

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 52000.1.STR07T1B(P-5206C) F.A. PROJ. FRA-FR-HSR-0006-10-01-00
COUNTY ROWAN
PROJECT DESCRIPTION NCRRNS MAINLINE REID TO NORTH
KANNAPOLIS RAILROAD ROADBED (MP 337.0 TO MP 348.3)
SITE DESCRIPTION BRIDGE ON -MIC- (NCRRNS RAILROAD)
OVER -Y10- (KIMBALL ROAD EXTENSION)

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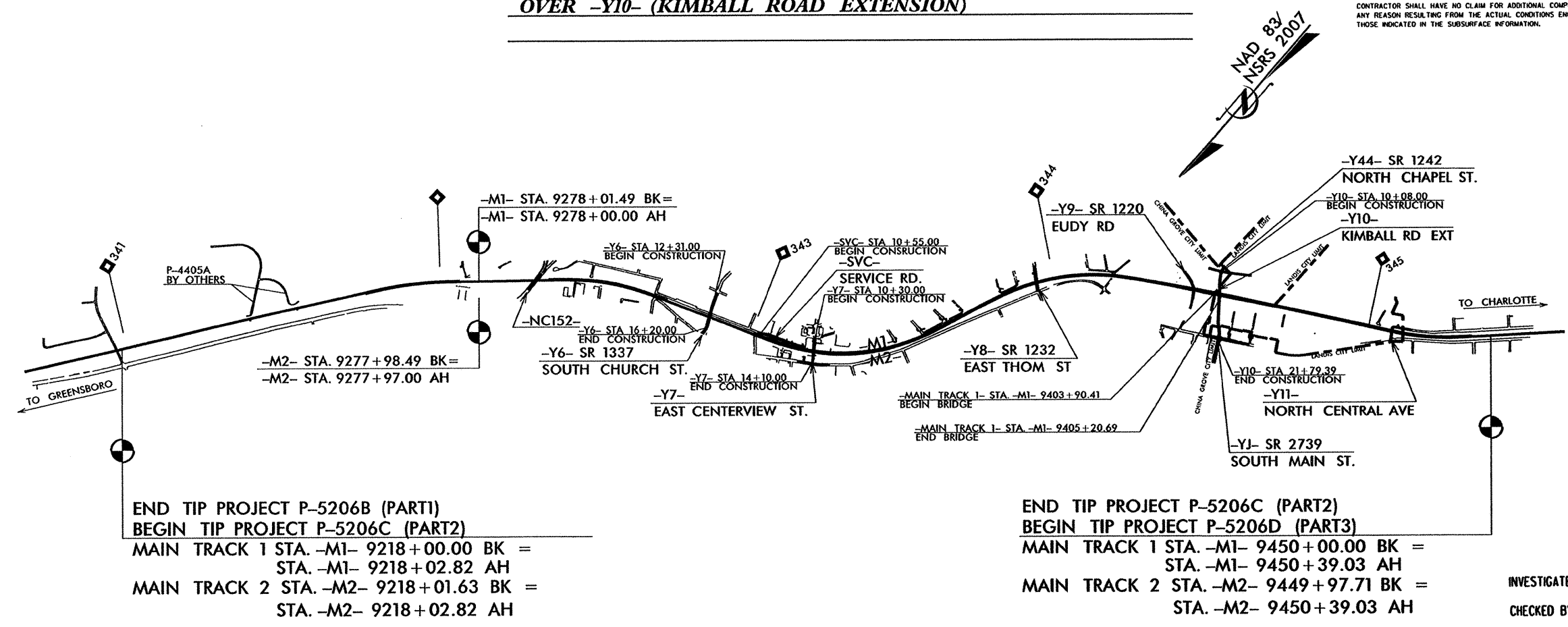
CAUTION NOTICE

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, 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 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.

