

PROJECT: 52400.1.STR03T1B ID: P-5204

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C.  | 52400.1.STR03T1B (P-5204)   | 1         | 9            |

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

**STRUCTURE  
SUBSURFACE INVESTIGATION**

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PROJ. REFERENCE NO. 52400.1.STR03T1B (P-5204) F.A. PROJ. FRA-FR-HSR-0086-10-01-00  
 COUNTY GUILFORD  
 PROJECT DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) GRADE  
SEPARATION OVER NS/CRR RAILROAD FROM SR 2826  
TO NORTH OF SR 2746  
 SITE DESCRIPTION BRIDGE ON McLEANSVILLE RD OVER NCRR  
CORRIDOR BETWEEN US 70 AND HUFFINE MILL RD

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (UN-PLACED) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, OR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL

C. V. NORVILLE

J. R. HAMM

W. S. HUNSBERGER

T. E. EVANS

INVESTIGATED BY WSH, JRH

CHECKED BY CVN

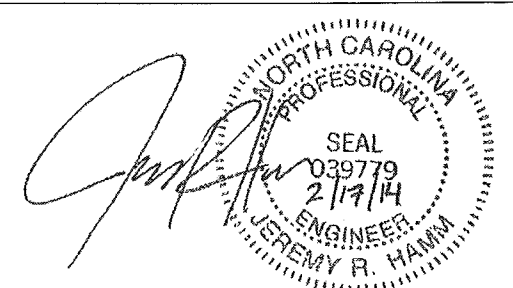
SUBMITTED BY FALCON

DATE FEBRUARY 2014

DRAWN BY: JRH

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

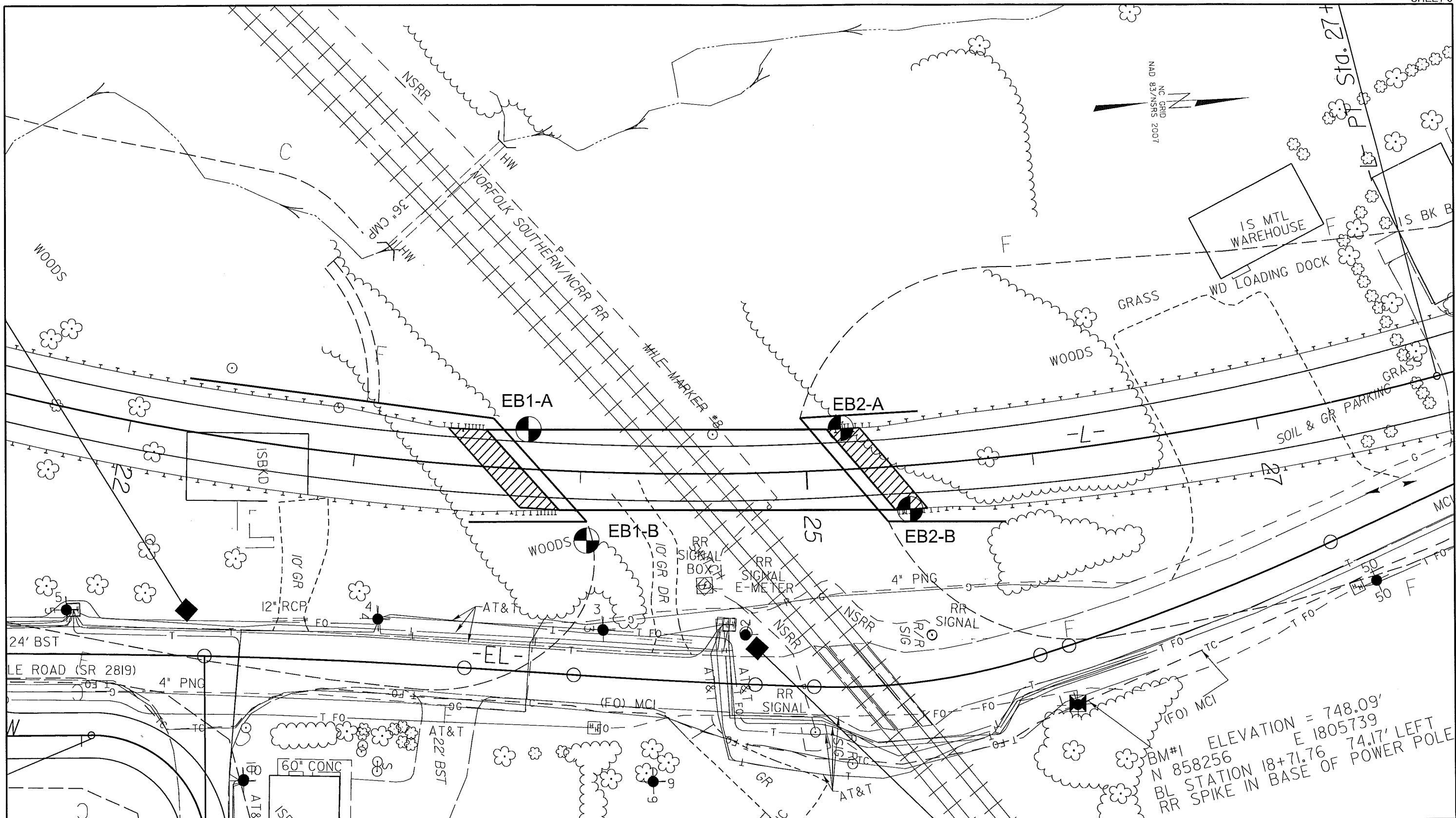
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

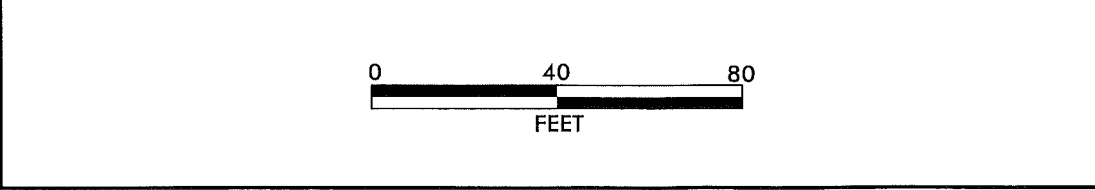
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

PROJECT REFERENCE NO. 52400.1STR03T1B (P-5204) SHEET NO. 2

SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSION, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION, PLASTICITY, COLOR.



**NOTES:**  
 PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM ATKINS IN NOVEMBER 2013.



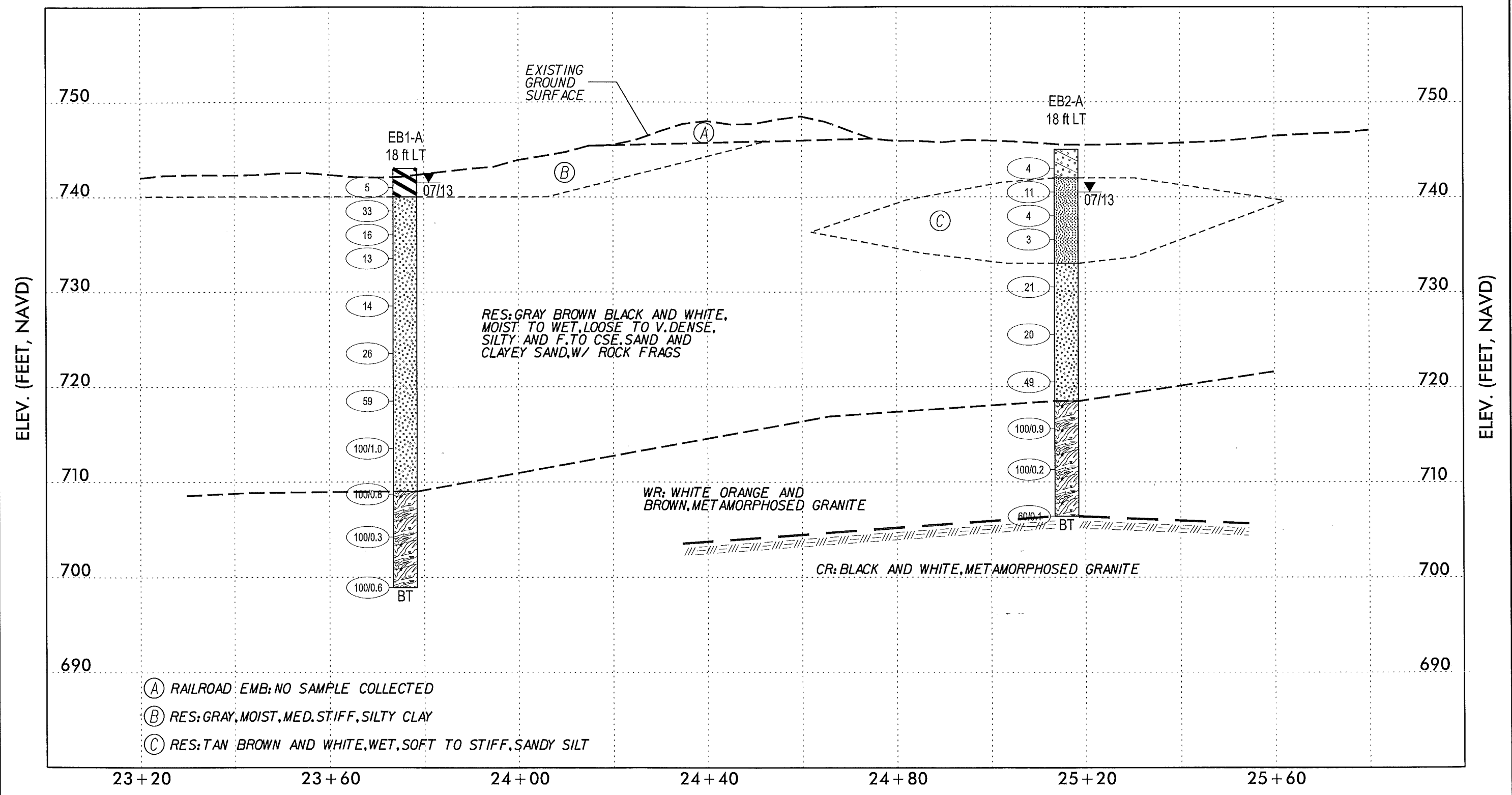
**FALCON**  
 ENGINEERING

FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 RALEIGH, NC 27607  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

