



PAT McCRORY  
Governor

NICHOLAS J. TENNYSON  
Secretary

October 28, 2015

MEMORANDUM TO: Ben Upshaw, P.E.  
Division Design Engineer

FROM:  DS NR Kyung Kim, PhD., P.E.  
Eastern Regional Geotechnical Manager

STATE PROJECT: 45335.1.5 (W-5205E)  
FEDERAL PROJECT: HSIP-0050(13)  
COUNTY: WAKE

DESCRIPTION: NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR RD)

SUBJECT: Cable Guiderail Inventory Report

The Geotechnical Engineering Unit has reviewed and presents the attached 26 page Subsurface Inventory prepared by Terracon for the Cable Guiderail proposed on the above referenced project.

Please call Jaime Love Pedro, LG or Neil T. Roberson, LG at (919) 662-4710 if there are any questions concerning this memorandum.

Attachment



REFERENCE: W-5205E

PROJECT: 45335

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5205E	1	26

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<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3-14	PLAN SHEETS
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26	LABORATORY TESTING SUMMARY

**SUBSURFACE INVENTORY**

COUNTY WAKE  
PROJECT DESCRIPTION HIGH TENSION GUIDERAIL SYSTEM PROPOSED ALONG NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD)

**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. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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 (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 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, NOR 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 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.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
  2. 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

FRAWLEY, M. H.  
ASHLEY, R. T.  
CYR, A. H.

INVESTIGATED BY TERRACON CONSULTANTS  
DRAWN BY FIELDS, W. D.  
CHECKED BY NASH, A. A.  
SUBMITTED BY TERRACON CONSULTANTS  
DATE OCTOBER 2015



DocuSigned by:  
Matt Alexander 10/28/2015  
0FB0038EEA06452  
SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**  
**SUBSURFACE INVESTIGATION**  
**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																																																																	
<p>SOIL IS CONSIDERED 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 THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>										<p><b>WELL GRADED</b> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  <b>UNIFORMLY GRADED</b> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.  <b>GAP-GRADED</b> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>										<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>										<p><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.  <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.  <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.  <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.  <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.  <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.  <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.  <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.  <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.  <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.  <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL.  <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.  <b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.  <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.  <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.  <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.  <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  <b>ROCK QUALITY DESIGNATION (ROD)</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.  <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.  <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 INTRUDED ROCKS.  <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.  <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 0.1 FOOT PER 60 BLOWS.  <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  <b>STRATA ROCK QUALITY DESIGNATION (SROD)</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.  <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																	
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IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</p> <p>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.</p> <p>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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>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. <i>IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF</i></p> <p>VERY SEVERE (IV SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</i></p> <p>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.</p>										<p style="text-align: center;"><b>PERCENTAGE OF MATERIAL</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE 1 - 10%</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE 10 - 20%</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME 20 - 35%</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>&gt; 10%</td> <td>&gt; 20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> </table>										ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%	HIGHLY ORGANIC	> 10%	> 20%	HIGHLY 35% AND ABOVE
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<p style="text-align: center;"><b>INDURATION</b></p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE: RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED: GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED: GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED: SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>										<p style="text-align: center;"><b>FRACATURE SPACING</b></p> <p>TERM: VERY WIDE, WIDE, MODERATELY CLOSE, CLOSE, VERY CLOSE</p> <p>SPACING: MORE THAN 10 FEET, 3 TO 10 FEET, 1 TO 3 FEET, 0.16 TO 1 FOOT, LESS THAN 0.16 FEET</p> <p style="text-align: center;"><b>BEDDING</b></p> <p>TERM: VERY THICKLY BEDDED, THICKLY BEDDED, THINLY BEDDED, VERY THINLY BEDDED, THICKLY LAMINATED, THINLY LAMINATED</p> <p>THICKNESS: 4 FEET, 1.5 - 4 FEET, 0.16 - 1.5 FEET, 0.03 - 0.16 FEET, 0.008 - 0.03 FEET, &lt; 0.008 FEET</p>																																																																																																																																																																																																																					
<p style="text-align: center;"><b>NOTES:</b></p> <p>FIAD - FILLED IN AFTER DRILLING</p>										<p style="text-align: center;"><b>BENCH MARK: TOP OF BORING ELEVATIONS ESTIMATED USING TIN FILE (B512). B5317 IS TIN FILE (12/12/2014) PROVIDED BY DIVISION FOR EACH CABLE GUIDERAIL SITE. ELEVATION: N/A FEET</b></p>																																																																																																																																																																																																																					