PROJECT: 52000.1.STR07T1B ID: P-5206C



END TIP PROJECT P-5206B (PART1)
BEGIN TIP PROJECT P-5206C (PART2)
MAIN TRACK 1 STA. -M1- 9218+00.00 BK =
STA. -M1- 9218+02.82 AH =
MAIN TRACK 2 STA. -M2- 9218+01.63 BK =
STA. -M2- 9218+02.82 AH

END TIP PROJECT P-5206C (PART2)
BEGIN TIP PROJECT P-5206D (PART3)
MAIN TRACK 1 STA. -M1- 9450+00.00 BK =
STA. -M1- 9450+39.03 AH =
MAIN TRACK 2 STA. -M2- 9449+97.71 BK =
STA. -M2- 9450+39.03 AH

PERSONNEL

P. OREE
N. MILLER
S. KITTS
J. WHITT
S. BUCHANAN
M. BAHIRADHAN
TERRACON
AMERIDRILL

INVESTIGATED BY TERRACON/AMERIDRILL
CHECKED BY M. BAHIRADHAN
SUBMITTED BY SCHNABEL ENG
DATE MAY 2013

NORTH CAROLINA
PROFESSIONAL
ENGINEER
MAHALINGAM BAHIRADHAN

SEAL
035072

M. Bahiradhan
05/02/2013

DRAWN BY: S. KITTS

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT 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.

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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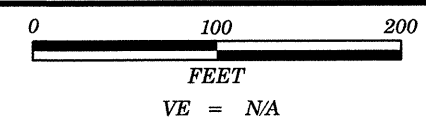
PROJECT REFERENCE NO. 52000.I.STROT71B (P-5206C) SHEET NO. 2 OF 20