**SITE PLAN**

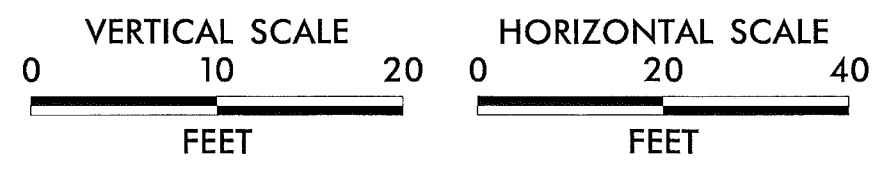
BRIDGE ON McLEANSVILLE RD OVER NCR CORRIDOR  
 BETWEEN US 70 AND HUFFINE MILL RD  
 GUILFORD COUNTY, NORTH CAROLINA  
 WBS NO.: 52400.1.STR03T1B, TIP NO.: P-5204  
 FALCON PROJECT NO.: G13047.00

BM#1 ELEVATION = 748.09'  
 N 858256 E 1805739  
 BL STATION 18+71.76 74.17' LEFT  
 RR SPIKE IN BASE OF POWER POLE



**NOTES:**

- GROUNDLINE ADOPTED FROM FILES RECEIVED FROM ATKINS IN OCTOBER 2013.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

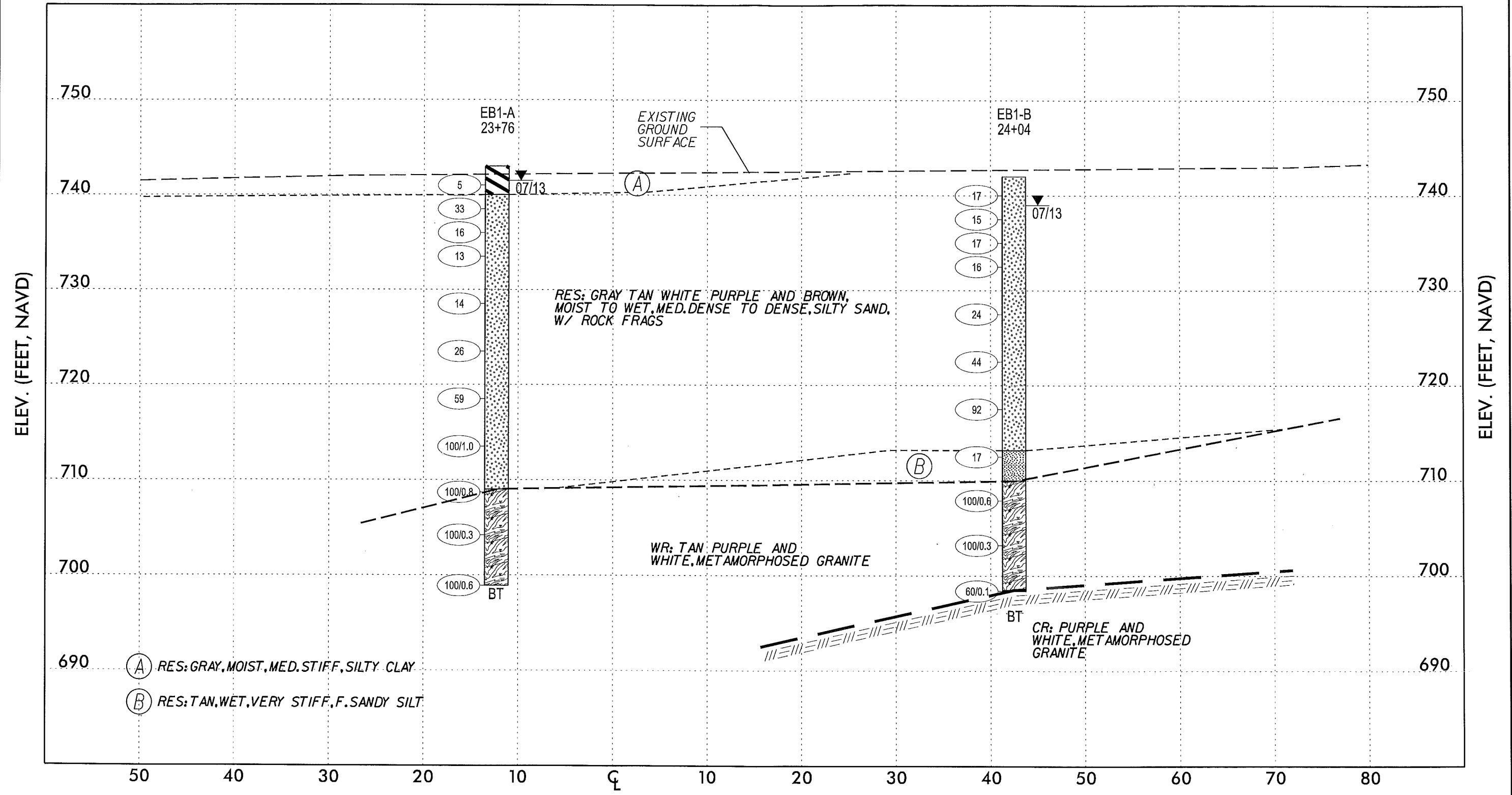


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**SUBSURFACE PROFILE CENTERLINE -L-**

BRIDGE ON McLEANSVILLE RD OVER NCRR CORRIDOR BETWEEN US 70 AND HUFFINE MILL RD  
GUILFORD COUNTY, NORTH CAROLINA  
WBS NO.: 52400.1.STR03T1B, TIP NO.: P-5204  
FALCON PROJECT NO.: G13047.00



**NOTES:**

- GROUNDLINE ADOPTED FROM FILES RECEIVED FROM ATKINS IN OCTOBER 2013.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

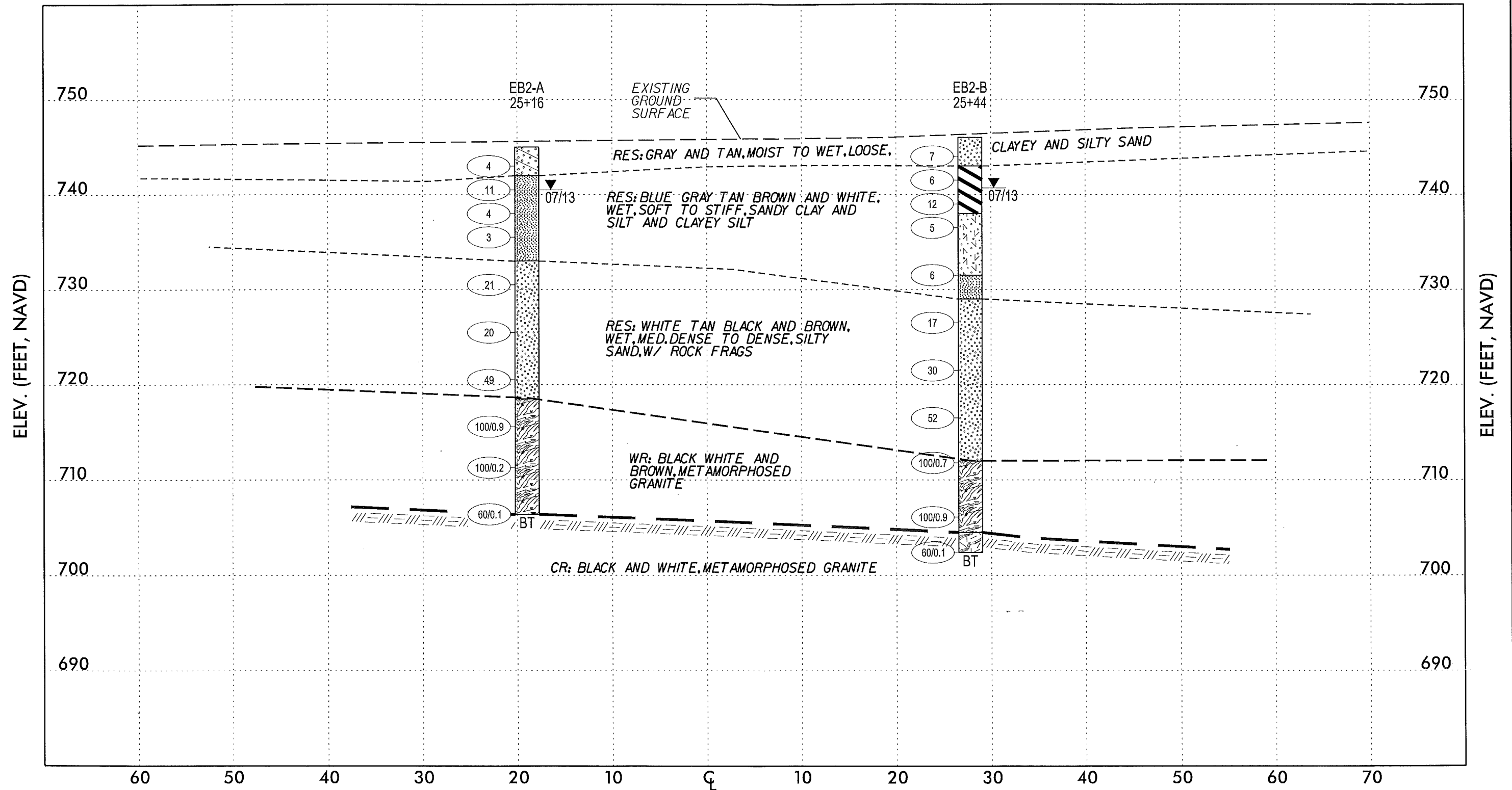


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**SUBSURFACE CROSS SECTION**  
**END BENT 1: STATION 23+82.48**

BRIDGE ON McLEANSVILLE RD OVER NCRR CORRIDOR  
BETWEEN US 70 AND HUFFINE MILL RD  
GUILFORD COUNTY, NORTH CAROLINA  
WBS NO.: 52400.1.STR03T1B, TIP NO.: P-5204  
FALCON PROJECT NO.: G13047.00



**NOTES:**

- GROUNDLINE ADOPTED FROM FILES RECEIVED FROM ATKINS IN OCTOBER 2013.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



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**SUBSURFACE CROSS SECTION  
 END BENT 2: STATION 25+31.37**

BRIDGE ON McLEANSVILLE RD OVER NCRR CORRIDOR  
 BETWEEN US 70 AND HUFFINE MILL RD  
 GUILFORD COUNTY, NORTH CAROLINA  
 WBS NO.: 52400.1.STR03T1B, TIP NO.: P-5204  
 FALCON PROJECT NO.: G13047.00



