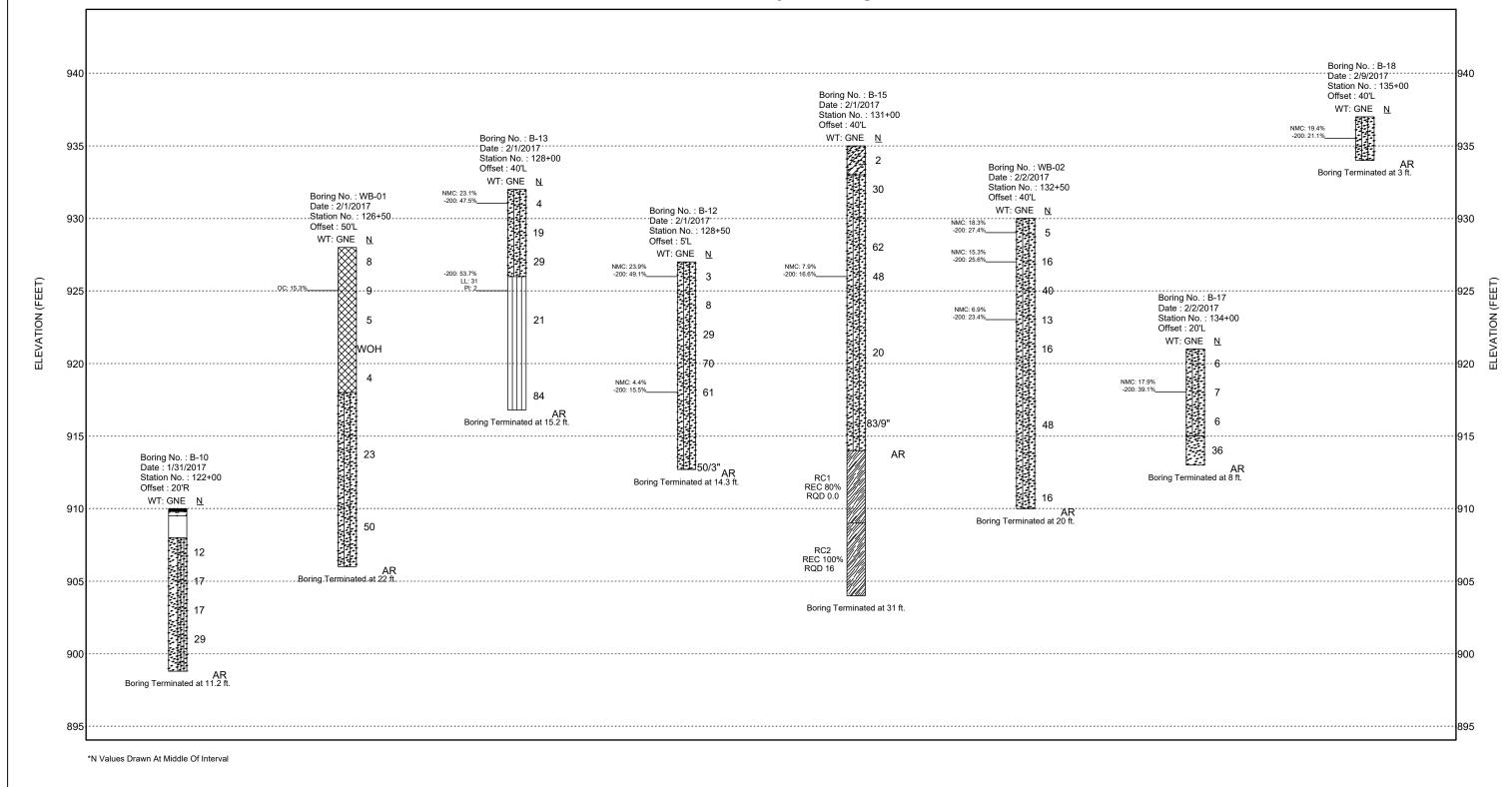
Subsurface Boring Profiles MC² PROJ. NO. SHEET NO.

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Marietta, Cobb County, Georgia

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Soil Survey Borings



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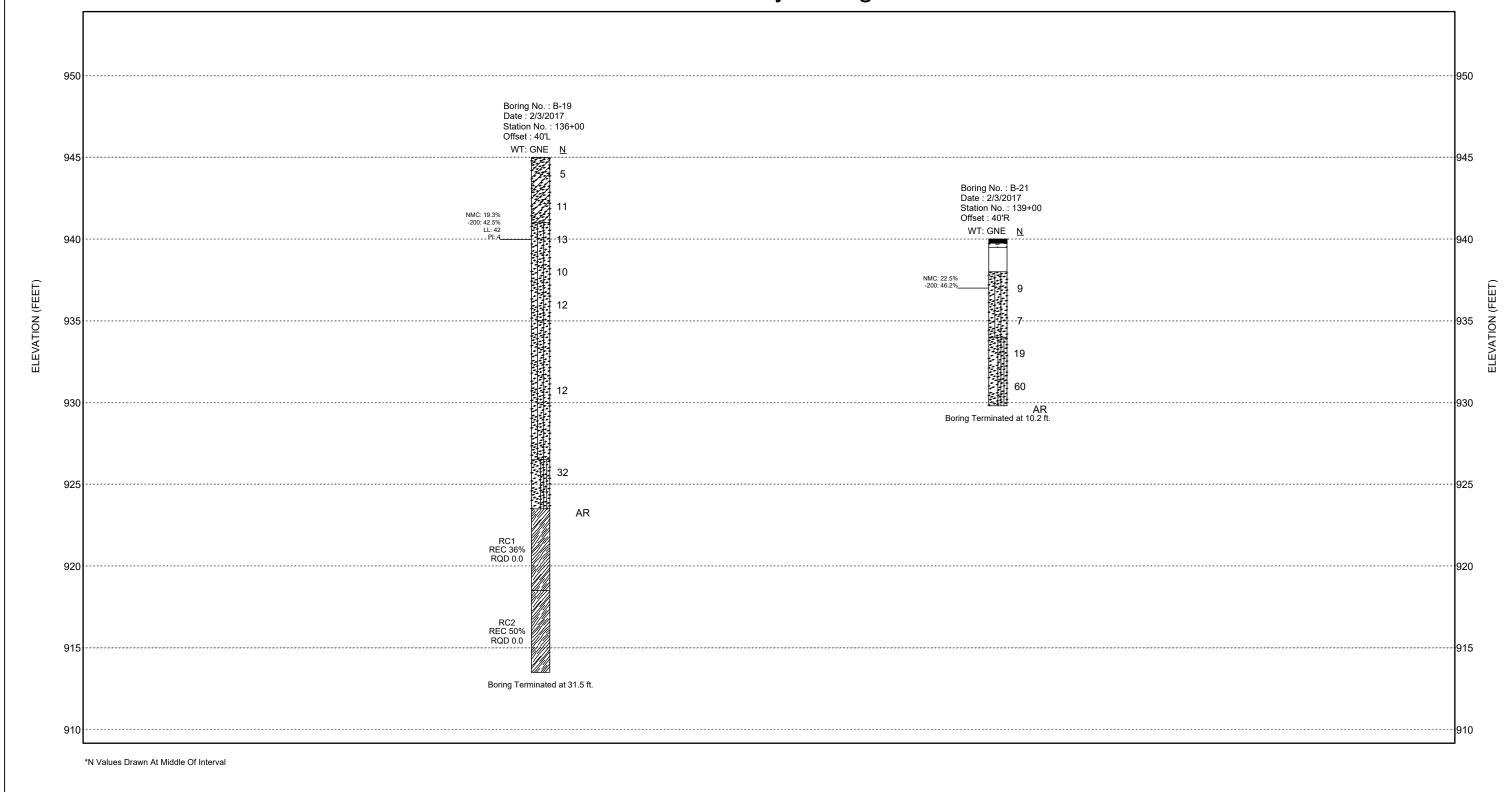
Subsurface Boring Profiles MC² PROJ. NO. SHEET NO.

Windy Hill Road - Terrell Mill Road Connector
Marietta, Cobb County, Georgia

A121503.122

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Soil Survey Borings



| DATE | NAME | REVISION | APPROVED BY: | |
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| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | |

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| GEORGIA ENGINEERING CERTIFICATE | OF |
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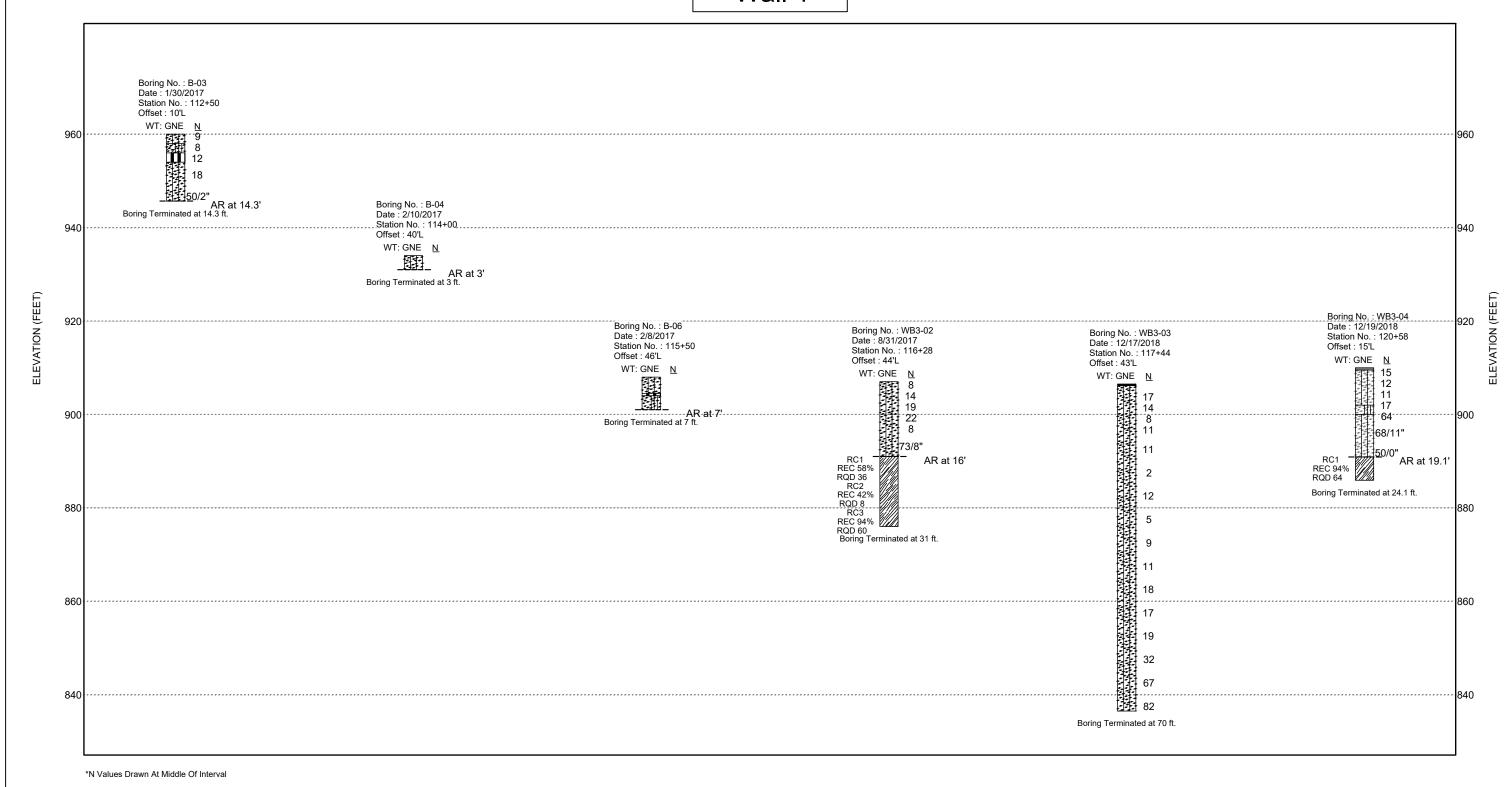
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| OF | DESIGNED BY: | TC | 12/27/2018 |
| | DRAWN BY: | TC | 12/28/2018 |
| | CHECKED BY: | AM | 1/3/2019 |
| | SUPERVISED BY: | PV | |

Subsurface Boring Profiles MC² PROJ. NO. SHEET NO.

Windy Hill Road - Terrell Mill Road Connector
Marietta, Cobb County, Georgia

A121503.122

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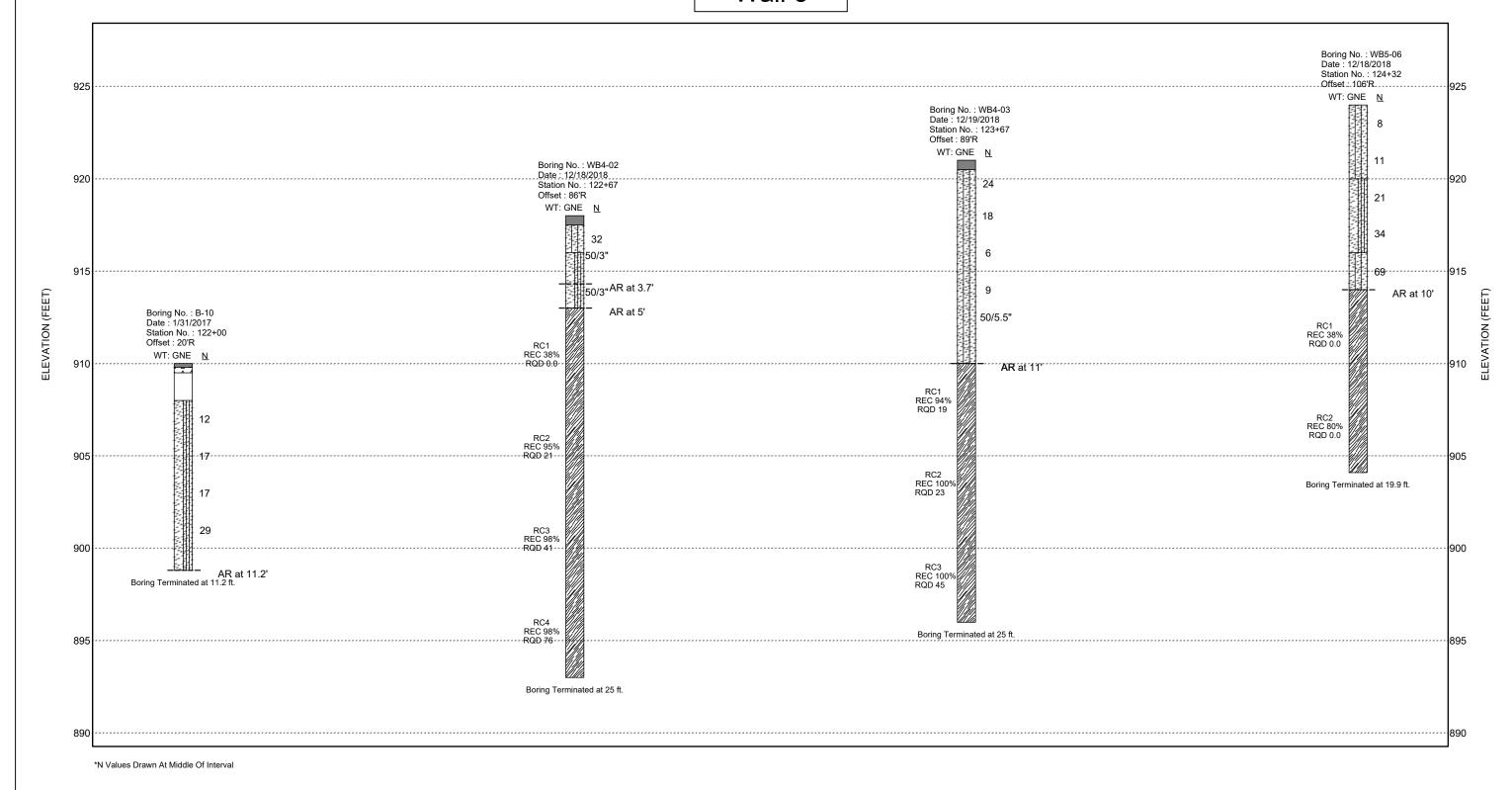
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Marietta, Cobb County, Georgia

A121503.122

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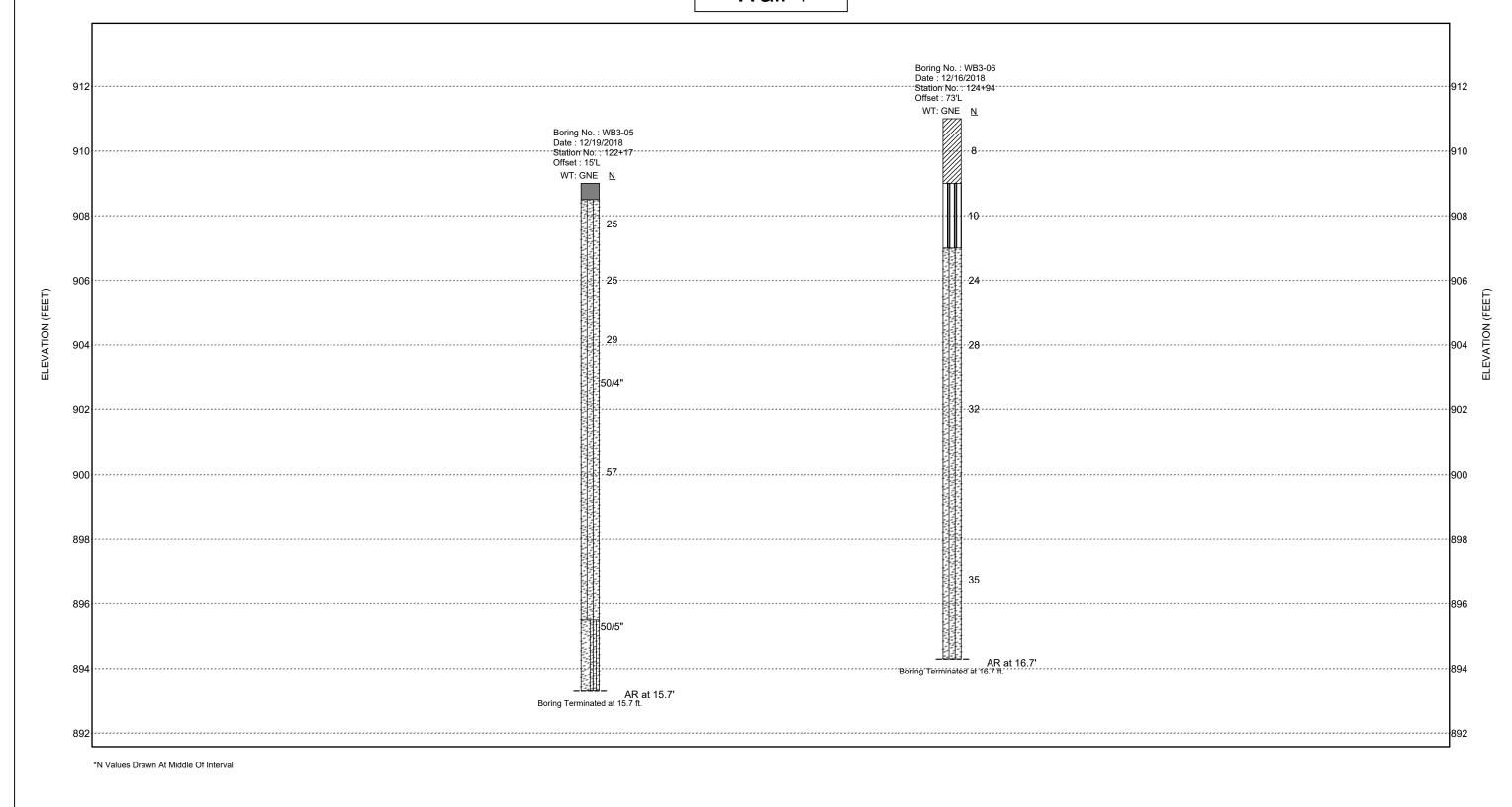
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Marietta, Cobb County, Georgia

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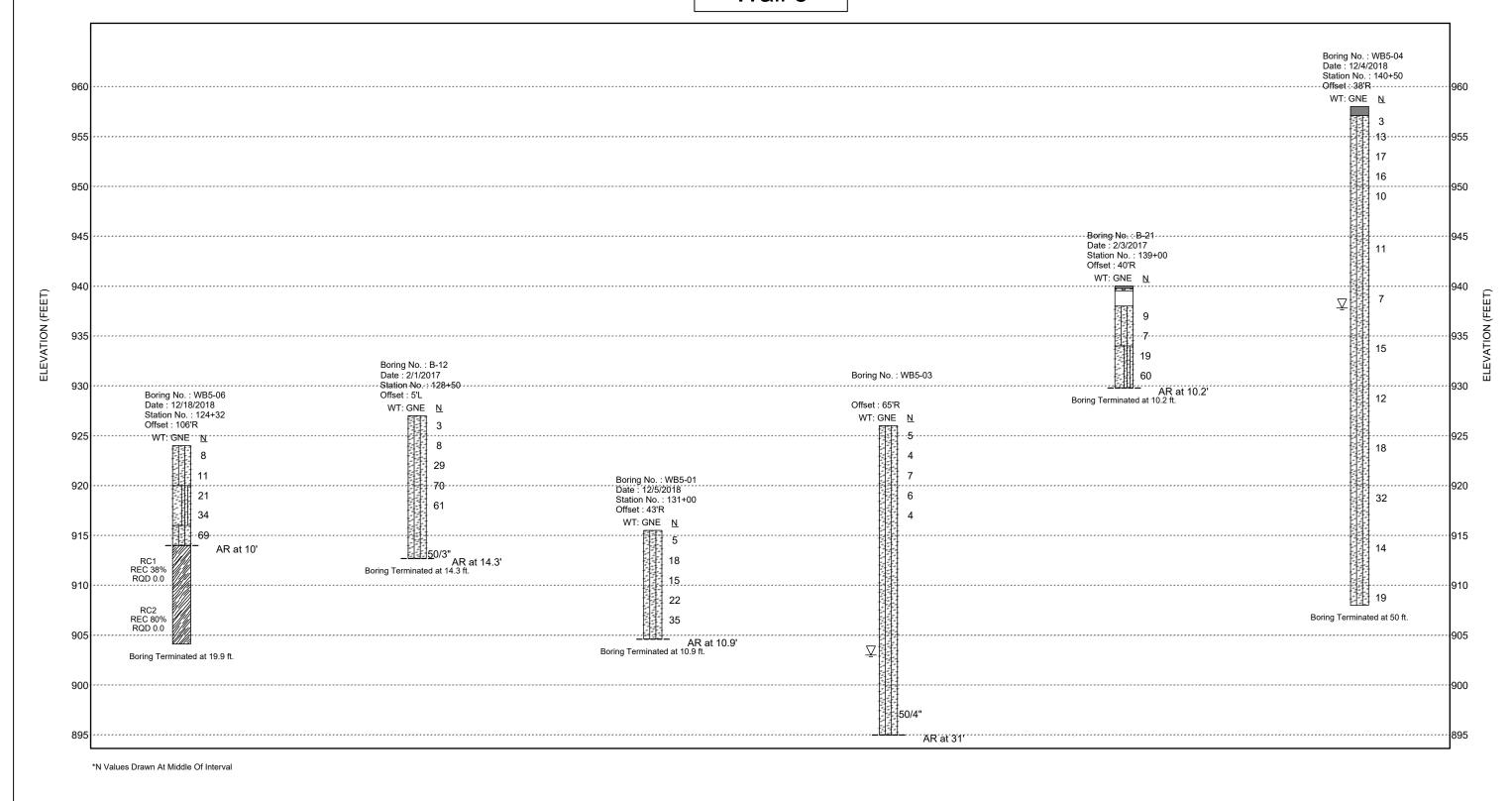
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| GEORGIA ENGINEERING CERTIFICATE | OF |
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| Windy Hill Road - Terrell Mill Road Connector Marietta, Cobb County, Georgia | A121503.122 | 17 |



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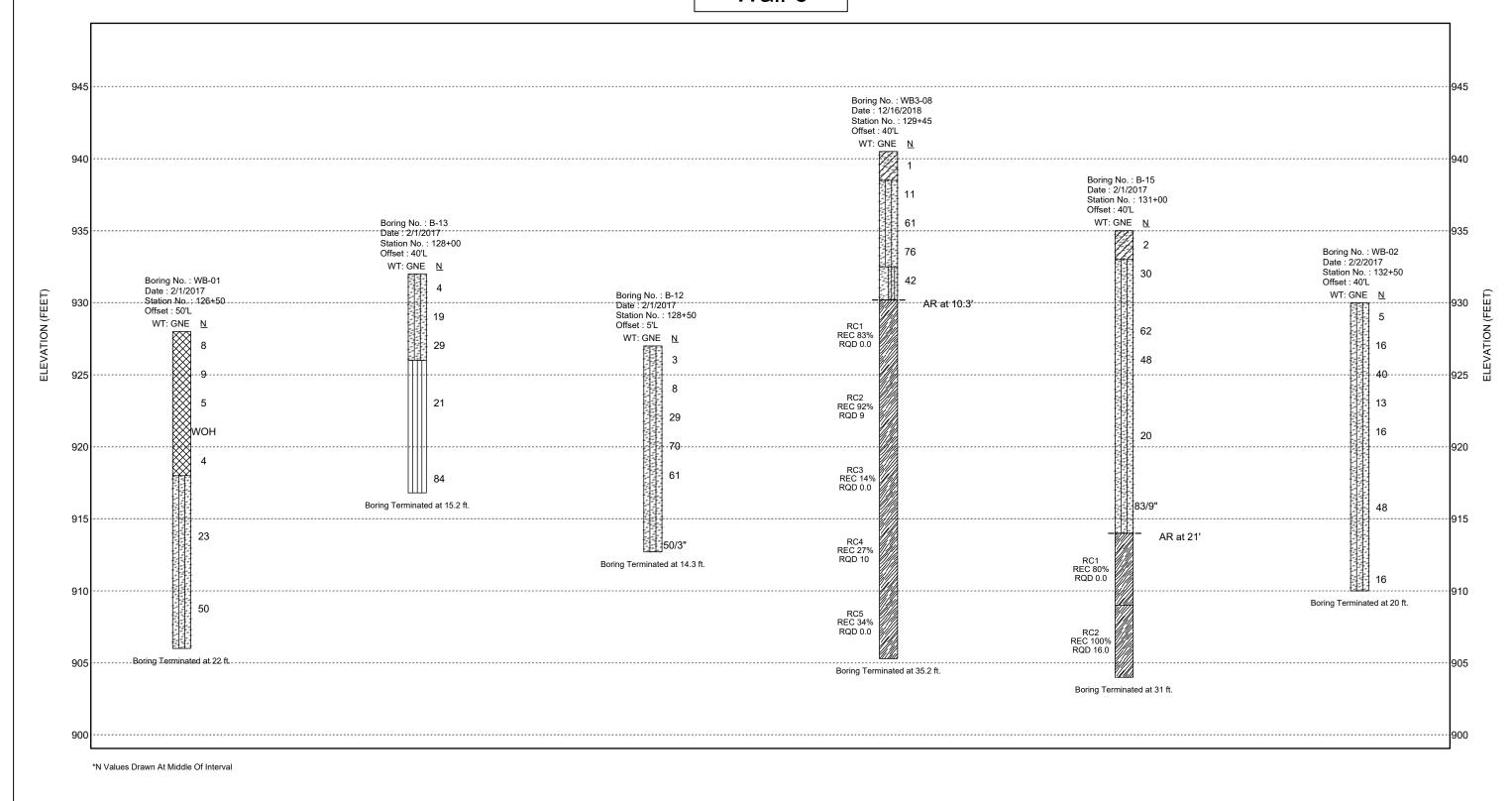
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| AUTHORIZATION No. PEF004822 Prashanth Vaddu, P.E. GEORGIA LICENSE No. PE039820 | DRA |
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| Subsurface Boring Profiles | MC ² PROJ. NO. | SHEET NO. |
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| Windy Hill Road - Terrell Mill Road Connector Marietta, Cobb County, Georgia | A121503.122 | 18 |



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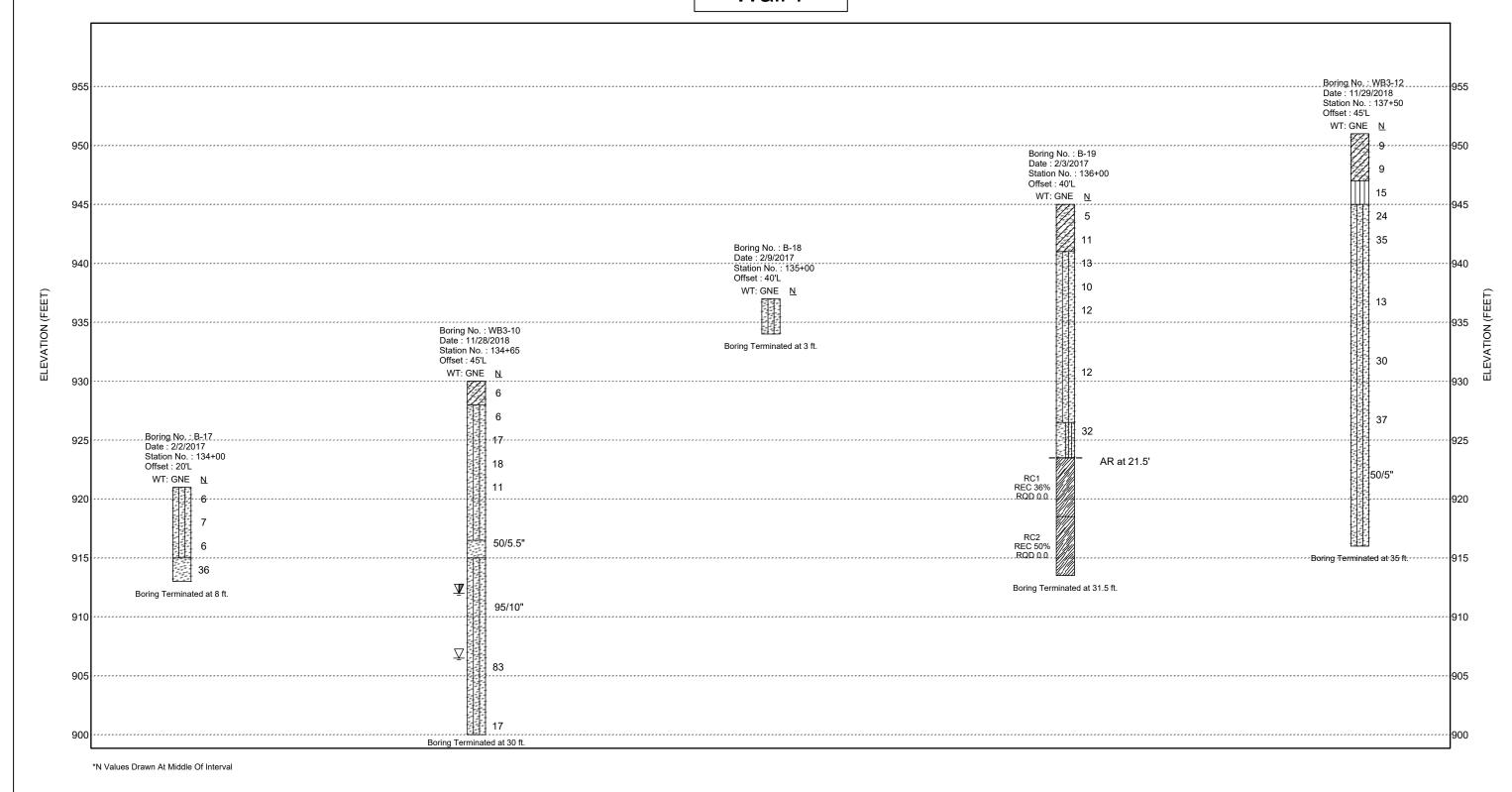
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Marietta, Cobb County, Georgia

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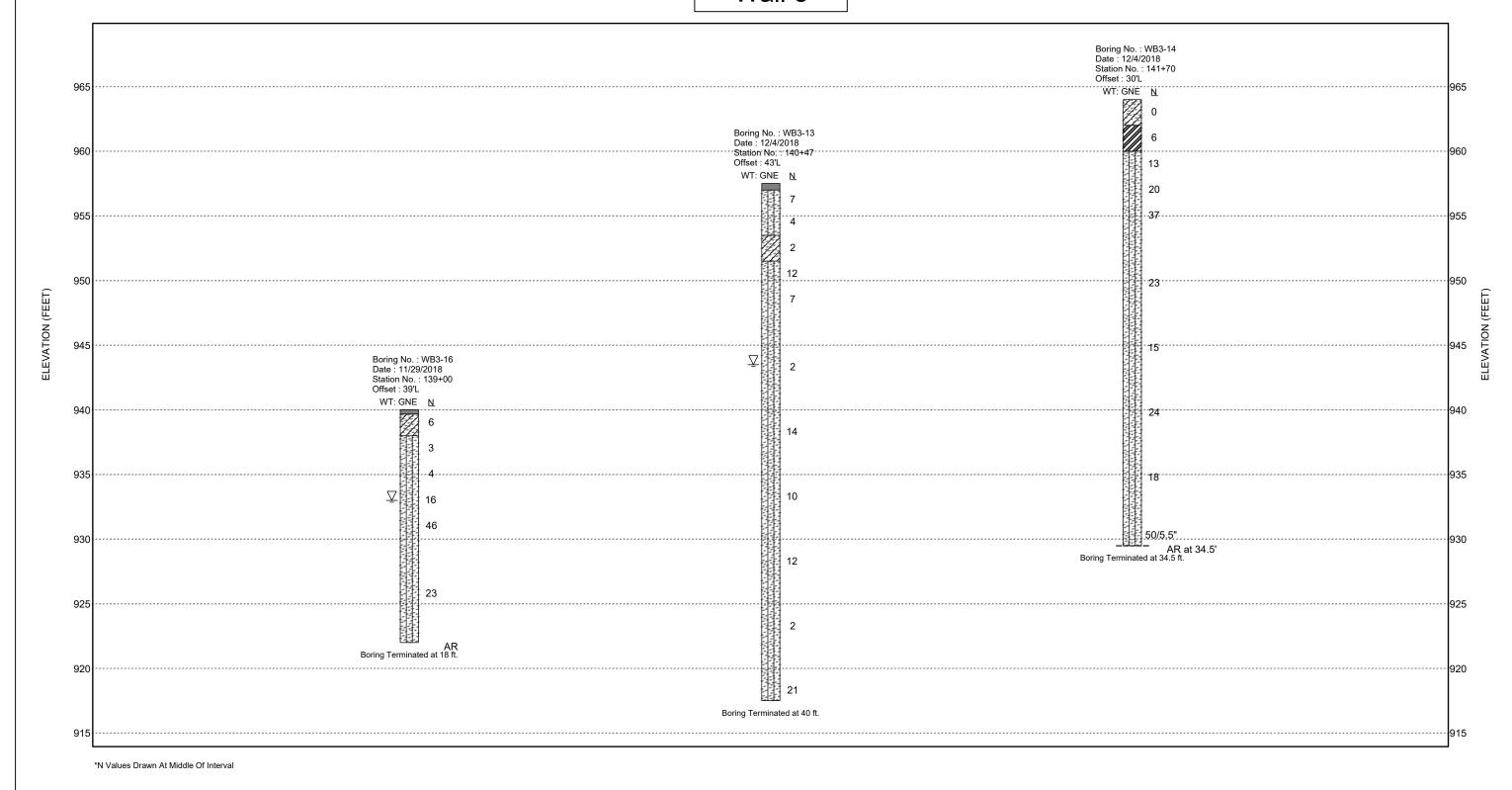
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Subsurface Boring Profiles MC² PROJ. NO. SHEET NO. Windy Hill Road - Terrell Mill Road Connector 20 A121503.122 Marietta, Cobb County, Georgia



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| ī. | Kennesaw, GA 30144 |
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| Windy Hill Road - Terrell Mill Road Connector Marietta, Cobb County, Georgia | A121503.122 | 21 | |

LEGEND





Asphalt





(GAB) Graded Aggregate Base



Limerock Base





Soil Cement



(SP) Poorly Graded Sand



(SP-SM) Poorly Graded Sand With Silt



(SP-SC) Poorly Graded Sand With Clay











(CL-ML) Silty Clay





(CL) Lean Clay



(OH) Organic Clay



(OL) Organic Silt





Fill







(WLS) Weathered Limestone



(PWR) Partially Weathered Rock



Granite





Mica Schist

NOTES:

| ⊻ | Water Table At Time Of Drilling |
|----------|-----------------------------------|
| <u> </u> | Water Table After 24 Hours |
| GNE | Groundwater Not Encountered |
| GNA | Groundwater Not Apparent |
| GNM | Groundwater Not Measured |
| CL | Center Line |
| RT | Right Of Center Line |
| LT | Left of Center Line |
| BGS | Below Ground Surface |
| HA | Hand Auger |
| PA | Power Auger |
| NMC | Natural Moisture Content (%) |
| -200 | Fines Passing A No. 200 Sieve (%) |
| PI | Plasticity Index |
| NP | Non Plastic |