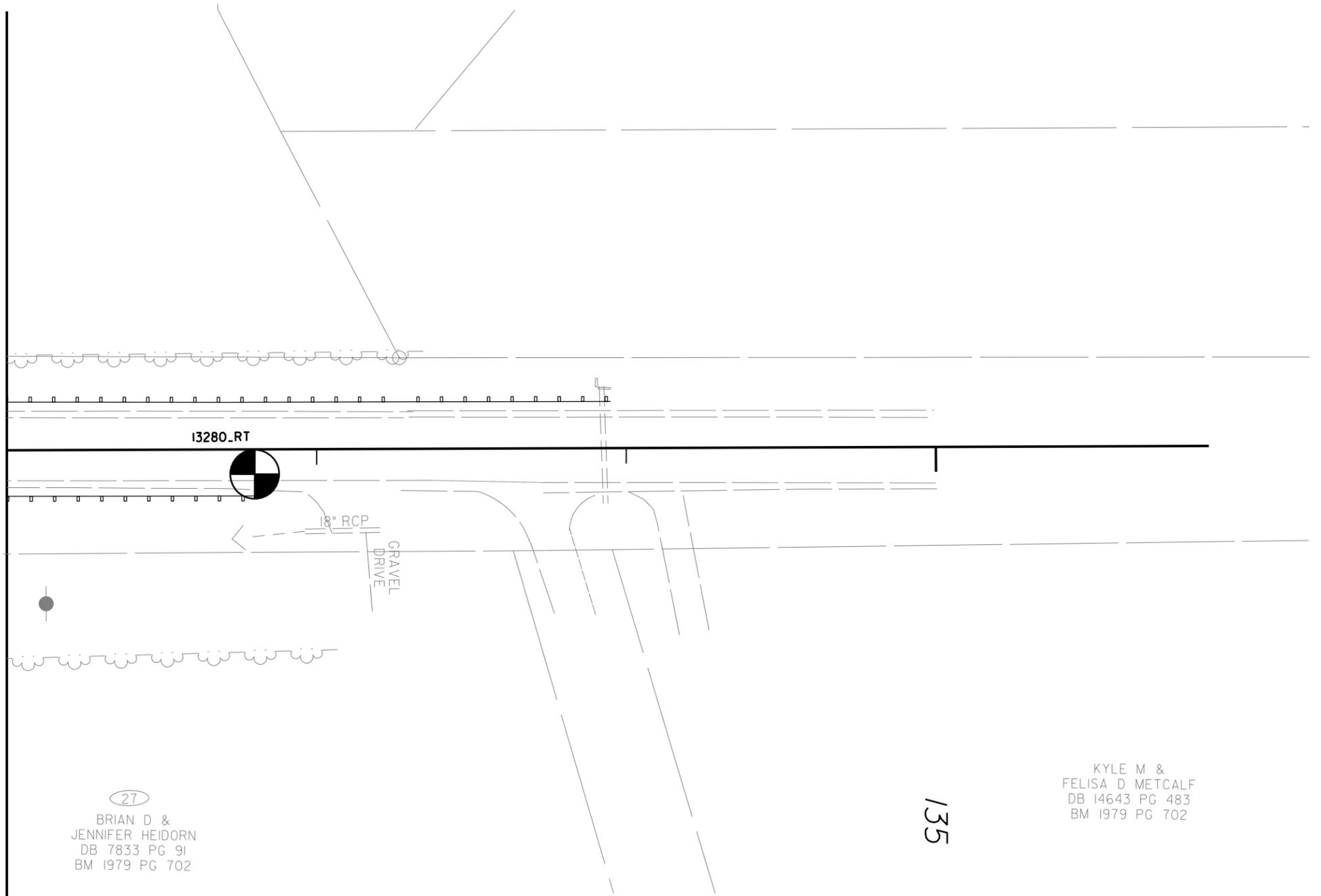








MATCHLINE -L- STA. 132 + 00.00 SEE SHEET 8



(27)  
BRIAN D &  
JENNIFER HEIDORN  
DB 7833 PG 91  
BM 1979 PG 702

KYLE M &  
FELISA D METCALF  
DB 14643 PG 483  
BM 1979 PG 702

135

<p><i>DIVISION FIVE DESIGN</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION</p> </div>	<p><b>SITE 8 CABLE GUIDERAIL INSTALLATION NC 50</b></p> <p>DIVISION 05 WAKE COUNTY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">REVISIONS</th> <th style="width: 15%;">INT.</th> <th style="width: 15%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	INT.	DATE													
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<p><i>N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION FIVE DESIGN UNIT</i></p>		<p>SCALE: 40' = 1"    DATE: 12 AUG 2015</p> <p>PREPARED BY: TLM</p> <p>REVIEWED BY: BJU</p>															











# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45335		TIP W-5205E		COUNTY WAKE		GEOLOGIST FRAWLEY, M. H.								
SITE DESCRIPTION NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD) - CABLE GUIDERAIL							GROUND WTR (ft)							
BORING NO. 1050_RT		STATION 10+50		OFFSET 10 ft RT		ALIGNMENT -L-								
COLLAR ELEV. 362.8 ft		TOTAL DEPTH 9.0 ft		NORTHING 793,977		EASTING 2,093,494								