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

| WBS 52100.0.STR03T1B  | TIP P-5204          | COUNTY GUILFORD          | GEOLOGIST Hamm, J.R. |         |        |                |    |    |    |     |           |     |      |                           |            |  |
|---|---------------------|--------------------------|----------------------|---------|--------|----------------|----|----|----|-----|-----------|-----|------|---------------------------|------------|--|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                     |                          | GROUND WTR (ft)      |         |        |                |    |    |    |     |           |     |      |                           |            |  |
| BORING NO. EB1-A  | STATION 23+76       | OFFSET 18 ft LT          | ALIGNMENT -L-        |         |        |                |    |    |    |     |           |     |      |                           |            |  |
| COLLAR ELEV. 742.9 ft   | TOTAL DEPTH 44.1 ft | NORTHING 858,020         | EASTING 1,805,605    |         |        |                |    |    |    |     |           |     |      |                           |            |  |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                     | DRILL METHOD H.S. Augers |                      |         |        |                |    |    |    |     |           |     |      |                           |            |  |
| DRILLER Wichard, W.   |                     | START DATE 07/26/13      |                      |         |        |                |    |    |    |     |           |     |      |                           |            |  |
| COMP. DATE 07/26/13   |                     | SURFACE WATER DEPTH N/A  |                      |         |        |                |    |    |    |     |           |     |      |                           |            |  |
| ELEV (ft)   | DRIVE ELEV (ft)     | DEPTH (ft)               | BLOW COUNT           |         |        | BLOWS PER FOOT |    |    |    |     | SAMP. NO. | MOI | LOG  | SOIL AND ROCK DESCRIPTION |            |  |
|   |                     |                          | 0.5ft                | 0.5ft   | 0.5ft  | 0              | 25 | 50 | 75 | 100 |           |     |      | ELEV. (ft)                | DEPTH (ft) |  |
| 745   |                     |                          |                      |         |        |                |    |    |    |     |           |     |      |                           | 742.9      | GROUND SURFACE: 4" TOPSOIL   |
| 740   | 741.9               | 1.0                      | WOH                  | 2       | 3      |                |    |    |    |     |           |     | SS-1 | 33%                       | 739.9      | RESIDUAL GRAY, SI. CLAY (A-7-6)  |
|   | 739.4               | 3.5                      |                      | 9       | 14     | 19             |    |    |    |     |           |     |      |                           |            | GRAY BROWN BLACK AND WHITE, DENSE, SI. F. TO CSE. SAND (A-2-4) W/ ROCK FRAGS |
| 735   | 736.9               | 6.0                      |                      | 12      | 8      | 8              |    |    |    |     |           |     |      |                           |            |  |
|   | 734.4               | 8.5                      |                      | 4       | 7      | 6              |    |    |    |     |           |     |      |                           |            |  |
| 730   | 729.4               | 13.5                     |                      | 6       | 6      | 8              |    |    |    |     |           |     |      |                           |            |  |
| 725   | 724.4               | 18.5                     |                      | 7       | 10     | 16             |    |    |    |     |           |     |      |                           |            |  |
| 720   | 719.4               | 23.5                     |                      | 20      | 26     | 33             |    |    |    |     |           |     |      |                           |            |  |
| 715   | 714.4               | 28.5                     |                      | 33      | 67/0.5 |                |    |    |    |     |           |     |      |                           |            |  |
| 710   | 709.4               | 33.5                     |                      | 64      | 36/0.3 |                |    |    |    |     |           |     |      |                           | 708.9      | WEATHERED ROCK TAN AND WHITE, METAMORPHOSED GRANITE                          |
| 705   | 704.4               | 38.5                     |                      | 100/0.3 |        |                |    |    |    |     |           |     |      |                           |            |  |
| 700   | 699.4               | 43.5                     |                      | 77      | 23/0.1 |                |    |    |    |     |           |     |      |                           | 698.8      | Boring Terminated at Elevation 698.8 ft in WR: METAMORPHOSED GRANITE         |

| WBS 52100.0.STR03T1B  | TIP P-5204          | COUNTY GUILFORD          | GEOLOGIST Hamm, J.R. |         |        |                |    |    |    |     |           |     |     |                           |            |  |
|---|---------------------|--------------------------|----------------------|---------|--------|----------------|----|----|----|-----|-----------|-----|-----|---------------------------|------------|--|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                     |                          | GROUND WTR (ft)      |         |        |                |    |    |    |     |           |     |     |                           |            |  |
| BORING NO. EB1-B  | STATION 24+04       | OFFSET 30 ft RT          | ALIGNMENT -L-        |         |        |                |    |    |    |     |           |     |     |                           |            |  |
| COLLAR ELEV. 742.3 ft   | TOTAL DEPTH 43.6 ft | NORTHING 858,044         | EASTING 1,805,655    |         |        |                |    |    |    |     |           |     |     |                           |            |  |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                     | DRILL METHOD H.S. Augers |                      |         |        |                |    |    |    |     |           |     |     |                           |            |  |
| DRILLER Wichard, W.   |                     | START DATE 07/26/13      |                      |         |        |                |    |    |    |     |           |     |     |                           |            |  |
| COMP. DATE 07/26/13   |                     | SURFACE WATER DEPTH N/A  |                      |         |        |                |    |    |    |     |           |     |     |                           |            |  |
| ELEV (ft)   | DRIVE ELEV (ft)     | DEPTH (ft)               | BLOW COUNT           |         |        | BLOWS PER FOOT |    |    |    |     | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION |            |  |
|   |                     |                          | 0.5ft                | 0.5ft   | 0.5ft  | 0              | 25 | 50 | 75 | 100 |           |     |     | ELEV. (ft)                | DEPTH (ft) |  |
| 745   |                     |                          |                      |         |        |                |    |    |    |     |           |     |     |                           | 742.3      | GROUND SURFACE: 5" TOPSOIL   |
| 740   | 741.3               | 1.0                      |                      | 4       | 9      | 8              |    |    |    |     |           |     |     |                           |            | RESIDUAL GRAY TAN BROWN AND PURPLE, SI. F. TO CSE. SAND (A-2-4)      |
|   | 738.8               | 3.5                      |                      | 4       | 7      | 8              |    |    |    |     |           |     |     |                           |            |  |
| 735   | 736.3               | 6.0                      |                      | 6       | 8      | 9              |    |    |    |     |           |     |     |                           |            |  |
|   | 733.8               | 8.5                      |                      | 6       | 6      | 10             |    |    |    |     |           |     |     |                           |            |  |
| 730   | 728.8               | 13.5                     |                      | 7       | 9      | 15             |    |    |    |     |           |     |     |                           |            |  |
| 725   | 723.8               | 18.5                     |                      | 8       | 17     | 27             |    |    |    |     |           |     |     |                           |            |  |
| 720   | 718.8               | 23.5                     |                      | 26      | 41     | 51             |    |    |    |     |           |     |     |                           |            |  |
| 715   | 713.8               | 28.5                     |                      | 29      | 9      | 8              |    |    |    |     |           |     |     |                           |            |  |
| 710   | 708.8               | 33.5                     |                      | 78      | 22/0.1 |                |    |    |    |     |           |     |     |                           | 713.5      | TAN, F. SANDY SILT (A-4)   |
| 705   | 703.8               | 38.5                     |                      | 100/0.3 |        |                |    |    |    |     |           |     |     |                           | 710.3      | WEATHERED ROCK PURPLE AND WHITE, METAMORPHOSED GRANITE               |
| 700   | 698.8               | 43.5                     |                      | 60/0.1  |        |                |    |    |    |     |           |     |     |                           | 698.8      | CRYSTALLINE ROCK PURPLE AND WHITE, METAMORPHOSED GRANITE             |
|   |                     |                          |                      |         |        |                |    |    |    |     |           |     |     |                           | 698.7      | Boring Terminated at Elevation 698.7 ft in CR: METAMORPHOSED GRANITE |

NCDOT BORE DOUBLE P5204\_GEO\_STR03T1B\_GINT.GPJ NC\_DOT.GDT 2/17/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

| WBS 52100.0.STR03T1B  |                 | TIP P-5204          |            | COUNTY GUILFORD          |       | GEOLOGIST Hamm, J.R.    |                 |    |    |     |           |     |     |                           |  |      |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|-----|---------------------------|--|------|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                 |                     |            |                          |       |                         | GROUND WTR (ft) |    |    |     |           |     |     |                           |  |      |
| BORING NO. EB2-A  |                 | STATION 25+16       |            | OFFSET 18 ft LT          |       | ALIGNMENT -L-           |                 |    |    |     |           |     |     |                           |  |      |
| 0 HR. 7.0   |                 | TOTAL DEPTH 38.6 ft |            | NORTHING 858,159         |       | EASTING 1,805,612       |                 |    |    |     |           |     |     |                           |  |      |
| COLLAR ELEV. 745.4 ft   |                 | TOTAL DEPTH 38.6 ft |            | NORTHING 858,159         |       | EASTING 1,805,612       |                 |    |    |     |           |     |     |                           |  |      |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                 |                     |            | DRILL METHOD H.S. Augers |       | HAMMER TYPE Automatic   |                 |    |    |     |           |     |     |                           |  |      |
| DRILLER Wichard, W.   |                 | START DATE 07/26/13 |            | COMP. DATE 07/26/13      |       | SURFACE WATER DEPTH N/A |                 |    |    |     |           |     |     |                           |  |      |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft)          | BLOW COUNT |                          |       | BLOWS PER FOOT          |                 |    |    |     | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft)   |      |
|   |                 |                     | 0.5ft      | 0.5ft                    | 0.5ft | 0                       | 25              | 50 | 75 | 100 |           |     |     |                           |  |      |
| 750   |                 |                     |            |                          |       |                         |                 |    |    |     |           |     |     |                           |  |      |
| 745   | 744.4           | 1.0                 | 2          | 2                        | 2     |                         |                 |    |    |     |           |     |     | W                         | 745.4 GROUND SURFACE: 10" STONE/TOPSOIL                              | 0.0  |
|   | 741.9           | 3.5                 |            |                          |       |                         |                 |    |    |     |           |     |     | W                         | RESIDUAL GRAY AND TAN, CLAYEY SAND (A-2-6)                           |      |
| 740   | 739.4           | 6.0                 | 4          | 5                        | 6     |                         |                 |    |    |     |           |     |     | W                         | TAN BROWN AND WHITE, SANDY SILT (A-4)                                | 3.0  |
|   | 736.9           | 8.5                 | 1          | 2                        | 2     |                         |                 |    |    |     |           |     |     | W                         |  |      |
| 735   | 731.9           | 13.5                | 3          | 9                        | 12    |                         |                 |    |    |     |           |     |     | W                         | WHITE TAN AND BROWN, SI. F. TO CSE. SAND (A-2-4)                     | 12.0 |
| 730   | 726.9           | 18.5                | 8          | 9                        | 11    |                         |                 |    |    |     |           |     |     | W                         |  |      |
| 725   | 721.9           | 23.5                | 21         | 22                       | 27    |                         |                 |    |    |     |           |     |     | W                         |  |      |
| 720   | 716.9           | 28.5                | 36         | 64/0.4                   |       |                         |                 |    |    |     |           |     |     | W                         | WEATHERED ROCK BLACK WHITE AND TAN, METAMORPHOSED GRANITE            | 26.5 |
| 715   | 711.9           | 33.5                | 100/0.2    |                          |       |                         |                 |    |    |     |           |     |     | W                         |  |      |
| 710   | 706.9           | 38.5                | 60/0.1     |                          |       |                         |                 |    |    |     |           |     |     | W                         | CRYSTALLINE ROCK BLACK WHITE AND TAN, METAMORPHOSED GRANITE          | 38.5 |
|   |                 |                     |            |                          |       |                         |                 |    |    |     |           |     |     |                           | Boring Terminated at Elevation 706.8 ft in CR: METAMORPHOSED GRANITE | 38.6 |