Liquid Limit OC Organic Content (%)

| N | SPT N-Value |
|-------|---|
| WOH | Weight-Of-Hammer |
| WOR | Weight-Of-Rod |
| CPT | Cone Penetrometer Test |
| SPT | Standard Penetration Test |
| DT | Dilatometer Test |
| LOC | Loss Of Circulation |
| ROC | Regain Of Circulation |
| REC | Rock Core Recovery(%) |
| RQD | Rock Quality Designation |
| ST | Shelby Tube Sample |
| q_u | Unconfined Compressive Strength From Pocket |

Penetrometer In tsf

| GRANULAR MATERIALS- RELATIVE DENS | SITY SPT (BLOWS/FT) |
|-----------------------------------|----------------------------------|
| VERY LOOSE | ≤ 4 |
| LOOSE | 5-10 |
| MEDIUM | 11-30 |
| DENSE | 31-50 |
| VERY DENSE | GREATER THAN 50 |
| SILTS AND CLAYS CONSISTENCY | SPT (BLOWS/FT) |
| VERY SOFT | ≤ 2 |
| SOFT | 3-4 |
| FIRM | 5-8 |
| STIFF | 9-15 |
| VERY STIFF | 16-30 |
| HARD | 30-50 |
| VERY HARD | GREATER THAN 50 |
| SPT Spoon Inside Diameter 1 3/8" | ASTM Standard Drop Safety Hammer |
| SPT Spoon Outside Diameter 2" | Average Hammer Drop Height 30" |
| | Hammer Weight 140 lbs |

| DATE | NAME | REVISION | APPROVED BY: | | MC SQUARED, INC. | | NAME DATE Legend | | Leaend | MC ² PROJ. NO. | SHEET NO. | |
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| | | | | | | GEORGIA ENGINEERING CERTIFICATE OF | DESIGNED BY: | TC | 12/27/2018 | | | 511221 1151 |
| | | | | \mathbf{MC}^2 | 1275 Shiloh Road NW | AUTHORIZATION No. PEF004822 Proshorth Vaddu, P.E. | DRAWN BY: | TC | 12/28/2018 | Windy Hill Road - Terrell Mill Road Connector | ! | |
| | | | | | Suite 2620 | | CHECKED BY: | AM | 1/3/2019 | Marietta, Cobb County, Georgia | A121503.122 | 22 |
| | | | | GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | Kennesaw, GA 30144 Ph:770-650-0873 Fax:770-650-7825 | | SUPERVISED BY: | PV | - | manata, 3355 33unty, 36ongia | | |



| ō | GEOTECHNIC MATE | AL•ENVIR | ONMENTAL ING | | | | | | | | | | | | |
|--------------|--|-----------------|----------------------|---------------|---------------|--------------------|-----------------------|-----------------------|--|---------------------|-------|------------------|-------------------|-----------------------------|---------------|
| CLI | ENT | HN ⁻ | ТВ | | | | PROJECT NAME | Windy Hill | Road - Terr | ell Mill | Road | Conn | ector | | |
| PRO | OJEC | T NL | JMBER | A121503.122 | | | PROJECT LOCAT | ION Marie | tta, Cobb C | ounty, | Georg | gia | | | |
| DA٦ | TE ST | ART | ED _1/3 | 31/17 | COMPLETE | 1 /31/17 | GROUND ELEVAT | TION <u>953 f</u> | <u>: </u> | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G CC | ONTRAC | TOR Tri-State | Drilling, LLC | | GROUND WATER | LEVELS: | | | | | | | |
| | | | | Hollow Stem A | | | AT TIME OF I | | | | | | | | |
| | | | | | _ CHECKED B | Y P. Vaddu | | _ | | | | | | | |
| NO. | TES . | Sta. | 110+50 |), 40'L | | | AFTER DRILL | LING | | | | | | | |
| O DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | MATER | IIAL DESCRIPTIO | DN | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY % (RQD) | ⊕ OR | GANIO PL I | MC MC CONTE | LUE ITENT LL ENT (% 0 80 | · % ⊕ 6) □ |
| 5 | 952 950 948 946 944 942 940 | | SM | Medium de | ısal at 11.5' | se, brown, gray, r | nicaceous, silty SAND | 2 | (11) 5-9-10-12 (19) 7-15-15-12 (30) 12-11-14- 17 (25) | | | | | | >>1 |
| | 938 936 932 928 926 924 | | | | | | -Bottom of Cut | | | | | | | | |



| | MATE | RIALS TEST | ING | | | | | | | | | | | |
|------------|--|-------------|----------------------|---|--|------------------------------------|-----------------------|-----------------------------|----------------|-------|--------------|-----------------|---------|-------|
| CLI | CLIENT HNTB PROJECT NAME Windy Hill Road - Terrell Mill Road Connector | | | | | | | | | | | | | |
| PR | DJEC | T NU | JMBER | A121503.122 | | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | gia | | | |
| | | | | | PLETED 1/31/17 | = | 960 ft | <u>:</u> | HOLE | SIZE | 6"_ | | | |
| | | | | | , LLC | | _ | | | | | | | |
| | | | | Hollow Stem Auger | | _ | | | | | | | | |
| | | | | | CKED BY P. Vaddu | AT END OF DRIL | LING _ | | | | | | | |
| NO. | TES | Sta. | 111+50 |), 40'R | | _ AFTER DRILLING | 3 <u></u> | | | | | | | |
| _ | | 96 | ۵ | | | |)E | | % | | SPT | N VA | LUE | |
| H) | Œ | 2 [| irou ool | | | | THE H | W ITS .UE) | ※() | ⊕ OR | GANI | C CON | NTENT | - % ⊕ |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | PL — | MC | LL — | |
| ä | | 3RA |)SN | | | | ΜŽ | oz | ZEC. | □FI | NES (| CONTI | ENT (% | %) 🗆 |
| 0 | | 0 | | | | | 0) | | Ъ. | 2 | 0 4 | 0 6 | 0 8 | 0 |
| | L. | | SM | Loose, dark brown, | micaceous, silty SAND | | ss | | | | | | | |
| | 958 | | Olvi | | | | 1 | (10) | | | | | | |
| | | | | Very dense, brown | gray, clayey SAND | | SS 2 | 25-50/4" | | • | | - 00 | | >> |
| | 956 | | SC | | | | | | | | | | | |
| | 1930 | | SP | Very dense, brown | sh gray, SAND | | X ss | 20-50/4" | 1 | | | | | >> |
| _ 5_ | 054 | | | Auger refusal at 4.8 Mica Schist (musco | 33° ovite, quartz, feldspar, biotite | e) gray white black | 3 | | | | | | | |
| | 954 | | | hard to very hard, f | resh to slightly weathered, 3 grained, some iron oxide sta | 0 degree foliation, | Ш | | | | | | | |
| | + - | | | (4.83' - 9.83') Inten | sely fractured, 30 degree, place | anar, smooth, slightly | RC | | 90 | | | | | |
| | 952 | | | to moderately weat | hered, iron oxide staining the | roughout | | | (38) | | | | | |
| | ļ - | | | | | | Ш | | | | | | | |
| 10 | 950 | | | Mica Schiet (musco | ovite, quartz, feldspar, biotite | a) gray white black | H- | | | | | | | |
| | ļ . | | | hard to very hard, f | esh to slightly weathered, 3 | 0 degree foliation, | Ш | | | | | | | |
| | 948 | | | (9.83' - 14.83') Mod | grained, some iron oxide sta erately fractured, 30 degree | ining present , planar, smooth, | | | 100 | | | | | |
| | | | | fresh to slightly wea | athered, some iron oxide sta | ining present | RC 2 | | 100 (90) | | | | | |
| | 946 | | | | | | Ш | | | | | | | |
| | | | | | | | Ш | | | | | | | |
| | 044 | | | | Bottom of hole at 14.8 feet | t. | | | | | | | | |
| | 944 | - | | | | | | | | | | | | |
| | | - | | | | | | | | | | | | |
| | 942 | - | | | | | - | | | | | | | |
| | <u> </u> | - | | | /\ | Bottom of Cut | | | | | | | | |
| | 940 | - | | | | ottom or out | | | | | | | | |
| | ļ . | - | | | | | | | | | | | | |
| | 938 | - | | | | | | | | | | | | |
| | L | _ | | | | | | | | | | | | |
| | 936 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 024 | - | | | | | | | | | | | | |
| | 934 | - | | | | | | | | | | | | |
| | - | - | | | | | | | | | | | | |
| | 932 | - | | | | | | | | | | | | |
| | <u> </u> | - | | | | | | | | | | | | |
| | 930 | - | | | | | | | | | | | | |
| | ļ - | - | | | | | | | | | | | | |



| • | MATE | RIALS TES | TING | | | | | | | | | | |
|--|----------|-------------|----------------------|--|---------------------|-----------------------|--|----------------|-------|---------|-------|--------------|----------|
| CLIENT HNTB PROJECT NAME Windy Hill Road - Terrell Mill Road Connector | | | | | | | | | | | | | |
| PR | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Marie | tta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE ST | ART | ED <u>8/2</u> | 29/17 COMPLETED 8/29/17 | GROUND ELEVATION | 960 f | <u>: </u> | HOLE | SIZE | 6" | | | |
| | | | | CTOR Big Dog | GROUND WATER LEV | ELS: | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRI | | | | | | | | |
| | | | | ussly CHECKED BY P. Vaddu | | | | | | | | | |
| NO | TES | Sta. | 111+80 | 0, 63'L | AFTER DRILLIN | G | | | | | | | |
| | | စ္က | Q. | | | Щ | | % | (| SPT | N VA | LUE (| • |
| DEPTH (ft) | Œ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | ⊕ OR | | | ITENT | - % ⊕ |
| ΕĐΤ | ELEV. | 분 | SS (| MATERIAL DESCRIPTION | | PLE | BLO OUN VAL | ROE BOE | | PL — | MC | LL — | |
| DE | | ЗRА |)SN | | | NAW NAW | _os | ZEC | □FI | NES C | CONTE | ENT (9 | %) □ |
| 0 | | | | Medium dense to very dense, brown to gravish h | provin dark brown | 1 | | _ | 2 | 0 4 | 0 6 | 0 8 | 0 |
| | ļ _ | | | Medium dense to very dense, brown to grayish to silty SAND, micaceous, with rock fragments | Drown, dark brown, | | 4-8-18-32 (26) | | | • | | | |
| | 958 | | | | | ss | 33-50/5" | | | | | | >> |
| | 956 | | | | | 2 | | | | | | | |
| 5 | | | SM | | | ⊠ss 3 | 50/6" | 1 | | | | | >>(|
| | 954 | | Oivi | | | | 16.06 | | | | | | |
| | <u> </u> | | | | | SS 4 | 16-26- 50/4" | | | | | | >>(|
| | 952 | | | | | ⊠ ss | 2-50/3" | | | | | | >>(|
| 10 | 950 | | | Auger Refusal at 10 feet. | | 5 | | | | | | | |
| | | | | (10' - 30') MICA SCHIST (quartz, feldspar, biotiti black, white, moderately soft to moderately hard | e, muscovite) gray, | | | | | | | | |
| | 948_ | | | weathered, medium to coarse grained, intensely | r fractured | RC | | 88 | | | | | |
| | <u> </u> | | | | | 1 | | (56) | | | | | |
| | 946_ | | | | | Ш | | | | | | | |
| 15 | 944 | | | | | Н | | | | | | | |
| | _3 | | | | | Ш | | 400 | | | | | |
| | 942 | | | | | RC 2 | | 100 (73) | | | | | |
| | ļ - | | | | | Ш | | , , | | | | | |
| 20 | 940 | | MICA SCHIST | | | \mathbf{H} | | | | | | | |
| | 938 | | | | | Ш | | | | | | | |
| | _936_ | | | | | RC 3 | | 100 (73) | | | | | |
| | 936 | | | | | | | (73) | | | | | |
| 25 | | | | | | Щ. | | | | | | | |
| | 934_ | | | | | Ш | | | | | | | |
| | | | | | | RC | | 100 | | | | | |
| | 932 | | | | | 4 | | (85) | | | | | |
| 30 | 930 | | | | | | | | | | | | |
| | L - | | | Bottom of hole at 30.0 feet. | | | | | | | | | |
| | 928 | . | | | | | | | | | | | |
| | | . | | | | | | | | | | | |
| | 926 | . | | | | | | | | | | | |
| | 924 | . | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 922 | . | | | | | | | | | | | |
| | | . | | | | | | | | | | | |
| | 020 | | | I . | | 1 | 1 | i | i . | | | . , | |



| GEOTECHNICAL "ENVIRONMENTAL MATERIALS TESTING | | | | | | | | | | | | | | | |
|--|------------|-------------|----------------------|-------------------------|-------------------|-----------------------|-----------------------|-----------------------|-----------------------------|----------------|--------|----------|---------------|----------|-----|
| CLIENT HNTB PRO | | | | | | | PROJECT NAME Win | ndy Hill | Road - Terr | ell Mil | l Road | Conne | ector | | _ |
| PRO | OJEC | T NU | JMBER | A121503.122 | | | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | ia | | | |
| DAT | TE ST | ART | ED <u>8/2</u> | 29/17 | COMPLETED | 8/29/17 | GROUND ELEVATION | <u>961 ft</u> | | HOLE | SIZE | 6' | | | _ |
| | | | | TOR Big Dog | | | GROUND WATER LEV | ELS: | | | | | | | |
| | | | | Hollow Stem A | | | AT TIME OF DRI | | | | | | | | — |
| | | | | | CHECKED BY | P. Vaddu | | | | | | | | | — |
| NO ⁻ | ΓES | Sta. | . 112+40 |), 46'R | | | AFTER DRILLING | G | | | | | | | |
| _ | | 96 | d | | | | | 出 | | % | | SPT | N VAL | UE | |
| DEРТН (ft) | E | GRAPHIC LOG | USCS Group Symbol | | | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | ⊕ OR | | | | 6⊕ |
| ΞPΤ | ELEV. (ft) | PHI | CS (Sym | | MATERIA | L DESCRIPTION | | P.E. | BLC OUN | SS S | | PL — | MC | _LL — | |
| □ | Ш | GRA | SN ; | | | | | SAN | 02 | REC | □FIN | NES C | ONTE | NT (%) | |
| 0 | | 933 333 | | Medium den | se to very dense | , reddish brown to | brown gravish | 1 | 4 4 4 00 00 | | 20 |) 40 | 60 | 80 | |
| | 960 | | | brown, silty | SAND, micaceou | is, with rock fragme | ents | | 4-14-22-23 (36) | | | P | | | |
| | 958 | | | | | | | Ss | 9-13-15-17 | | | | | | |
| _ | [] | | SM | | | | | 2 | (28) | | | | \rightarrow | | |
| 5_ | 956 | | · · · · | | | | | SS 3 | 33-31- 50/4" | | | | | | >>(|
| | 054 | | | | | | | ×ss | 28-50/3" | | | | | | >>(|
| | 954 | | | | | | | 4 | | | | | | | |
| | 952 | | SP-SM | Very dense, rock fragme | tan, poorly-grade | ed fine SAND with | silt, micaceous, with | SS 5 | 10-50/5" | | | | | | >> |
| 10 | ┞ - | | OI -OIVI | _ | | - III. OAND | | 🕓 | | | | | | | |
| | 950 | | | very dense, fragments | dark brown to br | own, siity Sand, m | nicaceous, with rock | | | | | | | | |
| | 040 | | | | | | | | | | | | | | |
| - | 948 | | | | | | | ✓ SS | 0.50/4" | | | | | | |
| 15 | 946 | | | | | | | $\bigcirc 6$ | 8-50/4" | | | | | | >>(|
| | | | | | | | | | | | | | | | |
| | 944 | | | | | | | | | | | | | | |
| | 942 | | | | | | | 400 | | | | | | | _ |
| 20 | _942_ | | CM | | | | | \times SS 7 | 10-50/5" | | | | | | >> |
| | 940 | | SM | | | | | | | | | | | | |
| | ┞ - | | | | | | | | | | | | | | |
| | 938 | | | | | | | 1 | | | | | | | |
| 25 | 936 | | | | | | | X SS 8 | 6-42-50/2" | | | | | | >> |
| | | | | | | | | | | | | | | | |
| _ | 934 | | | | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | >>(|
| 30 | 932 | | | | | | | SS 9 | 50/2" | | | | | | |
| 00 | 930 | - | | | Bottom | of hole at 30.0 feet. | | _ | | | | | | | |
| | L - | - | | | | | | | | | | | | | |
| | 928 | - | | | | | | | | | | | | | |
| | 026 | - | | | | | | | | | | | | | |
| | 926 | • | | | | | | | | | | | | | |
| | 924 | - | | | | | | | | | | | | | |
| | ļ - | - | | | | | | | | | | | | | |
| | 922 | - | | | | | | | | | | | | | |
| | 1 | | | | | | | 1 | | i | | - 1 | 1 | 1 | |



| č | GEOTECHNIC MATE | AL•ENVIR RIALS TES | ONMENTAL TING | | | | | | | | | | |
|-------------------|--------------------|-----------------------|----------------------|--|------------------|-----------------------|-----------------------------|---------------------|--------------|-------|-------|----------------|-----------|
| CLI | ENT | HN | ТВ | | PROJECT NAME Win | ndy Hill | Road - Ter | rell Mil | Road | Conn | ector | | |
| PRO | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE ST | ART | TED _1/3 | 30/17 COMPLETED 1/30/17 | GROUND ELEVATION | 960 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G CC | ONTRAC | Tri-State Drilling, LLC | GROUND WATER LEV | ELS: | | | | | | | |
| DRI | LLIN | G MI | ETHOD | Hollow Stem Auger | AT TIME OF DRIL | LING | GNA | | | | | | |
| LO | GGED | BY | Basan | ta Dhakal CHECKED BY P. Vaddu | | | | | | | | | |
| NO. | TES . | Sta | . 112+50 |), 10'L | AFTER DRILLING | 3 <u></u> | | | | | | | |
| | | ניז | | | | ш | | % | | SPT | N VA | LUE (| • |
| Œ | Œ | SRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | S (E) | | ⊕ OR | GANI | CCON | TENT | - % ⊕ |
| DEPTH (ft) | ELEV. (| 呈 | S Gr mbc | MATERIAL DESCRIPTION | | LEI | BLOW COUNTS (N VALUE) | SEE | | PL | MC | LL ENT (% | |
| DEF | == | ₹ | JSC; Sy | | | M N | | Si F | | NEC (| CONT | | / \ □ |
| 0 | | 20 | ٦ | | | <i>\S</i> | | 2 | 2 | 0 4 | 0 6 | =ini (7 0 8 | ∞) ⊔ 0 |
| | | | | Loose, dark brown, micaceous, silty SAND | | √ss | 3-4-5 | | | | | | |
| | 958 | | SM | | | 1 | (9) | | | | | | |
| | 930 | | | Loose, brown, silty clayey SAND | | 1 | 0.5.0.5 | | | | | | |
| | - | | SC-SM | | | | 3-5-3-5 (8) | | $ lack {} $ | | | | |
| | 956 | | | Stiff, reddish brown, sandy elastic SILT | | () | | _ | | | | | |
| 5 | - | 11 | МН | • | | | 3-5-7-8 (12) | | ├ | | | | |
| | 954 | | | Medium dense to very dense, grayish brown, bro | own_silty_SAND | | , , | | | | | | |
| | - | | | Shelby Tube (6' - 8') Micaceous (6' - 8') | , ey ez | ST 4 | | | | НС |] | | |
| | 952 | | | Micaceous (6 - 8) | | | | | | | | | |
| | L - | | | | | \/ ss | 6-8-10-9 | | | | | | |
| 10 | 950 | | CM | | | 5 | (18) | | | | | | |
| _ | | | SM | | | | | | |) | | | |
| | 948 | | | | | | | | | | | | |
| _ | | | | | | | | | | | | | |
| | 946 | | | | | SS | 50/2" | - | | | | | >>(|
| | 940 | | | Auger refusal at 14.3' | | 6 | 30/2 | 1 | | | | | |
| | | - | | Bottom of hole at 14.3 feet. | | | | | | | | | |
| | 944 | - | | | | | | | | | | | |
| | | - | | | | - | | | | | | | |
| | 942 | - | | '_B | ottom of Cut | | | | | | | | |
| | <u> </u> | - | | | ottorii or out | | | | | | | | |
| | 940 | - | | | | | | | | | | | |
| | L - | - | | | | | | | | | | | |
| | 938 | _ | | | | | | | | | | | |
| | L _ | _ | | | | | | | | | | | |
| | 936 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 934 | • | | | | | | | | | | | |
| | _504_ | - | | | | | | | | | | | |
| | - | - | | | | | | | | | | | |
| | 932 | - | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | 930 | - | | | | | | | | | | | |
| | ļ . | _ | | | | | | | | | | | |



| GEOTECHN MA | ICAL•ENVIR TERIALS TES | RONMENTAL TING | | | | | | | | | | |
|--------------------------|--|----------------------|---|--|-----------------------|-----------------------------|-----------------|-------|---------|-------|---------|-------|
| CLIENT | HN | ТВ | | PROJECT NAME Windy Hill Road - Terrell Mill Road Connector | | | | | | | | |
| PROJE | CT NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | tta, Cobb C | ounty, | Georg | ia | | | |
| DATE S | TART | TED 8/2 | 29/17 COMPLETED 8/29/17 | GROUND ELEVATION | 956 ft | : | HOLE | SIZE | 6" | | | |
| DRILLIN | IG CC | ONTRAC | CTOR Big Dog | GROUND WATER LEV | ELS: | | | | | | | |
| DRILLIN | IG ME | ETHOD | Hollow Stem Auger | AT TIME OF DRII | LLING | GNE | | | | | | |
| LOGGE | D BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF DRIL | LING | | | | | | | |
| NOTES | Sta | . 113+90 |), 57'R | AFTER DRILLING | 3 <u></u> | | | | | | | |
| | (J | | | | ш | | % | | SPT | N VAL | LUE • |) |
| £ £ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | TS CE) | \ <u>\</u> _ (| ⊕ OR | | | | |
| DEPTH (ft) ELEV. (ft) | HIC | :S G ymb | MATERIAL DESCRIPTION | | . J.C. | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | PL — | MC | LL — | |
| | RAF | S | | | AMF | mož |) | | | CONTE | | 6) [] |
| 0 | Θ | | | | σ | | IX. | 20 | | | | |
| | - | | Medium dense to very dense, dark brown to brow grayish brown, silty SAND, micaceous | n, reddish brown, | | | | | | | | |
| 954 | 4 | | | | }} на | | | | | | | |
| 952 | - | | | | | | | | | | | |
| 5 | | | | | ss | 9-9-8-6 | | | | | | |
| 950 | | | | | 1 | (17) | | | | | | |
| . 🗼 | _ | | | | SS 2 | 6-15-21-23 (36) | 1 | | | | | |
| 948 | 3 | SM | | | \mapsto | 1 1 | | | | | | |
| | - | Olvi | | | SS 3 | 3-6-9-13 (15) | | | | | | |
| 10_5+0 | 4 | | | | | | | | | | | |
| 944 | | | | | | | | | | | | |
| . 🗼 | - | | | | | | | | | | 1 | |
| 942 | 4 | | | | ⊠SS 4 | 50/6" | 1 | | | | | >>(|
| 15 940 | - | | | | | | | | | | | |
| | 4 | | Auger Refusal at 17 feet. | | | | | | | | | |
| 938 | 3/// | | (17' - 27') MICA SCHIST (quartz, feldspar, biotite, black, white, moderately soft to moderately hard, | muscovite) gray, | | | | | | | | |
| . 🗼 | | | to moderately weathered, medium to coarse grain | ned, FeOx staining | RC | | 82 | | | | | |
| 20 936 | | | present, intensely fractured | | 1 | | (0) | | | | | |
| 934 | | MICA | | | Ш | | | | | | | |
| | | SCHIST | | | | | | | | | | |
| 932 | <u>- ////////////////////////////////////</u> | | | | RC | | 95 | | | | | |
| 25 | - 1//// | | | | 2 | | (50) | | | | | |
| 930 | | | | | Ш | | | | | | | |
| 928 | _ <i>\[\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i> | | Bottom of hole at 27.0 feet. | | | | | | | | | |
| | _ | | | | | | | | | | | |
| 926 | <u>}</u> | | | | | | | | | | | |
| | - | | | | | | | | | | | |
| 924 | <u> </u> | | | | | | | | | | | |
| 922 | - | | | | | | | | | | | |
| | _ | | | | | | | | | | | |
| 920 | <u>) </u> | | | | | | | | | | | |
| <u> </u> | - | | | | | | | | | | | |
| _918 | <u>5</u> _ | | | | | | | | | | | |
| - | _ | | | | | | | | | | | |

| MC ² |
|------------------------------|
| GEOTECHNICAL • ENVIRONMENTAL |

| GEOTE | CHNICAL•ENV MATERIALS TE | RONMENTAL STING | | | | | | | | | | |
|-------------|-----------------------------|----------------------|--|------------------------|-----------------------|-----------------------------|-----------------|-------|-------|------------------|--------------|-------------|
| CLIEN | т <u>н</u> и | ITB | | PROJECT NAME Win | ndy Hill | Road - Ter | rell Mill | Road | Conn | ector | | |
| PROJ | ECT N | UMBER | A121503.122 | PROJECT LOCATION | Marie | ta, Cobb C | ounty, | Georg | gia | | | |
| DATE | STAR | TED _2/ | 10/17 COMPLETED 2/10/17 | GROUND ELEVATION | 934 ft | | HOLE | SIZE | 4" | | | |
| DRILL | ING C | ONTRAC | CTOR MC Squared, Inc. | GROUND WATER LEV | /ELS: | | | | | | | |
| DRILL | ING M | ETHOD | Hand/Power Auger | AT TIME OF DRI | LLING | GNA | | | | | | |
| LOGG | ED BY | Amir I | Moussly CHECKED BY P. Vaddu | AT END OF DRIL | LING | | | | | | | |
| NOTE | S _Sta | . 114+0 | 0, 40'L | AFTER DRILLING | G <u></u> | | | | | | | |
| | O | | | | Ш | | % | | SPT | N VA | LUE (| |
| £ (\$ | ELEV. (π) GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | <u>ک</u> ش | ⊕ OR | GANI | MC MC | TENT | - % ⊕ |
| DEPTH (ft) | ELEV. (II) | S G ymb | MATERIAL DESCRIPTION | N | J.E. | A PLO | NS S | | PL | MC | LL | |
| 급 | 7 ¥ | OSC S | | | AMP | moz | COUNTY SECON | □FI | NES (| _ _ _ | ENT (9 | ——— %) □ |
| 0 | 0 | | | | S | | IL. | 2 | 0 4 | 0 6 | 0 8 | 0 |
| | | | Dark brown, brown, micaceous, silty SAND fragments | with organics and rock | | | | | | | | |
| 9: | 32 | SM | | | }} на | | | | | | | |
| | | | | | | | | | | | | |
| | 30_ | | Auger refusal at 3' Bottom of hole at 3.0 for | -et | | | | | | | | |
| <u> </u> | <u> </u> | | Bottom of hole at 0.0 is | | | | | | | | | |
| | _ | | | | | | | | | | | |
| [9, | 28_ | | | | | | | | | | | |
| | _ | | | | | | | | | | | |
| 9: | 26_ | | | | | | | | | | | |
| _ | _ | | | | | | | | | | | |
| 9: | 24_ | | | | | | | | | | | |
| - | _ | | | | | | | | | | | |
| 9: | 22_ | | | | | | | | | | | |
| L | _ | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
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| [g. | - 18 | | | | | | | | | | | |
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| | _ 16 | | | | | | | | | | | |
| Pa | 16_ | | | | | | | | | | | |
| - | | | | | | | | | | | | |
| <u> 1</u> 9 | 14_ | | | | | | | | | | | |
| F | - | | | | | | | | | | | |
| 9 | 12_ | | | | | | | | | | | |
| F | _ | | | | | | | | | | | |
| 9 | 10_ | | | | | | | | | | | |
| L | _ | | | | | | | | | | | |
| | 08_ | | | | | | | | | | | |
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| 9 | _ 06_ | | | | | | | | | | | |
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| a | 04_ | | | | | | | | | | | |
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| ō | GEOTECHNIC MATE | AL · ENVIR | | | |
|------------|--------------------|-------------|----------------------|---|--|
| CLI | ENT | HN | ТВ | | PROJECT NAME Windy Hill Road - Terrell Mill Road Connector |
| PRO | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION Marietta, Cobb County, Georgia |
| DA | TE ST | TAR1 | ΓED _1/3 | 30/17 COMPLETED 1/30/17 | GROUND ELEVATION 954 ft HOLE SIZE 6" |
| DRI | LLIN | G CC | ONTRAC | CTOR Tri-State Drilling, LLC | _ GROUND WATER LEVELS: |
| DRI | LLIN | G MI | ETHOD | Hollow Stem Auger | AT TIME OF DRILLING GNA |
| LO | GGED | BY | Basar | nta Dhakal CHECKED BY P. Vaddu | AT END OF DRILLING |
| | | | . 114+50 | | AFTER DRILLING |
| | | | | | |
| Œ | | 90 | dn | | W SPT N VALUE ● |
| E | /. (ff.) | 2 | Gro Jode | MATERIAL DESCRIPTION | HE WE THE SECTION OF |
| DEPTH (ft) | ELEV. | GRAPHIC LOG | USCS Group Symbol | WATERIAL DESCRIPTION | AMPLE TY NUMBER TY NUMBER TY SCOUNTS OCCUPY OCCUPY AMPLE TY OCCUPY OCC |
| | " | GR/ | S) | | \omega \ |
| 0 | | | | Asphalt | 20 40 60 80 |
| | ļ - | <u> </u> | | Graded aggregate base | |
| | 952 | | | No sample retrieved (0' - 2') | |
| | | | | Medium dense to very dense, brown, gray, mi | caceous, silty SAND |
| _ | 950 | | | | 1 (17) |
| | 000 | | | Rock fragments (2' - 8') | SS 3-11-12-12 |
| 5_ | † - | | | | 2 (23) |
| | 948 | | | | |
| | - 1 | | | | \forall SS 6-11-7-11 |
| | 946 | | | | /\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ |
| | | | | | SS 4-12-13-10 |
| 10 | 944 | | | | 4 (25) |
| | | | | | |
| | 042 | | | | |
| | 942 | | | | |
| | + - | | SM | | |
| | 940 | | | | |
| 15 | ↓ - | | | | 5 (42) |
| | 938 | | | | |
| | | | | | |
| | 936 | | | | |
| _ | | | | | |
| | | | | | SS 11-37- 6 50/5" A□ >> |
| 20 | 934 | | | Rock fragments (18.5' - 24') | Bottom of Cut |
| | - 1 | | | | South Circuit |
| | 932 | | | | |
| | ļ . | | | | |
| | 930 | | | Auger Refusal at 24' | SS 50/4" >>> |
| | | | | Bottom of hole at 24.0 fee | zt. 7 |
| | 928 | | | | |
| | 120 | - | | | |
| | <u> </u> | - | | | |
| | 926 | - | | | |
| | ļ | - | | | |
| | 924 | _ | | | |
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| V | TA | 1 | +X) | |
| GEOT | ECHNICA MATER | AL•EN | VIRONME | NTAL |

| i | GEOTECHNI MATI | CAL•ENVI | RONMENTAL STING | | | | | | | | | | |
|------------|-------------------|-------------|----------------------|--|--------------------|-------------------------|-----------------------------|------------------|-------|--------|-------|-----------------|-------------------|
| | ENT | | | | PROJECT NAME _Wind | dy Hill I | Road - Ter | rell Mil | Roac | l Conn | ector | | |
| PR | OJEC | T N | UMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE S | TAR | TED _2/8 | 8/17 COMPLETED 2/8/17 | GROUND ELEVATION | 908 ft | | HOLE | SIZE | 4" | | | |
| DRI | LLIN | G C | ONTRAC | CTOR MC Squared, Inc. | GROUND WATER LEVI | ELS: | | | | | | | |
| DRI | LLIN | G M | ETHOD | Hand/Power Auger | AT TIME OF DRIL | LING | GNA | | | | | | |
| LO | GGEI | D BY | Amir M | Moussly CHECKED BY P. Vaddu | AT END OF DRILL | ING _ | | | | | | | |
| NO. | TES | Sta | . 115+50 | D, 46'L | AFTER DRILLING | <u></u> | | | | | | | |
| | | ניו | | | | Ш | | % | | SPT | N VA | LUE (| |
| Œ | Œ. | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | SZ E) | \ \ \ \ | ⊕ OR | GANI | C CON | 1TENT | <u>-</u> - % ⊕ |
| DEPTH (ft) | ELEV. (ft) | 呈 | S Gr | MATERIAL DESCRIPTION | | LE 1 MBE | BLOW COUNTS (N VALUE) | | | PL | MC | LL ENT (% | |
| Ë | | ₩ | SCS | | | MP | | Si R | | HEC. | CONT | | |
| 0 | | 9 | | | | S/ | | 2 | 2 | NES (| .0 6 | = N 1 (7 0 8 | ″) ⊔ 0 |
| | | | | Dark brown, brown, silty SAND | | $ \lambda $ | | | | | | | |
| | 906 | | SM | Organics (0' - 2') | | | | | | | | | |
| | _900 | | Sivi | | | | | | | | | | |
| | | | | Rock fragments (2' - 3.5') | | $\left\{ \right\}_{HA}$ | | | | | | | |
| | 904 | | MH | Brown, sandy elastic SILT with some organics | | <u> </u> | | | | | | | |
| _5_ | ├ - | - | SP-SM | Dark brown, SAND with silt | | | | | | | | | |
| | 902 | - 11 | SF-SIVI | | | $ \cdot $ | | | | | | | |
| | ├ - | | 1 | Auger refusal at 7' | | 11 | | | | | | | |
| | 900 | _ | | Bottom of hole at 7.0 feet. | | | | | | | | | |
| | ļ., | _ | | | | | | | | | | | |
| | 898 | <u>.</u> | | | | | | | | | | | |
| | L. | _ | | | | | | | | | | | |
| | 896 | _ | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 894 | _ | | | | | | | | | | | |
| | | _ | | | | | | | | | | | |
| | 892 | _ | | | | | | | | | | | |
| | _032 | _ | | | | | | | | | | | |
| | - | _ | | | | | | | | | | | |
| | 890 | _ | | | | | | | | | | | |
| | - | - | | | | | | | | | | | |
| | 888 | <u>-</u> | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | _886 | <u>-</u> | | | | | | | | | | | |
| | | _ | | | | | | | | | | | |
| | 884 | <u>.</u> | | | | | | | | | | | |
| | L. | _ | | | | | | | | | | | |
| | 882 | _ | | | | | | | | | | | |
| | | _ | | | | | | | | | | | |
| | 880 | | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | 878 | - | | | | | | | | | | | |
| | ا م رو | _ | | | | | | | | | | | |
| | F - | _ | | | | | | | | | | . | |