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 93% 05/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER ASHLEY, R. T.		START DATE 10/08/15		COMP. DATE 10/08/15		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
365														
														362.8 GROUND SURFACE 0.0
														361.8 PAVEMENT (ASPHALT) 1.0
														359.8 ROADWAY EMBANKMENT 3.0
														DARK BROWN TO RED, SILTY CLAY
														RESIDUAL
														RED, SAPROLITIC, SILTY SAND, MICACEOUS
														Boring Terminated at Elevation 353.8 ft IN RESIDUAL SILTY SAND

WBS 45335		TIP W-5205E		COUNTY WAKE		GEOLOGIST FRAWLEY, M. H.								
SITE DESCRIPTION NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD) - CABLE GUIDERAIL							GROUND WTR (ft)							
BORING NO. 1435_RT		STATION 14+35		OFFSET 8 ft RT		ALIGNMENT -L-								
COLLAR ELEV. 370.3 ft		TOTAL DEPTH 9.0 ft		NORTHING 794,357		EASTING 2,093,433								
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 93% 05/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER ASHLEY, R. T.		START DATE 10/08/15		COMP. DATE 10/08/15		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
375														
														370.3 GROUND SURFACE 0.0
														369.1 PAVEMENT (ASPHALT) 1.2
														366.3 ROADWAY EMBANKMENT 4.0
														RED, SILTY CLAY
														RESIDUAL
														RED, SILTY CLAY
														Boring Terminated at Elevation 361.3 ft IN RESIDUAL SILTY CLAY