| WBS 52100.0.STR03T1B  |                 | TIP P-5204          |            | COUNTY GUILFORD          |        | GEOLOGIST Hamm, J.R.    |                 |    |    |     |           |     |     |                           |  |      |
|---|-----------------|---------------------|------------|--------------------------|--------|-------------------------|-----------------|----|----|-----|-----------|-----|-----|---------------------------|--|------|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                 |                     |            |                          |        |                         | GROUND WTR (ft) |    |    |     |           |     |     |                           |  |      |
| BORING NO. EB2-B  |                 | STATION 25+44       |            | OFFSET 18 ft RT          |        | ALIGNMENT -L-           |                 |    |    |     |           |     |     |                           |  |      |
| 0 HR. 8.9   |                 | TOTAL DEPTH 43.6 ft |            | NORTHING 858,187         |        | EASTING 1,805,649       |                 |    |    |     |           |     |     |                           |  |      |
| COLLAR ELEV. 746.2 ft   |                 | TOTAL DEPTH 43.6 ft |            | NORTHING 858,187         |        | EASTING 1,805,649       |                 |    |    |     |           |     |     |                           |  |      |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                 |                     |            | DRILL METHOD H.S. Augers |        | HAMMER TYPE Automatic   |                 |    |    |     |           |     |     |                           |  |      |
| DRILLER Wichard, W.   |                 | START DATE 07/25/13 |            | COMP. DATE 07/25/13      |        | SURFACE WATER DEPTH N/A |                 |    |    |     |           |     |     |                           |  |      |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft)          | BLOW COUNT |                          |        | BLOWS PER FOOT          |                 |    |    |     | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft)   |      |
|   |                 |                     | 0.5ft      | 0.5ft                    | 0.5ft  | 0                       | 25              | 50 | 75 | 100 |           |     |     |                           |  |      |
| 750   |                 |                     |            |                          |        |                         |                 |    |    |     |           |     |     |                           |  |      |
| 745   | 745.2           | 1.0                 | 2          | 3                        | 4      |                         |                 |    |    |     |           |     |     | M                         | 746.2 GROUND SURFACE: 12" STONE                                      | 0.0  |
|   | 742.7           | 3.5                 | 2          | 3                        | 3      |                         |                 |    |    |     |           |     |     | W                         | RESIDUAL TAN AND GRAY, SI. SAND (A-2-4)                              |      |
| 740   | 740.2           | 6.0                 | 2          | 5                        | 7      |                         |                 |    |    |     |           |     |     | W                         | GRAY AND TAN, SANDY CLAY (A-7-6)                                     | 3.0  |
|   | 737.7           | 8.5                 | 3          | 2                        | 3      |                         |                 |    |    |     |           |     |     | W                         | BLUE-GRAY, CLAYEY SILT (A-5)   | 8.0  |
| 735   | 732.7           | 13.5                | 2          | 3                        | 3      |                         |                 |    |    |     |           |     |     | W                         | TAN AND BROWN, F. SANDY SILT (A-4)                                   | 14.5 |
| 730   | 727.7           | 18.5                | 4          | 8                        | 9      |                         |                 |    |    |     |           |     |     | W                         | TAN AND BLACK, SI. SAND (A-2-4) W/ ROCK FRAGS                        | 17.0 |
| 725   | 722.7           | 23.5                | 9          | 14                       | 16     |                         |                 |    |    |     |           |     |     | W                         |  |      |
| 720   | 717.7           | 28.5                | 9          | 23                       | 29     |                         |                 |    |    |     |           |     |     | W                         | WEATHERED ROCK BLACK WHITE AND BROWN, METAMORPHOSED GRANITE          | 34.0 |
| 715   | 712.7           | 33.5                | 40         | 60/0.2                   |        |                         |                 |    |    |     |           |     |     | W                         |  |      |
| 710   | 707.7           | 38.5                | 45         | 44                       | 56/0.4 |                         |                 |    |    |     |           |     |     | W                         | CRYSTALLINE ROCK BLACK AND WHITE, METAMORPHOSED GRANITE              | 41.5 |
| 705   | 702.7           | 43.5                | 60/0.1     |                          |        |                         |                 |    |    |     |           |     |     | W                         | Boring Terminated at Elevation 702.6 ft in CR: METAMORPHOSED GRANITE | 43.6 |

NCDOT BORE DOUBLE P5204\_GEO\_STR03T1B\_GINT.GPJ NC\_DOT.GDT 2/17/14



FALCON

1210 TRINITY ROAD, SUITE 110, RALEIGH, NORTH CAROLINA 27607

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

SR 2819 (McLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70

WBS: 52400.1.STR03T1B, TIP NO.: P-5204

GUILFORD COUNTY, NORTH CAROLINA

FALCON ENGINEERING, INC. PROJECT NO: G13047.00

| BORING                |               | SAMPLE       | TOTAL SAMPLE    |     |      | Atterberg Limit Test Results |    |    | Natural Moisture Content |
|-----------------------|---------------|--------------|-----------------|-----|------|------------------------------|----|----|--------------------------|
| AASHTO Classification |               |              | PERCENT PASSING |     |      |                              |    |    |                          |
| STATION               | OFFSET (FEET) | DEPTH (FEET) | #10             | #40 | #200 | LL                           | PL | PI | %                        |
| EB1-A                 |               | SS-1         | 94              | 88  | 73   | 67                           | 24 | 43 | 33.3                     |
|                       | A-7-6(32)     |              |                 |     |      |                              |    |    |                          |
| 23+76                 | 18 ft LT      | 0-1.0        |                 |     |      |                              |    |    |                          |
| EB2-A                 |               | SS-2         | 97              | 73  | 45   | 49                           | NP | NP | 39.8                     |
|                       | A-4(0)        |              |                 |     |      |                              |    |    |                          |
| 25+16                 | 18 ft LT      | 8.5-10.0     |                 |     |      |                              |    |    |                          |
| EB2-B                 |               | SS-3         | 96              | 87  | 70   | 81                           | 28 | 53 | 27.6                     |
|                       | A-7-6(38)     |              |                 |     |      |                              |    |    |                          |
| 25+44                 | 18 ft RT      | 3.5-5.0      |                 |     |      |                              |    |    |                          |

SIGNATURE



105-03-0803

Notes: LL = Liquid limit  
 PL = Plastic limit  
 PI = Plasticity index = LL - PL

PROJECT: 52400.1.STR03T1B ID: P-5204

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C.  | 52400.1.STR03T1B (P-5204)   | 1         | 8            |

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

**STRUCTURE  
SUBSURFACE INVESTIGATION**

**CONTENTS**

| SHEET | DESCRIPTION                |
|-------|----------------------------|
| 1     | TITLE SHEET                |
| 2     | LEGEND                     |
| 3-4   | SITE PLAN & WALL ENVELOPES |
| 5-7   | BORING LOGS                |
| 8     | SOIL TEST RESULTS          |

PROJ. REFERENCE NO. 52400.1.STR03T1B F.A. PROJ. FRA-FR-HSR-0086-10-01-00  
 COUNTY GUILFORD  
 PROJECT DESCRIPTION SR 2819 (MCLEANSVILLE RD) OVER NS/NCRR  
RAILROAD NORTH OF US 70

SITE DESCRIPTION \_\_\_\_\_  
WALL -R1- STA. 10+00.00 TO 12+30.35  
WALL -R2- STA. 10+00.00 TO 11+48.83

**RETAINING WALLS**

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA, AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS, INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

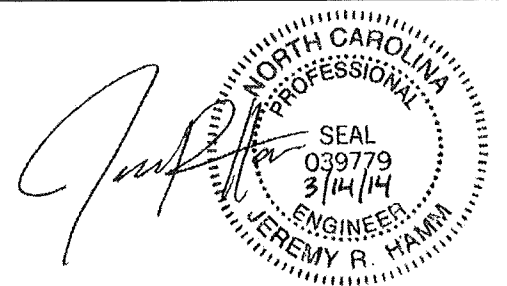
THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, OR THE OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

- PERSONNEL
- NORVILLE, C. V.
  - HAMM, J. R.
  - HUNSBERGER, W. S.
  - TRIGON
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

INVESTIGATED BY JRH, WSH  
 CHECKED BY NORVILLE, C. V.  
 SUBMITTED BY FALCON ENG.  
 DATE MARCH 2014



DRAWN BY: HUNSBERGER, W. S.