| GEOTECHNI MAT | CAL+ENVIR ERIALS TEST | ONMENTAL ING | | | | | | | | | | |
|--------------------------|--------------------------|----------------------|---|----------------------|-----------------------|-----------------------------|----------------|-------------|-------|-------|-----------|-----------|
| CLIENT | HN | ГΒ | | PROJECT NAME Win | ıdy Hill | Road - Terr | rell Mil | l Road | Conne | ector | | |
| PROJEC | T NU | IMBER | A121503.122 | PROJECT LOCATION | Mariet | tta, Cobb C | ounty, | Georg | jia | | | |
| DATE S | TART | ED _8/3 | 31/17 COMPLETED 8/31/17 | GROUND ELEVATION | 907 ft | | HOLE | SIZE | 6" | | | |
| DRILLIN | G CC | NTRAC | TOR Big Dog | GROUND WATER LEV | ELS: | | | | | | | |
| DRILLIN | IG ME | THOD | Hollow Stem Auger | AT TIME OF DRI | LLING | GNE | | | | | | |
| LOGGEI | D BY | A. Mou | ussly CHECKED BY P. Vaddu | AT END OF DRIL | LING | | | | | | | |
| NOTES | Sta. | 116+28 | 3, 44'L | AFTER DRILLING | 3 <u></u> | | | | | | | |
| | ניו | | | | ш | | % | | SPT | N VAI | UE • |) |
| £ £ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | ZE GE | ≿ _ | ⊕ OR | GANIC | CON | TENT | % ⊕ |
| DEPTH (ft) ELEV. (ft) | 위 | S G /mb | MATERIAL DESCRIPTION | | LE . | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | PL | MC | ĻĻ | |
| | RAF | JSC | | | AMP | a O S | | | NES C | ONTE | NT (% | —— ا ۱ |
| 0 | G | | | | Ŋ | | ~ | 2 | | | | |
| 906 | | | Loose to very dense, reddish brown to brown, gra silty SAND, micaceous | ay to grayish brown, | ∫ ss | | | $ _{ullet}$ | | | | |
| +- | - | | o, o, | | 1 | (8) | - | $ \ \ $ | | | | |
| 904 | - | | | | SS 2 | 5-7-7-7 (14) | | 🛉 | | | | |
| 5 902 | | | | | SS | 4-9-10-10 | 1 | | | | | |
| | | | | | 3 | (19) | | 7 | | | | |
| 900 | | | | | SS 4 | 21-18-4- 50/4" | | | | | | >> |
| . + | - | SM | | | | | 1 | | | | | |
| 898 | | | | | SS 5 | 21-4-4-4 (8) | | | | | | |
| 896 | | | | | | | 1 | | | | | |
| | | | | | | | | | | | | |
| 894 | - | | | | | | | | | | | |
| + | - | | | | X $\frac{SS}{6}$ | 8-23-50/2" | 1 | | | | | >>(|
| <u>15</u> 892 | 4111 | | Auger Refusal at 16 feet. | | | | 1 | | | | | |
| 890 | | | (16' - 31') MICA SCHIST (quartz, biotite, muscov | ite, feldspar) gray, | | | | | | | | |
| | | | black white, moderately soft to moderately hard, highly weathered, 25 to 30 degree foliation, medi | um to coarse | RC | | 58 | | | | | |
| 888 | | | grained, FeOx staining present, intensely fracture | ed, planar | 1 | | (36) | | | | | |
| 20 | | | | | Ш | | | | | | | |
| 886 | | | | | H | | | | | | | |
| 884 | | | | | 11 | | 40 | | | | | |
| | <i>V////</i> | MICA SCHIST | | | RC 2 | | (8) | | | | | |
| <u>25</u> 882 | | | | | Ш | | | | | | | |
| . + . | | | | | H- | | | - | | | | |
| 880 | | | | | Ш | | | | | | | |
| 878 | | | | | RC 3 | | (60) | | | | | |
| 30 | | | | | \prod | | (00) | | | | | |
| 876 | | | Bottom of hole at 31.0 feet. | | Ш | | | - | | | | |
| 07. | - | | bolloni di fidie al 31.0 feet. | | | | | | | | | |
| _874 | - | | | | | | | | | | | |
| 872 | _ | | | | | | | | | | | |
| | _ | | | | | | | | | | | |
| 870 | _ | | | | | | | | | | | |
| - | - | | | | | | | | | | | |
| _868 | - | | | | | | | | | | | |



| | MATE | RIALS TEST | ING | | | | | | | | | | | | |
|-------------------|------------|-------------|----------------------|--------------|---------------------|-----------------------|------------------|---|-----------------------------|----------|--|-------|-------|-------|-------|
| CLI | ENT | HN | ТВ | | | | PROJECT NAME Win | dy Hill | Road - Ter | ell Mill | Road | Conn | ector | | |
| | | | | A121503.122 | | | PROJECT LOCATION | | | | | | | | |
| | | | | | | | GROUND ELEVATION | | <u>:</u> | HOLE | SIZE | 6" | | | |
| | | | | | | | GROUND WATER LEV | | | | | | | | |
| | | | | Hollow Stem | | | | LING | GNA | | | | | | |
| LOC | GGED | BY | Basan | ta Dhakal | CHECKED BY | P. Vaddu | AT END OF DRILI | LING _ | | | | | | | |
| NO. | TES _ | Sta. | 116+50 |), 20'R | | | AFTER DRILLING | | | | | | | | |
| | | G | 0 | | | | | Щ | | % | | | N VAL | | |
| # | Œ | GRAPHIC LOG | USCS Group Symbol | | | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | \\ \(\) | ⊕ OR(| GANIC | CON | TENT | - % ⊕ |
| DEPTH (ft) | ELEV. (ft) | 불 | SS G ymb | | MATERIA | AL DESCRIPTION | | ?LE JMB | A P | NS PS | F | PL | MC | ĻĻ | |
| В | ᆸ | ₽. | OSC S | | | | | AMF | mož |) | □FIN | NFS (| CONTE | NT (9 | 6) [] |
| 0 | | 9 | | | | | | 'S | | ~ | 20 |) 4 | 0 60 |) 80 | 0 |
| | | | | Medium de | ense, dark brown, | gray, silty SAND wit | th rock | \bigvee_{SS} | 4-7-5-4 | | | | | | |
| _ | 906 | | | | | | | 1 | (12) | | T | | | | |
| | 500_ | | | | | | | ss | 4-6-7-7 | | | | | | |
| | | | SM | | | | | $\begin{vmatrix} 1 & 33 \\ 2 & 2 \end{vmatrix}$ | (13) | | 🕈 | | | | |
| | 904_ | | | | | | | $\left\langle \cdot \right\rangle$ | | - | $ \ $ | | | | |
| 5_ | | | | | | | | $\begin{vmatrix} SS \\ 3 \end{vmatrix}$ | 4-9-9-7 (18) | | | | | | |
| | 902 | | | Stiff brow | n reddish brown I | ight brown, sandy e | lastic SII T | $\langle \cdot \rangle$ | (- / | | / | | | | |
| | - | | | Micaceous | s (6' - 8') | ight brown, sandy c | idolic OIL1 | ss | 3-3-6-7 (9) | | | • | | | |
| | 900 | | МН | | | | | | (9) | | | | | | |
| | _ | | | | | | | ∖/ ss | 3-5-5-6 | | | | | | |
| 10 | 898 | | | | | | | 5 | (10) | | | | | | |
| | | | | Medium de | ense, dark gray, m | icaceous, SAND wit | th silt | | | | | | | | |
| | 896 | | | | | | | | | | | | | | |
| | _090_ | | | | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | |
| | 894_ | | | | | | | SS 6 | 6-7-6 (13) | | | | | | |
| 15_ | | | | Rock fragr | ments (15' - 22.5') | | | / \ 0 | (13) | | \vdash | | | | |
| | 892 | | SP-SM | r took iragi | | | | | | | \ | | | | |
| | ┞ - | | OI OIVI | | | | | | | | \ | | | | |
| _ | 890 | | | | | | | | | | │ | | | | |
| | L _ | | | | | | | √ss | 4-11-14 | | | \ | | | |
| 20 | 888_ | | | | | | | 7 | (25) | | | • | | | |
| | | | | | | | | | | | | | | | |
| | 886 | | | | | | | | | | | | | | |
| | _000_ | | | Auger Ref | usal at 22.5' | | | | | | | | | | |
| | | | | | Bottom | of hole at 22.5 feet. | | | | | | | | | |
| | _884_ | . | | | | | | | | | | | | | |
| | | . | | | | | | | | | | | | | |
| | 882 | | | | | | | | | | | | | | |
| | ļ - | . | | | | | | | | | | | | | |
| | 880 | . | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | |
| | 878_ | | | | | | | | | | | | | | |
| | [, 0 | . | | | | | | | | | | | | | |
| | F - | . | | | | | | | | | | | | | |

BORING ID: WB3-03 Soil Profile **CLIENT** HNTB **PROJECT NAME** Windy Hill Road - Terrell Mill Road Connector PROJECT LOCATION Marietta, Cobb County, Georgia PROJECT NUMBER A121503.122 **COMPLETED** 12/17/18 GROUND ELEVATION 906.5 ft HOLE SIZE 6" DATE STARTED 12/17/18 DRILLING CONTRACTOR M&W Drilling **GROUND WATER LEVELS:** DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING GNE LOGGED BY A. Moussly CHECKED BY P. Vaddu AT END OF DRILLING _---NOTES Sta. 117+44, 43'L AFTER DRILLING _---● SPT N VALUE ● GRAPHIC LOG SAMPLE TYPE NUMBER USCS Group Symbol BLOW COUNTS (N VALUE) DEPTH (ft) ELEV. (ft) RECOVERY (RQD) ⊕ ORGANIC CONTENT % ⊕ MATERIAL DESCRIPTION MC ☐ FINES CONTENT (%) ☐ 40 60 906 2 inches of ASPHALT, 2 inches of GRAVEL Very loose to very dense, reddish brown to brown, grayish brown to gray, white, silty SAND, micaceous 904 SS 8-8-9-9 (17)1 902 SS 5-6-8-9 (14)900 SS 5-4-4-6 3 (8) 898 SS 5-4-7-10 4 (11)896 894 √ss 5-6-5 892 (11)890 888 √/ss 3-1-1 (2) SM _886_ 884 SS 7 3-7-5 882 (12)880 878 SS 8 2-2-3 (5) 876 874

872

870

868

35

√|ss

10

4-4-5

(9)

3-5-6

(11)



BORING ID: WB3-03

PROJECT NAME Windy Hill Road - Terrell Mill Road Connector CLIENT HNTB PROJECT NUMBER A121503.122 PROJECT LOCATION Marietta, Cobb County, Georgia SAMPLE TYPE NUMBER ● SPT N VALUE ● GRAPHIC LOG USCS Group Symbol BLOW COUNTS (N VALUE) RECOVERY ((RQD) DEPTH (ft) ELEV. (ft) ⊕ ORGANIC CONTENT % ⊕ MATERIAL DESCRIPTION MC ☐ FINES CONTENT (%) ☐ 40 60 866_ Very loose to very dense, reddish brown to brown, grayish brown to gray, white, silty SAND, micaceous 864 6-7-11 862 (18)860 858 7-7-10 (17)856_ 854 SS 13 5-7-12 852 (19)55 SM 850 848 SS 14 9-13-19 60 (32)_846_ 844 SS 15 19-27-40 842 (67)840 838 SS 16 22-32-50 (82) _836_ Bottom of hole at 70.0 feet. 834_ 832_ 830 828_ 826_ 824_ 822_



| , | MATER | IALS TEST | ING | | | | | | | | | |
|------------------------------|------------|-----------------|----------------------|--|----------------------|-----------------------|-----------------------------|----------------|---------------|---|--------|----------|
| CLI | ENT . | HN [*] | ТВ | | PROJECT NAME Win | dy Hill | Road - Ter | rell Mill | Road C | onne | ctor | |
| PRO | JEC. | ΓNU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | County, | Georgia | 1 | | |
| DA | E ST | ART | ED _1/3 | 31/17 COMPLETED 1/31/17 | GROUND ELEVATION | 910 ft | | HOLE | SIZE _6 | <u>}" </u> | | |
| DRI | LLING | CC | ONTRAC | CTOR Tri-State Drilling, LLC | GROUND WATER LEV | ELS: | | | | | | |
| DRI | LLING | S ME | ETHOD | Hollow Stem Auger | AT TIME OF DRIL | LING | GNA | | | | | |
| LO | GED | BY | Basan | ta Dhakal CHECKED BY P. Vaddu | AT END OF DRIL | LING | | | | | | |
| NO | res _ | Sta. | 120+00 |), 20'R | AFTER DRILLING | ; <u></u> | | | | | | |
| | | ני | | | | ш | | % | • ; | SPT N | N VALU | IE • |
| $\widehat{\boldsymbol{\Xi}}$ | (£) | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | _SE(E) | \} (| | | | ENT % 6 |
| DEPTH (ft) | ELEV. (ft) | 일 | S Amb | MATERIAL DESCRIPT | ION | LE . | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | Ρļ | L N | | LL - |
| | | ₹ | JSC S | | | M S | SCB | N | | | | <u> </u> |
| 0 | | ਹ | _ | | | <i>'</i> S | | <u>~</u> | 20 | 40 | | 80 80 |
| | | | | Medium dense, grayish brown, reddish bro | wn, dark brown, | | | | | Ī | | |
| | | | | micaceous, silty SAND | | | | | | | | |
| | 908_ | | | | | // | | 1 | | | | |
| | | | | | | SS 1 | 3-5-7-8 (12) | | • | | | |
| | 906_ | | | | | \leftarrow | ` ′ | + | | | | |
| 5 | | | SM | | | | 5-6-6-8 (12) | | lacksquare | _ | _ | |
| | 904_ | | | | | | (12) | _ | | | | |
| | | | | | | √ ss | | | | | | |
| | 902 | | | | | 3 | (12) | | | | | |
| | | | | | | \bigvee_{ss} | 4-9-8-6 | | | | | |
| 10 | 900 | | | | | 4 | (17) | | | | | |
| 10 | 300 | | | Firm to stiff, reddish brown, dark brown, mi | icaceous, sandy SILT | | | 1 | | \neg | | |
| | | | | | | | | | | | | |
| | 898_ | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | 896_ | | | | | √ss | 3-3-3 | | | | | |
| 15_ | | | ML | | | <u> 5</u> | (6) | | | _ | | |
| | 894 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | 892 | | | | | | | | | | | |
| | | | | | | 100 | 500 | + | | | | |
| 20 | 890 | | | | | SS 6 | 5-6-6 (12) | | $ \bullet $ | | | |
| 20_ | 000 | | | Medium dense, dark brown, gray, micaceo | us, silty SAND | | | 1 | | | | |
| | | | | | | | | | | | | |
| | _888_ | | | | | | | | \ | | | |
| | | | | | | | | | | | | |
| | _886_ | | | | | √ss | 5-18-11 | | | | | |
| 25 | | | SM | Pook fragments (201, 251) | | 7 | (29) | - | | \vdash | | |
| | 884_ | | | Rock fragments (20' - 25') | | | | | / | | | |
| | | | | | | | | | / | | | |
| _ | 882 | | | | | | | | | | | |
| _ | | | | | | 100 | F 7 10 | - | | | | |
| 30 | 880 | | | | | SS 8 | 5-7-13 (20) | | • | | | |
| 50 | 000 | .1-1 | | Bottom of hole at 30.0 |) feet. | V V | | 1 | | + | + | |
| | | | | | | | | | | | | |



| ō | GEOTECHNIC/ MATER | AL•ENVI | RONMENTAL STING | | | | | | | | | | |
|------------|----------------------|-------------|----------------------|---|-------------------------------------|------------------------------|---|------------------|--------|---------------------------|-----------------|---|------------|
| | ENT | | | | PROJECT NAME Win | ndy Hill I | Road - Terr | ell Mil | l Road | Conne | ector | | |
| PR | OJEC. | T N | UMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | ia | | | |
| DA | ΓE ST | AR | TED <u>12</u> | /19/18 COMPLETED 12/19/18 | GROUND ELEVATION | 910 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLING | G C | ONTRAC | TOR M&W Drilling | | | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRI | | | | | | | | |
| | | | | ussly CHECKED BY P. Vaddu | | | | | | | | | |
| NO. | TES _ | Sta | . 120+58 | 3, 15'L | AFTER DRILLING | G | | ı | | | | | |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY % (RQD) | | GANIC PL I NES C | MC A ONTE | ITENT LL —————————————————————————————————— | 「%⊕ %)□ |
| 0 | | 1914. | | 0.2 feet of ASPHALT, 0.3 feet of GRAVEL | | 100 | 6.0.6 | | |) 40 |) (00 |) 0 | |
| 5 - | 908 | | SM | Medium dense, brown to dark reddish to orange by with rocks | orown, silty SAND | SS 1 SS 2 SS 3 SS 4 | 6-9-6 (15) 6-5-7-10 (12) 6-6-5-7 (11) 5-7-10-14 (17) | | | | = | | |
| | 902 | | | Very dense, brownish gray, SAND with silt | | ss | 17-24-40- | | | | | | |
| 10 | 900 | | SP-SM | | | 5 | 43 (64) | | | | | | |
| | 898 896 894 | | SM | Very dense, grayish brown, silty SAND, micaceou | 15 | SS 6 | 31-18- 50/5" | | | | | | >> |
| | 892 | | | Auger Refusal at 19.1 feet. | | ss | 50/0" | | | | | | >> |
| 20 | 890 888 886 | | MICA SCHIST | rractured, pianar, smootn. | o hard, slightly to um to coarse | RC 1 | | 94 (64) | | | | | |
| | | | | Bottom of hole at 24.1 feet. | | | | | | | | | |
| | _884_ | | | | | | | | | | | | |
| | _882 | | | | | | | | | | | | |
| | 880 | | | | | | | | | | | | |
| | 878_ | | | | | | | | | | | | |
| | 876_ 874_ | | | | | | | | | | | | |
| | 872 | | | | | | | | | | | | |
| | - | | | | | | | | | | | | |



| ō | GEOTECHNIC MATE | AL•ENVIR | RONMENTAL TING | | | | | | | | | | |
|------------|--------------------|-------------|----------------------|---|------------------|-----------------------|-----------------------------|------------|-------|-------------|-------|--------------------|---------------|
| CLI | ENT | HN | ТВ | | PROJECT NAME Win | ıdy Hill I | Road - Terr | ell Mil | Road | l Conn | ector | | |
| PRO | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE ST | 'AR1 | ΓED _1/3 | 81/17 COMPLETED 1/31/17 | GROUND ELEVATION | 910 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G CC | ONTRAC | TOR Tri-State Drilling, LLC | GROUND WATER LEV | ELS: | | | | | | | |
| DRI | LLIN | G MI | ETHOD | Hollow Stem Auger | AT TIME OF DRIL | LING | GNA | | | | | | |
| LO | GGED | BY | Basan | ta Dhakal CHECKED BY P. Vaddu | AT END OF DRIL | LING _ | | | | | | | |
| NO. | TES . | Sta | . 122+00 |), 20'R | AFTER DRILLING | · <u></u> | | | | | | | |
| | | Ö |) | | | Й | | % | | SPT | N VA | LUE • | , |
| (#) | £ | 2 | roup | | | 두띪 | ^ ⊤S UE) | RY ((| ⊕ OR | GANI | CON | TENT | - % ⊕ |
| DEPTH (ft) | ELEV. (ft) | 분 | SS G ymb | MATERIAL DESCRIPTION | | ٦ MB | BLOW COUNTS (N VALUE) | OVE RQE | | PL | MC | LL | |
| | 🗖 | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | mo's |) SEC(| □FI | NES (| CONTE | LL LL ENT (% | ——— ⁄⁄6) □ |
| 0 | | O | | | | Ø | | ч | 2 | 0 4 | 0 6 | 0 8 | 0 |
| | L. | 7 | | Asphalt Graded aggregate base | | | | | | | | | |
| | 908 | | | No sample retrieved (0' - 2') | | | | | | | | | ı |
| | | | | Medium dense, light brown, brown, gray, white, in Micaceous (2' - 8') | SAND with silt | \bigvee_{SS} | 4-5-7-10 | | | | | | ı |
| _ | 906 | | | Wilcadeous (2 - 0) | | 1 | (12) | | ٦ | | | | ļ |
| 5 | | | | | | Ss | 5-8-9-8 | | \ | | | | |
| | 904 | | | | | 2 | (17) | | • | | | | |
| | 1904 | F: 1H: | SP-SM | | | | 5-7-10-15 | | | | | | ļ |
| | - | | 0 | | | 3 | (17) | | • | | | | ļ |
| | 902 | | | | | \ | | | | \setminus | | | ļ |
| | + - | | | | | | 5-17-12-19 (29) | | | > | | | ļ |
| 10 | 900 | | | | | <u> </u> | | | | | | | |
| | - + | | | ─ Auger Refusal at 11.2' | | | | | | | | | ı |
| | _898_ | | | Bottom of hole at 11.2 feet. | | | | | | | | | ı |
| | | - | | | | | | | | | | | ļ |
| | 896 | - | | | | | | | | | | | ļ |
| | | - | | | | | | | | | | | ı |
| | 894 | | | | | | | | | | | | ļ |
| | ļ . | - | | | | | | | | | | | ļ |
| | 892 | | | | | | | | | | | | ļ |
| | L _ | | | | | | | | | | | | ļ |
| | 890 | | | | | | | | | | | | ļ |
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| | 888 | _ | | | | | | | | | | | ļ |
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| | 886 | | | | | | | | | | | | ļ |
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| | 884 | - | | | | | | | | | | | ı |
| | _004_ | - | | | | | | | | | | | ı |
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| | 882 | - | | | | | | | | | | | ı |
| | - | - | | | | | | | | | | | ı |
| | 880 | | | | | | | | | | | | ı |
| | L - | - | | | | | | | | | | | |



| ō | | AL · ENVI | RONMENTAL STING | | | | | | | | | | |
|-------------------|------------|-------------|----------------------|--|-------------------|-----------------------|-----------------------------|----------------|---------|---------|-------|--------|----------|
| | ENT | | | | PROJECT NAME _Wir | ndy Hill | Road - Teri | ell Mil | ll Road | l Conn | ector | | |
| PR | OJEC | TN | UMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | , Georg | gia | | | |
| DA | TE ST | 'AR | TED _12 | /19/18 COMPLETED 12/19/18 | GROUND ELEVATION | 909 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G C | ONTRAC | TOR M&W Drilling | | | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRI | | | | | | | | |
| | | | | ussly CHECKED BY P. Vaddu | | | | | | | | | |
| NO. | TES | Sta | . 122+17 | /, 15'L | AFTER DRILLING | G | Ι | 1 | 1 | | | | |
| | | 90 | dr | | | 된 | | % | | | N VAI | | |
| Ħ. | /. (ft) | <u>C</u> L | Grou | MATERIAL DECORIDATION | | ETY BER | NTS | ER DER | ⊕ OR | | C CON | | |
| DEPTH (ft) | ELEV. (ft) | SRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | PL — | MC | LL | |
| | ш | GR | ns | | | SAN | ا کی | RE(| □FI | | CONTE | | |
| 0 | 908 | THE SE | 1 | 0.2 feet of ASPHALT, 0.3 feet of GRAVEL | | 100 | 10 10 15 | | 2 | 0 4 | 0 60 | 0 80 | <u>J</u> |
| | | | | Medium dense to very dense, brown to grayish b brown, silty SAND, micaceous | rown, orange | SS 1 | (28) | | | • | | | ı |
| | 906 | | | brown, only of the, micadedad | | \\\\ss | 12-12-13- 15 | | | | | | ı |
| | ļ | | - | | | 2 SS | (25) 8-7-22- | | | | | | |
| 5 | 904 | | | | | 3 | 50/2" | | | | | | >> |
| | 902 | | SM | | | ≥SS | 50/4" | | | | | | >> |
| | Į . | | SIVI | | | 4 | | | | | | | |
| | 900 | | | | | SS 5 | 24-15-42- 50/4" | | | | | | >> |
| 10 | т - | | | | | 7 1 - | | - | | | | | |
| | 898 | | : | | | | | | | | | | ļ |
| | 896 | | | | | | | | | | | | ļ |
| | - | | | Very dense, brownish gray, SAND with silt | | ⊠ss | 50/5" | | | | | | >> |
| 15 | 894 | | SP-SM | Auger Refusal at 15.7 feet. | | \6_ | | | | | | | |
| | 892 | - | | Bottom of hole at 15.7 feet. | | | | | | | | | ı |
| | | - | | | | | | | | | | | ı |
| | 890 | - | | | | | | | | | | | ı |
| | | - | | | | | | | | | | | ı |
| | _888 | - | | | | | | | | | | | ı |
| | 886 | - | | | | | | | | | | | ļ |
| | | - | | | | | | | | | | | ļ |
| | _884_ | - | | | | | | | | | | | ļ |
| | 882 | - | | | | | | | | | | | ļ |
| | | - | | | | | | | | | | | |
| | 880 | - | | | | | | | | | | | ļ |
| | | - | | | | | | | | | | | |
| | <u>878</u> | - | | | | | | | | | | | |
| | _ _876_ | - | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | 874 | - | | | | | | | | | | | |
| | 872 | - | | | | | | | | | | | ļ |
| | 012 | - | | | | | | | | | | | ı |
| | 870 | - | | | | | | | | | | | |

| MC ² |
|---|
| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING |

| ō | GEOTECHNICA MATER | AL•ENVI | RONMENTAL STING | | | | | | | | | | | |
|-----------------|----------------------|-------------|----------------------|---|--------------------------------------|-------------|-----------------|----------------------|-------|-------|-------------|-------|---------------|-------|
| CLI | ENT | HN | ТВ | | PROJECT NAME Win | ıdy Hi | I Road - 1 | errell l | Mill | Road | Conn | ector | | |
| PR | OJEC | T N | JMBER | A121503.122 | PROJECT LOCATION | Mari | etta, Cobl | Coun | ty, | Georg | ia | | | |
| DA ⁻ | TE ST | AR | TED _12 | /18/18 COMPLETED 12/18/18 | GROUND ELEVATION | 918 | ft | _ но | LE | SIZE | 6" | | | |
| | | | | TOR M&W Drilling | | _ | | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRI | | | | | | | | | |
| | | | | CHECKED BY P. Vaddu | | | | | | | | | | |
| NO | IES _ | Sta | . 122+67 | 7, 86°R | AFTER DRILLING | _ | | | | | | | | |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE | BLOW | (N VALUE) RECOVERY % | (RQD) | ⊕ OR | GANIO PL | MC | ITENT | - % ⊕ |
| 0 | | ß | ر | | | /S | | R | | 20 | | | ENT (9 0 8 | , |
| | 916 | | SM | 0.1 feet of ASPHALT, 0.4 feet of GRAVEL Very dense, brown to grayish brown, white, oran with rock fragments Very dense, brown to grayish brown, white, oran | | S S 2 | (69) S 50/3' | | | • | | | | >>(|
| 5 | 914_ | | SP-SM | with rock fragments Auger Refusal at 3.7 feet. Boring offset 8 feet ric | ght. | ≊∖s | | | | | | | | >> |
| · - | 912 910 908 | | | Auger Refusal at 5 feet. (5' - 25') MICA SCHIST (muscovite, quartz, felds white, black, orange, soft to hard, slightly to high 35 degree foliation, medium to coarse grained, staining, intensely to moderately fractured, plana | nly weathered, 30 to some iron-oxite | R | | 3. | - 1 | | | | | |
| 15 | т - | | MICA SCHIST | | | R | | 9: (2 | - 1 | | | | | |
| · - | 902 | | | | | R | | 9 (4 | | | | | | |
| | 896_ 894_ | | | | | R | | 9 (7 | - 1 | | | | | |
| | 892 | | | Bottom of hole at 25.0 feet. | | | | | | | | | | |
| | 890 | | | | | | | | | | | | | |
| | _888_ | | | | | | | | | | | | | |
| | 886_ | | | | | | | | | | | | | |
| | 884 | - | | | | | | | | | | | | |
| | 882 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |



| G | EOTECHNICA MATER | AL•ENVIR RIALS TEST | ONMENTAL TING | | | | | | | | | | |
|------------|---------------------|------------------------|----------------------|--|---------------------------------------|-----------------------|-----------------------------|----------------|-----------------|--------|-------|--------------|-------------|
| | ENT | | | | PROJECT NAME Wir | ndy Hill | Road - Terr | ell Mil | l Road | Conn | ector | | |
| PRO | JEC | T NL | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | jia | | | |
| DAT | E ST | ART | ED _12 | /19/18 COMPLETED 12/19/18 | GROUND ELEVATION | 921 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G CC | NTRAC | TOR M&W Drilling | GROUND WATER LEV | ELS: | | | | | | | |
| DRI | LLIN | G ME | THOD | Hollow Stem Auger | AT TIME OF DRI | LLING | GNE | | | | | | |
| LOC | GED | BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF DRIL | LING | | | | | | | |
| NO | res _ | Sta. | 123+67 | 7, 89'R | AFTER DRILLING | G | | | | | | | |
| | | ധ | _ | | | ш | | % | | SPT | N VA | LUE (|) |
| (# | (#) | 10 | roup | | | 무 | V TS UE) | λ (| ⊕ OR | GANIC | CON | ITENT | - % ⊕ |
| DЕРТН (ft) | ELEV. (ft) | 울 | SS G ymb | MATERIAL DESCRIPTION | |) JMB | BLOW COUNTS (N VALUE) | NS/E | | PL | MC | LL — | |
| DE | П | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | moz | RECOVERY (RQD) | □ FII | NES C | | | 6) <u> </u> |
| 0 | | O | | 0.4.6 | | o o | | ш | 20 | 0 4 | | 0 8 | |
| | 920 | | | 0.1 feet of ASPHALT, 0.4 feet of GRAVEL Loose to very dense, brown to grayish brown, re- | ddish brown, silty | | 11-13-17 | | | • | | | |
| | 918 | | | SAND, micaceous, with rock fragments | | 1 | (30) 7-10-8-14 | | | / | | | |
| | 910_ | | | | | 2 | (18) | | | | | | |
| 5 | 916 | | | | | Ss | 2-3-3-3 | | | | | | |
| | | | SM | | | 3 | (6) | | $ \setminus $ | | | | |
| | 914_ | | | | | SS 4 | 5-4-5-4 (9) | | | | _ | | |
| | 912_ | | | | | Ss | 17-50/6" | | | | | | >> |
| 10 | | | | | | 5 | | | | | | | |
| | 910 | | | Auger Refusal at 11 feet. | | | | | | | | | |
| | | | | (11' - 15') MICA SCHIST (muscovite, quartz, feld white, black, orange, soft to moderately hard, moderatel | derately to highly | | | 0.4 | | | | | |
| | 908_ | | | weathered, 20 to 30 degree foliation, medium to iron-oxite staining throughout, intensely fractured | coarse grained, I, planar, smooth. | RC 1 | | 94 (19) | | | | | |
| 15 | 906 | | | | | Ш | | | | | | | |
| | | | | | | | | | | | | | |
| | 904 | | | | | RC | | 100 | | | | | |
| | 902 | | MICA SCHIST | | | 2 | | (23) | | | | | |
| 20 | 902 | | | | | Ш | | | | | | | |
| | 900 | | | | | | | | | | | | |
| | | | | | | RC | | 100 | | | | | |
| | _898_ | | | | | 3 | | (45) | | | | | |
| - 25 | 896_ | | | | | Ш | | | | | | | |
| | _555_ | | | Bottom of hole at 25.0 feet. | | | | | | | | | |
| | 894_ | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 892_ | . | | | | | | | | | | | |
| | 890 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | _888_ | . | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | _886_ | | | | | | | | | | | | |
| | 884 | | | | | | | | | | | | |
| | ļ <u> </u> | . | | | | | | | | | | | |
| | 882 | | | | | | | | | | | | |



| , | MATE | RIALS TES | TING | | | | | | | | | | |
|---|----------|-------------|----------------------|--|-------------------------|---|--|----------------|--------|---------|-------|----------------|--------------|
| CLI | ENT | HN | ТВ | | PROJECT NAME _Win | ndy Hill | Road - Terr | ell Mil | I Road | Conn | ector | | |
| PR | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | _Marie | tta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE ST | 'AR1 | ED <u>12</u> | 2/18/18 | GROUND ELEVATION | 924 f | <u>t </u> | HOLE | SIZE | 6" | | | |
| DR | LLIN | G CC | ONTRAC | CTOR M&W Drilling | GROUND WATER LEV | /ELS: | | | | | | | |
| DR | LLIN | G MI | ETHOD | Hollow Stem Auger | AT TIME OF DR | ILLING | GNE | | | | | | |
| LO | GGED | BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF DRI | LLING | | | | | | | |
| NO | TES . | Sta | 124+32 | 2, 106'R | _ AFTER DRILLIN | G | | | | | | | |
| | | G | _ | | | ш | | % | | ● SPT | N VA | LUE • |) |
| $(\!$ | Œ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | 7 | ⊕ OR | GANI | C CON | ITENT | - % ⊕ |
| DEPTH (ft) | ELEV. | 읡 | S G ymb | MATERIAL DESCRIPTION | | MBI N | APICO | RECOVERY (RQD) | | PL — | MC | LL | |
| DE | ᆸ | RAF | JSC | | | A M | S C B | | | | | ==== ENT (% | ——— (۵) 🗆 |
| 0 | | 9 | 1 | | | Ś | | 2 | 2 | | | 0 80 | |
| | ļ . | | | Loose to medium dense, brown, silty SAND, mi fragments | caceous, rock | \ ss | | | • | | | | |
| | 922 | | SM | nagments | | 1 | (8) | | | | | | |
| | <u> </u> | | | | | SS 2 | | | | | | | |
| | 920 | | | Medium dense to dense, brown to reddish brow | n grav black SAND | + | | | | | | | |
| 5 | 010 | | | with silt, with rock fragments | in, gray, black, critic | $\begin{vmatrix} \begin{vmatrix} SS \\ 3 \end{vmatrix} \end{vmatrix}$ | 8-10-11-11 (21) | | | | | | |
| | 910 | | SP-SM | | | ss | 7-19-15- | - | | | | | |
| | 916 | | | | | 4 | 50/5" | | | | | | >>(|
| | | | SM | Very dense, brown to pale brown, silty SAND, n | nicaceous | √ ss | 40-44-25- 25 | | | | | | |
| 10 | 914 | | | Auger Refusal at 10 feet. | foldonar histita) grav | 5 | (69) | | | | | | |
| | - + | | | (10' - 19.9') MICA SCHIST (muscovite, quartz, the white, black, orange, soft to moderately hard, m | noderately to highly | Ш | | | | | | | |
| | 912 | | | weathered, 30 to 35 degree foliation, medium to iron-oxite staining throughout, intensely fracture | | RC | ; | 38 | | | | | |
| | 910 | | | non exite stamming an outgrout, interiously fractale | a, planar, omoon. | | | (0) | | | | | |
| 15 | | | MICA | | | | | | | | | | |
| | 908 | | SCHIST | | | | | | | | | | |
| | ╽ - | | | | | RC | | 80 | | | | | |
| | 906 | | | | | 2 | | (0) | | | | | |
| | | | | | | Ш | | | | | | | |
| | 904 | | | Bottom of hole at 19.9 feet | | | 1 | | 1 | | | | |
| | 902 | | | | | | | | | | | | |
| | _002_ | | | | | | | | | | | | |
| | 900 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 898_ | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 896 | | | | | | | | | | | | |
| | 894 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 892 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 890 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 888_ | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 001 | | | | | | | | | | | . | |



| | MATE | RIALS TES | TING | | | | | | | | | | |
|------------|------------|-------------|----------------------|---|------------------|-----------------------|--|------------------|--------|--------|-------------|--------|--|
| CLI | ENT | HN. | TB | | PROJECT NAME Wir | ndy Hill | Road - Teri | ell Mil | l Road | l Conn | ector | | |
| PRO | DJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Marie | tta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE ST | ART | TED _12 | /16/18 COMPLETED 12/16/18 | GROUND ELEVATION | 911 ft | <u>t </u> | HOLE | SIZE | _6" | | | |
| | | | | CTOR M&W Drilling | GROUND WATER LEV | | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRI | | | | | | | | |
| | | | | ussly CHECKED BY P. Vaddu | | | | | | | | | |
| NO | ΓES . | Sta. | . 124+94 | 4, 73'L | AFTER DRILLIN | G | T | 1 | | | | | |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY % (RQD) | ⊕ OR | | N VA | | |
| o DE | 🗇 | GRAF | s OSN | | | SAME | mos mos | REC(| | | CONTE | ENT (% | |
| | 910 | | CL | Firm, reddish brown, sandy lean CLAY, micaceo | | SS 1 | 2-4-4-6 (8) | | • | | 4 | | |
| - - | 908 | | МН | Stiff, reddish brown, sandy elastic SILT, micaced | | SS 2 | 5-5-5-6 (10) | - | | ▲⊢ | 1 □ | | |
| | 906 | | | Medium dense to dense, brown to reddish brown silty SAND, micaceous | , grayish brown, | 3 | 7-11-13-15 (24) 10-13-15- | | | | | | |
| - | 904 | | | | | SS 4 | 15 (28) 9-15-17-17 | | | | | | |
| 10 | | | SM | | | 5 | (32) | - | | • | | | |
| _ | 898 | | | | | | | | | | | | |
| 15 | 896 | | | | | SS 6 | 7-14-21 (35) | | | • | | | |
| - | 894 | | | Auger Refusal at 16.7 feet. | | | | | | | | | |
| | | - | | Bottom of hole at 16.7 feet. | | | | | | | | | |
| | 892 | - | | | | | | | | | | | |
| | - 890 | - | | | | | | | | | | | |
| | 090 | - | | | | | | | | | | | |
| | 888 | . | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | 884 | - | | | | | | | | | | | |
| | 882_ | - 1 | | | | | | | | | | | |
| | 880 | | | | | | | | | | | | |
| | _878_ | | | | | | | | | | | | |
| | 876_ | | | | | | | | | | | | |
| | 874 | - | | | | | | | | | | | |
| | 872 | - | | | | | | | | | | | |