SUBSURFACE INVESTIGATION

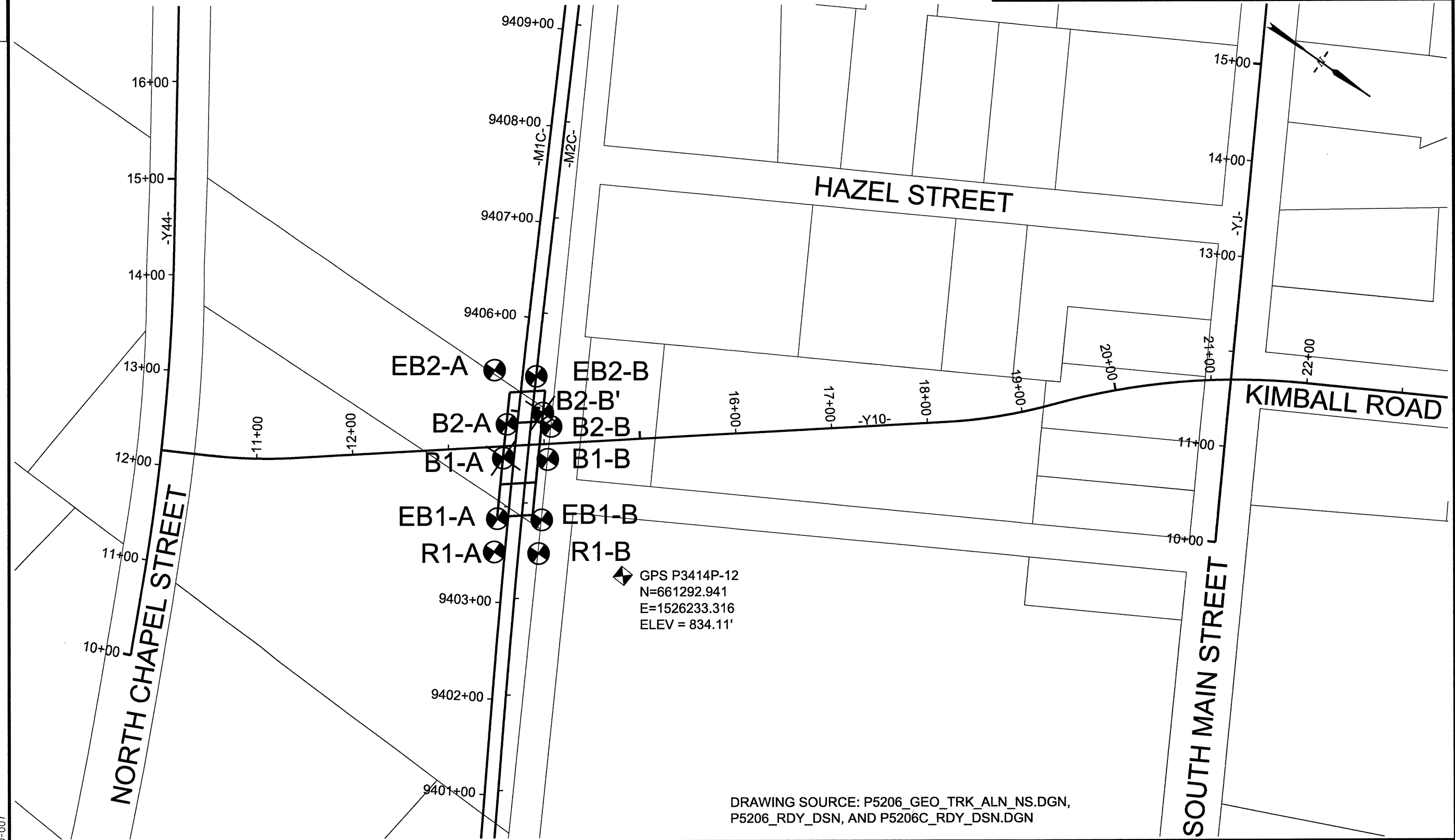
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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 (AASHTO T206, ASTM D-1586). 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: <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. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	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 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:  WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - 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. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOOD - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROQ) - 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. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - 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. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN 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. STRATA CORE RECOVERY (SCRC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - 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. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
SOIL LEGEND AND AASHTO CLASSIFICATION GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1, A-2, A-3, A-4, A-5, A-6, A-7 SYMBOL. [Grid of symbols for soil types] % PASSING: 10, 40, 200 LIQUID LIMIT: 6, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 GROUP INDEX: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 USUAL TYPES OF MAJOR MATERIALS: STONE FRAGS., GRAVEL AND SAND, FINE SAND, SILTY OR CLAYEY GRAVEL AND SAND, SILTY SOILS, CLAYEY SOILS, MUCK, PEAT, HIGHLY ORGANIC SOILS GENERAL RATING AS A SUBGRADE: EXCELLENT TO GOOD, FAIR TO POOR, POOR, UNSUITABLE PI OF A-7-5 SUBGROUP IS <= LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30	MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE. COMPRESSIBILITY SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 LIQUID LIMIT EQUAL TO 31-50 LIQUID LIMIT GREATER THAN 50 PERCENTAGE OF MATERIAL ORGANIC MATERIAL: GRANULAR SOILS, SILT-CLAY SOILS, OTHER MATERIAL TRACE OF ORGANIC MATTER: 2-3%, 3-5%, 5-12%, 12-20%, >20% LITTLE ORGANIC MATTER: 1-10%, 10-20%, 20-35%, 35% AND ABOVE MODERATELY ORGANIC: 5-10%, 10-20%, 20-35%, 35% AND ABOVE HIGHLY ORGANIC: >10%, >20%, >35% AND ABOVE GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	WEATHERING FRESH: ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.): 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. SLIGHT (SLI.): 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. 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. 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> 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, YIELDS SPT N VALUES > 100 BPF</i> 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 < 100 BPF</i> COMPLETE: ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIXES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.	
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE: COMPACTNESS OR CONSISTENCY, RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE), RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) GENERALLY GRANULAR MATERIAL (NON-COHESIVE): VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE GENERALLY SILT-CLAY MATERIAL (COHESIVE): VERY SOFT, SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD	MISCELLANEOUS SYMBOLS ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES SPT TEST DPT TEST TEST BORING W/ CORE SPT N-VALUE SPT REFUSAL AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD	ROCK HARDNESS VERY HARD: CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD: CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. MEDIUM HARD: CAN BE GROOVED 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. SOFT: CAN BE GROOVED 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. 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 FINGERNAIL.	