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. 52400.J.STRO3T1B  
SHEET NO. 2

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

| SOIL DESCRIPTION   |      | GRADATION  |      | ROCK DESCRIPTION   |       | TERMS AND DEFINITIONS   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
|--|------|--|------|--|-------|---|--|--|--|---|----|----|----|-----|-----|------|------|------|------|-------|-------|--|--|------------------------------|--|
| SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:<br><i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i> |      | WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.<br>UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)<br>GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.<br>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <b>ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</b> |      | HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 60 BLOWS PER FOOT IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.<br>ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:<br><br>WEATHERED ROCK (WR)  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.<br><br>CRYSTALLINE ROCK (CR)  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.<br><br>NON-CRYSTALLINE ROCK (NCR)  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.<br><br>COASTAL PLAIN SEDIMENTARY ROCK (CP)  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.   |       | <b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.<br><b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.<br><b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.<br><b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.<br><b>ARTESIAN</b> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.<br><b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.<br><b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.<br><b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.<br><b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.<br><b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.<br><b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.<br><b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.<br><b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.<br><b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL.<br><b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.<br><b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.<br><b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.<br><b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.<br><b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.<br><b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.<br><b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.<br><b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.<br><b>ROCK QUALITY DESIGNATION (RQD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.<br><b>SAPROLITE (SAP)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.<br><b>SILL</b> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRODUCED ROCKS.<br><b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.<br><b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 60 BLOWS PER FOOT.<br><b>STRATA CORE RECOVERY (SCRC)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.<br><b>STRATA ROCK QUALITY DESIGNATION (SRQD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.<br><b>TOPSOIL (TS)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| <b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>   |      | <b>MINERALOGICAL COMPOSITION</b>   |      | <b>WEATHERING</b>  |       |   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| GENERAL CLASS. GRANULAR MATERIALS ( $\leq$ 35% PASSING #200) SILT-CLAY MATERIALS ( $>$ 35% PASSING #200) ORGANIC MATERIALS   |      | MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.  |      | FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.<br>VERY SLIGHT (V SL) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.<br>SLIGHT (SL) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.<br>MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.<br>MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK.<br>SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT, SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.<br>VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES <math>&lt;</math> 100 BPF</i><br>COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE. |       | <b>COMPRESSIBILITY</b><br>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31<br>MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50<br>HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50  |  | <b>WEATHERING</b>  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| <b>PERCENTAGE OF MATERIAL</b>  |      | <b>GROUND WATER</b>  |      | <b>ROCK HARDNESS</b>   |       |   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL<br>TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%<br>LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%<br>MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%<br>HIGHLY ORGANIC $>$ 10% $>$ 20% HIGHLY 35% AND ABOVE  |      | $\nabla$ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING<br>$\nabla_{24}$ STATIC WATER LEVEL AFTER 24 HOURS<br>$\nabla_{PW}$ PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA<br>SPRING OR SEEP  |      | VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.<br>HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.<br>MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.<br>MEDIUM CAN BE GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.<br>SOFT CAN BE GROUDED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT, SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.<br>VERY SOFT CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.  |       | <b>SOIL MOISTURE - CORRELATION OF TERMS</b>   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| USUAL TYPES OF MAJOR MATERIALS   |      | MISCELLANEOUS SYMBOLS  |      | <b>ABBREVIATIONS</b>   |       |   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| GEN. RATING AS A SUBGRADE  |      | ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION<br>SOIL SYMBOL<br>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT<br>INFERRED ROCK LINE<br>ALLUVIAL SOIL BOUNDARY<br>DIP & DIP DIRECTION OF ROCK STRUCTURES   |      | SPT TEST BORING<br>AUGER BORING<br>CORE BORING<br>MONITORING WELL<br>PIEZOMETER INSTALLATION<br>SLOPE INDICATOR INSTALLATION<br>CONE PENETROMETER TEST<br>SOUNDING ROD   |       | AR - AUGER REFUSAL<br>BT - BORING TERMINATED<br>CL - CLAY<br>CPT - CONE PENETRATION TEST<br>CSE - COARSE<br>DMT - DILATOMETER TEST<br>DPT - DYNAMIC PENETRATION TEST<br>F - FINE<br>FOSS - FOSSILIFEROUS<br>FRAC - FRACTURED, FRACTURES<br>FRAGS - FRAGMENTS<br>HI - HIGHLY<br>MED. - MEDIUM<br>MICA - MICACEOUS<br>MOD. - MODERATELY<br>NP - NON PLASTIC<br>ORG. - ORGANIC<br>PMT - PRESSUREMETER TEST<br>SAP. - SAPROLITIC<br>SD. - SAND, SANDY<br>SL. - SILT, SILTY<br>SLI. - SLIGHTLY<br>TCR - TRICONE REFUSAL<br>W - MOISTURE CONTENT<br>V - VERY<br>VST - VANE SHEAR TEST<br>WEA. - WEATHERED<br>UNIT WEIGHT<br>DRY UNIT WEIGHT<br>SAMPLE ABBREVIATIONS<br>S - BULK<br>SS - SPLIT SPOON<br>ST - SHELBY TUBE<br>RS - ROCK<br>RT - RECOMPACTED TRIAXIAL RATIO<br>CER - CALIFORNIA BEARING RATIO   |  | <b>TEXTURE OR GRAIN SIZE</b><br>U.S. STD. SIEVE SIZE OPENING (MM)<br><table><tr><td>4</td><td>10</td><td>40</td><td>60</td><td>200</td><td>270</td></tr><tr><td>4.76</td><td>2.00</td><td>0.42</td><td>0.25</td><td>0.075</td><td>0.053</td></tr></table><br>BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE, SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.) |  | 4 | 10 | 40 | 60 | 200 | 270 | 4.76 | 2.00 | 0.42 | 0.25 | 0.075 | 0.053 | <b>EQUIPMENT USED ON SUBJECT PROJECT</b> |  | <b>TEXTURE OR GRAIN SIZE</b> |  |
| 4  | 10   | 40   | 60   | 200  | 270   |   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| 4.76   | 2.00 | 0.42   | 0.25 | 0.075  | 0.053 |   |  |  |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| PI OF A-7-5 SUBGROUP IS $\leq$ LL - 30 ; PI OF A-7-6 SUBGROUP IS $>$ LL - 30   |      | <b>CONSISTENCY OR DENSENESS</b><br>PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )  |      | MOBILE B- _____<br>BK-51 _____<br>CME-45C _____<br>CME-550 _____<br>PORTABLE HOIST _____<br>CME-55 _____   |       | <b>FRACURE SPACING</b><br>TERM SPACING<br>VERY WIDE MORE THAN 10 FEET<br>WIDE 3 TO 10 FEET<br>MODERATELY CLOSE 1 TO 3 FEET<br>CLOSE 0.16 TO 1 FEET<br>VERY CLOSE LESS THAN 0.16 FEET  |  | <b>TEXTURE OR GRAIN SIZE</b>   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| GENERAL CLASS. GRANULAR MATERIALS ( $\leq$ 35% PASSING #200) SILT-CLAY MATERIALS ( $>$ 35% PASSING #200) ORGANIC MATERIALS   |      | ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION  |      | TEST BORING  |       | VERY HARD   |  | <b>FRACURE SPACING</b>   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| GROUP CLASS.   |      | SOIL SYMBOL  |      | AUGER BORING   |       | MODERATELY HARD   |  | TERM SPACING   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| SYMBOL   |      | ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT   |      | CORE BORING  |       | MEDIUM  |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| %  |      | INFERRED ROCK LINE   |      | MONITORING WELL  |       | SOFT  |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| PASSING  |      | ALLUVIAL SOIL BOUNDARY   |      | PIEZOMETER INSTALLATION  |       | VERY SOFT   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| # 10   |      | DIP & DIP DIRECTION OF ROCK STRUCTURES   |      | SLOPE INDICATOR INSTALLATION   |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| # 40   |      |  |      | CONE PENETROMETER TEST   |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| # 200  |      |  |      | SOUNDING ROD   |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| LIQUID LIMIT   |      |  |      |  |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| PLASTIC INDEX  |      |  |      |  |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| GROUP INDEX  |      |  |      |  |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| USUAL TYPES OF MAJOR MATERIALS   |      |  |      |  |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |
| GEN. RATING AS A SUBGRADE  |      |  |      |  |       |   |  | TERM THICKNESS   |  |   |    |    |    |     |     |      |      |      |      |       |       |  |  |                              |  |

8/17/99

R1B2

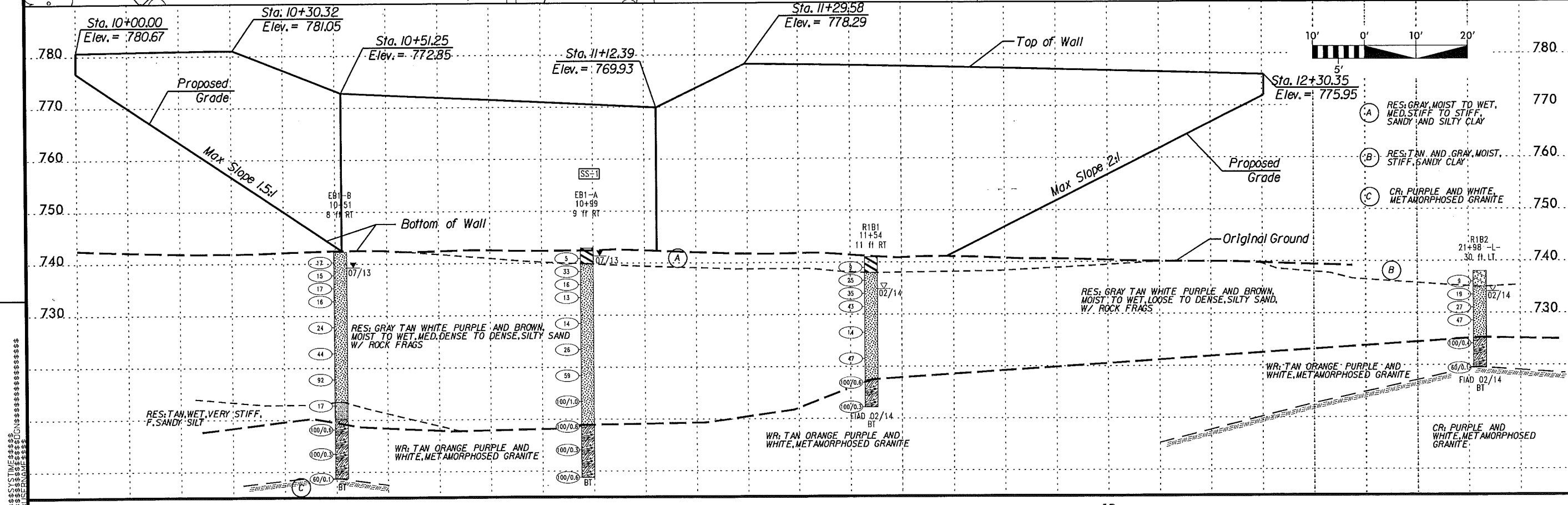
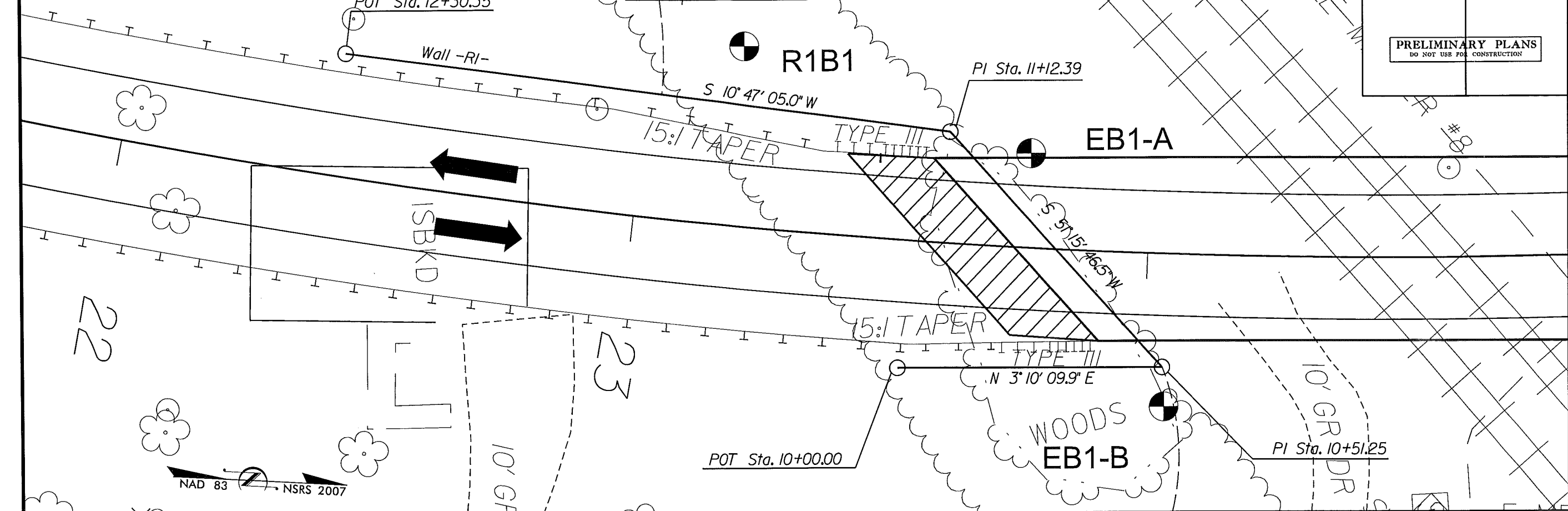
# Detail of Wall -R1-