| i | GEOTECHNIC MATE | AL•ENVIRO | ONMENTAL ING | | | | | | | | | | | | | |
|------------|--------------------|--------------------------|----------------------|---------------|---------------------|----------------------|--------------------------------------|-----------------------|-----------------------------|----------------|-------------|----------|-------------|--------------|----------|--|
| CLI | ENT | HN ⁻ | ТВ | | | | PROJECT NAME _W | ndy Hill | Road - Teri | ell Mil | l Road | l Conn | ector | | | |
| PR | OJEC | T NL | JMBER | A121503.122 | | | | | | | | | | | | |
| DA | TE ST | ART | ED _2/1 | 1/17 | COMPLETED | 2/1/17 | GROUND ELEVATION 928 ft HOLE SIZE 6" | | | | | | | | | |
| DRI | LLIN | G CC | NTRAC | TOR Tri-State | Drilling, LLC | | GROUND WATER LEVELS: | | | | | | | | | |
| DRI | LLIN | G ME | THOD | Hollow Stem A | luger | | | | | | | | | | | |
| LO | GGED | BY | Basan | ita Dhakal | _ CHECKED BY | P. Vaddu | AT END OF DRII | LING | | | | | | | | |
| NO. | TES | Sta. | 126+50 |), 50'L | | | AFTER DRILLIN | G | | | | | | | | |
| | | Ö | 0 | | | | | Щ | | % | | SPT | N VA | LUE (| • | |
| DEPTH (ft) | Œ | 2.00 | iroul ool | | | | | 두띴 | BLOW COUNTS (N VALUE) | \¥.(| ⊕ OR | GANI | CON | ITENT | Г% Ф | |
| Ή | ELEV. (ft) | 띪 | SS G | | MATERIA | L DESCRIPTION | | PLE | VAL VAL | NS PS | | PL — | MC | LL — | | |
| В | | GRAPHIC LOG | USCS Group Symbol | | | | | SAMPLE TYPE NUMBER | mos | RECOVERY (RQD) | □FI | NES (| | | %) □ | |
| 0 | | · · | | D "11 E" | | | | 0) | | ш. | 2 | | | 0 8 | | |
| | ╽ - | \bowtie | | Possible Fil | II, Brown to dark b | rown to dark gray | | \ ss | | | • | | | | | |
| | 926 | \bowtie | | | | | | 1 | (8) | | | | | | | |
| | | \bowtie | | Heavy orga | anics (2' - 4') | | | V ss | | | | | | | | |
| | 924 | \bowtie | | | | | | 2 | (9) | | | | | | | |
| 5 | | \bowtie | | | | | | √ ss | 3-2-3-2 | | | | | | | |
| | 922 | \bowtie | | | | | | 3 | (5) | | | | | | | |
| | | \bowtie | | Weight of h | nammer (6' - 7.5') | | | \bigvee_{SS} | 0-0-0-2 | | 1 | | | | | |
| _ | 920 | \bowtie | | | | | | 4 | (0) | \ \ \ | - << | | | | | |
| | 020 | \bowtie | | | | | | ss | 2-2-2-4 | | 1 | | | | | |
| 10 | 918 | \bowtie | | | | | | 5 | (4) | | T | | | | | |
| 10_ | 1910 | $\widetilde{\mathbb{M}}$ | | Medium de | nse to dense, brow | wn, reddish brown, | silty SAND | | | | | | | | | |
| | 040 | | | | | | | | | | | | | | | |
| | 916 | | | | | | Bottom of Cut | | | | | | | | | |
| | | | | | | | | | | | \ | | | | | |
| | 914 | | | | | | | SS 6 | 11-11-12 (23) | | (| | | | | |
| 15 | | | | | | | | 1 0 | (20) | | | \vdash | | | | |
| | 912 | | SM | | | | | | | | | | | | | |
| | + - | | | | | | | | | | | \ | | | | |
| | 910 | | | | | | | | | | | | \setminus | | | |
| | ┼ - | | | | | | | SS 7 | 8-21-29 | | | | | | | |
| 20 | 908 | | | | | | | /\ / | (50) | | | | | | | |
| | ┼ - | | | | | | | | | | | | | | | |
| | 906 | | | Auger refus | | | | | | | | | | | | |
| | | . | | | Bottom | of hole at 22.0 feet | • | | | | | | | | | |
| | 904 | . | | | | | | | | | | | | | | |
| | | . | | | | | | | | | | | | | | |
| | 902 | | | | | | | | | | | | | | | |
| | ļ - | . | | | | | | | | | | | | | | |
| | 900 | . | | | | | | | | | | | | | | |
| | L _ | | | | | | | | | | | | | | | |
| | 898 | | | | | | | | | | | | | | | |
| | L _ | | | | | | | | | | | | | | | |



| ō | GEOTECHNICA MATER | AL•ENVIR | ONMENTAL ING | | | | | | | | | | | | | |
|------------|--|-----------------|----------------------|-----------------------------|------------------------------------|---------------------|--------------------------|-----------------------|---|------------------|-------|---------------------------|-------|-------|---------------|--|
| CLI | ENT | HN ⁻ | ΤВ | | | | PROJECT NAME _V | Vindy Hill | Road - Terr | ell Mil | Road | l Conn | ector | | | |
| PRO | OJEC | T NL | IMBER | A121503.122 | | | PROJECT LOCATIO | N Marie | tta, Cobb C | ounty, | Georg | gia | | | | |
| DA | TE ST | ART | ED _2/1 | 1/17 | COMPLETE | D 2/1/17 | GROUND ELEVATION | ON <u>932</u> f | t | HOLE | SIZE | 6" | | | | |
| DRI | LLIN | G CC | NTRAC | TOR Tri-State | Drilling, LLC | | GROUND WATER LI | EVELS: | | | | | | | | |
| DRI | LLIN | G ME | THOD | Hollow Stem A | Auger | | AT TIME OF DRILLING GNA | | | | | | | | | |
| LO | GGED | BY | Basan | ta Dhakal | _ CHECKED E | P. Vaddu | AT END OF DR | ILLING | | | | | | | | |
| NO. | ΓES _ | Sta. | 128+00 |), 40'L | | | AFTER DRILLII | NG | | | | | | | | |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | MATER | RIAL DESCRIPTIO | DN | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY % (RQD) | ⊕ OR | GANIO PL I NES (| MC | NTENT | - % ⊕ %) □ | |
| _ | 930 | | SM | Very loose gray, SANI | | se, reddish brown | i, brown, grayish brown, | SS 1 | 1-2-2-3 (4) 5-8-11-10 (19) 4-11-18-13 | | 2 | 0 4 | 0 6 | 0 8 | 0 | |
| | 926 924 | | | Very stiff to Shelby Tub | - | wn, micaceous, sa | andy SILT | ST 4 | 9-11-10-9 (21) | | | Н | | | | |
| | 922 | | ML | Rock fragn Auger Refu | nents (13.5' - 15 Isal at 15.2' | ") | -Bottom of Cut | SS 6 | 8-35-49 (84) | | | | | | ` | |
| | 916 914 912 910 908 906 904 902 | | | | | m of hole at 15.2 f | feet. | | | | | | | | | |



| ō | GEOTECHNIC MATE | AL•ENVIR RIALS TEST | ONMENTAL ING | | | | | | | | | | | |
|-------------------|--------------------|------------------------|----------------------|---|--|-----------------------|-----------------------------|--------|------------|----------|-------|---------------|-------|--|
| CLI | ENT | HN ⁻ | ТВ | | PROJECT NAME Windy Hill Road - Terrell Mill Road Connector | | | | | | | | | |
| PRO | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Marie | ta, Cobb C | ounty, | Georg | gia | | | | |
| DAT | TE ST | ART | ED _2/ | //17 COMPLETED 2/1/17 | GROUND ELEVATION 927 ft HOLE SIZE 6" | | | | | | | | | |
| DRI | LLIN | G CC | NTRAC | Tri-State Drilling, LLC | | | | | | | | | | |
| | | | | Hollow Stem Auger | | | | | | | | | | |
| LOC | GGED | BY | Tate C | Cozort CHECKED BY P. Vaddu | AT END OF DRILLING | | | | | | | | | |
| NO. | TES . | Sta. | 128+50 |), 5'L | AFTER DRILLING | } <u></u> | | | | | | | | |
| _ | | ၅ | ۵ | | | Щ | | % | | SPT | N VA | LUE (| | |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | ER (0 | ⊕ OR | GANI | MC MC | ITENT | - % ⊕ | |
| EPT | LEV | PHI | CS (Sym | MATERIAL DESCRIPTION | | 1PLE IUME | BLC SOUN | S S S | | PL — | MC | <u>LL</u> | | |
| | Ш | GRA | SN | | | SAN | 02 | REC | □FI | NES (| CONTE | ENT (% | %) □ | |
| 0 | | 331 | | Very loose, reddish brown, brown, gray, micaced | ous. silty SAND | 1 | | | 2 | 0 4 | 0 6 | 8 0 | 0 | |
| | 926 | | | , | | | 1-1-2-2 (3) | (| | A | | | | |
| | | | | | | \rightarrow | (-, | | \ | | | | | |
| | 924 | | | | | | 4-4-4-9 (8) | | | | | | | |
| | | | | <u> </u> | | | (0) | - | | | | | | |
| 5 | 922 | | | /\` | ottom of Cut | | 7-13-16-18 (29) | | | | | | | |
| | | | | | ottorii or out | | | | | | | | | |
| | 920 | | SM | Micaceous (6' - 8') | | | 4/ | | | | | | | |
| | | | | Micaceous (0 - 8) | | | (70) | | | | | | | |
| | 918_ | | | | | SS 5 | 26-36-25- 20 | | ▲ □ | | | | | |
| 10 | ļ - | | | | | M_{2} | (61) | | | | | $\overline{}$ | | |
| | 916 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 914 | | | | | | | | | | | | | |
| | ļ . | | | Auger Refusal at 14.3' | | X ss | 32-50/3" | | | | | | >> | |
| | 912 | | | Bottom of hole at 14.3 feet. | | 6 | | | | | | | | |
| | ļ _ | . | | | | | | | | | | | | |
| | 910 | . | | | | | | | | | | | | |
| | L - | . | | | | | | | | | | | | |
| | 908 | . | | | | | | | | | | | | |
| | L _ | . | | | | | | | | | | | | |
| | 906 | . | | | | | | | | | | | | |
| | | . | | | | | | | | | | | | |
| | 904 | | | | | | | | | | | | | |
| | L - | . | | | | | | | | | | | | |
| | 902 | . | | | | | | | | | | | | |
| | L _ | . | | | | | | | | | | | | |
| | 900 | . | | | | | | | | | | | | |
| | L - | . | | | | | | | | | | | | |
| | 898 | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | |
| | 896_ | . | | | | | | | | | | | | |



| , | MATE | RIALS TES | TING | | | | | | | | | | | |
|------------|------------|-----------|----------------------|--|---|---------------------|----------------|-----------------------------|----------------|----------|----------------|------------|-------|-------|
| CLI | ENT | HN | TB | | PROJECT NAME W | indy | Hill | Road - Ter | ell Mil | l Road | Conn | ector | | |
| PR | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | I <u>N</u> | larie | tta, Cobb C | ounty, | Georg | gia | | | |
| DA | TE ST | ART | ED <u>12</u> | /16/18 COMPLETED 12/16/18 | GROUND ELEVATION | N _9 | 40.5 | ft | HOLE | SIZE | _6" | | | |
| DRI | LLIN | G CC | ONTRAC | CTOR M&W Drilling | GROUND WATER LE | VEL | S: | | | | | | | |
| DRI | LLIN | G ME | THOD | Hollow Stem Auger | AT TIME OF DR | RILL | NG | GNE | | | | | | |
| LO | GGED | BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF DR | ILLI | NG _ | | | | | | | |
| NO. | TES _ | Sta. | 129+45 | 5, 40'L | AFTER DRILLIN | NG _ | | | | | | | | |
| | | ധ | _ | | | Ш | J | | % | | ● SPT | N VA | LUE (| |
| Œ | Œ | 5 LOG | USCS Group Symbol | | | | NUMBER | TS JE | \ <u>\</u> | ⊕ OR | GANI | CON | ITENT | Г % 🖯 |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC | S G ymb | MATERIAL DESCRIPTION | | E | MB. | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | PL — | MC | LL | |
| | ᆸ | \¥ | JSC S | | | 100 | \[\frac{1}{2} | a S S | EC(| ΠFI | | CONTE | | %) [] |
| 0 | | - | | | | 0 | ٥ | | œ | 2 | | 0 6 | | 0 |
| | 940 | | sc | Very loose, reddish brown, clayey SAND, micace | eous | \setminus | ss | | | | l a | — 1 | | |
| | 938 | | | Medium dense to very dense, brown to orange b | rown white black | + | 1 | . , | - | | | | | |
| | | | | gray, silty SAND, micaceous | own, write, black, | X | SS 2 | 2-4-7-10 (11) | | . | | | | |
| 5 | 936 | | | | | | } _ | 8-32-29-20 | | | | | | |
| | | | SM | | | X | 3 | (61) | | | | | | |
| | 934_ | | | | | \bigvee | ss | 15-33-43- 50 | | | | | | |
| | 932 | | | 0.000 | | $\downarrow \wedge$ | 4 | (76) | | | | | | |
| | _552_ | 1 - 1111 | SP-SM | Dense, yellowish brown to dark brown, SAND wit | n siit, micaceous | $ \rangle$ | SS 5 | 25-15-27- 34 | | | (| | | |
| 10 | 930 | | | Auger Refusal at 10.3 feet. | foldonou biotito) | | | (42) | | | | | | |
| | - | | | (10.3' - 35.2') MICA SCHIST (muscovite, quartz, gray, white, black, orange, soft to moderately har | d, moderately to | | | | | | | | | |
| | 928_ | | | highly weathered, 40 to 55 degree foliation, medi grained, iron-oxite staining throughout, intensely | um to coarse fractured, planar, | | RC | | 83 | | | | | |
| | | | | smooth. | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | 1 | | (0) | | | | | |
| 15 | 926 | | | | | | | | | | | | | |
| | 924 | | | | | | | | | | | | | |
| | - | | | | | | RC | | 92 | | | | | |
| | 922 | | | | | | 2 | | (9) | | | | | |
| 20 | | | | | | | | | | | | | | |
| | 920 | | | | | | | | | | | | | |
| | 918 | | МІСА | | | | RC | | 14 | | | | | |
| | | | MICA SCHIST | | | | 3 | | (0) | | | | | |
| 25 | 916 | | | | | | | | | | | | | |
| | | | | | | F | | - | | | | | | |
| | 914_ | | | | | | D0 | | 27 | | | | | |
| | 912 | | | | | | RC 4 | | (10) | | | | | |
| | | | | | | | | | | | | | | |
| 30 | 910 | | | | | H | | _ | | | | | | |
| | - | | | | | | | | | | | | | |
| | _908_ | | | | | | RC 5 | | 34 (0) | | | | | |
| | 906 | | | | | | Ĭ | | | | | | | |
| 35 | -550 | | | Dottom of hole at 27.2 feet | | 1 | | | | | | | | |
| | 904 | . | | Bottom of hole at 35.2 feet. | | | | | | | | | | |
| | - | . | | | | | | | | | | | | |
| | 902 | . | | | | | | | | | | | | |
| | ⊢ - | . | | | | | | I | | | | | | |



| GEOTECHNICA MATER | AL•ENVIRO HALS TEST | NMENTAL NG | | | | | | | | | | | | | | |
|--------------------------|------------------------|----------------------|---------------|---|---|---|-----------------------------|-------------------|------|----------|-------|--|------|--|--|--|
| CLIENT | HN | ГВ | | | PROJECT NAME Wir | ndy Hill | Road - Ter | rell Mil | Road | l Conn | ector | | | | | |
| PROJEC | T NU | MBER | A121503.122 | | PROJECT LOCATION Marietta, Cobb County, Georgia | | | | | | | | | | | |
| DATE ST | ART | ED _2/1 | /17 | COMPLETED _2/1/17 | GROUND ELEVATION | 935 f | t | HOLE | SIZE | 6" | | | | | | |
| DRILLING | G CC | NTRAC | TOR Tri-State | e Drilling, LLC | GROUND WATER LEVELS: | | | | | | | | | | | |
| | | | Hollow Stem A | _ | AT TIME OF DRILLING GNA | | | | | | | | | | | |
| | | | | CHECKED BY P. Vaddu | | | | | | | | | | | | |
| NOTES _ | | | | | AFTER DRILLING | - | | | | | | | | | | |
| | | | , | | ATTENDICE | 1 | | | | | | | | | | |
| £ _ | 90 | ф | | | | SAMPLE TYPE NUMBER | , a (ii) | % | | | | LUE | | | | |
| DEPTH (ft) ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | MATERIAL RECORDERION | | | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | | | NTENT | | | | |
| EP1 | F | CS Sym | | MATERIAL DESCRIPTION | | JAN M | A SOU | ŠS | | PL — | MC | LL | | | | |
| | 3RA | SN | | | | NAN N | 02 | REC | □FI | NES (| CONT | ENT (9 | %) □ | | | |
| 0 | 777 | | \/om/loogo | roddiah brown brown miceoccus | alayay CAND | 1 | | | 2 | 0 4 | 0 6 | 8 0 | 0 | | | |
| 934 | | sc | | , reddish brown, brown, micaceous, nammer (0' - 0.5') | ciayey SAND | \/ ss | | | | | | | | | | |
| | | | | | | 1 | (2) | | | | | | | | | |
| 932 | | | Medium de | ense to very dense, gray, brown, mic | aceous, silty SAND | $\backslash \backslash $ | 4-15-15-8 | | | | | | | | | |
| | | | Rock fragn | nents (2' - 4') | | 2 | (30) | | | • | | | | | | |
| + - | | | Shelby Tub | pe (4' - 6') | | | | | | | | | | | | |
| 5 930 | | | | | | ST 3 | | | | | | | | | | |
| + - | | | | | | | 05.00.00 | | | | | | | | | |
| 928 | | | | | | \/ ss | 25-29-33- 39 | | | | , | | | | | |
| . 👃 . | | | | | | 4 | (62) | | | | / | | | | | |
| 926 | | | Rock fragn | nents (8' - 21') | | \bigvee_{SS} | 21-22-26- | | ╽╻┌ | | | | | | | |
| 10 | | | | K | | 5 | 25 (48) | | ▲□ | | 7 | | | | | |
| | | | | _E | Bottom of Cut | | | | | , | / | | | | | |
| 924 | | SM | | _ | | | | | | / | | | | | | |
| + - | | Oivi | | | | | | | | / | | | | | | |
| 922 | | | | | | | | | | / | | | | | | |
| . 👃 - | | | | | | √ss | 8-10-10 | | _ | <u> </u> | | | | | | |
| 15 920 | | | | | | 6 | (20) | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 918 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| + - | | | | | | | | | | | | | | | | |
| 916_ | | | | | | SS 7 | 9-33-50/3" | | | | | | >>(| | | |
| 20 | | | | | | , , | | 1 | | | | | | | | |
| 914 | | | Auger refu | | Names subite bleek | | 1 | | | | | | | | | |
| | | | moderately | et (muscovite, quartz, feldspar, biotite or soft to hard, moderately to highly w | eathered, 30 degree | Ш | | | | | | | | | | |
| 912 | | | foliation, m | edium to coarse grained, iron oxide ntensely fractured, 30 degree, plana | staining throughout | Ш | | | | | | | | | | |
| | | | to highly w | eathered, iron oxide staining through | out | RC 1 | ; | 80 (0) | | | | | | | | |
| 25 910 | | | | | | | | (0) | | | | | | | | |
| 23 910 | | | | | | Ш | | | | | | | | | | |
| + - | | | Mica Schis | et (muscovite, quartz, feldspar, biotite | e) gray, white, black | Н | 1 | | | | | | | | | |
| 908_ | | | moderately | soft to very hard, slightly to highly vedium to coarse grained, iron oxide | veathered, 30 degree | | | | | | | ' | | | | |
| + + | | | (26' - 31') I | ntensely fractured, 30 degree, plana | r, smooth, moderately | RC | | 100 | | | | ' | | | | |
| 906 | | | to highly w | eathered, iron oxide staining through | out | 2 | | (16) | | | | ' | | | | |
| 30 | | | | | | | | | | | | <u> </u> | | | | |
| 904 | | | | | | | | | | | | | | | | |
| | | | | Bottom of hole at 31.0 fee | t | | 1 | | | | | 1 ' | | | | |



| MA | TERIALS TES | TING | | | | | | | | | | |
|--------------------------|------------------|----------------------|--|-------------------|-----------------------|-----------------------------|----------------|---|----------|-------|----------|---------|
| CLIENT | HN | TB | | PROJECT NAME Win | dy Hill | Road - Teri | ell Mil | l Road | Conn | ector | | _ |
| | | | A121503.122 | PROJECT LOCATION | Mariet | tta, Cobb C | ounty, | Georg | gia | | | _ |
| | | | 2/5/18 COMPLETED 12/5/18 | _ | 915.5 | ft | HOLE | SIZE | _6" | | | _ |
| | | | CTOR M&W Drilling | | | | | | | | | |
| | | | Hollow Stem Auger | = | | | | | | | | |
| | | | ussly CHECKED BY P. Vaddu | | | | | | | | | _ |
| NOTES | Sta | . 131+00 | 0, 43'R | _ AFTER DRILLING | 3 <u></u> | T | | | | | | _ |
| | ဗ္ဂ | d | | | 出 | | % | | | | UE • | |
| DEPTH (ft) ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | ⊕ OR | | | TENT % | |
| EV EV | F | CS (Sym | MATERIAL DESCRIPTION | | IPLE UMB | BLC OUI | NS NS | | PL ├— | MC | LL | |
| | GRA | sn ; | | | SAN | 02 | REO | □FI | NES (| CONTE | NT (%) [| |
| 0 | _3444 | | Loose to dense, brown to grayish brown, reddis | sh brown orange | | 0004 | | 2 | 0 4 | 0 60 | 0 80 | |
| 914 | 1 | | brown, silty SAND, micaceous | in brown, ordingo | SS 1 | 0-2-3-4 (5) | | < ▲ | | | | |
| · † | - | | | | Ss | 5-9-9-9 | 1 | | | | | |
| 91: | 2 | | | | 2 | (18) | | lT | | | | |
| 5 910 | 7 | SM | | | SS 3 | 3-8-7-9 (15) | | $\vdash \!$ | | | | |
| -[| | SIVI | | | \leftarrow | 4-7-15-13 | | \ | | | | |
| 90 | 3 | | | | 4 | (22) | | | | | | |
| | - | | | | Ss | 9-18-17-20 | | | | | | |
| 10 | 2 | | Auger Refusal at 10.9 feet. | | 5 | (35) | | | | | | |
| 904 | 7111 1 | | Bottom of hole at 10.9 fee | t. | - | | | | | | | |
| - | - | | | | | | | | | | | |
| 902 | 2_ | | | | | | | | | | | |
| 900 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| _898 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| _89 | _ | | | | | | | | | | | |
| 894 | _ 1_ | | | | | | | | | | | |
| - | - | | | | | | | | | | | |
| _89 | 2_ | | | | | | | | | | | |
| - 890 | _) | | | | | | | | | | | |
| | | | | | | | | | | | | |
| _88 | 3_ | | | | | | | | | | | |
| 000 | | | | | | | | | | | | |
| _886 |)_ | | | | | | | | | | | |
| 884 | _ {_ | | | | | | | | | | | |
| - | - | | | | | | | | | | | |
| _88 | 2_ | | | | | | | | | | | |
| - 880 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 878 | | | | | | | | | | | | |
| 870 | _ | | | | | | | | | | | |
| ا/ م _ل | _ | | | | 1 | 1 | 1 | 1 | | | | |



BORING ID: WB-02

| ō | GEOTECHNIC MATE | AL•ENVIR RIALS TEST | ONMENTAL ING | | | | | | | | | |
|-------------------|--------------------|------------------------|----------------------|---|--------------------|--|-----------------------------|-------------|---------------------------------|-------------|--------------|------------|
| CLI | ENT | HN ⁻ | ТВ | | PROJECT NAME Wir | ndy Hill | Road - Terr | ell Mill | Road Con | nector | | |
| PRO | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georgia | | | |
| DA | TE ST | ART | ED _2/2 | 2/17 COMPLETED 2/2/17 | GROUND ELEVATION | 930 ft | | HOLE | SIZE 6" | | | |
| DRI | LLIN | G CC | NTRAC | CTOR Tri-State Drilling, LLC | _ GROUND WATER LEV | ELS: | | | | | | |
| DRI | LLIN | G ME | THOD | Hollow Stem Auger | _ AT TIME OF DRIL | LING | GNA | | | | | |
| LO | GGED | BY | Amir N | Moussly CHECKED BY P. Vaddu | AT END OF DRIL | LING _ | | | | | | |
| NO ⁻ | TES . | Sta. | 132+50 |), 40'L | _ AFTER DRILLING | } <u></u> | | | | | | |
| | | G | _ | | | ш | | % | ● SP ⁻ | ΓN VA | LUE (| |
| (#) | Œ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | LE) | \\ \\ \(\) | ⊕ ORGANI PL I— □ FINES | IC CON | NTENT | - 7 % ⊕ |
| DEPTH (ft) | ELEV. (ft) | 울 | S G ymb | MATERIAL DESCRIPTION | |) IMB | BLOW COUNTS (N VALUE) | 일 | PL | MC | ĻĻ | |
| | ᆸ | \¥ | SSC | | | AMF | a o z | | □ FINES | CONTI | FNT (9 | —— %) □ |
| 0 | | G | | | | Ŋ | | <u>«</u> | 20 4 | 40 6 | 0 8 | 0 |
| | L. | | | Loose to medium dense to dense, gray, reddis white, micaceous, silty SAND | h brown, brown, | V ss | 2-2-3-4 | | | | | |
| | 928 | | | | | 1 | (5) | | | | | |
| | | | | | | V _{ss} | 7-7-9-11 | | | | | |
| - | 926 | | | | | 2 | (16) | | | | | |
| 5 | 320 | | | | | | 9-23-17-19 | | | | | |
| | 004 | | | | | 3 | (40) | | | • | | |
| | 924 | | | K | | | 40.7.0.5 | 1 | | | | |
| | | | | · _E | Bottom of Cut | $\begin{vmatrix} 1 \\ 4 \end{vmatrix}$ | 10-7-6-5 (13) | | | | | |
| - | 922 | | | _ | | | | - | | | | |
| | | | | | | | 4-5-11-19 (16) | | • | | | |
| 10 | 920 | | SM | | | | , , | | | | | |
| | | | | | | | | | | | | |
| | 918 | | | | | | | | | | | |
| | ┞ - | | | | | | | | ` | \setminus | | |
| | 916 | | | | | √ss | 16-28-20 | - | | | | |
| 15 | | | | 5 1 5 1 4 5 1 5 1 | | 6 | (48) | | | <u> </u> | | |
| | 914 | | | Rock fragments (15' - 20') | | | | | | 1 | | |
| | L _ | | | | | | | | / | | | |
| | 912 | | | | | | | | | | | |
| | | | | | | 100 | 9-9-7 | - | / | | | |
| 20 | 910 | | | Auger refusal at 20' | | SS 7 | (16) | | | | | |
| | | | | Bottom of hole at 20.0 fee | t. | | | | | | | |
| | 908 | . | | | | | | | | | | |
| | _300_ | - | | | | | | | | | | |
| | - | - | | | | | | | | | | |
| | 906 | . | | | | | | | | | | |
| | | - | | | | | | | | | | |
| | 904 | - | | | | | | | | | | |
| | | . | | | | | | | | | | |
| | 902 | - | | | | | | | | | | |
| | <u> </u> | . | | | | | | | | | | |
| | 900 | . | | | | | | | | | | |
| | ļ - | . | | | | | | | | | | |



BORING ID: B-17

| | MATE | RIALS TEST | TNG | | | | | | | | | | | | | | | |
|------------|------------|-----------------|----------------------|------------|--|------------|--------------|---------------|--------------|-------|-----------------------|-----------------------------|----------------|-------|----------|-------|----------|------|
| CLIE | ENT | HN. | ТВ | | | | | | PROJECT NAME | Win | dy Hill | Road - Ter | ell Mil | Road | d Conn | ector | | |
| PRO | JEC | T NU | JMBER | A121503. | 122 | | | | PROJECT LOCA | TION | Mariet | tta, Cobb C | ounty, | Georg | gia | | | |
| | | | | | | | | | GROUND ELEVA | | | <u> </u> | HOLE | SIZE | _6" | | | |
| | | | | | | ng, LLC | | | GROUND WATER | R LEV | ELS: | | | | | | | |
| | | | | Hollow Ste | | | | | | | | | | | | | | |
| | | | | Moussly | | ECKED B | Y P. Vado | <u>du</u> | | | | | | | | | | |
| NOT | ES | Sta. | 134+00 |), 20'L | | | | | AFTER DRIL | LLING | · <u></u> | | , | | | | | |
| | | ဗျ | ۵ | | | | | | | | PE | | % | | ● SPT | N VA | LUE | • |
| DЕРТН (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | | | | | | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | ⊕ OR | | C COI | | |
| EPT | LEV | 핕 | CS (Sym | | | MATERI | AL DESCI | RIPTION | | | IPLE UME | BLC OUI | l S S | | PL ├─ | MC | <u> </u> | |
| | Ш | GR _A | SN. | | | | | | | | SAN | 02 | REC | □FI | INES (| CONT | ENT (9 | %) □ |
| 0 | | 335 | | Firm b | rown redo | lish brown | micaceou | ıs, silty SA | ND | | \ / | | | 2 | 20 4 | 0 6 | 8 0 | 0 |
| . 4 | 920 | | | 1, 2 | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | iion brown | , 1111000000 | 10, only 07 t | | | SS 1 | 2-3-3-3 (6) | | • | | | | |
| . | | | | | | | | | | | () . | (0) | | | | | | |
| . | 918 | | SM | | | | | | | | SS 2 | 3-3-4-4 | | • 4 | | | | |
| | | | | | | | | | | | | (7) | | | | | | |
| 5 | 916 | | | | | | | | | | ss | | | | | | | |
| .] | | | | _ | | | | | | | 3 | (6) | | | | | | |
| .] | 914 | | SP | Dense, | , brown, gr | ay, SAND | with rock f | ragments | | | | 6-16-20-20 | | | | | | |
| | | | | Augori | Defueel of | o' | | | | _ | ∕ | (36) | | | | | | |
| | 912 | | | Augeri | Refusal at | | n of hole a | t 8.0 feet. | | / | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 910 | | | | | | | | | | | | | | | | | |
| Ī | | | | | | | | | | | | | | | | | | |
| Ī | 908 | | | | | | | | | | | | | | | | | |
| İ | | | | | | | | | | | | | | | | | | |
| İ | _906_ | | | | | | | | | | | | | | | | | |
| İ | 900_ | - | | | | | | | | | | | | | | | | |
| İ | 004 | - | | | | | | | | | | | | | | | | |
| ŀ | 904 | - | | | | | | | | | | | | | | | | |
| ŀ | | . | | | | | | | | | | | | | | | | |
| - | 902 | - | | | | | | | | | | | | | | | | |
| ŀ | | - | | | | | | | | | | | | | | | | |
| - | 900 | - | | | | | | | | | | | | | | | | |
| - | | - | | | | | | | | | | | | | | | | |
| ŀ | 898 | - | | | | | | | | | | | | | | | | |
| - | | . | | | | | | | | | | | | | | | | |
| - | 896 | - | | | | | | | | | | | | | | | | |
| - | | . | | | | | | | | | | | | | | | | |
| | 894_ | . | | | | | | | | | | | | | | | | |
| | | . | | | | | | | | | | | | | | | | |
| | 892 | . | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 890 | . | | | | | | | | | | | | | | | | |
| - 1 | | - 1 | | | | | | | | | | 1 | i | 1 | 1 | 1 | 1 | |



BORING ID: WB3-10

| | WALL | MALS IES | | | | | | | | | | | |
|-----------------|------------|-------------|----------------------|---|--------------------------------|-----------------------|-----------------------------|----------------|------------|----------|--------------|---------------|----------|
| CLI | ENT | HN | TB | | PROJECT NAME _ | Windy Hill F | Road - Teri | rell Mil | I Road | Conn | ector | | |
| PRO | JEC | T NL | JMBER | A121503.122 | PROJECT LOCATION | ON Mariet | a, Cobb C | ounty, | Georg | gia | | | |
| DA | E ST | ΓART | ED 11 | /28/18 COMPLETED 11/28/18 | GROUND ELEVATION | ON <u>930 ft</u> | | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G CC | ONTRAC | TOR Betts Environmental | GROUND WATER L | LEVELS: | | | | | | | |
| DRI | LLIN | G ME | ETHOD | Hollow Stem Auger | \overline{igsq} at time of (| DRILLING . | 23.5 ft / E | lev 90 | 6.5 ft | | | | |
| LO | GEE | BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF D | RILLING _ | | | | | | | |
| NO ⁻ | TES . | Sta. | 134+65 | 5, 45'L | $ar{m{y}}$ 20hrs AFTER | DRILLING | 18.0 ft / I | Elev 9 | 12.0 ft | | | | |
| | | (1) | | | | 111 | | | | SPT | N VA | LUE | |
| (H) | £ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | ŚΘ | % ∖. | ⊕ OR | | C CON | | |
| Ŧ | ELEV. (ft) | 일 | S Gr mbo | MATERIAL DESCRIPTION | | F | ALU ALU | | | PL | MC | LL | |
| DEPTH (ft) | | ΑPI | SCS | | | M M | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | <u> </u> | - | | | |
| 0 | | 9 | \supset | | | S S | Ŭ | W | ∐ FI | | CONTE 0 6 | | |
| U | | | | Loose, reddish brown, clayey SAND | | √ss | 1-3-3-5 | | | | | | <u> </u> |
| - | 928 | | SC | | | 1 | (6) | | 🖣 | _ | ┨ | | |
| _ | | | | Loose to medium dense, brown to reddish brown silty SAND, micaceous | , grayish brown, | √ ss | 2-3-3-5 | | | | | | |
| . <u>-</u> | 926 | | | Sity SAND, Micaceous | | 2 | (6) | | | | | | |
| 5_ | | | | | | | 5-8-9-10 | | | | | | |
| - | 924 | | | | | + | (17) | 1 | | | | | |
| - | | | 014 | | | | 3-7-11-8 (18) | | 🏓 | | | | |
| - | 922 | | SM | | | ss | 5-6-5-5 | 1 | / | | | | |
| 10 | 920 | | | | | 5 | (11) | | • | | | | |
| | | | | | | | | 1 | | | | | |
| _ | 918 | | | | | | | | | | | | |
| _ | | | | | | | | | | | | | |
| | 916 | | SP | Very dense, brownish gray, poorly-graded SAND | , with rock | ⊠ss | 50/6" | | | | | | >>(|
| 15 | | | | fragments Medium dense to very dense, brown to light brow | n gravish hrown | | | | | | | | |
| - | 914 | | | white, silty SAND, micaceous, with rock fragment | is | | | | | | | | |
| - | 912 | | | ¥ | | | | | | | | | |
| - | _0 , | | | | | √ss | 39-45- | - | | | | | |
| 20 | 910 | | | | | 7 | 50/4" | | A [| | | | >>(|
| _ | | | | | | | | | | | | | |
| | 908 | | | | | | | | | | | | / |
| - | | | SM | $ar{\Sigma}$ | | | | | | | | | |
| | 906 | | | - | | SS 8 | 15-34-49 (83) | | | | | | |
| 25 | 904 | | | | | 7 1 0 | (65) | 1 | | | | $\overline{}$ | |
| _ | _304_ | | | | | | | | | | | | |
| | 902 | | | | | | | | | _ | | | |
| | | | | | | √ss | 8-6-11 | 1 | | | | | |
| 30 | 900 | | | Dettern of help at 20.0 feet | | 9 | (17) | - | | | | | |
| | | - | | Bottom of hole at 30.0 feet. | | | | | | | | | |
| | _898_ | - | | | | | | | | | | | |
| | 806 | - | | | | | | | | | | | |
| | _896_ | - | | | | | | | | | | | |
| | 894 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 892 | - | | | | | | | | | | | |
| | <u> </u> | - | | | | | | | | | | | |
| | เลอก | | | | | | | 1 | 1 | 1 | | | |

| | A PARTIE OF THE | |
|------|---|--------|
| | MC^2 | * |
| GEOT | ECHNICAL • ENVIRON MATERIALS TESTIM | MENTAL |

BORING ID: B-18

| | N | IC | | | OOII | | | | | | | | | |
|------------|------------|--------------------|----------------------|---------------------------|------------------------|--------------------|-----------------------|-----------------------------|----------------|-------|---------|-------|--------|---|
| G | EOTECHNICA | AL•ENVIR | ONMENTAL TING | | | | | | | | | | | |
| CLIE | ENT | HN | ТВ | | | PROJECT NAME Win | ıdy Hill I | Road - Terr | ell Mill | Road | l Conn | ector | | |
| PRC | JEC | T NU | JMBER | A121503.122 | | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | gia | | | |
| | | | | | _2/9/17 | | 937 ft | <u> </u> | HOLE | SIZE | _4" | | | |
| DRII | LLIN | G CC | ONTRAC | CTOR MC Squared, Inc. | | GROUND WATER LEV | ELS: | | | | | | | |
| | | | | | | AT TIME OF DRIL | | | | | | | | |
| | | | | Moussly CHECKED BY | P. Vaddu | | _ | | | | | | | |
| тои | ES _ | Sta | . 135+00 | 0, 40'L | | AFTER DRILLING | · | | | | | | | |
| | | ၅၉ | ₫ | | | | 씸 | | % | | ● SPT | N VA | LUE • | |
| DЕРТН (ft) | ELEV. (ft) | 3RAPHIC LOG | USCS Group Symbol | | | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | | | NTENT | |
| EPT | LEV | PH | CS (Sym | MATERI | AL DESCRIPTION | | 1PLE UME | BLC SOUR | SS S | | PL — | MC | LL | |
| | ш | GR/ | SN | | | | SAN | 02 | REC | □FI | | | ENT (% | |
| 0 | | 435 | | Brown, brownish orange, m | icaceous. silty SAND | and rock fragments | 13 | | | 2 | 0 4 | 0 6 | 0 8 | 0 |
| | 936_ | | 014 | | ,, | | KU | | | | | | | |
| | | | SM | | | | HA | | | 4 | | | | |
| | 934_ | | | Auger refusal at 3' | | | | | | | | | | |
| | | - | | | n of hole at 3.0 feet. | | | | | | | | | |
| | 932 | - | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 930 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 928_ | | | | | | | | | | | | | |
| | | | | | / | " (0) | | | | | | | | |
| | 926 | - | | | _B ₀ | ottom of Cut | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 924 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 922 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 920 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 918_ | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 916 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 914 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 912 | | | | | | | | | | | | | |
| | _V 14_ | - | | | | | | | | | | | | |
| | 910 | - | | | | | | | | | | | | |
| | 910 | | | | | | | | | | | | | |
| | | - | | | | | | | | | | | | |
| | 908_ | - | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 906 | | | | | | | | 1 | l | | | 1 1 | í |