NCDOT BORE DOUBLE W5205E\_GDRAL\_BH.GPJ NC\_DOT.GDT 10/22/15

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45335		TIP W-5205E		COUNTY WAKE		GEOLOGIST FRAWLEY, M. H.									
SITE DESCRIPTION NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD) - CABLE GUIDERAIL							GROUND WTR (ft)								
BORING NO. 1855_LT		STATION 18+55		OFFSET 10 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 378.8 ft		TOTAL DEPTH 9.0 ft		NORTHING 794,769		EASTING 2,093,350									
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 93% 05/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER ASHLEY, R. T.		START DATE 10/08/15		COMP. DATE 10/08/15		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					
380															378.8 GROUND SURFACE 0.0
	376.3	2.5	2	3	5										377.3 PAVEMENT (ASPHALT) 1.5
375	373.8	5.0	3	4	5										RESIDUAL RED TO TAN, SAPROLITIC, SILTY CLAY
	371.3	7.5	3	4	4										
370															369.8 Boring Terminated at Elevation 369.8 ft IN RESIDUAL SILTY CLAY 9.0

WBS 45335		TIP W-5205E		COUNTY WAKE		GEOLOGIST FRAWLEY, M. H.									
SITE DESCRIPTION NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD) - CABLE GUIDERAIL							GROUND WTR (ft)								
BORING NO. 2275_RT		STATION 22+75		OFFSET 10 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 394.2 ft		TOTAL DEPTH 9.0 ft		NORTHING 795,187		EASTING 2,093,304									
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 93% 05/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER ASHLEY, R. T.		START DATE 10/09/15		COMP. DATE 10/09/15		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					
395															394.2 GROUND SURFACE 0.0
	391.7	2.5	3	4	4										392.7 PAVEMENT (ASPHALT) 1.5
390	389.2	5.0	3	4	5										ROADWAY EMBANKMENT RED, SILTY CLAY 4.0
	386.7	7.5	3	3	5										RESIDUAL RED, SILTY CLAY
															385.2 Boring Terminated at Elevation 385.2 ft IN RESIDUAL SILTY CLAY 9.0

NCDOT BORE DOUBLE W5205E\_GDRAL\_BH.GPJ NC\_DOT.GDT 10/22/15

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45335		TIP W-5205E		COUNTY WAKE		GEOLOGIST FRAWLEY, M. H.									
SITE DESCRIPTION NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD) - CABLE GUIDERAIL							GROUND WTR (ft)								
BORING NO. 3800_RT		STATION 38+00		OFFSET 10 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 380.1 ft		TOTAL DEPTH 9.0 ft		NORTHING 796,693		EASTING 2,093,066									
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 93% 05/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER ASHLEY, R. T.		START DATE 10/08/15		COMP. DATE 10/08/15		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					
385															
380															
	377.6	2.5	1	3	3								M	380.1 GROUND SURFACE 0.0	
	375.1	5.0	3	4	5								M	378.9 PAVEMENT (ASPHALT) 1.2	
	372.6	7.5	3	4	5								M	RESIDUAL TAN TO RED, SAPROLITIC, SILTY SAND	
													M	371.1 Boring Terminated at Elevation 371.1 ft IN RESIDUAL SILTY SAND	9.0

WBS 45335		TIP W-5205E		COUNTY WAKE		GEOLOGIST FRAWLEY, M. H.									
SITE DESCRIPTION NC 50 BETWEEN I-540 AND SR 1831 (OLD CREEDMOOR ROAD) - CABLE GUIDERAIL							GROUND WTR (ft)								
BORING NO. 4200_LT		STATION 42+00		OFFSET 10 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 389.0 ft		TOTAL DEPTH 9.0 ft		NORTHING 797,085		EASTING 2,092,986									
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 93% 05/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER ASHLEY, R. T.		START DATE 10/08/15		COMP. DATE 10/08/15		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					
390															
	386.5	2.5	1	3	5								M	389.0 GROUND SURFACE 0.0	
	384.0	5.0	4	6	7								M	387.7 PAVEMENT (ASPHALT) 1.3	
	381.5	7.5	8	11	11								M	385.0 ROADWAY EMBANKMENT OLIVE, SAND WITH GRAVEL 4.0	
													M	RESIDUAL RED, SILTY CLAY	
														380.0 Boring Terminated at Elevation 380.0 ft IN RESIDUAL SILTY CLAY	9.0

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