R1B1

EB1-A

EB1-B

|   |                     |
|---|---------------------|
| PROJECT REFERENCE NO.<br>P-5204                         | SHEET NO.<br>3      |
| RW SHEET NO.  |                     |
| ROADWAY DESIGN ENGINEER                                 | HYDRAULICS ENGINEER |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION |                     |



REVISIONS

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11  
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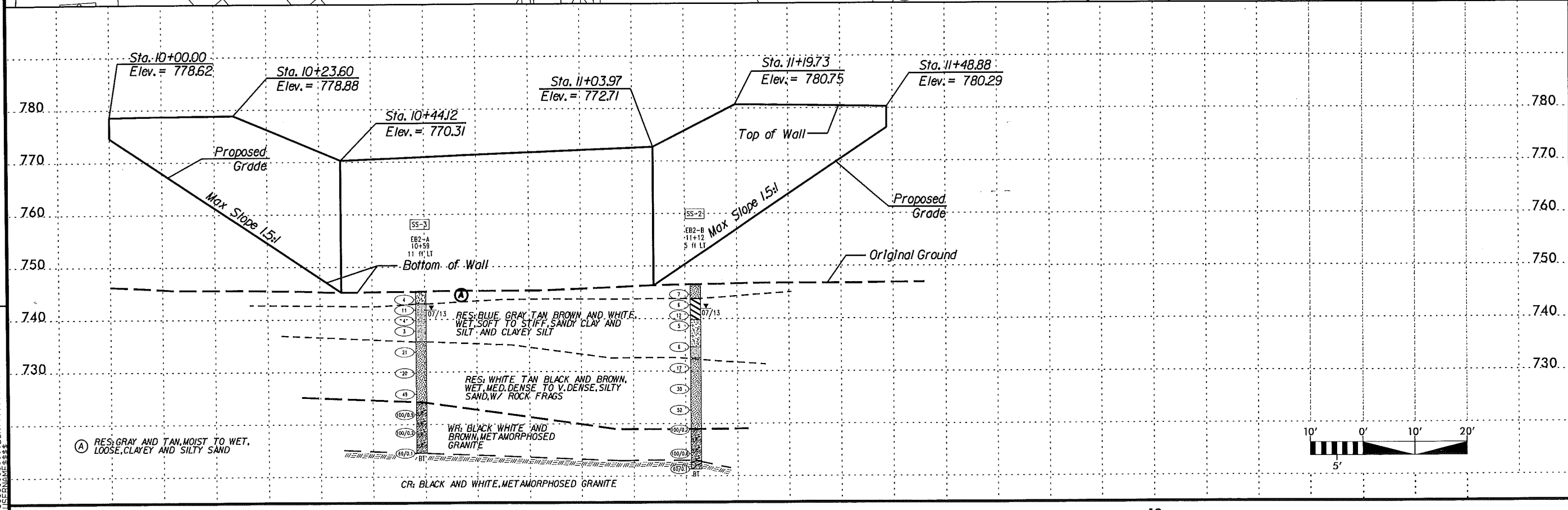
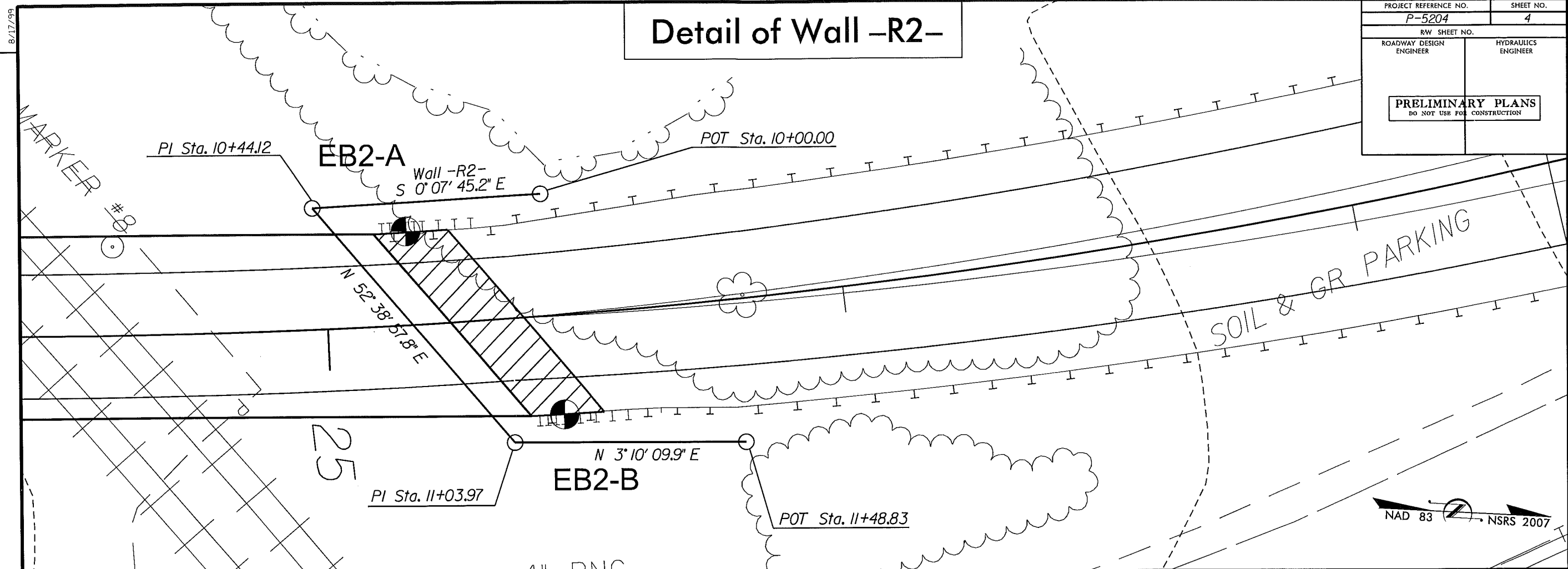
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# Detail of Wall -R2-

|   |                     |
|---|---------------------|
| PROJECT REFERENCE NO.<br>P-5204                         | SHEET NO.<br>4      |
| RW SHEET NO.  |                     |
| ROADWAY DESIGN ENGINEER                                 | HYDRAULICS ENGINEER |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION |                     |



REVISIONS

8/17/99

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NCDOT GEOTECHNICAL ENGINEERING UNIT  
BORELOG REPORT

| WBS 52100.0.STR03T1B  |                 | TIP P-5204               |            | COUNTY GUILFORD       |        | GEOLOGIST Hamm, J.R.    |                 |    |    |     |           |      |                           |            |  |      |
|---|-----------------|--------------------------|------------|-----------------------|--------|-------------------------|-----------------|----|----|-----|-----------|------|---------------------------|------------|--|------|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                 |                          |            |                       |        |                         | GROUND WTR (ft) |    |    |     |           |      |                           |            |  |      |
| BORING NO. EB1-A  |                 | STATION 10+99            |            | OFFSET 9 ft RT        |        | ALIGNMENT -R1-          |                 |    |    |     |           |      |                           |            |  |      |
| COLLAR ELEV. 742.9 ft   |                 | TOTAL DEPTH 44.1 ft      |            | NORTHING 858,020      |        | EASTING 1,805,605       |                 |    |    |     |           |      |                           |            |  |      |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                 | DRILL METHOD H.S. Augers |            | HAMMER TYPE Automatic |        |                         |                 |    |    |     |           |      |                           |            |  |      |
| DRILLER Wichard, W.   |                 | START DATE 07/26/13      |            | COMP. DATE 07/26/13   |        | SURFACE WATER DEPTH N/A |                 |    |    |     |           |      |                           |            |  |      |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft)               | BLOW COUNT |                       |        | BLOWS PER FOOT          |                 |    |    |     | SAMP. NO. | LOG  | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |  |      |
|   |                 |                          | 0.5ft      | 0.5ft                 | 0.5ft  | 0                       | 25              | 50 | 75 | 100 |           |      |                           |            |  |      |
| 745   |                 |                          |            |                       |        |                         |                 |    |    |     |           |      |                           | 742.9      | GROUND SURFACE: 4" TOPSOIL   | 0.0  |
| 740   | 741.9           | 1.0                      | WOH        | 2                     | 3      |                         |                 |    |    |     |           | SS-1 | 33%                       | 739.9      | RESIDUAL GRAY, SI. CLAY (A-7-6)  | 3.0  |
|   | 739.4           | 3.5                      |            | 9                     | 14     | 19                      |                 |    |    |     |           |      |                           |            | GRAY BROWN BLACK AND WHITE, DENSE, SI. F. TO CSE. SAND (A-2-4) W/ ROCK FRAGS |      |
| 735   | 736.9           | 6.0                      |            | 12                    | 8      | 8                       |                 |    |    |     |           |      |                           |            |  |      |
|   | 734.4           | 8.5                      |            | 4                     | 7      | 6                       |                 |    |    |     |           |      |                           |            |  |      |
| 730   | 729.4           | 13.5                     |            | 6                     | 6      | 8                       |                 |    |    |     |           |      |                           |            |  |      |
| 725   | 724.4           | 18.5                     |            | 7                     | 10     | 16                      |                 |    |    |     |           |      |                           |            |  |      |
| 720   | 719.4           | 23.5                     |            | 20                    | 26     | 33                      |                 |    |    |     |           |      |                           |            |  |      |
| 715   | 714.4           | 28.5                     |            | 33                    | 67/0.5 |                         |                 |    |    |     |           |      |                           |            |  |      |
| 710   | 709.4           | 33.5                     |            | 64                    | 36/0.3 |                         |                 |    |    |     |           |      |                           |            |  |      |
| 705   | 704.4           | 38.5                     |            | 100/0.3               |        |                         |                 |    |    |     |           |      |                           |            |  |      |
| 700   | 699.4           | 43.5                     |            | 77                    | 23/0.1 |                         |                 |    |    |     |           |      |                           |            |  |      |
|   |                 |                          |            |                       |        |                         |                 |    |    |     |           |      |                           | 698.8      | Boring Terminated at Elevation 698.8 ft in WR: METAMORPHOSED GRANITE         | 44.1 |