GEOTECHNICAL-ENVIRONMENTAL

Soil Profile

BORING ID: B-19

| CLI | ENT | HN | ТВ | | PROJECT NAME Win | ndy I | Hill F | Road - Ter | rell Mill | Road | l Conn | ector | | |
|------------|------------|-------------|----------------------|---|--|------------------------|------------|-----------------------------|--------------------------|---------------------|-----------------|--------------|---------|-----------|
| PR | OJEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Ma | ariett | ta, Cobb C | County, | Georg | gia | | | |
| DA | TE ST | ART | ED _2/3 | 3/17 COMPLETED 2/3/17 | GROUND ELEVATION | _94 | 15 ft | | HOLE | SIZE | 6" | | | |
| DR | ILLIN | G CC | ONTRAC | Tri-State Drilling, LLC | GROUND WATER LEV | ELS | S : | | | | | | | |
| DR | ILLIN | G ME | ETHOD | Hollow Stem Auger | AT TIME OF DRIL | .LIN | IG _ | GNA | | | | | | |
| LO | GGED | BY | Basan | ta Dhakal CHECKED BY P. Vaddu | AT END OF DRIL | LIN | G _ | | | | | | | |
| NO | TES | Sta. | 136+00 |), 40'L | AFTER DRILLING | • <u></u> | | | | | | | | |
| | | ני | | | | ш | | | % | | SPT | N VA | LUE • | • |
| £ | E. | SRAPHIC LOG | USCS Group Symbol | | | ΥP | NUMBER | E32 | | | | C CON | | |
| DEPTH (ft) | ELEV. (ft) | 임 | S Gr mbc | MATERIAL DESCRIPTION | | | MBE | AE S | JÄ G | | PL | MC | LL | |
| Ë | | ₹AP | SSC | | | MP | \exists | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | NEC (| CONT | -NIT (0 | /\ |
| 0 | | G | _ | | | \s\ | | | 2 | | | CONTE 0 6 | | ∞) ⊔ 0 |
| | 944 | | | Loose to medium dense, reddish brown, black, b | orown, micaceous, | $\backslash /$ | ss | 2-2-3-3 | | | | | | |
| | _944_ | | | clayey SAND | | X | 1 | (5) | | 7 | | | | |
| | † | | SC | | | | | | | \ | | | | |
| | 942 | | | | | IXI | SS 2 | 5-5-6-7 (11) | | • | | | | |
| | + - | | | Medium dense to loose, reddish brown, gray, mi | caceous silty SAND | $\left(\cdot \right)$ | | | - | | | | | |
| _5 | 940 | | | modalii donoo to looco, rodalon biomi, gray, iii | oacocac, only or wis | X | SS 3 | 4-6-7-7 (13) | | - | | a | | |
| | ↓ - | | | | | \square | | (13) | | | | | | |
| | 938 | | | | | V | ss | 5-5-5-6 | | | | | | |
| | ╽. | | | | | \triangle | 4 | (10) | | | | | | |
| | 936 | | | | | M | ss | 4-6-6-7 | | | | | | |
| 10 | | | | | | \mathbb{N} | 5 | (12) | | | | | | |
| _10_ | 934 | | | | | | | | 1 1 | | | | | |
| | 934 | | SM | K | | | | | | | | | | |
| | + - | | | B | ottom of Cut | | | | | | | | | |
| | 932 | | | | | | | | | | | | | |
| | + - | | | | | M | ss | 3-5-7 | | | | | | |
| 15 | 930 | | | | | Ш | 6 | (12) | - | $\vdash \downarrow$ | | | | |
| | ↓ - | | | | | | | | | \ | | | | |
| | 928 | | | | | | | | | | \ | | | |
| | ╽. | | | | | | | | | | $ \setminus $ | | | |
| | 926 | | | Dense, gray, white, black, micaceous, SAND wi | th silt | 1 | SS | 9-17-15 | - | | \ | | | |
| 20 | | | OD 014 | , 3 . 3, | | M | 7 | (32) | | | • | | | |
| | 924 | | SP-SM | | | | | |] | | | | | |
| | 324 | | | Auger refusal at 21.5' | | | | | | | | | | |
| | † - | | | Mica Shist (muscovite, quartz, feldspar, biotite) moderately hard to very soft, moderately weather | ered to completely | П | | | | | | | | |
| | 922 | | | weathered, 30 degree foliation, medium to coars staining present throughout | se grained, iron oxide | | | | | | | | | |
| | + - | | | (21.5' - 26.5') Intensely fractured, 30 degree, pla | nar to non-planar, | П | RC 1 | | (0) | | | | | |
| 25 | 920 | | | smooth, moderately to completely weathered, in present throughout | on oxide staining | П | | | (-) | | | | | |
| | ↓ - | | | | | | | | | | | | | |
| | 918 | | | Mica Shist (muscovite, quartz, feldspar, biotite) | gray, white, | Ħ | | | | | | | | |
| | ↓ . | | | moderately hard to very hard, silghtly to highly w foliation, medium to coarse grained, iron oxide s | eathered, 30 degree taining throughout | | | | | | | | | |
| _ | 916 | | | (21.5' - 26.5') Intensely fractured, 30 degree, pla to highly weathered, iron oxide staining present | nar, smooth, slightly | | RC | | 50 | | | | | |
| 30 | | | | to myrny weathered, iron oxide stairing present | unougnout | | 2 | | (0) | | | | | |
| | 014 | | | | | | | | | | | | | |
| | 1914 | | | | | | | | | | | | | |



BORING ID: WB5-03

| Gi | MATE | AL•ENVIR RIALS TES | ONMENTAL TING | | | | | | | | | | | | |
|------------|------------|-----------------------|----------------------|---------------|---------------------------------------|----------------------|--|-----------------------|-----------------------------|----------------|-----------------|------------------|-------|---------|-----|
| CLIE | ENT | HN [*] | ТВ | | | | PROJECT NAME Wir | ndy Hill I | Road - Ter | rell Mil | l Road | Conne | ector | | |
| PRC | JEC | T NU | JMBER | A121503.122 | | | PROJECT LOCATION | _Mariet | ta, Cobb C | county, | Georg | jia | | | |
| DAT | E ST | ART | ED _12 | 2/6/18 | COMPLETED | 12/8/18 | GROUND ELEVATION | 926 ft | <u>:</u> | HOLE | SIZE | 6" | | | |
| DRII | LLIN | G CC | ONTRAC | CTOR M&W Dr | rilling | | | | | | | | | | |
| DRII | LLIN | G ME | ETHOD | Hollow Stem A | Auger | | $rac{	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle 	extstyle$ | LLING | 23.0 ft / E | lev 903 | 3.0 ft | | | | |
| LOG | GED | BY | A. Mo | ussly | _ CHECKED BY | P. Vaddu | AT END OF DRII | LLING _ | | | | | | | |
| TOM | ES _ | Sta. | 136+7 | 0, 65'R | | | AFTER DRILLIN | G | | | | | | | |
| | | ני | | | | | | ш | | % | | SPT | N VAI | UE • |) |
| Œ | (#) | GRAPHIC LOG | USCS Group Symbol | | | | | SAMPLE TYPE NUMBER | ZE (E) | \ } ` | ⊕ OR | | | | |
| DЕРТН (ft) | ELEV. (ft) | 呈 | S Gi | | MATERIA | L DESCRIPTION | | LE. | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | | PL | MC | LL H | |
| | | ₹ | JSC S | | | | | M N S | SCB | N. P. | | NES C | ONTE | | /\ |
| 0 | | ਹ | ر | | | | | /S | | 쮼 | 2 | | | | |
| | | | | Very loose | to very dense, brovish brown, silty S | own to dark brown, | orange brown, pale | √ss | 1-3-2-2 | | | | | | |
| | 924_ | | | Diowii, gray | isii biowii, siity s | AND, micaceous | | 1 | (5) | 1 | | | | | |
| | | | | | | | | SS 2 | 1-2-2-5 (4) | | • 4 | | | | |
| | 922 | | | | | | | \longrightarrow | | + | $ \setminus $ | | | | |
| 5_ | 920 | | | | | | | SS 3 | 4-3-4-5 (7) | | † | | | | |
| - | 920 | | | | | | | ss | 1-3-3-5 | 1 | | | | | |
| | _ _918_ | | | | | | | 4 | (6) | | | | | | |
| . 4 | | | | | | | | \\\\ss | 2-2-2-3 | | | \blacktriangle | | | |
| 10_ | 916_ | | | | | | | 5 | (4) | - | \vdash | | | | |
| | 044 | | | | | | | | | | $ \ $ | | | | |
| | 914_ | | | | | | | | | | $ \ \ $ | | | | |
| _ | 912 | | | | | | | √ss | 3-7-12 | - | $ \ $ | | | | |
| 15 | | | | | | | | 6 | (19) | | • | , | | | |
| | 910 | | SM | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | _908_ | | | | | | | | | | | | | | |
| 20 | | | | | | | | SS 7 | 2-9-13 (22) | | | | | | |
| 20_ | _906_ | | | | | | | | (22) | 1 | | | | | |
| | 904 | | | | | | | | | | | | | | |
| | | | | Σ | | | | | | | | | | | |
| | 902 | | | | | | | √ss | 9-12-14 | 1 | | | | | |
| 25_ | | | | | | | | 8 | (26) | - | | | | | |
| | 900 | | | | | | | | | | | | | | |
| _ | _898_ | | | | | | | | | | | | | | |
| | | | | | | | | X SS | 7-50/4" | + | | | | | >>(|
| 30_ | 896_ | | | A D. f. | | | | 9 | | 1 | | | | | |
| . 4 | | | | Auger Retu | sal at 31 feet. | of hole at 31.0 feet | | - | | | | | | | |
| | 894_ | . | | | DOLLOTTI | or note at 31.0 leet | • | | | | | | | | |
| | _892_ | . | | | | | | | | | | | | | |
| | _084_ | . | | | | | | | | | | | | | |
| | 890 | | | | | | | | | | | | | | |
| | | . | | | | | | | | | | | | | |
| | _888_ | . | | | | | | | | | | | | | |
| | 886 | . | | | | | | | | | | | | | |
| | XXN | - 1 | | I . | | | | 1 | 1 | 1 | 1 1 | | | | |



BORING ID: WB3-12

| CLI | ENT | HN ⁻ | ТВ | | PROJECT NAME Wir | ndy Hill I | Road - Terr | ell Mil | I Road | l Conn | ector | | |
|-------------------|---------|-----------------|----------------------|---|--------------------|-----------------------|-----------------------------|----------------|--------|-------------|-------|---------------|----|
| PRO | JEC | T NL | | A121503.122 | PROJECT LOCATION | | | | | | | | |
| DAT | E S | ART | ED <u>11</u> | /29/18 COMPLETED _11/29/18 | GROUND ELEVATION | 951 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLIN | G CC | ONTRAC | TOR Betts Environmental | | | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRI | | | | | | | | |
| | | | | ussly CHECKED BY P. Vaddu | | | | | | | | | |
| NO | IES . | Sta. | 137+50 |), 45'L | AFTER DRILLIN | G | | I | | | | | |
| ··· | | ဗ္ဗ | ф | | | H | | % | | SPT | | | |
| DEPTH (ft) | ۷. (ft) | GRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | ⊕ OR | GANIC | MC | | |
| EPT | ELEV. (| APH | SCS | WATERIAL DESCRIPTION | | MPL | BLC COU | S K | | | | <u>LL</u> | |
| 0 | _ | GR | ñ | | | SAI | | 뀚 | □ FI | NES (| | ENT (% 0 8 | |
| | 950 | | | Loose, brown to reddish brown, clayey SAND, m | icaceous | √ss | 3-4-5-8 | | • | | | | |
| - | 948 | | sc | | | /\ SS | (9) | | | | | | |
| | _5-0 | | | 017 | | 2 | (9) | | | | | | |
| 5 | 946 | | ML | Stiff, reddish brown, sandy SILT, micaceous | | SS 3 | 3-8-7-8 (15) | | + | | | | |
| | 944 | | | Medium dense to very dense, brown to light brow dark brown, silty SAND, micaceous | vn, grayish brown, | SS 4 | 7-10-14-19 (24) | | ' | • | | | |
| | 942 | | | | | ss | 6-16-19-20 | | | | | | |
| 10_ | | | | | | 5 | (35) | | | | | | |
| | 940 | | | | | | | | | | | | |
| | 938 | | | | | | | | / | | | | |
| 15 | 936 | | | | | SS 6 | 7-7-6 (13) | | | | | | |
| | 934 | | | | | | | | \ | | | | |
| | | | | | | | | | | \setminus | | | |
| 20 | 932 | | | | | SS 7 | 7-14-16 (30) | - | | | | | |
| | 930 | | SM | | | , | | | | | | | |
| | 928 | | | | | | | | | | | | |
| 25 | 926 | | | | | SS 8 | 13-16-21 (37) | | | | | | |
| | | | | | | | (0.) | | | | | | |
| - | 924 | | | | | | | | | | | | |
| | 922 | | | | | XSS 9 | 12-50/5" | | 4 | | | | >> |
| 30 | 920 | | | Augered an additional 5 feet. No sample taken, a above. | assumed same as | | | | | | | | |
| - | 918 | | | 42010. | | | | | | | | | |
| | L - | | | | | | | | | | | | |
| 35 | 916 | | | Bottom of hole at 35.0 feet. | | | | | | | | | |
| | 914 | - - | | | | | | | | | | | |
| | 912 | - | | | | | | | | | | | |
| | 214 | - | | | | | | | | | | | |



BORING ID: WB3-16

| G | EOTECHNIC MATE | AL•ENVIR | ONMENTAL FING | | | | | | | | | | |
|------------|-------------------|-------------|----------------------|--|-------------------------------------|-----------------------|-----------------------------|------------------|--------|----------|-------|-------------|-------|
| CLII | ENT | HN' | ТВ | | PROJECT NAME Win | dy Hill | Road - Teri | ell Mil | l Road | l Conn | ector | | |
| PRO | JEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georg | gia | | | |
| | | | ED _11 | | GROUND ELEVATION | | | HOLE | SIZE | 6"_ | | | |
| | | | | Betts Environmental | GROUND WATER LEV | | 70#/51- | 000 | 0.4 | | | | |
| | | | | Hollow Stem Auger ussly CHECKED BY P. Vaddu | $\overline{igspace}$ at time of DRI | | | | | | | | |
| | | | 139+00 | | AFTER DRILLING | _ | | | | | | | |
| DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY % (RQD) | | PL | N VAI | ITENT LL | - % ⊕ |
| 0 | | Ō | | | | /S | | ₩. | 2 | | 0 6 | | |
| _ | | | SC | 4 inches of ASPHALT Loose, brown, clayey SAND, micaceous | | SS 1 | 3-3-3-4 (6) | | • | | | | |
| - | 938_ | | | Very loose to dense, brown to grayish brown, dar | k brown, silty | ss | 2-1-2-3 | | | | | | |
| · - | - 936 | | | SAND, micaceous, rock fragments | · | 2 | (3) | | | A | | | |
| 5 | | | | | | SS 3 | 1-2-2-1 (4) | | iggle | | | | |
| _ | 934 | | | <u> </u> ∑ | | ss | 7-7-9-4 | | | | | | |
| _ | 932 | | | | | 4 | (16) | | | | | | |
| 10 | 930 | | SM | | | SS 5 | 8-21-25-14 (46) | | | | • | | |
| - | _928_ | | OW | | | | | | | / | | | |
| _ | _920_ | | | | | | | | | / | | | |
| | 926 | | | | | \ss | 6-10-13 | | | | | | |
| 15_ | 924 | | | | | 6 | (23) | | | | | | |
| _ | | | | Account Deficiel at 40 feet | | | | | | | | | |
| - | 922 | | | Auger Refusal at 18 feet. Bottom of hole at 18.0 feet. | | | | | | | | | |
| | 920 | - | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | 918 | - | | | | | | | | | | | |
| | 916 | - | | | | | | | | | | | |
| | 914 | - | | | | | | | | | | | |
| | _914_ | - | | | | | | | | | | | |
| | 912 | | | | | | | | | | | | |
| | 910 | - | | | | | | | | | | | |
| | 908 | | | | | | | | | | | | |
| | _ _906_ | - | | | | | | | | | | | |
| | 904 | - | | | | | | | | | | | |
| | | - | | | | | | | | | | | |
| | 902 | - - | | | | | | | | | | | |



BORING ID: B-21

| | MATERIA | LS TESTIN | IG | | | | | | | | | | | | |
|------------|-----------------|-------------|----------------------|---------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------------|----------------|--------|----------|-------|---------|---|
| CLIE | NT _ | HNT | В | | | | PROJECT NAME Win | ndy Hill | Road - Terr | ell Mil | l Road | l Conn | ector | | |
| PRO | JECT | NU | MBER | A121503.122 | | | PROJECT LOCATION | _Mariet | tta, Cobb C | ounty, | Georg | gia | | | |
| DATE | E STA | ARTI | ED <u>2/3</u> | 3/17 | _ COMPLETED . | 2/3/17 | GROUND ELEVATION | 940 ft | : | HOLE | SIZE | 6"_ | | | |
| DRIL | LING | СО | NTRAC | TOR Tri-State | e Drilling, LLC | | GROUND WATER LEV | ELS: | | | | | | | |
| DRIL | LING | ME | THOD | Hollow Stem A | Auger | | AT TIME OF DRII | LING | GNA | | | | | | |
| LOG | GED | BY | Basan | ita Dhakal | _ CHECKED BY | P. Vaddu | AT END OF DRIL | LING | | | | | | | |
| NOTI | ES _S | Sta. | 139+00 |), 40'R | | | AFTER DRILLING | 3 <u></u> | | | | | | | |
| | | رم | | | | | | T | | | | • CDT | N VAI | | |
| € | <u></u> | GRAPHIC LOG | USCS Group Symbol | | | | | SAMPLE TYPE NUMBER | SΘ | % ≿ | | | C CON | | |
| DEPTH (ft) | ELEV. (ft) | 우 | Gr. nbo | | MATERIA | L DESCRIPTION | | ET. | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | 011 | PL | MC | LL | |
| 년 | | AP | SCS | | | | | MAN | N S B B | SE | | <u> </u> | | | |
| | _ | 용 | Ö | | | | | SA | | 뿞 | FI | | CONTE | | |
| 0 | | - | | Asphalt | | | | | | | | 0 4 | 0 60 |) 8 | J |
| - + | | | | Graded agg | gregate base | | | | | | | | | | ļ |
| - 4 | 938 | DI. | | | retrieved (0' - 2') | | IND | 1 | | | | | | | |
| . | | | | Loose, read | aisn brown, gray, r | micaceous, silty SA | AND | \/ ss | 3-4-5-6 | | | | | | |
| | 936_ | | SM | | | | | /\ 1 | (9) | | T | | | | |
| 5 | | | SIVI | | | | | V _{ss} | 3-3-4-5 | | 11 | | | | |
| | 24 | | | | | | | 2 | (7) | | 7 | | | | |
| - + | 934 | | | | ense to very dense | , gray, brown, SAN | ID with silt and rock | | 0.7.40.04 | | | | | | |
| - + | | | | fragments | | | | | 3-7-12-34 (19) | | • | | | | |
| - + | 932 | | SP-SM | | | | | \longrightarrow | | | | | | | |
| - 丰 | | | | | | | | \/ ss | 26-17-43- 37 | | | | | , | |
| 10 9 | 930 | | | | | | | 4 | (60) | | | | | | |
| | نا | | | Auger refus | | of hole at 10.2 feet | | 1 | | | | | | | |
| \[\langle | 928_ | | | | BOLLOITI | of floie at 10.2 feet | • | | | | | | | | |
| ľ | 020_ | | | | | | | | | | | | | | |
| F | _ | | | | | | | | | | | | | | |
| 1 | 926_ | | | | | | | | | | | | | | |
| - | | | | | | | | | | | | | | | |
| 3 | 924_ | | | | | | | | | | | | | | |
| | _ | | | | | | | | | | | | | | |
| إ | 922_ | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| , | 920 | | | | | | | | | | | | | | |
| ľ | 920 | | | | | | | | | | | | | | |
| H | _ | | | | | | | | | | | | | | |
| 3 | 918_ | | | | | | | | | | | | | | |
| - | - | | | | | | | | | | | | | | |
| 9 | 916_ | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | 914_ | | | | | | | | | | | | | | |
| ľ | v .¬ <u>′</u> _ | | | | | | | | | | | | | | |
| + | _ | | | | | | | | | | | | | | |
| 3 | 912_ | | | | | | | | | | | | | | |
| - | _ | | | | | | | | | | | | | | |
| 9 | 910 <u></u> | | | | | | | | | | | | | | |
| | _ | | | | | | | | | | | | | | |

GEOTECHNICAL-ENVIRONMENTAL

Soil Profile

BORING ID: WB3-13

| GEO | TECHNIC/ MATER | L•Envir | ONMENTAL TING | | | | | | | | | |
|------------|-------------------|--------------------|----------------------|--|-------------------------------------|-----------------------|-----------------------------|----------------|-----------------|--|----------------|----------|
| CLIE | NT . | HN | ТВ | | PROJECT NAME Wir | ndy Hill | Road - Ter | rell Mil | l Road C | Connector | r | |
| PRO. | JEC | T NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | tta, Cobb C | county, | Georgia | а | | |
| DATE | E ST | AR1 | ED 12 | /4/18 COMPLETED 12/4/18 | GROUND ELEVATION | 957.5 | ft | HOLE | SIZE _ | 6" | | |
| DRIL | LING | G CC | ONTRAC | CTOR M&W Drilling | GROUND WATER LEV | ELS: | | | | | | |
| DRIL | LING | 3 MI | ETHOD | Hollow Stem Auger | $\overline{igspace}$ at time of DRI | LLING | 14.0 ft / E | lev 94 | 3.5 ft | | | |
| LOG | GED | BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF DRIL | LING | | | | | | |
| NOTI | ES _ | Sta | 140+4 | 7, 43'L | AFTER DRILLING | G | | | | | | _ |
| | | (D | | | | 1111 | | % | | SPT N V | ALLIE | _ |
| Œ | (£ | ρ | dno. | | | \ F \ F \ | ZE (E) | ₹% | | | NTENT % | <u>-</u> |
| DEРТН (ft) | ELEV. (ft) | 3RAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | P | L MC | : LL | _ |
| <u> </u> | | RAP | JSC Sy | | | M S | S C B | | | ES CONT | TENT (%) [| _ |
| 0 | | ত | _ | | | Ś | | ₩. | 20 | | 60 80 | _ |
| - | | | | 0.1 feet of ASPHALT, 0.4 feet of GRAVEL | CANID | √ss | 3-4-3 | | | | | |
| ' | 956_ | | SM | Very loose to loose, brown to reddish brown, silty | / SAND, micaceous | 1 | (7) | | | | | |
| | 954_ | | Olvi | | | SS 2 | 2-2-2-3 (4) | | | | | |
| 5 | | | | Very loose, reddish brown, clayey SAND, micace | eous | ss | | 1 | | | | |
| | 952_ | | SC | | | 3 | (2) | ' | R | | | _ |
|], | 050 | | | Very loose to medium dense, brown to reddish b brown, grayish brown, dark brown, white, black, s | | Ss | | 1 | | | | |
| | 950 | | | micaceous | Sitty OAIND, | 4 | (12) | - | [| | | |
| | 948_ | | | | | SS 5 | 2-2-5-4 (7) | | $ \phi $ | | | |
| _10_ | | | | | | | () | 1 | + | + | | _ |
| | 946_ | | | | | | | | | | | |
|], | 044 | | | | | | | | | | | |
| | 944_ | | | $\bar{\Sigma}$ | | √ss | 0-1-1 | ┧ , | | | | |
| _15 | 942_ | | | | | 6 | (2) | - | \mathbb{H} | - | + | _ |
| | | | | | | | | | $ \setminus $ | | | |
| | 940 | | | | | | | | $ \setminus $ | | | |
|], | | | | | | √ss | 2-4-10 | - | | | | |
| _20_ | 938_ | | | | | 7 | (14) | - | | $-\!\!\!\!+\!\!\!\!-$ | | |
| [| 936_ | | | | | | | | | | | |
| | | | | | | | | | | | | |
| <u> </u> | 934_ | | SM | | | //ss | 3-3-7 | - | | | | |
| 25 | 932_ | | | | | SS 8 | (10) | | | \perp | | _ |
| | 932_ | | | | | | | | | | | |
| [| 930 | | | | | | | | | | | |
| - | - | | | | | 100 | 3-3-9 | - | | | | |
| 30_ | 928_ | | | | | SS 9 | (12) | | <u> </u> | | | |
| | _ 926_ | | | | | | | | | | | |
| | <u></u> | | | | | | | | | | | |
| | 924_ | | | | | 100 | 0.1.1 | 1 | / | | | |
| 35 | - | | | | | SS 10 | 0-1-1 (2) | _ (| | <u>1</u> ♠ | | |
| | 922_ | | | | | , | | | | | | |
| | 920 | | | | | | | | | | | |
| [| | | | | | | | | | | | |
| [| 918_ | | | | | SS | 5-8-13 | 1 | } | | | |

GEOTECHNICAL-ENVIRONMENTAL MATERIALS TESTING

Soil Profile

BORING ID: WB5-04

| CLI | ENT | HN | ТВ | | PROJECT NAME Win | ndy Hill F | Road - Ter | rell Mil | Road (| Conne | ector | | |
|-------------------|------------|-------------------------|----------------------|---|---------------------|-----------------------|-----------------------------|----------------|-------------|----------|-------|-------|------|
| PRO | OJEC. | T NU | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | county, | Georgi | а | | | |
| DA | TE ST | AR1 | TED 12 | /4/18 COMPLETED 12/4/18 | GROUND ELEVATION | 958 ft | | HOLE | SIZE | 6" | | | |
| DRI | LLING | G CC | ONTRAC | TOR M&W Drilling | GROUND WATER LEV | ELS: | | | | | | | |
| DRI | LLING | 3 MI | ETHOD | Hollow Stem Auger | abla at time of DRI | LLING | 20.2 ft / E | lev 937 | 7.8 ft | | | | |
| LO | GGED | BY | A. Mo | ussly CHECKED BY P. Vaddu | AT END OF DRIL | LING _ | | | | | | | |
| NO. | TES _ | Sta | . 140+50 |), 38'R | AFTER DRILLING | G | | | | | | | |
| | | (D | | | | | | | | SDT | N VAL | LIE 🗬 | 1 |
| Œ. | £ | GRAPHIC LOG | USCS Group Symbol | | | SAMPLE TYPE NUMBER | E S | % ≿ | | | | | |
| DEPTH (ft) | ELEV. (ft) | $\overset{\bigcirc}{=}$ | Gr S Gr | MATERIAL DESCRIPTION | | LE T | BLOW COUNTS (N VALUE) | RECOVERY (RQD) | F | | MC | LL | 70 0 |
| Ë | | AP | SCS | | | MPI | SOL N | SE | | <u> </u> | _ | | |
| | | GR | Ď | | | SA | _ | W | FIN | | ONTE | | |
| 0 | | | | 0.9 feet of ASPHALT and GRAVEL | | | | | 20 | 40 | 60 | 80 |) |
| | 956 | | | Very loose to dense, brown to reddish brown, lig | ht brown, orange | X ss | 3-6 | 1 | | . 占 | | | |
| | _550_ | | | brown, grayish brown, dark brown, white, silty Si | AND, micaceous | SS 1 | 4-7-6-9 | 1 | | | | | |
| | 954 | | | | | 2 | (13) | | \P | | | | |
| 5 | | | | | | | 4-7-10-17 | | | | | | |
| | 952 | | | | | 3 | (17) | | | | | | |
| | ļ _ | | | | | SS | 9-7-9-10 | | | | | | |
| | 950 | | | | | 4 | (16) | - | / | | | | |
| | <u> </u> | | | | | SS 5 | 4-4-6-12 (10) | | | | | | |
| 10 | 948_ | | | | | | (10) | 1 | | | | | |
| | 946 | | | | | | | | | | | | |
| | _940_ | | | | | | | | | | | | |
| | 944 | | | | | 100 | 2 4 7 | - | | | | | |
| 15 | | | | | | SS 6 | 3-4-7 (11) | | • | | | | |
| | 942 | | | | | • | | | | | | | |
| | Ļ _ | | | | | | | | | | | | |
| | 940 | | | | | | | | | | | | |
| | | | | | | √ss | 3-3-4 | 1 | | | | | |
| 20 | 938_ | | SM | ∇ | | 7 | (7) | - | \vdash | _ | | | |
| | 026 | | Olvi | | | | | | $ \ \ $ | | | | |
| | _936_ | | | | | | | | $ \ \ $ | | | | |
| | 934 | | | | | √ss | 5-7-8 | - | $ \ \ $ | | | | |
| 25 | | | | | | 8 | (15) | | | | | | |
| | 932 | | | | | | | | | | | | |
| | ļ _ | | | | | | | | | | | | |
| | 930 | | | | | | | | | | | | |
| | | | | | | SS | 2-4-8 | 1 | | | | | |
| 30 | 928_ | | | | | 9 | (12) | - | \vdash | | | | |
| | 026 | | | | | | | | | | | | |
| | 926_ | | | | | | | | | | | | |
| | 924 | | | | | 100 | 0-7-11 | - | \ | | | | |
| 35 | | | | | | SS 10 | (18) | | | | | | |
| | 922 | | | | | | | | | | | | |
| | | | | | | | | | \ | \ | | | |
| | 920 | | | | | | | | | \ | | | |
| | 010 | | | | | SS | 9-17-15 |] | | | | | |



BORING ID: WB5-04

PROJECT NAME Windy Hill Road - Terrell Mill Road Connector CLIENT HNTB PROJECT NUMBER A121503.122 PROJECT LOCATION Marietta, Cobb County, Georgia SAMPLE TYPE NUMBER ● SPT N VALUE ● GRAPHIC LOG USCS Group Symbol BLOW COUNTS (N VALUE) RECOVERY ((RQD) DEPTH (ft) ELEV. (ft) ⊕ ORGANIC CONTENT % ⊕ MATERIAL DESCRIPTION MC ☐ FINES CONTENT (%) ☐ 40 40 60 Very loose to dense, brown to reddish brown, light brown, orange brown, grayish brown, dark brown, white, silty SAND, micaceous 916 914 3-6-8 (14)SM 912 910 4-8-11 <u>50</u> 908 (19)Bottom of hole at 50.0 feet. 906_ 904_ 902_ 900 898_ 896_ 894_ 892 890 _888_ _886_ 884_ 882_ 880 _878_ 876_ 874_



BORING ID: WB3-14

| 7 | EOTECHNIC MATE | AL•ENVIR | ONMENTAL TING | | | | | | | | | | | | |
|--------------|-------------------|-------------|----------------------|---|-------------------------|-----------------------|-----------------------------|------------------|--|----------|------|---------------|--|--|--|
| CLI | ENT | HN | ТВ | | PROJECT NAME Win | ndy Hill I | Road - Terr | ell Mil | l Road Conn | ector | | | | | |
| PRO | JEC | T NL | JMBER | A121503.122 | PROJECT LOCATION | Mariet | ta, Cobb C | ounty, | Georgia | | | | | | |
| DAT | E ST | ART | ED _12 | /4/18 COMPLETED 12/4/18 | GROUND ELEVATION | 964 ft | | HOLE | SIZE _6" | | | | | | |
| DRI | LLIN | G CC | ONTRAC | TOR M&W Drilling | GROUND WATER LEV | ELS: | | | | | | | | | |
| | | | | Hollow Stem Auger | AT TIME OF DRILLING GNE | | | | | | | | | | |
| | | | | ussly CHECKED BY P. Vaddu | AT END OF DRIL | _ | | | | | | | | | |
| NO. | res . | Sta. | 141+70 |), 30'L | AFTER DRILLING | G | | ı | | | | | | | |
| O DEPTH (ft) | ELEV. (ft) | GRAPHIC LOG | USCS Group Symbol | MATERIAL DESCRIPTION | | SAMPLE TYPE NUMBER | BLOW COUNTS (N VALUE) | RECOVERY % (RQD) | ⊕ ORGANI PL ⊢ FINES | MC | TENT | · % ⊕ 6) □ | | | |
| | | | SC | Very loose, brown, clayey SAND, micaceous, tra | ces of roots | \ ss | 0-0-0-0 | | ●<< ▲ | | | | | | |
| | 962 | | | WOH from 0 to 2 feet. Firm, reddish brown, sandy FAT CLAY, micaceo | ue . | 1 | (0) | | | | | | | | |
| | 960 | | СН | Timi, reduisit brown, sandy FAT CLAT, micaceo | us | SS 2 | 2-2-4-5 (6) | | \ _ | | | | | | |
| 5 | 300 | | | Medium dense to very dense, light to dark brown | , pale brown, silty | ss | 2-6-7-11 | | | | | | | | |
| | 958 | | | SAND, micaceous | | 3 | (13) | | | | | | | | |
| | | | | | | SS 4 | 6-8-12-13 (20) | | 🗼 | | | | | | |
| | 956 | | | | | ss | 13-21-16- | | | | | | | | |
| 10 | 954 | | | | | 5 | 16 (37) | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | 952 | | | | | | | | | | | | | | |
| | 950 | | | | | √ss | 6-14-9 | | | | | | | | |
| 15 | | | | | | 6 | (23) | | | | | | | | |
| | 948 | | | | | | | | | | | | | | |
| | 946 | | | | | | | | | | | | | | |
| | | | CM | | | √ss | 4-8-7 | | | | | | | | |
| 20 | 944 | | SM | | | 7 | (15) | | - | \vdash | | | | | |
| | 942 | | | | | | | | | | | | | | |
| | | | | | | | | | \ | | | | | | |
| | 940 | | | | | SS 8 | 6-7-17 | | | | | | | | |
| 25 | 938 | | | | | / 8 | (24) | | | | | | | | |
| | _550_ | | | | | | | | | | | | | | |
| | 936 | | | | | | | | | | | | | | |
| 30 | 934 | | | | | SS 9 | 7-7-11 (18) | | | | | | | | |
| | _554_ | | | | | V 4 - | (10) | | | | | | | | |
| | 932 | | | | | | | | | | | | | | |
| | 020 | | | | | Vac | F0 '0" | | | | | | | | |
| | 930 | | | Auger Refusal at 34.5 feet. Low Recovery (33.5' - 34.5') | _ | ⊠SS 10 | 50/6" | | | | | >> | | | |
| | 928 | | | Bottom of hole at 34.5 feet. | | | | | | | | | | | |
| | | . | | | | | | | | | | | | | |
| | _926_ | - | | | | | | | | | | | | | |
| | | - 1 | | | | 1 | | 1 | 1 1 | 1 | I | | | | |

APPENDIX II

- Summary of Laboratory Results 2 Pages
 - Atterberg Limits' Results 1 Page
 - Grain Size Distribution 1 Page
 - Corrosion Test Results 1 Page