| WBS 52100.0.STR03T1B  |                 | TIP P-5204               |            | COUNTY GUILFORD       |        | GEOLOGIST Hamm, J.R.    |                 |    |    |     |           |     |                           |            |  |      |
|---|-----------------|--------------------------|------------|-----------------------|--------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|------|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                 |                          |            |                       |        |                         | GROUND WTR (ft) |    |    |     |           |     |                           |            |  |      |
| BORING NO. EB1-B  |                 | STATION 10+51            |            | OFFSET 8 ft RT        |        | ALIGNMENT -R1-          |                 |    |    |     |           |     |                           |            |  |      |
| COLLAR ELEV. 742.3 ft   |                 | TOTAL DEPTH 43.6 ft      |            | NORTHING 858,044      |        | EASTING 1,805,655       |                 |    |    |     |           |     |                           |            |  |      |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                 | DRILL METHOD H.S. Augers |            | HAMMER TYPE Automatic |        |                         |                 |    |    |     |           |     |                           |            |  |      |
| DRILLER Wichard, W.   |                 | START DATE 07/26/13      |            | COMP. DATE 07/26/13   |        | SURFACE WATER DEPTH N/A |                 |    |    |     |           |     |                           |            |  |      |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft)               | BLOW COUNT |                       |        | BLOWS PER FOOT          |                 |    |    |     | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |  |      |
|   |                 |                          | 0.5ft      | 0.5ft                 | 0.5ft  | 0                       | 25              | 50 | 75 | 100 |           |     |                           |            |  |      |
| 745   |                 |                          |            |                       |        |                         |                 |    |    |     |           |     |                           | 742.3      | GROUND SURFACE: 5" TOPSOIL   | 0.0  |
| 740   | 741.3           | 1.0                      |            | 4                     | 9      | 8                       |                 |    |    |     |           |     |                           |            | RESIDUAL GRAY TAN BROWN AND PURPLE, SI. F. TO CSE. SAND (A-2-4)      |      |
|   | 738.8           | 3.5                      |            | 4                     | 7      | 8                       |                 |    |    |     |           |     |                           |            |  |      |
| 735   | 736.3           | 6.0                      |            | 6                     | 8      | 9                       |                 |    |    |     |           |     |                           |            |  |      |
|   | 733.8           | 8.5                      |            | 6                     | 6      | 10                      |                 |    |    |     |           |     |                           |            |  |      |
| 730   | 728.8           | 13.5                     |            | 7                     | 9      | 15                      |                 |    |    |     |           |     |                           |            |  |      |
| 725   | 723.8           | 18.5                     |            | 8                     | 17     | 27                      |                 |    |    |     |           |     |                           |            |  |      |
| 720   | 718.8           | 23.5                     |            | 26                    | 41     | 51                      |                 |    |    |     |           |     |                           |            |  |      |
| 715   | 713.8           | 28.5                     |            | 29                    | 9      | 8                       |                 |    |    |     |           |     |                           |            |  |      |
| 710   | 708.8           | 33.5                     |            | 78                    | 22/0.1 |                         |                 |    |    |     |           |     |                           |            |  |      |
| 705   | 703.8           | 38.5                     |            | 100/0.3               |        |                         |                 |    |    |     |           |     |                           |            |  |      |
| 700   | 698.8           | 43.5                     |            | 60/0.1                |        |                         |                 |    |    |     |           |     |                           |            |  |      |
|   |                 |                          |            |                       |        |                         |                 |    |    |     |           |     |                           | 698.7      | Boring Terminated at Elevation 698.7 ft in CR: METAMORPHOSED GRANITE | 43.6 |

NCDOT BORE DOUBLE P5204\_GEO\_RVAL\_GINT.GPJ NC\_DOT.GDT 3/13/14

**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

| WBS 52100.0.STR03T1B  |                 | TIP P-5204               |            | COUNTY GUILFORD       |       | GEOLOGIST Hunsberger, W.S. |    |    |    |     |           |         |                           |  |      |
|---|-----------------|--------------------------|------------|-----------------------|-------|----------------------------|----|----|----|-----|-----------|---------|---------------------------|--|------|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                 |                          |            |                       |       | GROUND WTR (ft)            |    |    |    |     |           |         |                           |  |      |
| BORING NO. R1B1   |                 | STATION 11+54            |            | OFFSET 11 ft RT       |       | ALIGNMENT -R1-             |    |    |    |     |           |         |                           |  |      |
| COLLAR ELEV. 741.0 ft   |                 | TOTAL DEPTH 28.8 ft      |            | NORTHING 857,967      |       | EASTING 1,805,581          |    |    |    |     |           |         |                           |  |      |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                 | DRILL METHOD H.S. Augers |            | HAMMER TYPE Automatic |       |                            |    |    |    |     |           |         |                           |  |      |
| DRILLER Toothman, R.  |                 | START DATE 02/11/14      |            | COMP. DATE 02/11/14   |       | SURFACE WATER DEPTH N/A    |    |    |    |     |           |         |                           |  |      |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft)               | BLOW COUNT |                       |       | BLOWS PER FOOT             |    |    |    |     | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft)   |      |
|   |                 |                          | 0.5ft      | 0.5ft                 | 0.5ft | 0                          | 25 | 50 | 75 | 100 |           |         |                           |  |      |
| 745   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           |  |      |
| 740   | 740.0           | 1.0                      | 1          | 4                     | 5     |                            |    |    |    |     |           |         | M                         | 741.0 GROUND SURFACE: 4" TOPSOIL   | 0.0  |
|   | 737.5           | 3.5                      | 6          | 11                    | 14    |                            |    |    |    |     |           |         | M                         | RESIDUAL TAN AND GRAY, SANDY CLAY (A-7)                                    | 3.0  |
| 735   | 735.0           | 6.0                      | 13         | 17                    | 18    |                            |    |    |    |     |           |         | W                         | TAN ORANGE GRAY AND BROWN, SI. F. TO CSE. SAND (A-2-4)                     |      |
|   | 732.5           | 8.5                      | 9          | 16                    | 27    |                            |    |    |    |     |           |         | W                         |  |      |
| 730   |                 |                          |            |                       |       |                            |    |    |    |     |           |         | W                         |  |      |
|   | 727.5           | 13.5                     | 5          | 6                     | 8     |                            |    |    |    |     |           |         | W                         |  |      |
| 725   |                 |                          |            |                       |       |                            |    |    |    |     |           |         | W                         |  |      |
|   | 722.5           | 18.5                     | 27         | 19                    | 28    |                            |    |    |    |     |           |         | W                         |  |      |
| 720   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           |  |      |
|   | 717.5           | 23.5                     | 83         | 17/0.1                |       |                            |    |    |    |     |           |         |                           | 717.5 WEATHERED ROCK ORANGE BROWN AND WHITE, METAMORPHOSED GRANITE         | 23.5 |
| 715   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           |  |      |
|   | 712.5           | 28.5                     | 100/0.3    |                       |       |                            |    |    |    |     |           |         |                           | 712.2 Boring Terminated at Elevation 712.2 ft in WR: METAMORPHOSED GRANITE | 28.8 |