PAGE 1 OF 2

SUMMARY OF LABORATORY RESULTS

GEOTECINICAL *ENVIRONMENTAL MATERIALS TESTING

MC Squared, Inc. 1275 Shiloh Road, Suite 2620 Kennesaw, GA 30144

CLIENT HNTB

PROJECT NAME Windy Hill Road - Terrell Mill Road Connector

PROJECT LOCATION Marietta, Cobb County, Georgia

PROJECT NUMBER A121503.122 GDOT P.I. 0013967

| Station/ | | | | %< Finer Sieve N M Decisión de | | | | | | | | | | <u> </u> | | | |
|---------------------|--------------------|---|------------------|--------------------------------|-----|-----|-----|-----|-----|------|------|------|-----|----------------------|---------|---------|---------|
| Sample No. | Offset (C/L) | Soil Description | USCS - Class. | 3/4" | #4 | #10 | #20 | #40 | #60 | #100 | #200 | (%) | рН | Resistivity (ohm-cm) | LL % | PL % | PI % |
| WB3-03 (48.5-50 ft) | Sta. 117+44, 43'L | Whitish, Grayish Silty SAND with Mica | SM | | | | | | | | 23 | 28.6 | | | NP | NP | NP |
| WB3-04 (4-6 ft) | Sta. 120+58, 15'L | Dark Reddish Brown Silty SAND Micaceous | SM | | | | | | | | 44 | 22.7 | | | NP | NP | NP |
| WB3-05 (8-10 ft) | Sta. 122+17, 15'L | Mottled Brown Gray Silty SAND Micaceous | SM | | | | | | | | 16 | 14.2 | | | NP | NP | NP |
| WB4-02 (0-2 ft) | Sta. 122+67, 86'R | Reddish Brown Silty SAND Micaceous | SM | | 96 | 89 | 81 | 72 | 59 | 45 | 35 | 17.8 | | | NP | NP | NP |
| WB4-02 (2-4 ft) | Sta. 122+67, 86'R | Orange, Brown SAND with Silt and Mica | SP-SM | | | | | | | | | | 5.3 | 31,000 | | | |
| WB4-03 (2-4 ft) | Sta. 123+67, 89'R | Dark Reddish Brown Silty SAND Micaceous | SM | | 85 | 81 | 73 | 66 | 54 | 41 | 30 | 15.1 | | | NP | NP | NP |
| WB4-03 (4-6 ft) | Sta. 123+67, 89'R | Reddish Brown Silty SAND with Mica | SM | | 82 | 76 | 68 | 60 | 48 | 35 | 25 | 15.3 | | | NP | NP | NP |
| WB4-03 (6-8 ft) | Sta. 123+67, 89'R | Reddish Brown Silty SAND Micaceous | SM | | | | | | | | | | 5.4 | 24,000 | | | |
| WB5-06 (2-4 ft) | Sta. 124+32, 106'F | Reddish Brown Silty SAND Micaceous | SM | | | | | | | | 36 | 16.1 | | | NP | NP | NP |
| WB3-06 (0-2 ft) | Sta. 124+94, 73'L | Reddish Brown Sandy Lean CLAY Micaceous | CL | | | | | | | | 65 | 25.1 | | | 44 | 22 | 22 |
| WB3-06 (2-4 ft) | Sta. 124+94, 73'L | Reddish Brown Sandy Elastic SILT Micaceous | МН | | | | | | | | 59 | 25.3 | | | 52 | 29 | 23 |
| WB3-08 (0-2 ft) | Sta. 129+45, 40'L | Reddish Brown Clayey SAND with Mica | SC | | | | | | | | 45 | 25.6 | | | 46 | 22 | 24 |
| WB3-08 (2-4 ft) | Sta. 129+45, 40'L | Orangish Brown SIIty SAND Micaceous | SM | | | | | | | | | | 5.2 | 32,000 | | | |
| WB3-08 (4-6 ft) | Sta. 129+45, 40'L | Brown Silty SAND with Gravel with Mica | SM | 95 | 76 | 70 | 59 | 51 | 41 | 31 | 20 | 11.5 | | | NP | NP | NP |
| WB3-08 (8-10 ft) | Sta. 129+45, 40'L | Mottled Yellowish Brown, Dark Brown SAND with Silt and Mica | SP-SM | | | | | | | | 11 | 10.1 | | | NP | NP | NP |
| WB5-01 (0-2 ft) | Sta. 131+00, 43'R | Reddish Brown Silty SAND with Mica | SM | | | | | | | | 23 | 17.9 | | | NP | NP | NP |
| WB5-01 (6-8 ft) | Sta. 131+00, 43'R | Brown Silty SAND Micaceous | SM | | | | | | | | 16 | 13.3 | | | NP | NP | NP |
| WB3-10 (0-2 ft) | Sta. 134+65, 45'L | Reddish Brown Clayey SAND | SC | | | | | | | | 49 | 25.3 | | | 43 | 23 | 20 |
| WB3-10 (2-4 ft) | Sta. 134+65, 45'L | Reddish Brown Silty SAND Micaceous | SM | | | | | | | | | | 5.0 | 30,000 | | | |
| WB3-10 (4-6 ft) | Sta. 134+65, 45'L | Grayish Brown Silty SAND Micaceous | SM | | | | | | | | | | 5.6 | 100,000 | | | |
| WB3-10 (6-8 ft) | Sta. 134+65, 45'L | Brown Silty SAND Micaceous | SM | 100 | 100 | 98 | 89 | 77 | 61 | 45 | 27 | 15.6 | 5.0 | 70,000 | NP | NP | NP |
| WB3-10 (18.5-20 ft) | Sta. 134+65, 45'L | Light Brown Silty SAND Micaceous | SM | | | | | | | | 20 | 12.7 | | | NP | NP | NP |
| WB5-03 (2-4 ft) | Sta. 136+70, 65'R | Brown Silty SAND with Roots Micaceous | SM | | | | | | | | 34 | 18.7 | | | NP | NP | NP |
| WB5-03 (8-10 ft) | Sta. 136+70, 65'R | Dark Brown Silty SAND Micaceous | SM | | | | | | | | 37 | 30.1 | | | NP | NP | NP |
| WB3-12 (2-4 ft) | Sta. 137+50, 45'L | Reddish Brown Clayey SAND Micaceous | SC | | | | | | | | | | 5.2 | 23,000 | | | |
| WB3-12 (4-6 ft) | Sta. 137+50, 45'L | Reddish Brown Sandy SILT Micaceous | ML | | | | | | | | 72 | 15.1 | | | NP | NP | NP |
| WB3-12 (6-8 ft) | Sta. 137+50, 45'L | Light Brown Silty SAND Micaceous | SM | | | | | | | | | | 5.8 | 140,000 | | | |
| WB3-12 (8-10 ft) | Sta. 137+50, 45'L | Light Brown Silty SAND Micaceous | SM | | | | | | | | | | 5.9 | 110,000 | | | |
| WB3-12 (13.5-15 ft) | Sta. 137+50, 45'L | Light Brown Silty SAND Micaceous | SM | | | | | | | | 25 | 10.4 | | | NP | NP | NP |
| WB3-12 (28.5-30 ft) | Sta. 137+50, 45'L | Brown Silty SAND Micaceous | SM | | | | | | | | 21 | 19.5 | | | NP | NP | NP |

PAGE 2 OF 2

GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING

MC Squared, Inc.

1275 Shiloh Road, Suite 2620 Kennesaw, GA 30144

CLIENT HNTB

PROJECT NUMBER A121503.122 GDOT P.I. 0013967

PROJECT NAME Windy Hill Road - Terrell Mill Road Connector

PROJECT LOCATION Marietta, Cobb County, Georgia

| | Station/ | Soil Description | | | | | %< Fin | er Sieve | | | | N M | | | | | |
|---------------------|-------------------|--|------------------|------|----|-----|--------|----------|-----|------|------|--------|----|----------------------|---------|---------|---------|
| Sample No. | Offset (C/L) | | USCS - Class. | 3/4" | #4 | #10 | #20 | #40 | #60 | #100 | #200 | (%) | рН | Resistivity (ohm-cm) | LL % | PL % | PI % |
| WB3-16 (2-4 ft) | Sta. 139+00, 39'L | Reddish Brown Silty SAND Micaceous | SM | | | | | | | | 42 | 26.7 | | | 52 | 29 | 23 |
| WB3-16 (13.5-15 ft) | Sta. 139+00, 39'L | Light Brown Silty SAND Micaceous | SM | | | | | | | | 20 | 21.8 | | | NP | NP | NP |
| WB3-13 (4-6 ft) | Sta. 140+47, 43'L | Reddish Brown Clayey SAND Micaceous | sc | | | | | | | | 43 | 23.9 | | | 42 | 24 | 18 |
| WB3-13 (13.5-15 ft) | Sta. 140+47, 43'L | Gray White Silty SAND Micaceous | SM | | | | | | | | 29 | 39.2 | | | NP | NP | NP |
| WB3-13 (33.5-35 ft) | Sta. 140+47, 43'L | Light Gray, White Silty SAND Micaceous | SM | | | | | | | | 23 | 39.4 | | | NP | NP | NP |
| WB5-04 (0-2 ft) | Sta. 140+50, 38'R | Reddish Brown Silty SAND Micaceous | SM | | | | | | | | 39 | 21.3 | | | NP | NP | NP |
| WB5-04 (18.5-20 ft) | Sta. 140+50, 38'R | Brown Silty SAND Micaceous | SM | | | | | | | | 33 | 34.2 | | | NP | NP | NP |
| WB3-14 (0-2 ft) | Sta. 141+70, 30'L | Brown Clayey SAND with Traces of Roots Micaceous | sc | | | | | | | | 42 | 23.3 | | | 31 | 21 | 10 |
| WB3-14 (2-4 ft) | Sta. 141+70, 30'L | Reddish Brown Sandy FAT CLAY Micaceous | СН | | | | | | | | 58 | 27.5 | | | 56 | 28 | 28 |
| WB3-14 (8-10 ft) | Sta. 141+70, 30'L | Brown Silty SAND Micaceous | SM | | | | | | | | 14 | 9.5 | | | NP | NP | NP |
| WB3-14 (18.5-20 ft) | Sta. 141+70, 30'L | Light Brown Silty SAND Micaceous | SM | | | | | | | | 20 | 17.5 | | | NP | NP | NP |

SUMMARY OF LABORATORY RESULTS

ATTERBERG LIMITS' RESULTS



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CL-ML

I

N D E X

MC Squared Inc. 1275 Shiloh Road,Suite 2620 Kennesaw, GA 30144

CLIENT HNTB

PROJECT NAME Windy Hill Road - Terrell Mill Road Connector

PROJECT NUMBER A121503.122 GDOT P.I. 0013967 PROJECT LOCATION Marietta, Cobb County, Georgia (CL) (CH) 50 PLASTICITY 40

×

(ML)

(MH)

| 0 20 40 60 80 100 LIQUID LIMIT Specimen Identification | |
|---|----|
| Specimen Identification LL PL PI Fines Classification | |
| ' | |
| ● WB3-06 (0-2 ft) 44 22 22 65 Reddish Brown Sandy Lean CLAY Micaceous | |
| | |
| ▼ WB3-06 (2-4 ft) 52 29 23 59 Reddish Brown Sandy Elastic SILT Micaceous | |
| ▲ WB3-08 (0-2 ft) 46 22 24 45 Reddish Brown Clayey SAND with Mica | |
| ★ WB3-10 (0-2 ft) 43 23 20 49 Reddish Brown Clayey SAND | |
| WB3-16 (2-4 ft) 52 29 23 42 Reddish Brown Silty SAND Micaceous | |
| ♥ WB3-13 (4-6 ft) 42 24 18 43 Reddish Brown Clayey SAND Micaceous | |
| ○ WB3-14 (0-2 ft) 31 21 10 42 Brown Clayey SAND with Traces of Roots Micaceo | us |
| △ WB3-14 (2-4 ft) 56 28 28 58 Reddish Brown Sandy FAT CLAY Micaceous | |
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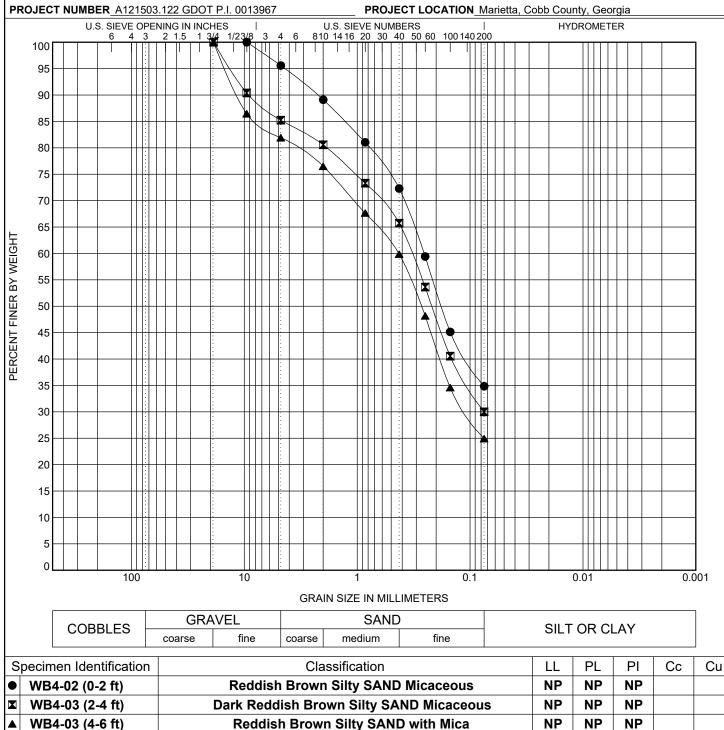
GRAIN SIZE DISTRIBUTION



MC Squared Inc. 1275 Shiloh Road,Suite 2620 Kennesaw, GA 30144

CLIENT HNTB

PROJECT NAME Windy Hill Road - Terrell Mill Road Connector



| | WB4-02 (0-2 ft) | | Reddish Br | own Silty S | NP | NP | NP | | | |
|---|------------------------|-------|------------|--------------|----------|---------|-----------|----|-----------|-------|
| X | WB4-03 (2-4 ft) | Da | rk Reddish | Brown Silty | SAND Mi | caceous | NP | NP | NP | |
| ▲ | WB4-03 (4-6 ft) | | Reddish B | rown Silty S | AND with | Mica | NP | NP | NP | |
| | | | | | | | | | | |
| S | pecimen Identification | D100 | D60 | D30 | D10 | %Gravel | %Sand | | %Silt | %Clay |
| • | WB4-02 (0-2 ft) | 9.525 | 0.256 | | | 4.4 | 60.7 | | | 4.8 |
| × | WB4-03 (2-4 ft) | 18.75 | 0.331 | 0.075 | | 14.8 | 55.2 | | 3 | 0.0 |
| ▲ | WB4-03 (4-6 ft) | 18.75 | 0.43 | 0.108 | | 18.1 | 57.0 | | 2 | 4.9 |
| | | | | | | | | | | |
| | | | | | | | | | | |

Corrosion Test Results

| | Summary of Environmental Corrosion Test Results | | | | | | | | | | | | | | |
|--|---|--------|-------------------------|-----------------|-------------------|-------------------|---|--|--|--|--|--|--|--|--|
| Boring No. / Depth | uscs | рН | Resistivity (ohm-cm) | Chlorides (ppm) | Sulfates (ppm) | (Sc | sification * oil) | | | | | | | | |
| (ft) | | | (Olilli Olli) | (ррпі) | (ppiii) | Steel | Concrete | | | | | | | | |
| WB3-08 (2 – 4) | SM | 5.2 | 32,000 | <11 | 29 | Non- Corrosive | Non- Corrosive | | | | | | | | |
| WB4-02 (2 - | SP- | 5.3 | 31,000 | <11 | 27 | Non- | Non- | | | | | | | | |
| 4) | SM | | | | | Corrosive | Corrosive | | | | | | | | |
| WB4-03 (6 - | SM | 5.4 | 24,000 | 11 | 12 | Non- | Non- | | | | | | | | |
| 8) | | | | | | Corrosive | Corrosive | | | | | | | | |
| WB3-10 (2 - | SM | 5.0 | 30,000 | <10 | <10 | Non- | Non- | | | | | | | | |
| 4) | | | | | | Corrosive | Corrosive | | | | | | | | |
| WB3-10 (4 - | SM | 5.6 | 100,000 | <10 | <10 | Non- | Non- | | | | | | | | |
| 6) | | | | | | Corrosive | Corrosive | | | | | | | | |
| WB3-12 (2 - | SC | 5.2 | 23,000 | <10 | <10 | Non- | Non- | | | | | | | | |
| 4) | | | | | | Corrosive | Corrosive | | | | | | | | |
| WB3-12 (6 - | SM | 5.8 | 140,000 | <10 | <10 | Non- | Non- | | | | | | | | |
| 8) | | | | | | Corrosive | Corrosive | | | | | | | | |
| Notes: | | | | | | | | | | | | | | | |
| *As per Soil Na | *As per Soil Nail Wall Reference Manual, FHWA GEC 007, Publication no. FHWA-NHI-14-007, | | | | | | | | | | | | | | |
| February 2015 (Section 7.5) | | | | | | | | | | | | | | | |
| pH – tested in accordance with ASTM D4972 | | | | | | | | | | | | | | | |
| Resistivity – tested in accordance with ASTM G57 | | | | | | | | | | | | | | | |
| Chlorides - con | tent dete | rmined | by EPA SW9056 | SA test method | | | Chlorides – content determined by EPA SW9056A test method | | | | | | | | |

Sulfates – content determined by EPA SW9056A test method



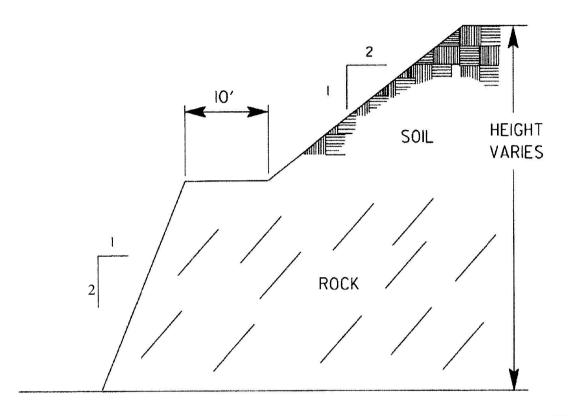


APPENDIX III

- Detail of Rock Cut 1 Page
- Berm Detail for Cuts or Fills over 35 Feet 1 Page
 - Benching Detail 1 Page
 - Standup Test Photographs 4 Pages
 - Seismic Refraction Survey Report 18 Pages

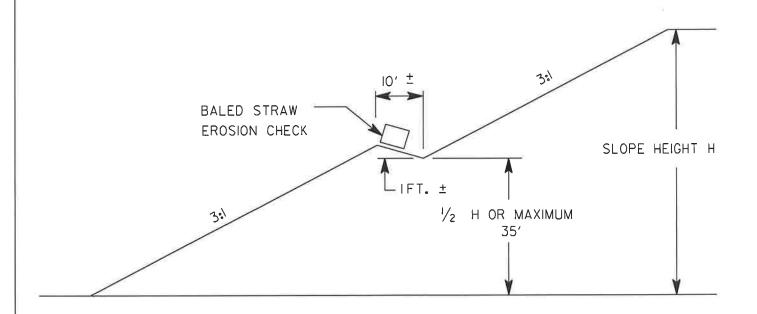
Windy Hill Road-Terrell Mill Road Connector

Marietta, Cobb County, Georgia PI No. 0013967



| APPLIES TO STATION TO STATION | LOCATION | RANGE OF ROCK DEPTHS FROM EXISTING TOP OF GROUND ELEVATION. |
|---------------------------------------|------------|---|
| 122+00± to 123+82± 128+50± to 131+00± | Rt. Lt. | 13 to 24 ft. 16 ft. |

DETAIL FOR ROCK CUT



NOTES:

- I. FOR SLOPE HEIGHTS LESS THAN 70 FT.BUT GREATER THAN 35 FT., A BERM SHOULD BE CONSTRUCTED AT APPROX. 1/2 THE SLOPE HEIGHT. FOR SLOPE HEIGHTS GREATER THAN 70 FT., CONSTRUCT A BERM EVERY 35 FT.
- 2. THE BERM SHOULD BE SLOPED TO DRAIN AND SHOULD BE CONNECTED TO CONCRETE FLUMES TO REMOVE WATER FROM SLOPE.
- 3. A DRAINAGE DITCH SHOULD BE CONSTRUCTED AT THE TOP OF CUT SLOPES WHERE WATER DRAINS TOWARDS SLOPE.

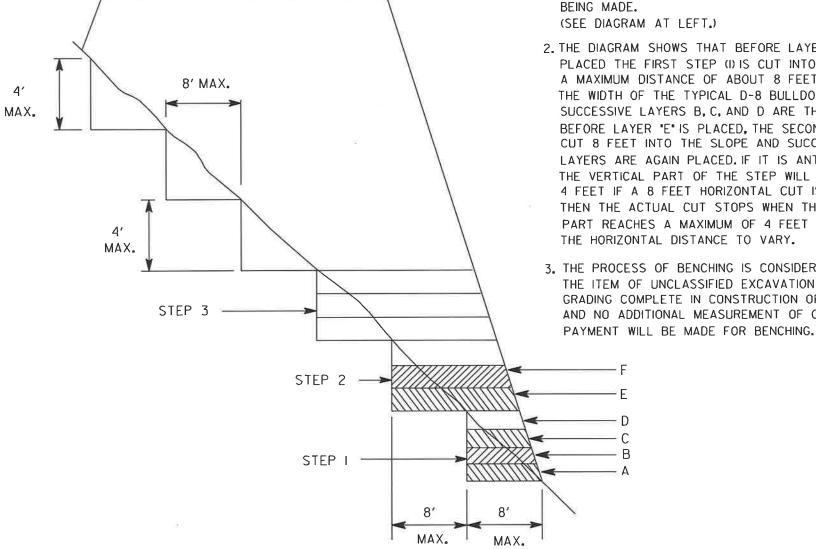
BERM DETAIL FOR CUTS OR FILLS OVER 35 FEET

I. WHERE THE EMBANKMENT IS TO BE PLACED ON A HILLSIDE OR ANOTHER EXISTING EMBANKMENT HAVING A SLOPE OF 3 TO IOR STEEPER, THE FOUNDATION MUST BE BENCHED WHILE THE EMBANKMENT IS BEING MADE. (SEE DIAGRAM AT LEFT.) 2. THE DIAGRAM SHOWS THAT BEFORE LAYER "A" IS PLACED THE FIRST STEP (I) IS CUT INTO THE SLOPE A MAXIMUM DISTANCE OF ABOUT 8 FEET (ABOUT 3/4 THE WIDTH OF THE TYPICAL D-8 BULLDOZER BLADE). SUCCESSIVE LAYERS B, C, AND D ARE THEN PLACED BEFORE LAYER "E" IS PLACED, THE SECOND STEP IS CUT 8 FEET INTO THE SLOPE AND SUCCESSIVE LAYERS ARE AGAIN PLACED. IF IT IS ANTICIPATED THAT THE VERTICAL PART OF THE STEP WILL EXCEED 4 FEET IF A 8 FEET HORIZONTAL CUT IS MADE, THEN THE ACTUAL CUT STOPS WHEN THE VERTICAL PART REACHES A MAXIMUM OF 4 FEET ALLOWING THE HORIZONTAL DISTANCE TO VARY. 3. THE PROCESS OF BENCHING IS CONSIDERED INCIDENTAL TO THE ITEM OF UNCLASSIFIED EXCAVATION AND BORROW OR GRADING COMPLETE IN CONSTRUCTION OF THE EMBANKMENT AND NO ADDITIONAL MEASUREMENT OF QUANTITY OR

Windy Hill Road-Terrell Mill Road Connector

Marietta, Cobb County, Georgia

PI No. 0013967



BENCHING DETAIL

Standup Test Photographs Windy Hill Road-Terrell Mill Road Connector

GDOT P.I. No. 0013967

Cobb County Project No. X2401

HNTB Project No. 64327

MC² Project No. A121503.122

Marietta, Cobb County, Georgia

Standup Test Photographs Windy Hill Road-Terrell Mill Road Connector HNTB ST-01 (129+00, 40' L)

Approximate dimensions: 2 feet wide, 6 feet long and 6 feet deep



Elapsed Time: 2 hours



Elapsed Time: 23 hours



Elapsed Time: 9 days

Standup Test Photographs Windy Hill Road-Terrell Mill Road Connector HNTB ST-02 (129+45, 45' L)

Approximate dimensions: 2 feet wide, 6 feet long and 6 feet deep



Elapsed Time: 1.5 hours



Elapsed Time: 24 hours



Elapsed Time: 9 days

Standup Test Photographs Windy Hill Road-Terrell Mill Road Connector HNTB ST-03 (134+00, 60' L)

Approximate dimensions: 2 feet wide, 6 feet long and 6 feet deep



Elapsed Time: 3 hours



Elapsed Time: 22 hours



Elapsed Time: 9 days

SEISMIC REFRACTION SURVEY REPORT

Windy Hill-Terrell Mill Connector Cobb County, Georgia

Prepared For: Chris Seckinger, P.E.

Project Manager/Lead Roadway

HNTB

191 Peachtree Street, NE, Suite 3300

Atlanta, GA 30303

Prepared By: MC Squared, Inc. 1275 Shiloh Rd, Suite 2620 Kennesaw, GA 30144

Project No.: A121503.122 Prepared: December 2016





December 22, 2016

Mr. Chris Seckinger, P.E. Project Manager/Lead Roadway HNTB 191 Peachtree Street, NE, Suite 3300 Atlanta, GA 30303

Subject: Seismic Refraction Survey Report

Windy Hill-Terrell Mill Connector

Cobb County, Georgia

MC Squared, Inc. (MC²) Project Number A121503.122

Dear Mr. Seckinger:

MC² is pleased to submit this Seismic Refraction Survey Report for the Windy Hill-Terrell Mill Connector in Cobb County, Georgia. Refer to **Sheet** 1 for an approximate Project Location Map. These services were authorized through a subcontract agreement between **MC**² and **HNTB** dated July 1, 2016.

Project Information

The planned improvements at the subject project consist of a new roadway alignment approximately 4,600 lineal feet. The planned roadway will consist of a four-lane divided roadway connecting Windy Hill Road and Terrell Mill Road with turn lanes and divided median. The proposed alignment transverses through areas with significant elevation changes. A preliminary evaluation of the roadway profile and cross sectional drawings provided by HNTB indicates several areas of cut and fill. Accordingly, HNTB has requested MC² to evaluate the subsurface conditions, specifically the presence of rock and its quality.

Scope of Work

Evaluation of the presence and depth to PWR and/or rock is a two-phase process. Phase I includes performing a non-invasive geophysical survey to estimate the depth, quality and extents of rock over a large footprint. Phase II includes performing test borings also called truth borings at strategically placed locations along the geophysical survey alignment to confirm and evaluate the quality of rock. This letter report addresses Phase I of the evaluation. Phase I of the evaluation consisted of performing a non-invasive geophysical method known as seismic refraction. Seismic refraction survey was performed along the proposed roadway alignment where cut is anticipated.

Field Investigation

A total length of approximately 1,320 lineal feet of roadway was evaluated over a period of four days. **Sheets 2 thru 4** depict the various proposed alignments and the approximate location of the various seismic refraction traverses, as located in the field by **MC**² personnel.

Seismic Refraction Survey Report Windy Hill-Terrell Mill Connector Cobb County, Georgia MC² Project Number A121503.122

The station numbering and location of the seismic refraction traverses as indicated on **Sheets 2 thru 4** should be considered approximate. Locations were identified in the field utilizing hand held GPS devices. Locations should be considered accurate to approximately 15 feet.

Seismic Refraction

The seismic refraction method is based on the measurement of the travel time of seismic waves refracted at the interfaces between subsurface layers of different velocity. Seismic energy (compression p-wave) is created by a source (shot) located on the surface. Energy radiates out from the shot point, either traveling directly through the upper layer (direct arrivals), or traveling down to and then laterally (refracting) along higher velocity layers (refracted arrivals) before returning to the surface. This energy is detected on the surface using a linear array (or spread) of geophones spaced at regular intervals. Beyond a certain distance from the shot point, known as the crossover distance, the refracted signal is observed as a first arrival signal at the geophones (arriving before the direct arrivals). Wave velocities increase as they are refracted off of harder layers. The field data establishes time versus distance graphs, which are used to calculate velocities and corresponding depths of the subsurface materials.

Field Methodology

A total of 8 seismic refraction traverses were deployed along various stations along the proposed alignment. At each traverse, twenty-four (24) 11.5 Hz geophones were deployed. The geophones were spaced 5 feet apart. Two sources were used, based on accessibility and ground surface conditions; one was a 20-lb sledge hammer striking a steel plate and the other was a GISCO Electronic Seismic Source which consists of a 50-lb hammer which utilizes elastomer acceleration. The source generates 208 Joules per strike at an impact velocity of 14 ft/sec. Several off-end shots, and intermediate center shots, were taken along each traverse alignment in the course of this survey.

The gathered data was analyzed using the SeisImager software suite, produced by Geometrics, Inc. Depth Profiles were produced by an analytical procedure based on consideration of shot and receiver geometry, the measured travel times and calculated velocities. The final output comprises of a depth profile of the refractor layers and a velocity model of the subsurface. Refer to **Sheets 5 thru 12** for P-wave profiles.

Findings

Inherent in this process is the assumption that the subsurface material gets denser with depth. Therefore, this technique cannot predict hidden layers (or weaker zones that may be present under rock layers). Refer to the limitations section of this report for additional limitations related to the seismic survey. In reading the attached profiles, the following typical range of velocities could be used as a reference. References to excavate-ability are in the context of an open cut.

| P-Wave Velocity (ft/sec) | Interpretation of Material Composition |
|-----------------------------|--|
| 0 – 2000 | Softer materials generally consisting of soils and Saprolites which typically can be excavated using backhoes and scrapers. |
| 2000 – 5000 | Partially Weathered and Fractured Rock which can usually be ripped using large earth moving equipment in mass excavations. Trench excavation may require blasting for removal. |
| >5000 | Competent Rock normally requiring blasting in trench or mass excavations |

The seismic refraction profiles showed a velocity range between 1,405 ft/sec and 1,986 ft/sec for the overburden material that ranged in thickness from approximately 2 feet to over 20 feet thick. The overburden is underlain by what appears to be more competent material, ranging in velocity from 3,033 ft/sec to over 11,000 ft/sec, which could connote layers of dense PWR and/or competent rock material.

The following table summarizes the seismic refraction line locations and our findings:

| Seismic Traverse Line No. | Stations Covered | Ground Cover | Overburden Velocity (Average Thickness) | Refractory Layer Velocity |
|---------------------------------|---------------------|--|---|---------------------------------|
| 1 | 110+75 to 112+95 | Grass, Leaf Litter & Ivy | 1,405 ft/sec (10 ft) | 11,302 ft/sec |
| 2 | 112+90 to 115+05 | Grass, Leaf Litter & Ivy | 1,587 ft/sec (25 ft) | 8,202 ft/sec |
| 3 | 120+65 to 122+85 | Asphalt | 1,939 ft/sec (20 ft) | 8,374 ft/sec |
| 4 | 126+45 to 128+70 | Grass, Asphalt (Tennis Court), Play Sand (Volleyball Court) | 1,623 ft/sec (15 ft) | 5,312 ft/sec |
| 5 | 127+85 to 130+05 | Grass & Leaf Litter | 1,487 ft/sec (10 ft) | 6,538 ft/sec |
| 6 | 130+40 to 132+55 | Grass & Leaf Litter | 1,247 ft/sec (8 ft) | 6,211 ft/sec |
| 7 | 134+00 to 136+15 | Grass & Leaf Litter | 1,986 ft/sec (15 ft) | 4,581 ft/sec |
| 8 | 135+60 to 137+70 | Grass & Leaf Litter | 1,438 ft/sec (5 ft) | 3,033 ft/sec |

Conclusions

- 1. Our conclusions are based upon our review of the seismic traverse lines in conjunction with the proposed depth to cut along the proposed roadway alignment.
- 2. Our review of the seismic traverse lines 1, 4, 5, 6 and 8 indicates that portions of the proposed cut may encounter dense material such as PWR and/or rock during construction.
- 3. A closer look at the P-wave velocities indicates that a majority of the dense material may be PWR which may be excavatable/rippable using large earth moving equipment in mass excavations.
- 4. Phase II consisting of truth borings (Standard Penetration Test Borings) shall help determine the actual quality of rock and will be performed at a future time by **MC**² as approved by HNTB.

Limitations

The profiles presented show layers as having sharp boundaries. Actual field conditions, however, will likely grade from one horizon to the next, producing a thin zone of intermediate velocities which are not visible in the produced cross sections.

Geophysical techniques are highly interpretative. Accordingly, ground-truthing efforts are recommended to be undertaken in order to confirm findings from Phase I. The presence of a well-established groundwater table in a soil or partially weathered rock (PWR) regime will often produce a characteristic seismic velocity of 5,000 ft/sec which can be mistaken for competent rock. Where field conditions indicate a high probability for this occurrence, secondary geophysical or mechanical methods are recommended to verify the seismic refraction findings. These efforts may include using Shear Wave Velocity testing (such MASW), a series of drilled (Standard Penetration Test) borings, including rock coring and/or the use of test pits using rated excavating equipment.

We trust that the information provided in this report will assist you in the planning of the proposed project. We appreciate the opportunity to be of service to you and Cobb County. Should you have any questions, please do not hesitate to contact us.

Amir Moussly

Staff Engineer

Sameer Moussly

CEO

Prashanth Vaddu, P.E.

the Vaddu

Project Manager

Seismic Refraction Survey Report Windy Hill-Terrell Mill Connector

Cobb County, Georgia MC² Project Number A121503.122

Attachments:

Sheet 1 – Project Location Map

Sheets 2 thru 4 – Approximate Seismic Traverse Locations

Sheet 5 – P-Wave Profile: Line 1

Sheet 6 - P-Wave Profile: Line 2

Sheet 7 – P-Wave Profile: Line 3

Sheet 8 - P-Wave Profile: Line 4

Sheet 9 - P-Wave Profile: Line 5

Sheet 10 - P-Wave Profile: Line 6

Sheet 11 - P-Wave Profile: Line 7

Sheet 12 - P-Wave Profile: Line 8



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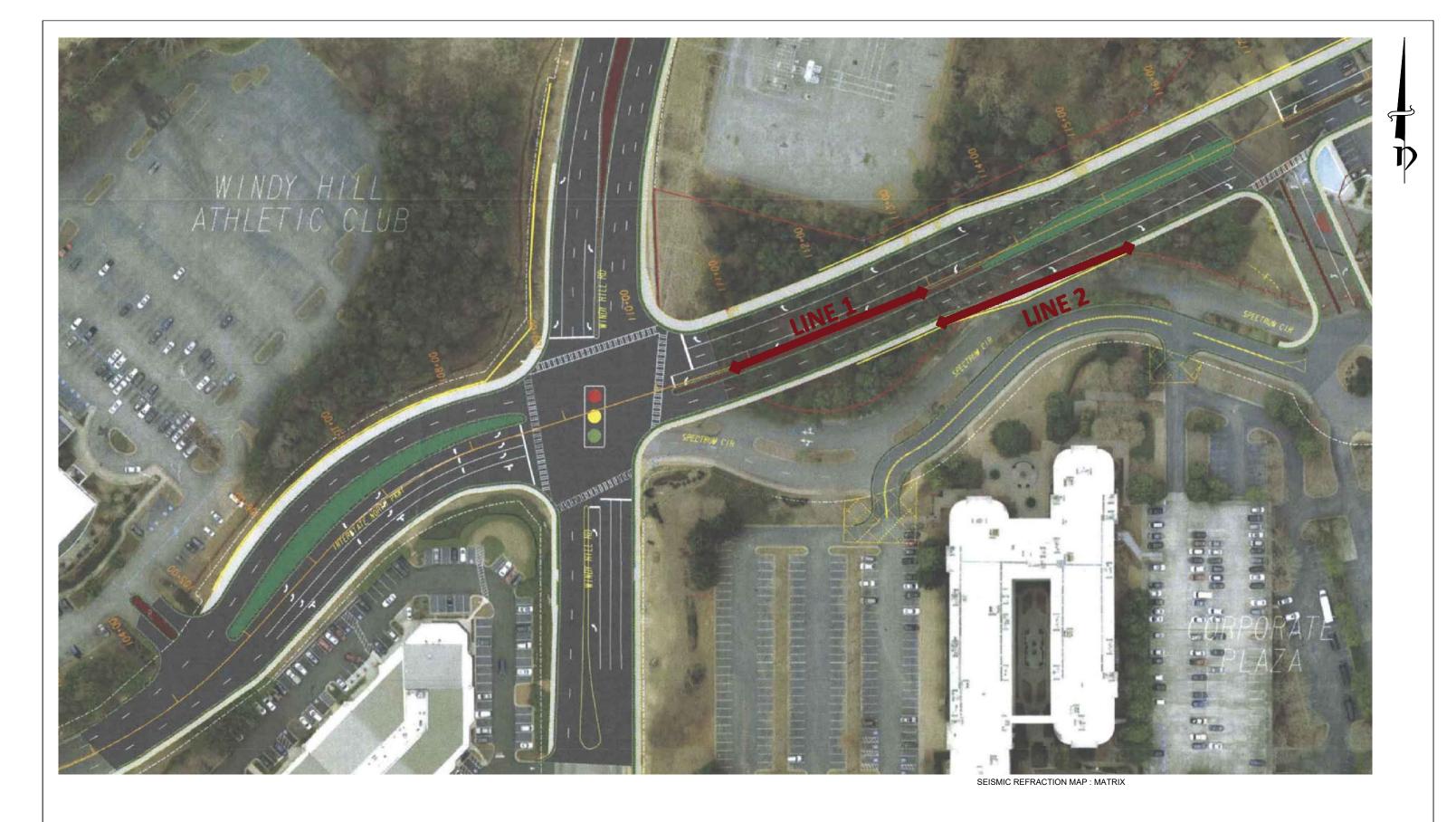
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MC SQUARED, INC. Geotechnical Consultants 1275 Shiloh Road NW Suite 2620 Kennesaw, GA 30144 Ph:770-650-0873 Fax:770-650-7825

| GEORGIA ENGINEERING CERTIFICATE OF AUTHORIZATION No. PEF004822 | |
|---|--|
| Prashanth Vaddu, P.E. | |
| GEORGIA LICENSE No. PE039820 | |

| | NAME | DATE | |
|----------------|------|----------|--|
| DESIGNED BY: | CW | 12/20/16 | |
| DRAWN BY: | CW | 12/20/16 | |
| CHECKED BY: | AM | 12/20/16 | |
| SUPERVISED BY: | PV | | |

| PROJECT LOCATION MAP | MC ² PROJ. NO. | SHEET NO. |
|---|---------------------------|-----------|
| Windy Hill - Terrell Mill Connector Cobb County, Georgia | A121503.122 | 1 |



PI NO. 0013967

| DATE | NAME | REVISION | APPROVED BY: | | MC SQUARED. IN |
|------|------|----------|--------------|------------------------------|-----------------------------------|
| | | | | N 102 | Geotechnical Consult |
| | | | | IVIC | 1275 Shiloh Road NW Suite 2620 |
| | | | | GEOTECHNICAL • ENVIRONMENTAL | Kennesaw, GA 30144 |
| | | | | MATERIALS TESTING | Ph:770-650-0873 Fax:770-650-7825 |

MC SQUARED, INC. Geotechnical Consultants 1275 Shiloh Road NW Suite 2620 ennesaw GARRIA

GEORGIA ENGINEERING CERTIFICATE OF AUTHORIZATION No. PEF004822 Prashanth Vaddu, P.E. GEORGIA LICENSE No. PE039820

| | | NAME | DATE |
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| | CHECKED BY: | AM | 12/20/16 |
| | SUPERVISED BY: | PV | |

APPROXIMATE SEISMIC TRAVERSE LOCATIONS MC² PROJ. NO. SHEET NO. Windy Hill - Terrell Mill Connector Cobb County, Georgia A121503.122



SEISMIC REFRACTION MAP : MATRIX

PI NO. 0013967

| DATE | NAME | REVISION | APPROVED BY: | _ |
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MC SQUARED, INC.
Geotechnical Consultants
1275 Shiloh Road NW
Suite 2620

Kennesaw, GA 30144 Ph:770-650-0873 Fax:770-650-7825 GEORGIA ENGINEERING CERTIFICATE OF AUTHORIZATION No. PEF004822 Prashanth Vaddu, P.E. GEORGIA LICENSE No. PE039820

| | | NAME | DATE | | |
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| | CHECKED BY: | AM | 12/20/16 | | |
| | SUPERVISED BY: | PV | | | |

APPROXIMATE SEISMIC TRAVERSE LOCATIONS MC² PROJ. NO. SHEET NO.