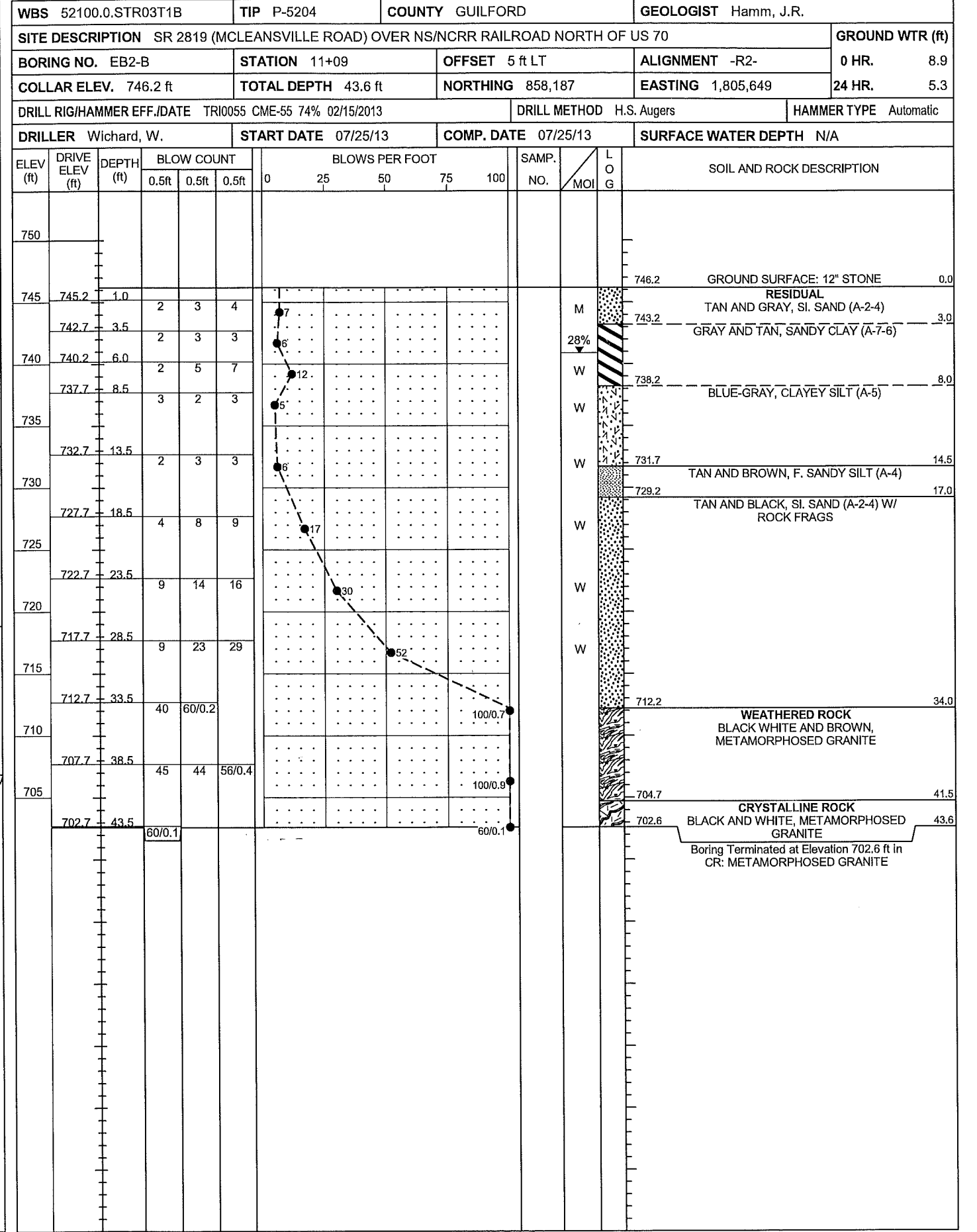
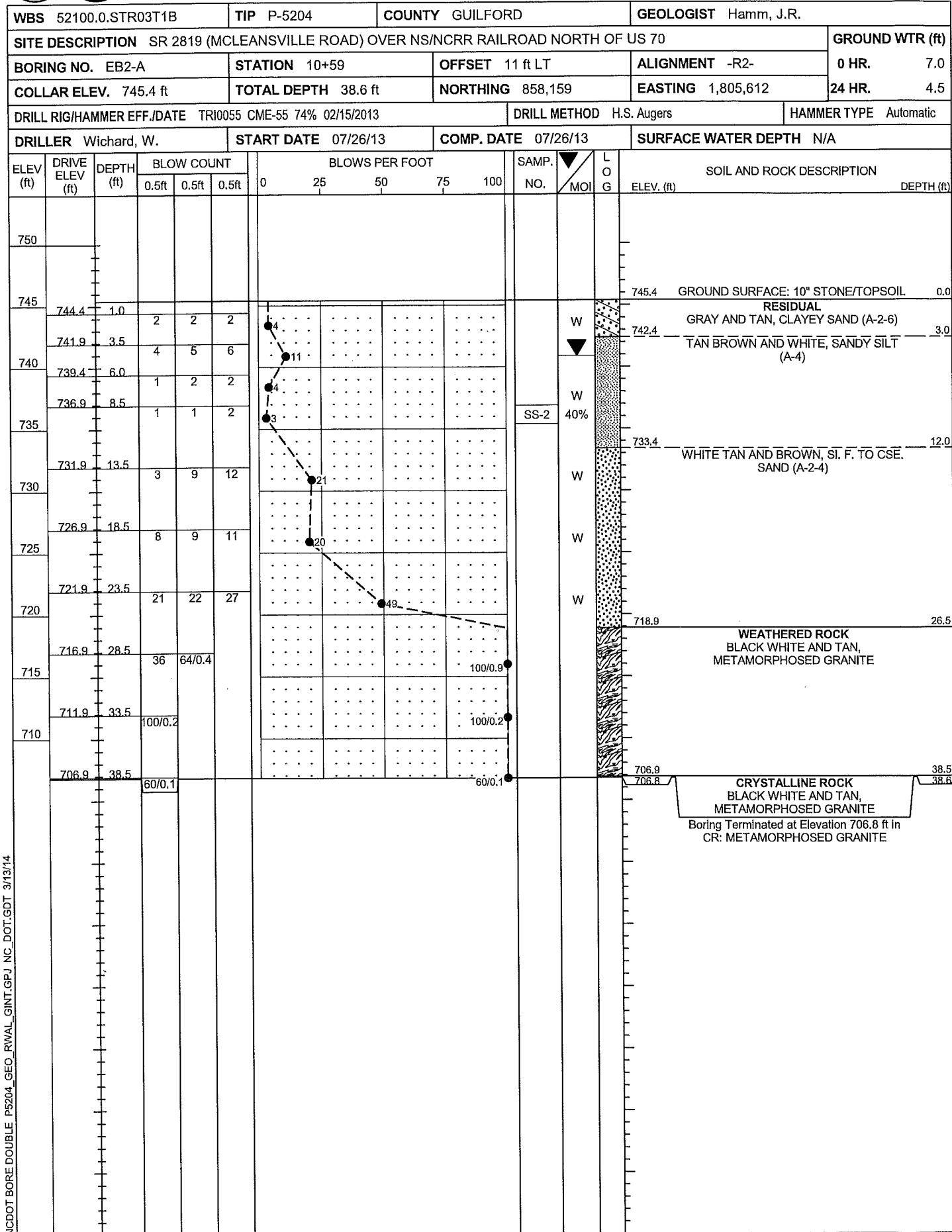
| WBS 52100.0.STR03T1B  |                 | TIP P-5204               |            | COUNTY GUILFORD       |       | GEOLOGIST Hunsberger, W.S. |    |    |    |     |           |         |                           |  |      |
|---|-----------------|--------------------------|------------|-----------------------|-------|----------------------------|----|----|----|-----|-----------|---------|---------------------------|--|------|
| SITE DESCRIPTION SR 2819 (MCLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70 |                 |                          |            |                       |       | GROUND WTR (ft)            |    |    |    |     |           |         |                           |  |      |
| BORING NO. R1B2   |                 | STATION 21+98            |            | OFFSET 30 ft LT       |       | ALIGNMENT -L-              |    |    |    |     |           |         |                           |  |      |
| COLLAR ELEV. 738.0 ft   |                 | TOTAL DEPTH 18.6 ft      |            | NORTHING 857,851      |       | EASTING 1,805,562          |    |    |    |     |           |         |                           |  |      |
| DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 74% 02/15/2013                          |                 | DRILL METHOD H.S. Augers |            | HAMMER TYPE Automatic |       |                            |    |    |    |     |           |         |                           |  |      |
| DRILLER Toothman, R.  |                 | START DATE 02/11/14      |            | COMP. DATE 02/11/14   |       | SURFACE WATER DEPTH N/A    |    |    |    |     |           |         |                           |  |      |
| ELEV (ft)   | DRIVE ELEV (ft) | DEPTH (ft)               | BLOW COUNT |                       |       | BLOWS PER FOOT             |    |    |    |     | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft)   |      |
|   |                 |                          | 0.5ft      | 0.5ft                 | 0.5ft | 0                          | 25 | 50 | 75 | 100 |           |         |                           |  |      |
| 740   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           |  |      |
|   | 737.0           | 1.0                      | 2          | 3                     | 6     |                            |    |    |    |     |           |         | M                         | 738.0 GROUND SURFACE: 2" TOPSOIL   | 0.0  |
| 735   | 734.5           | 3.5                      | 6          | 8                     | 11    |                            |    |    |    |     |           |         | W                         | RESIDUAL TAN ORANGE AND GRAY, CLAYEY F. TO MED. SAND (A-2-6) W/ TRACE ORGANICS | 3.0  |
|   | 732.0           | 6.0                      | 10         | 13                    | 14    |                            |    |    |    |     |           |         | W                         | WHITE ORANGE AND TAN, SI. F. TO MED. SAND (A-2-4)                              |      |
| 730   |                 |                          |            |                       |       |                            |    |    |    |     |           |         | W                         |  |      |
|   | 729.5           | 8.5                      | 12         | 23                    | 24    |                            |    |    |    |     |           |         |                           |  |      |
| 725   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           |  |      |
|   | 724.5           | 13.5                     | 100/0.4    |                       |       |                            |    |    |    |     |           |         |                           | 725.1 WEATHERED ROCK ORANGE BROWN AND WHITE, METAMORPHOSED GRANITE             | 12.9 |
| 720   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           |  |      |
|   | 719.5           | 18.5                     | 60/0.1     |                       |       |                            |    |    |    |     |           |         |                           | 719.5 WEATHERED ROCK ORANGE BROWN AND WHITE, METAMORPHOSED GRANITE             | 18.5 |
|   |                 |                          |            |                       |       |                            |    |    |    |     |           |         |                           | 719.4 Boring Terminated at Elevation 719.4 ft in CR: METAMORPHOSED GRANITE     | 18.6 |

NCDOT BORE DOUBLE P5204\_GEO\_RVAL\_GINT.GPJ NC\_DOT.GDT 3/13/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



NCDOT BORE DOUBLE P5204\_GEO\_RWAL\_GINT.GPJ NC\_DOT.GDT 3/13/14



FALCON

1210 TRINITY ROAD, SUITE 110, RALEIGH, NORTH CAROLINA 27607

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

SR 2819 (McLEANSVILLE ROAD) OVER NS/NCRR RAILROAD NORTH OF US 70

WBS: 52400.1.STR03T1B, TIP NO.: P-5204

GUILFORD COUNTY, NORTH CAROLINA  
FALCON ENGINEERING, INC. PROJECT NO: G13047.00

| BORING                |               | SAMPLE       | TOTAL SAMPLE    |     |      | Atterberg Limit Test Results |    |    | Natural Moisture Content |
|-----------------------|---------------|--------------|-----------------|-----|------|------------------------------|----|----|--------------------------|
| AASHTO Classification |               |              | PERCENT PASSING |     |      |                              |    |    |                          |
| STATION               | OFFSET (FEET) | DEPTH (FEET) | #10             | #40 | #200 | LL                           | PL | PI | %                        |
| EB1-A                 |               | SS-1         | 94              | 88  | 73   | 67                           | 24 | 43 | 33.3                     |
| A-7-6(32)             |               |              |                 |     |      |                              |    |    |                          |
| 10+99                 | 9 ft RT       | 0-1.0        |                 |     |      |                              |    |    |                          |
| EB2-A                 |               | SS-2         | 97              | 73  | 45   | 49                           | NP | NP | 39.8                     |
| A-4(0)                |               |              |                 |     |      |                              |    |    |                          |
| 10+59                 | 11 ft LT      | 8.5-10.0     |                 |     |      |                              |    |    |                          |
| EB2-B                 |               | SS-3         | 96              | 87  | 70   | 81                           | 28 | 53 | 27.6                     |
| A-7-6(38)             |               |              |                 |     |      |                              |    |    |                          |
| 11+07                 | 8 ft LT       | 3.5-5.0      |                 |     |      |                              |    |    |                          |

SIGNATURE  105-03-0803

Notes: LL = Liquid limit  
 PL = Plastic limit  
 PI = Plasticity index = LL - PL