Windy Hill - Terrell Mill Connector
Cobb County, Georgia

A121503.122

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SEISMIC REFRACTION MAP : MATRIX

PI NO. 0013967

| DATE | NAME | REVISION | APPROVED BY: | |
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Geotechnical Consultants
1275 Shiloh Road NW
Suite 2620

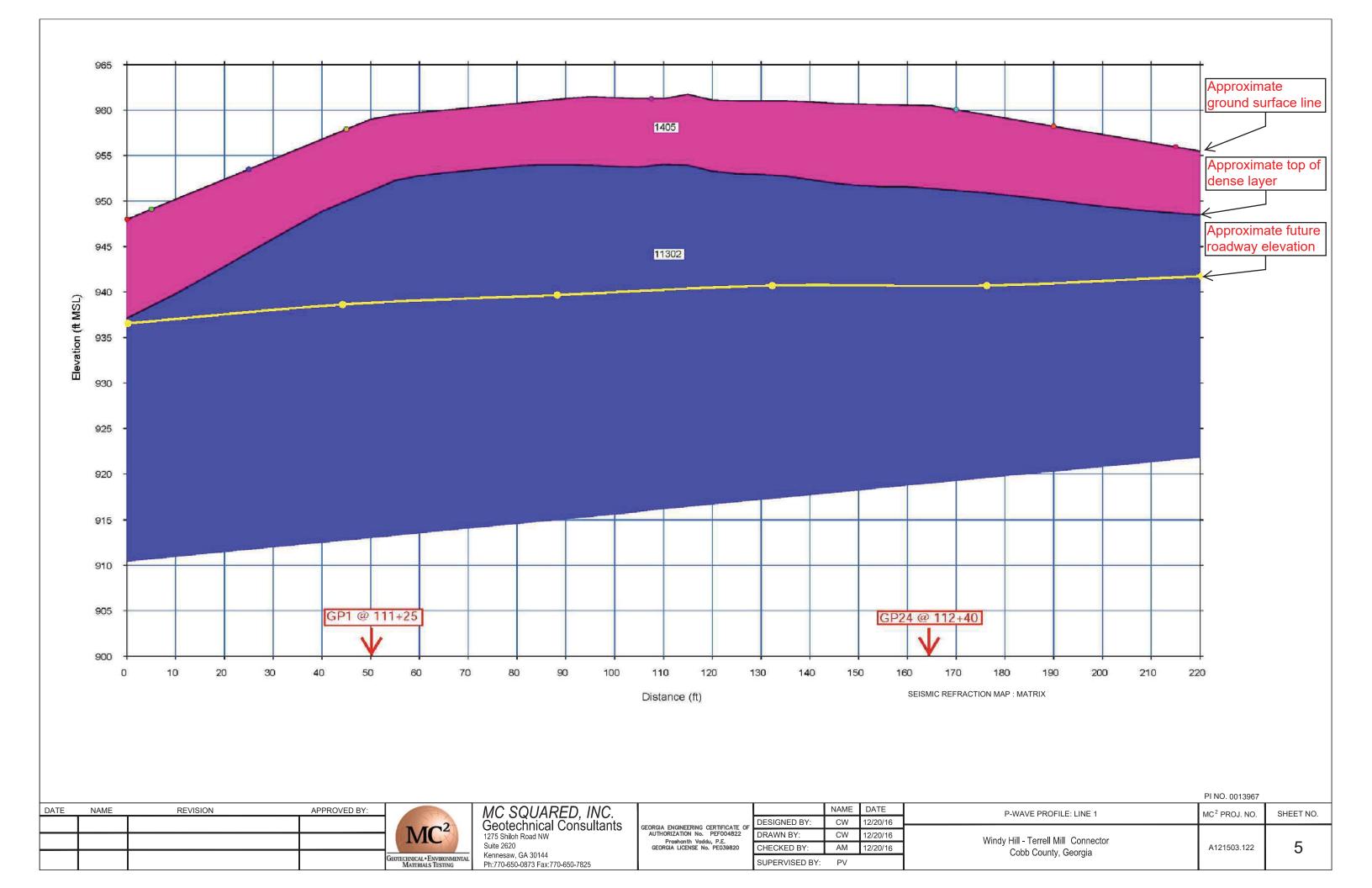
Kennesaw, GA 30144 Ph:770-650-0873 Fax:770-650-7825 GEORGIA ENGINEERING CERTIFICATE OF AUTHORIZATION No. PEF004822 Prashanth Vaddu, P.E. GEORGIA LICENSE No. PE039820

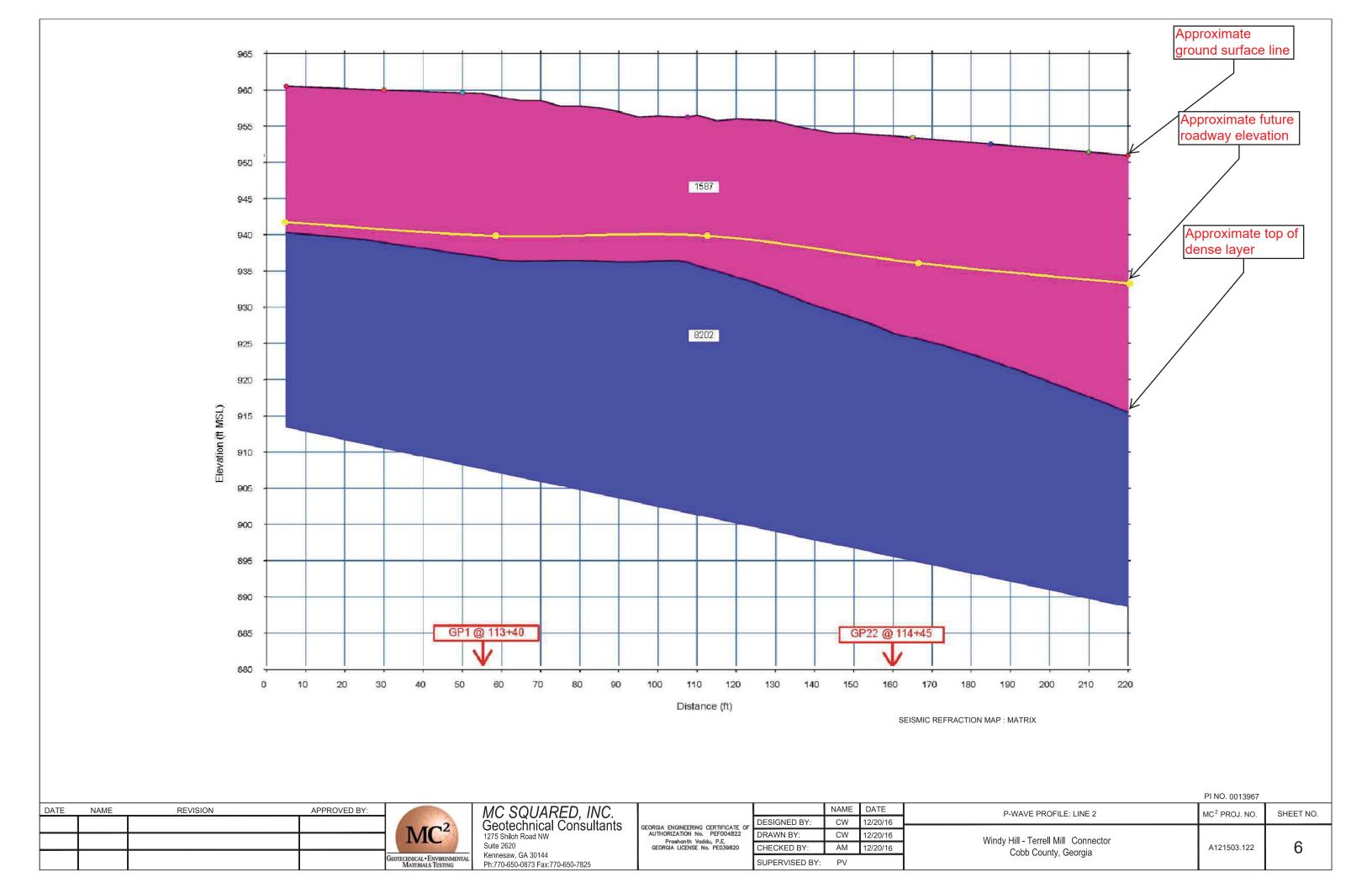
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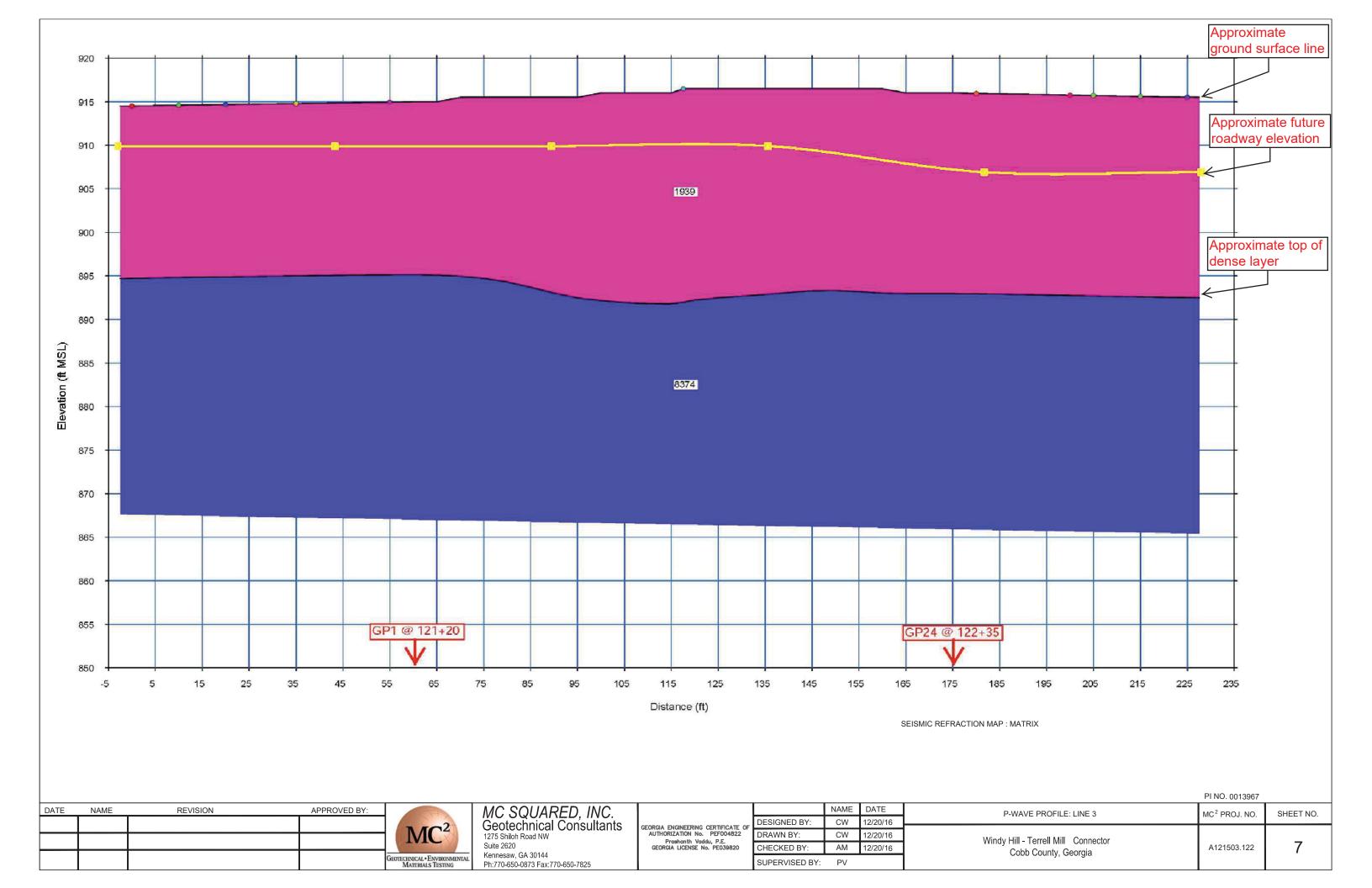
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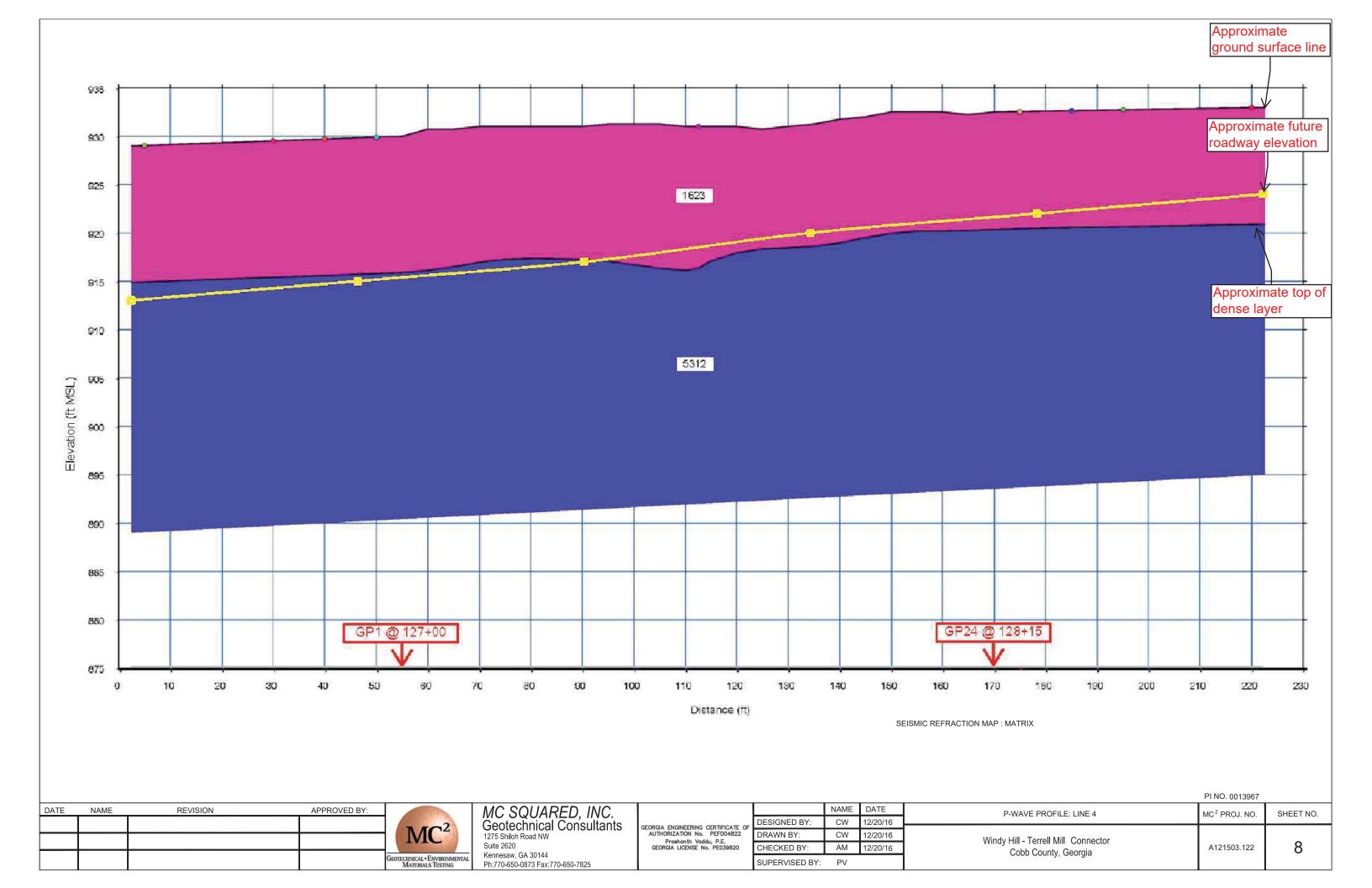
Windy Hill - Terrell Mill Connector
Cobb County, Georgia

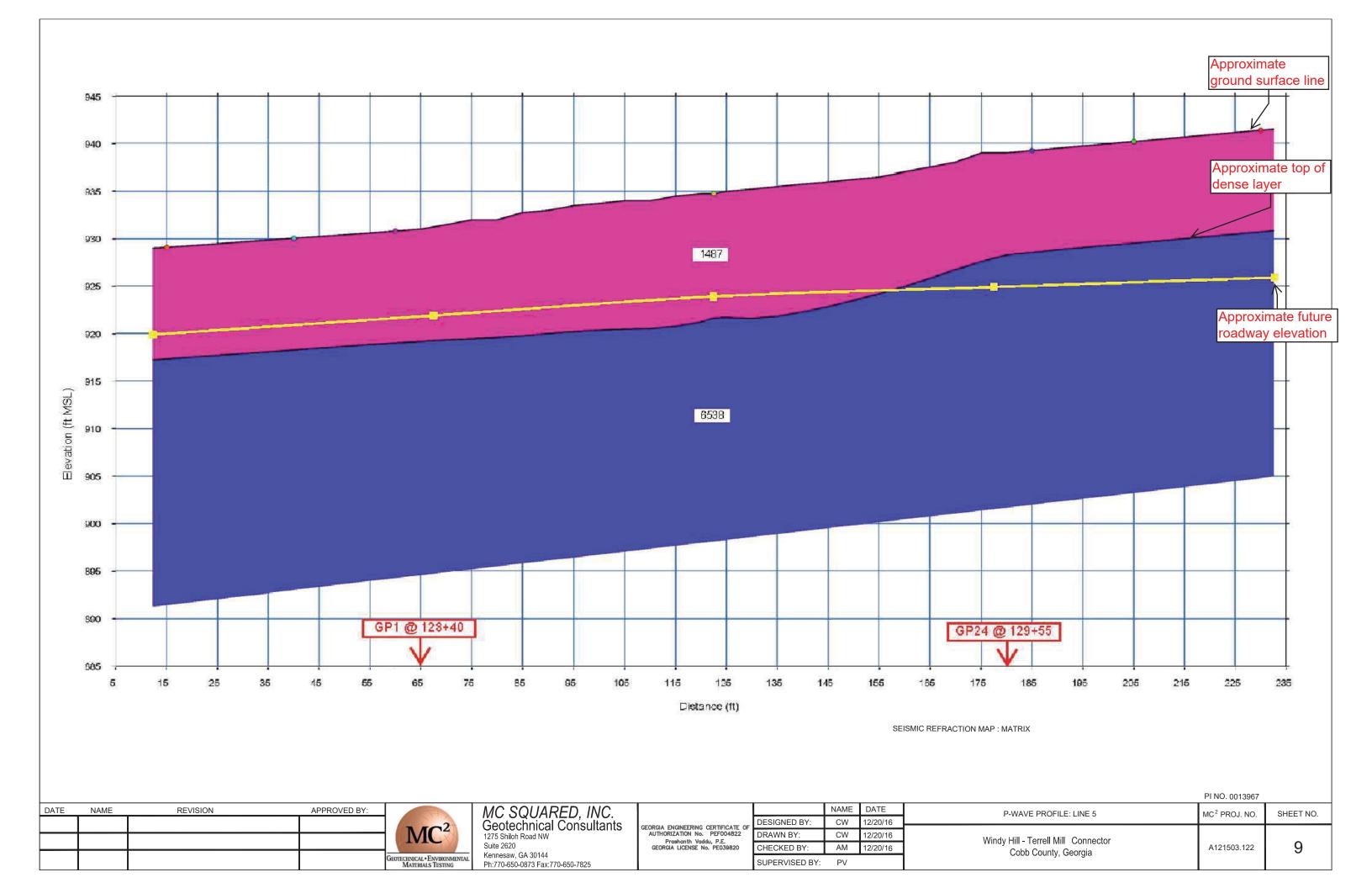
A121503.122

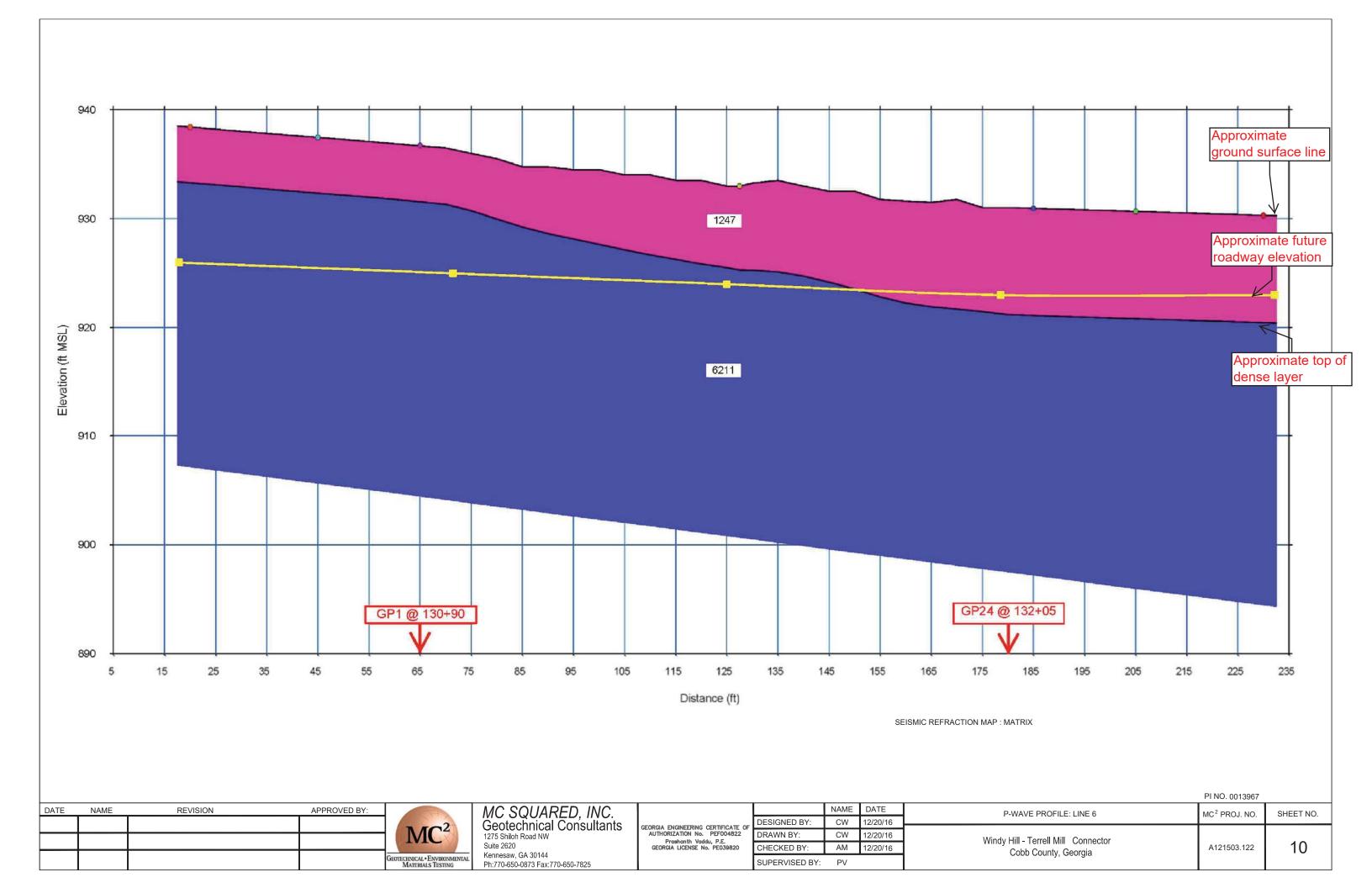


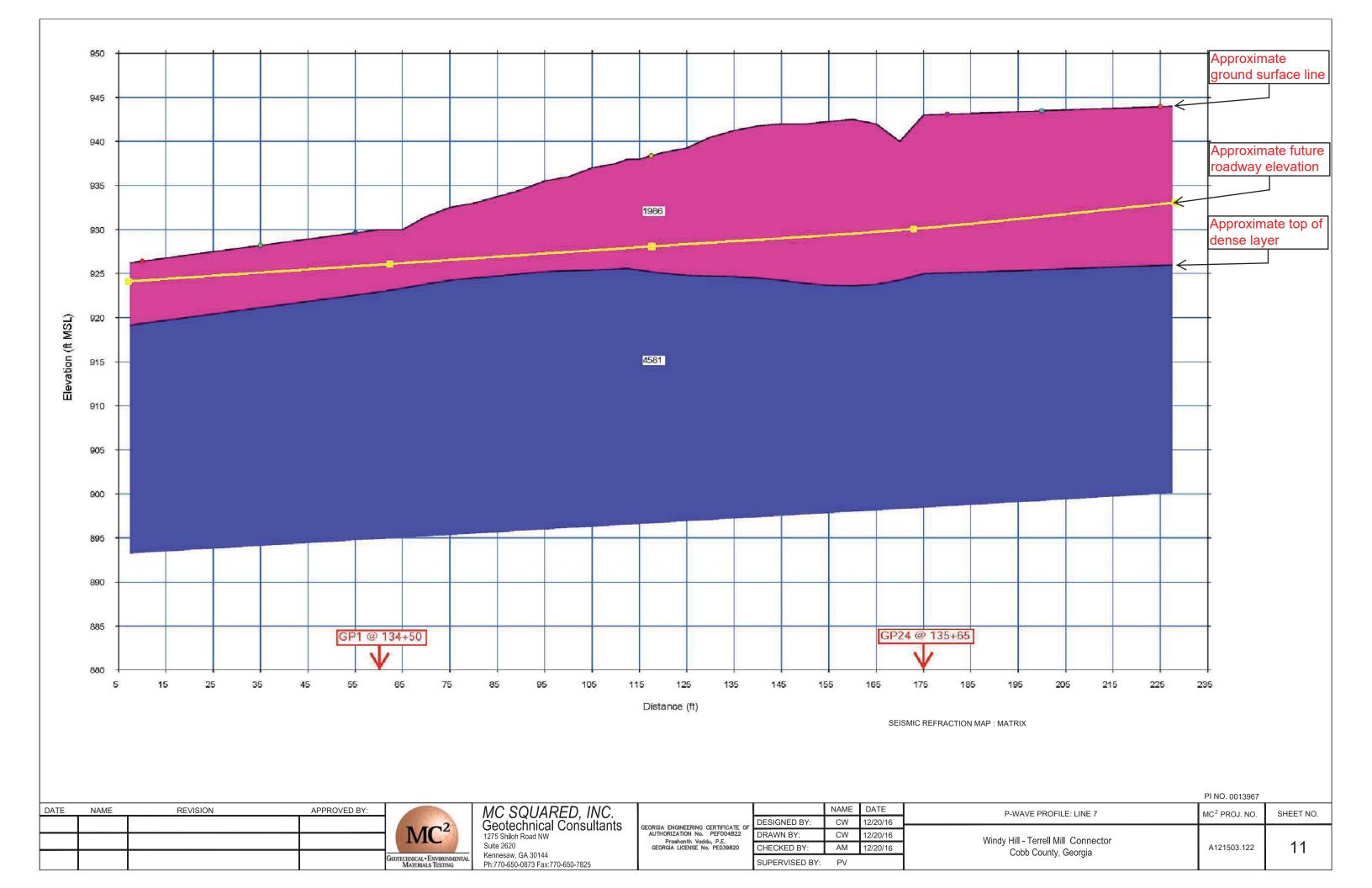


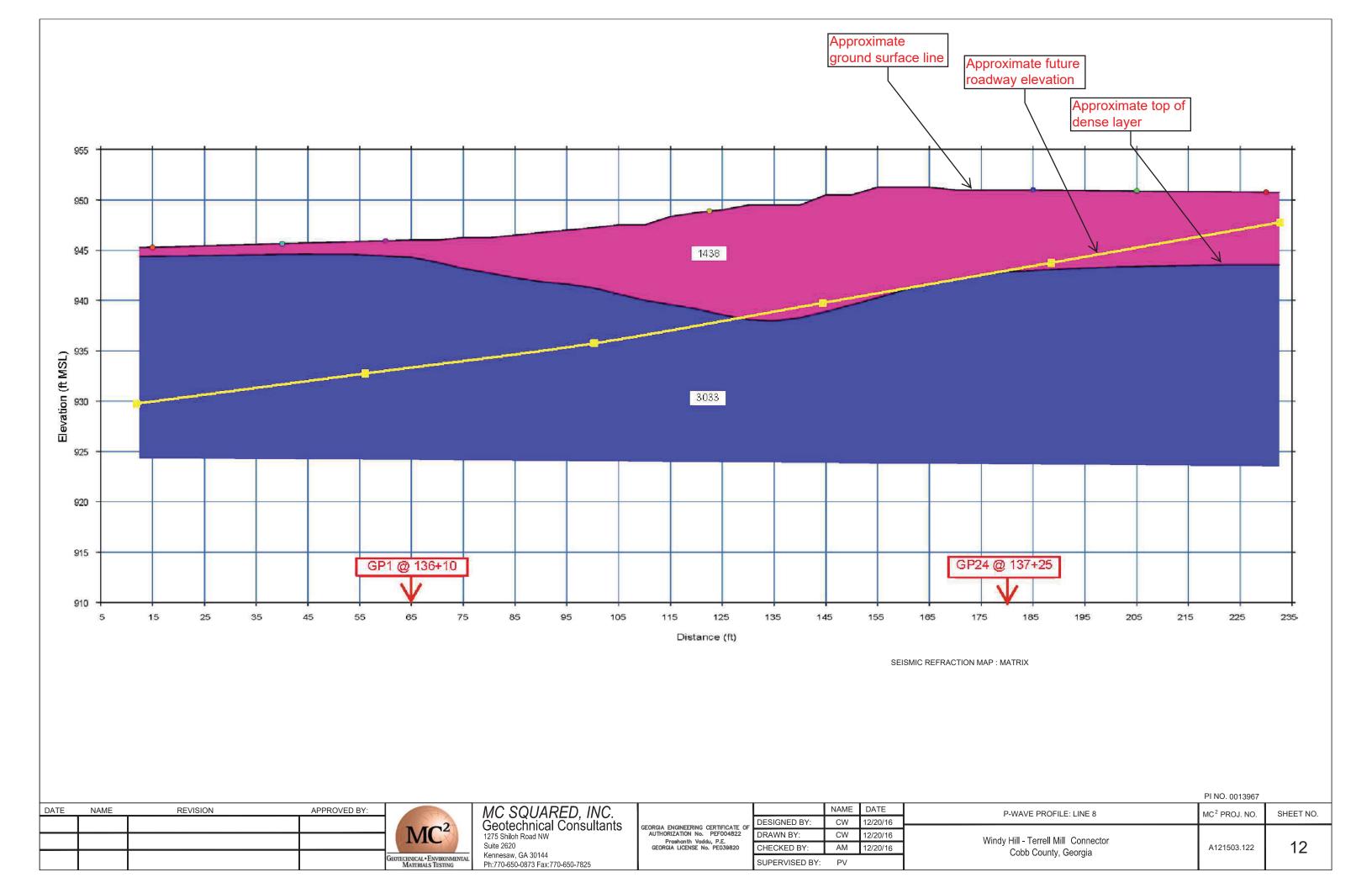






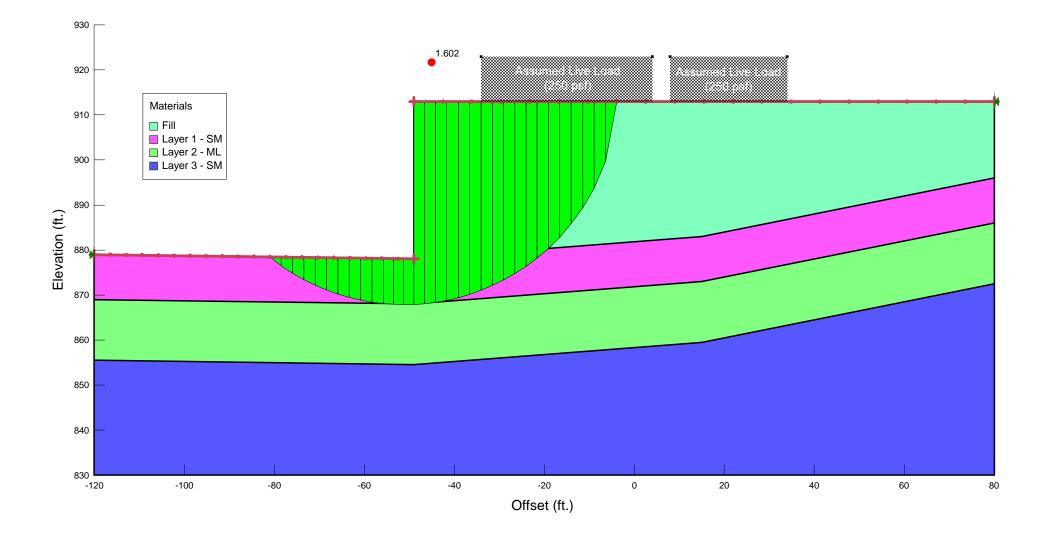




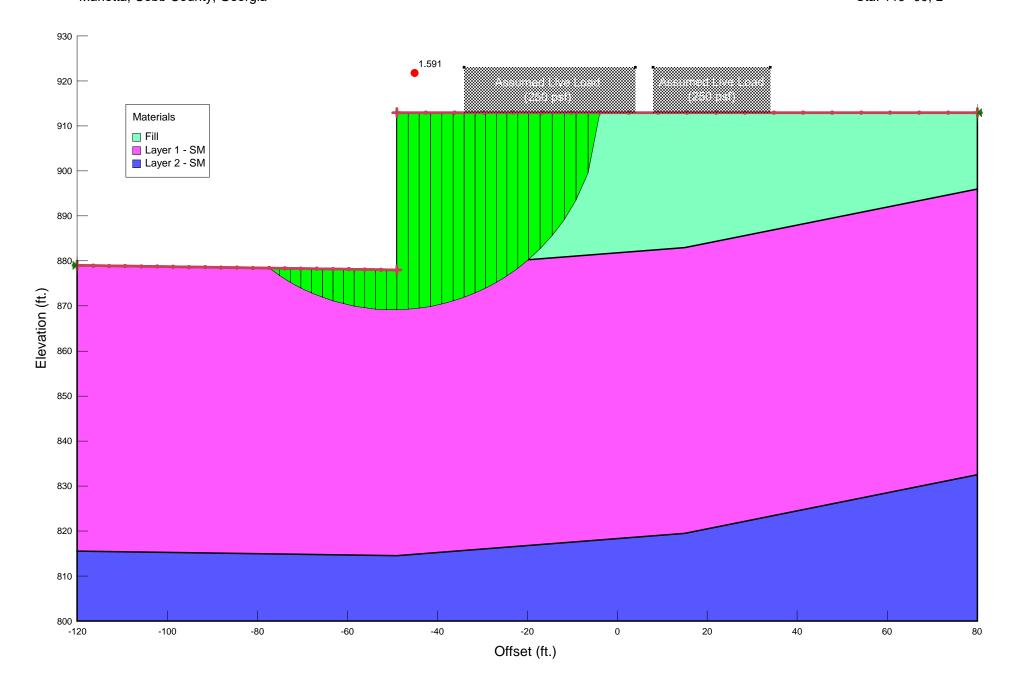


APPENDIX IV (MSE Walls)

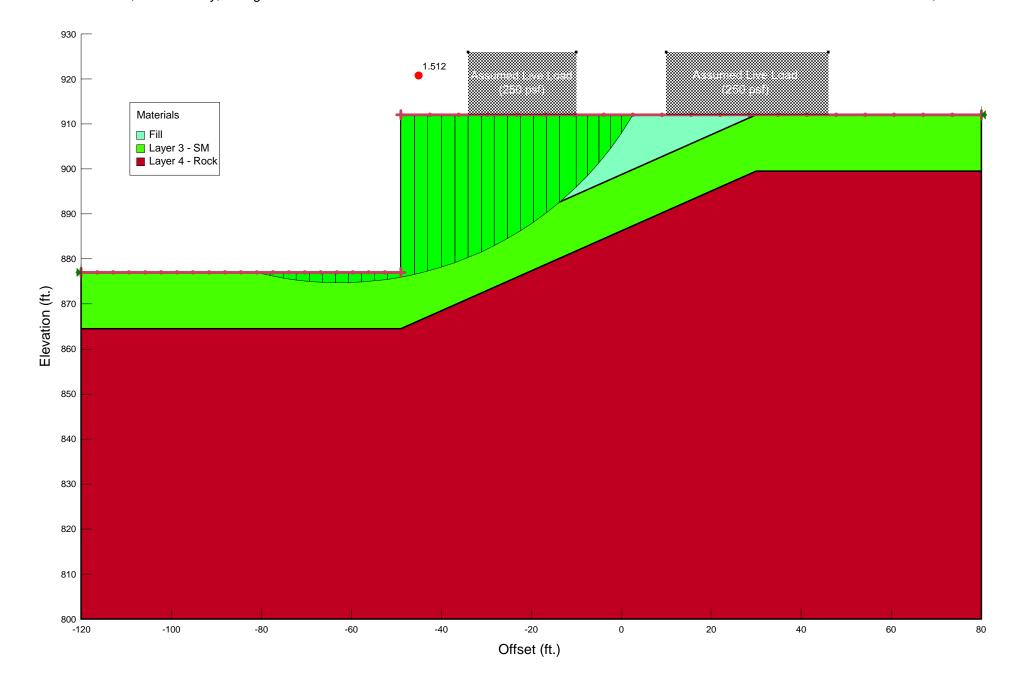
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- Global Stability Analysis Wall 4 1 Page
- Global Stability Analysis Wall 5 2 Pages
- Global Stability Analysis Wall 8 1 Page



Global Stability Analysis - Wall 1 (WB3-03) Sta. 119+00, L

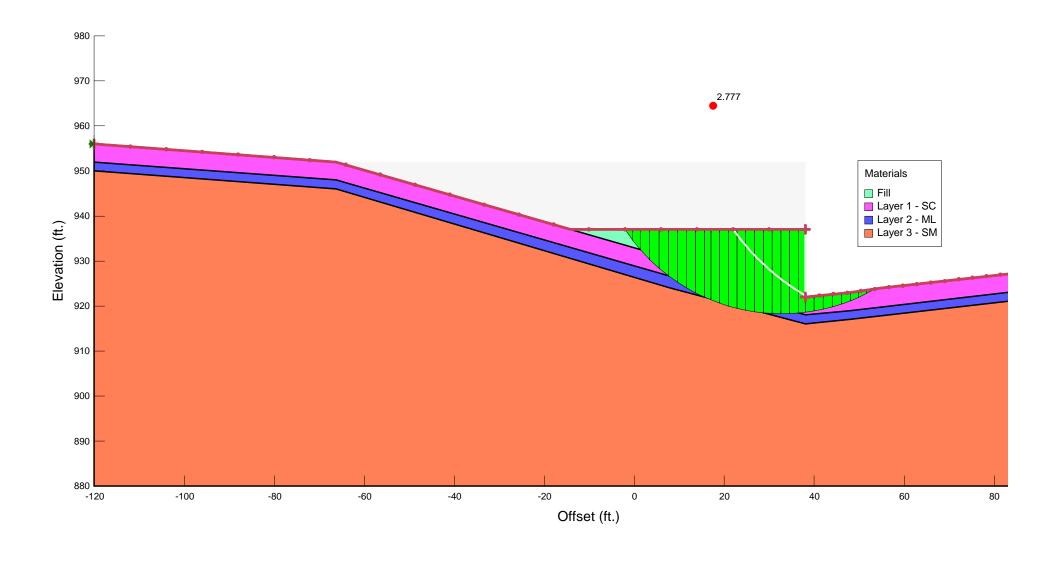


Global Stability Analysis - Wall 4 (WB3-06) Sta. 123+00, L



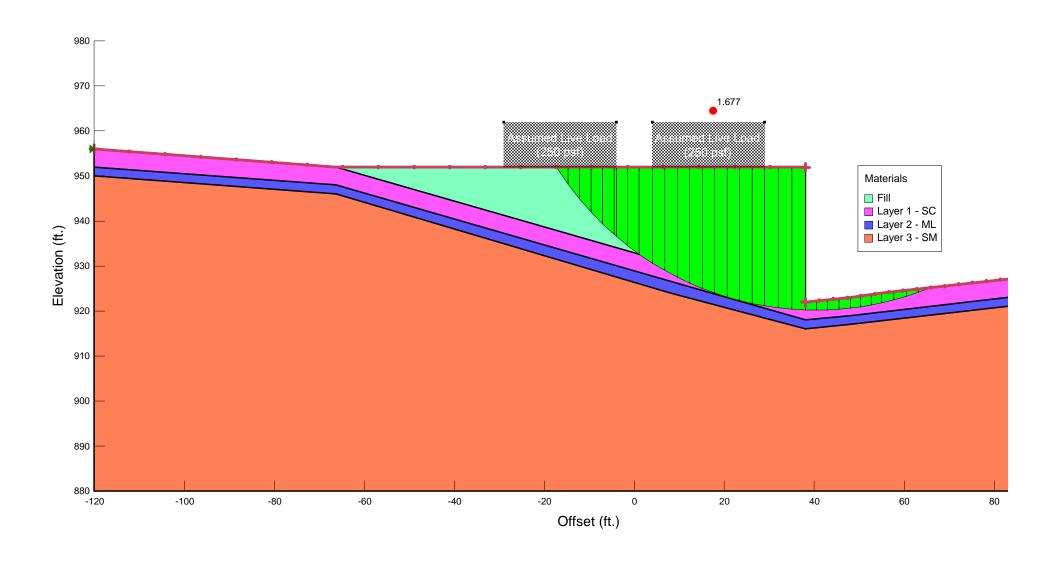
Windy Hill Road-Terrell Mill Road Connector GDOT P.I. No. 0013967 Cobb County Project No. X2401 HNTB Project No. 64327 MC Squared Project No. A121503.122 Marietta, Cobb County, Georgia

Global Stability Analysis - Wall 5 (Stage 1) (WB3-12) Sta. 138+00, R

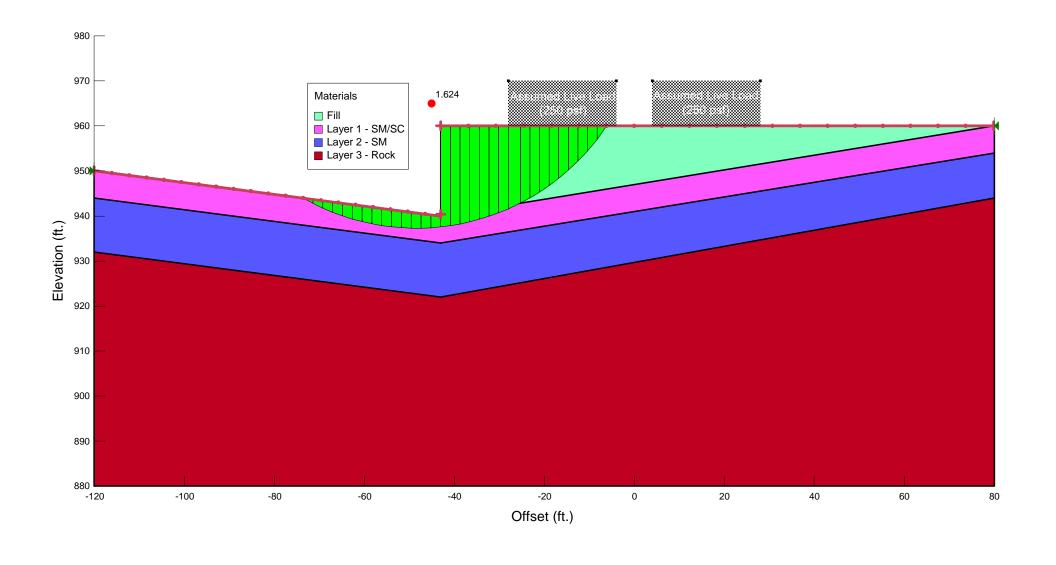


Windy Hill Road-Terrell Mill Road Connector GDOT P.I. No. 0013967 Cobb County Project No. X2401 HNTB Project No. 64327 MC Squared Project No. A121503.122 Marietta, Cobb County, Georgia

Global Stability Analysis - Wall 5 (Stage 2) (WB3-12) Sta. 138+00, R



Global Stability Analysis - Wall 8 (WB3-16) Sta. 139+50, L

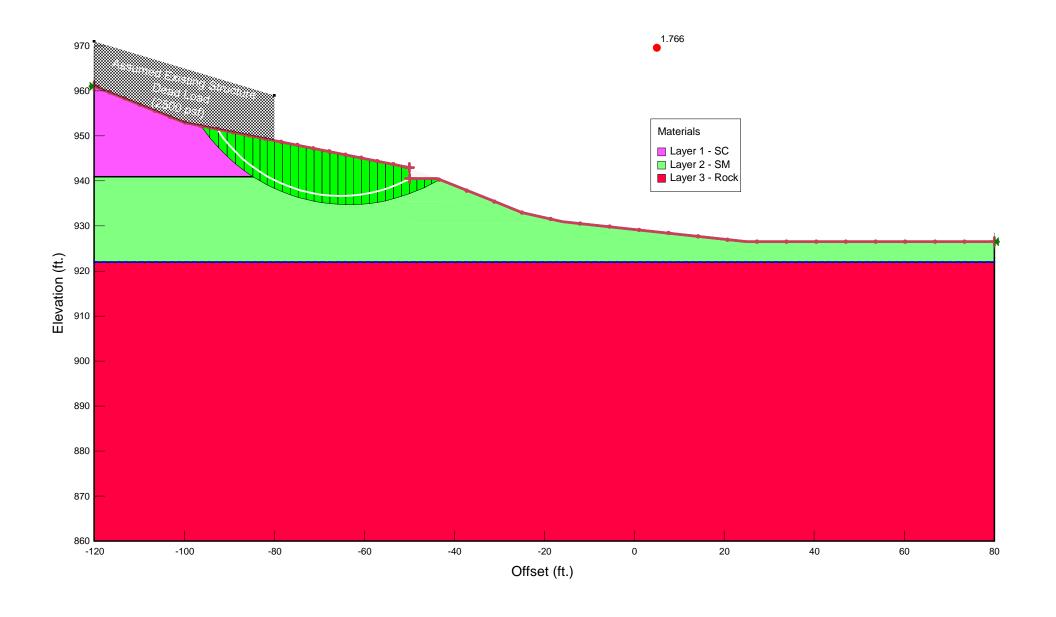


APPENDIX V (Soil Nail Walls)

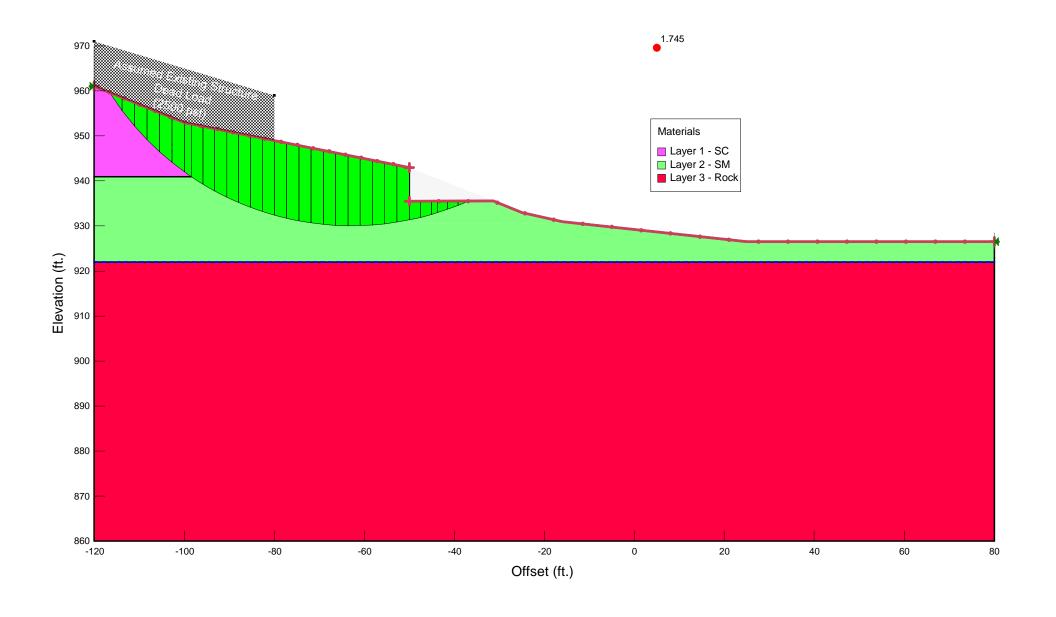
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- Global Stability Analysis Wall 7 4 Pages

Windy Hill Road-Terrell Mill Road Connector GDOT P.I. No. 0013967 Cobb County Project No. X2401 HNTB Project No. 64327 MC Squared Project No. A121503.122 Marietta, Cobb County, Georgia

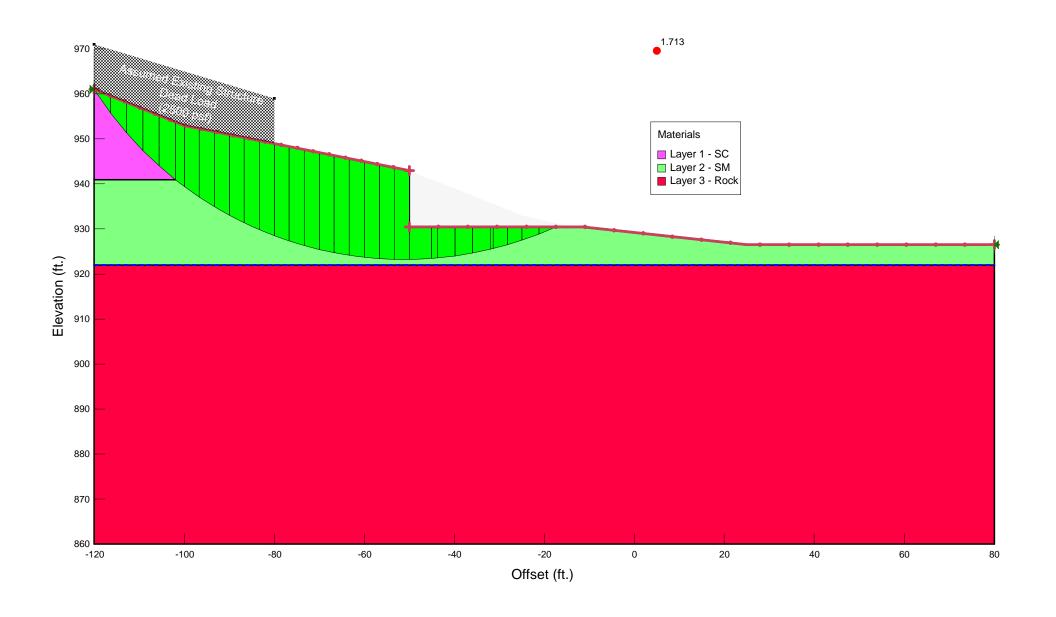
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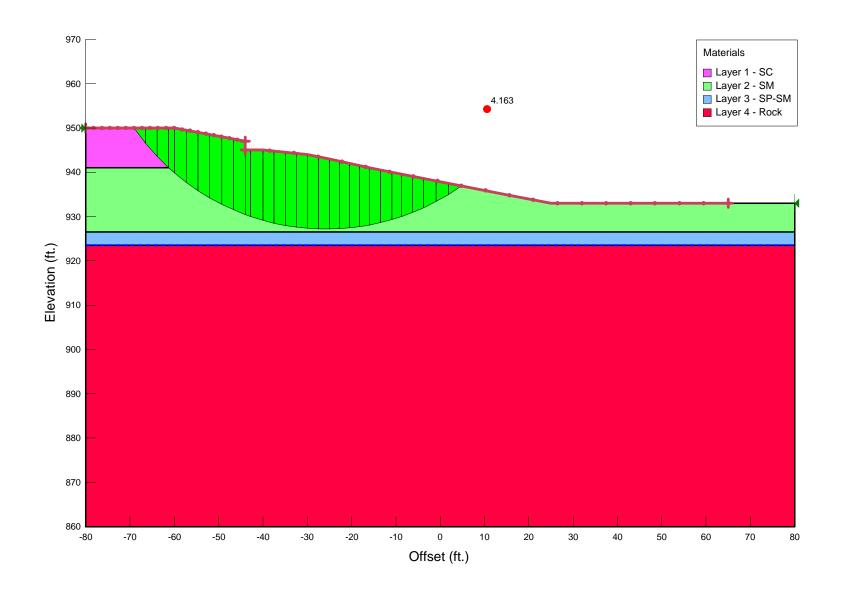


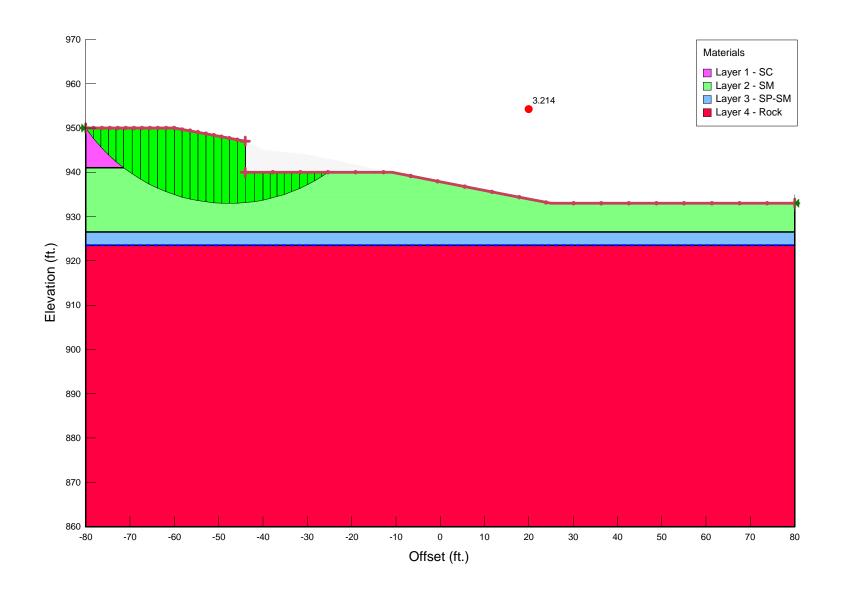
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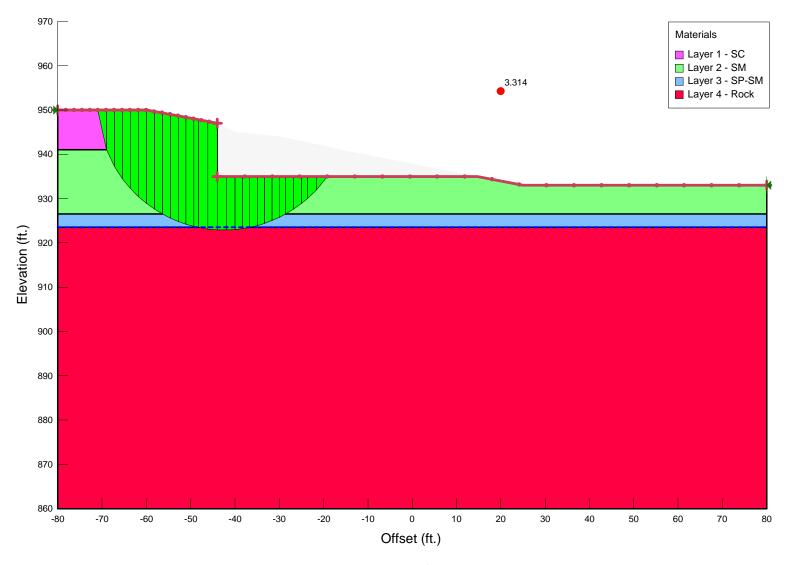


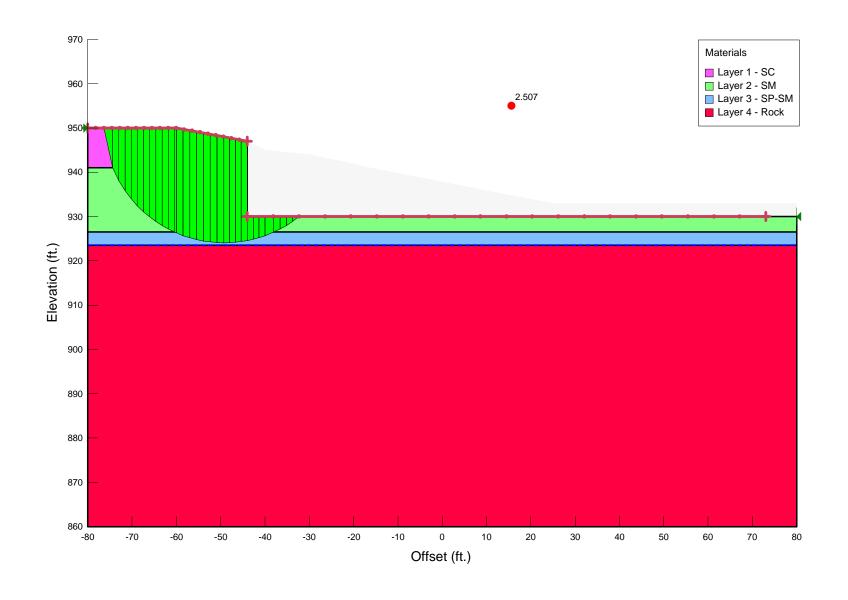
Global Stability Analysis - Wall 6 (Stage 3) (B-15) Sta. 130+00, L











APPENDIX VI

• Rock Core Photographs – 18 Pages



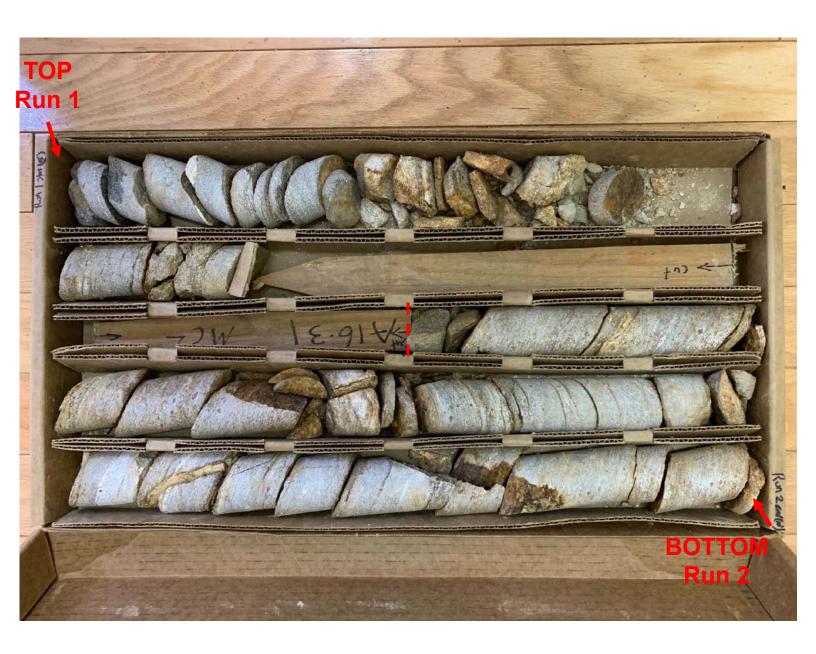
DRY
Boring No. WB3-04 (Sta. 120+58, 15' L) Run 1
Run 1: 19.1 ft. – 24.1 ft., REC = 94%, RQD = 64%

| MC ² | Wall Foundation Investigation (WFI) Report Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | Prepared For: HNTB Corporation |
|------------------------------|--|---|
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



WET Boring No. WB3-04 (Sta. 120+58, 15' L) Run 1 Run 1: 19.1 ft. – 24.1 ft., REC = 94%, RQD = 64%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|------------------------------|--|---|
| MC^2 | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB4-02 (Sta. 122+67, 86' R) Runs 1 and 2 Run 1: 5ft. – 10 ft., REC = 38%, RQD = 0% Run 2: 10 ft. – 15 ft., REC = 95%, RQD = 21%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|------------------------------|--|---|
| MC ² | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
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| | Wall Foundation Investigation (WFI) Report | Prepared For: |
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| MC ² | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB4-02 (Sta. 122+67, 86' R) Runs 3 and 4 Run 3: 15ft. – 20 ft., REC = 98%, RQD = 41% Run 4: 20 ft. – 25 ft., REC = 98%, RQD = 76%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|------------------------------|--|---|
| MC^2 | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB4-02 (Sta. 122+67, 86' R) Runs 3 and 4 Run 3: 15ft. – 20 ft., REC = 98%, RQD = 41% Run 4: 20 ft. – 25 ft., REC = 98%, RQD = 76%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
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| MC^2 | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB4-03 (Sta. 123+67, 89' R) Runs 1 and 2 Run 1: 10 ft. – 15 ft., REC = 94%, RQD = 19% Run 2: 15 ft. – 20 ft., REC = 100%, RQD = 23%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|------------------------------|--|---|
| MC^2 | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB4-03 (Sta. 123+67, 89' R) Runs 1 and 2 Run 1: 10 ft. – 15 ft., REC = 94%, RQD = 19% Run 2: 15 ft. – 20 ft., REC = 100%, RQD = 23%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|------------------------------|--|---|
| MC ² | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



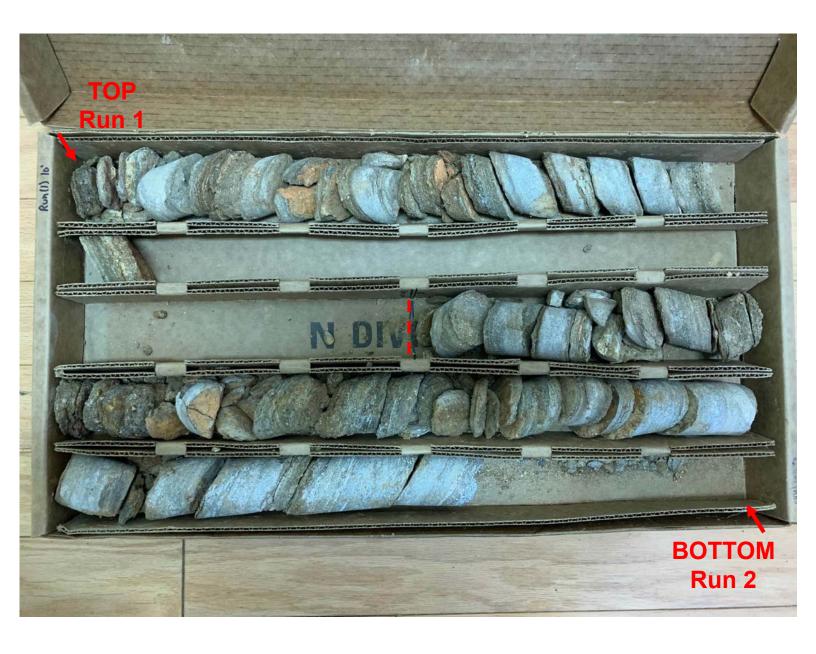
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| | Wall Foundation Investigation (WFI) Report | Prepared For: |
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| MC^2 | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



WET Boring No. WB4-03 (Sta. 123+67, 89' R) Run 3 Run 3: 20 ft. – 25 ft., REC = 100%, RQD = 45%

| MC ² | Wall Foundation Investigation (WFI) Report Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | Prepared For: HNTB Corporation |
|------------------------------|--|---|
| GEOTECHNICAL • ENVIRONMENTAL | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB5-06 (Sta. 124+32, 106' R) Runs 1 and 2 Run 1: 10 ft. – 14.9 ft., REC = 38%, RQD = 0% Run 2: 14.9 ft. – 19.9 ft., REC = 80%, RQD = 0%

| MC ² GEOTECHNICAL® ENVIRONMENTAL | Wall Foundation Investigation (WFI) Report | Prepared For: |
|---|--|---|
| | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB5-06 (Sta. 124+32, 106' R) Runs 1 and 2 Run 1: 10 ft. – 14.9 ft., REC = 38%, RQD = 0% Run 2: 14.9 ft. – 19.9 ft., REC = 80%, RQD = 0%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|---|--|---|
| MC ² | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | | MC ² Project No. A121503.122 |
| | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB3-08 (Sta. 129+45, 40' L) Runs 1 and 2 Run 1: 10.3 ft. – 15.2 ft., REC = 83%, RQD = 0% Run 2: 15.2 ft. – 20.2 ft., REC = 92%, RQD = 9%

| MC ² GEOTECHNICAL•ENVIRONMENTAL | Wall Foundation Investigation (WFI) Report | Prepared For: |
|--|--|---|
| | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| | | MC ² Project No. A121503.122 |
| MATERIALS TESTING | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB3-08 (Sta. 129+45, 40' L) Runs 1 and 2 Run 1: 10.3 ft. – 15.2 ft., REC = 83%, RQD = 0%

Run 2: 15.2 ft. – 20.2 ft., REC = 92%, RQD = 9%



Wall Foundation Investigation (WFI) Report

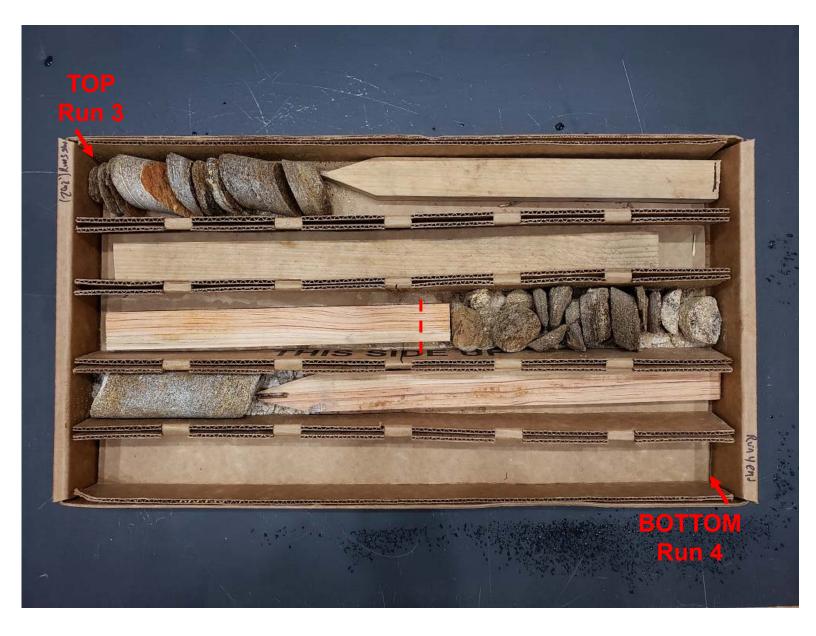
Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia

Prepared For:

HNTB Corporation

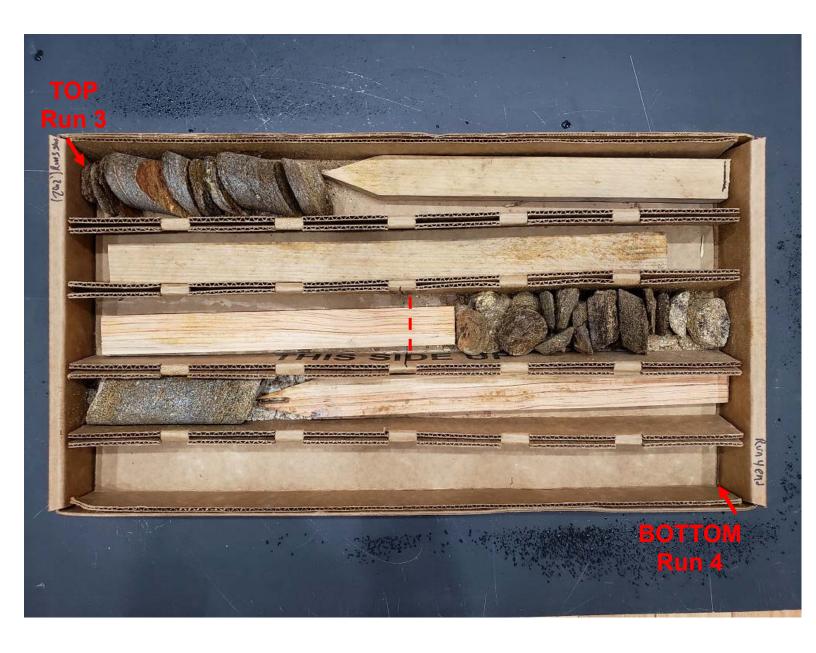
MC² Project No. A121503.122

ROCK CORE PHOTOGRAPHS Date: 4/19/19



Boring No. WB3-08 (Sta. 129+45, 40' L) Runs 3 and 4 Run 3: 20.2 ft. – 25.2 ft., REC = 14%, RQD = 0% Run 4: 25.2 ft. – 30.2 ft., REC = 27%, RQD = 10%

| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | Wall Foundation Investigation (WFI) Report Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | Prepared For: HNTB Corporation |
|--|--|---|
| | | MC ² Project No. A121503.122 |
| | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



Boring No. WB3-08 (Sta. 129+45, 40' L) Runs 3 and 4 Run 3: 20.2 ft. – 25.2 ft., REC = 14%, RQD = 0% Run 4: 25.2 ft. – 30.2 ft., REC = 27%, RQD = 10%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|---|--|---|
| MC ² | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | | MC ² Project No. A121503.122 |
| | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



DRY Boring No. WB3-08 (Sta. 129+45, 40' L) Run 5 Run 5: 30.2 ft. – 35.2 ft., REC = 34%, RQD = 0%

| | Wall Foundation Investigation (WFI) Report | Prepared For: |
|--|--|---|
| MC^2 | Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | HNTB Corporation |
| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | | MC ² Project No. A121503.122 |
| | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |



WET Boring No. WB3-08 (Sta. 129+45, 40' L) Run 5 Run 5: 30.2 ft. – 35.2 ft., REC = 34%, RQD = 0%

| GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING | Wall Foundation Investigation (WFI) Report Windy Hill Terrell Mill Connector Marietta, Cobb County Georgia | Prepared For: HNTB Corporation |
|--|--|---|
| | | MC ² Project No. A121503.122 |
| | ROCK CORE PHOTOGRAPHS | Date: 4/19/19 |