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE OPENING (MM): 4, 10, 40, 60, 200, 270 4.75, 2.00, 0.42, 0.25, 0.075, 0.053 BOULDER (BLDR.), COBBLE (COB.), GRAVEL (GR.), COARSE SAND (CSE, SD.), FINE SAND (F SD.), SILT (SL.), CLAY (CL.) GRAIN SIZE: MM 305, 75, 2.0, 0.25, 0.05, 0.005 IN. 12, 3	ABBREVIATIONS AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED UW - UNIT WEIGHT UWd - DR UNIT WEIGHT SAMPLE ABBREVIATIONS SS - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO	ROCK HARDNESS VERY HARD: CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD: CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. MEDIUM HARD: CAN BE GROOVED 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. SOFT: CAN BE GROOVED 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. 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 FINGERNAIL.	
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS), FIELD MOISTURE DESCRIPTION, GUIDE FOR FIELO MOISTURE DESCRIPTION LL - LIQUID LIMIT, PL - PLASTIC LIMIT, OM - OPTIMUM MOISTURE, SL - SHRINKAGE LIMIT SATURATED - (SAT.) WET - (W) MOIST - (M) DRY - (D)	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: MOBILE B-51, BK-51, CME-45C, CME-550, PORTABLE HOIST, DIEDRICH D-50 ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 6" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE 3" STEEL TEETH, TRICONE TUNG-CARB., MUD ROTARY HAMMER TYPE: AUTOMATIC, MANUAL CORE SIZE: B, 0-2, H HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST	FRACTURE SPACING TERM: VERY WIDE, WIDE, MODERATELY CLOSE, CLOSE, VERY CLOSE SPACING: MORE THAN 10 FEET, 3 TO 10 FEET, 1 TO 3 FEET, 0.16 TO 1 FEET, LESS THAN 0.16 FEET BEDDING TERM: VERY THICKLY BEDDED, THICKLY BEDDED, THINLY BEDDED, VERY THINLY BEDDED, THICKLY LAMINATED, THINLY LAMINATED THICKNESS: > 4 FEET, 1.5 - 4 FEET, 0.16 - 1.5 FEET, 0.03 - 0.16 FEET, < 0.008 FEET INDURATION FRIABLE: RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED: GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED: GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED: SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	BENCH MARK: ELEVATION: FT. NOTES: FIAD: FILLED IMMEDIATELY AFTER DRILLING
PLASTICITY PLASTICITY INDEX (PI), DRY STRENGTH NONPLASTIC: 0-5 LOW PLASTICITY: 6-15 MED. PLASTICITY: 16-25 HIGH PLASTICITY: 26 OR MORE VERY LOW, SLIGHT, MEDIUM, HIGH			
COLOR DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.			

0164DEL P1062



PROJECT REFERENCE NO.	SHEET
52000.1.STR07TIB (P-5206C)	3 OF 20
BRIDGE ON -MIC- (NCRRS RAILROAD) OVER -Y10-	



DRAWING SOURCE: P5206_GEO_TRK_ALN_NS.DGN,
P5206_RDY_DSN, AND P5206C_RDY_DSN.DGN

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NO.	BY	DATE	REVISION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

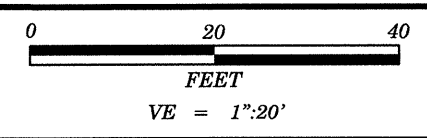
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **TGS ENGINEERS**
975 WALNUT STREET, SUITE 141
CARY, NC 27511
PH (919) 319 8850
CORP. LICENSE NO. C-0275

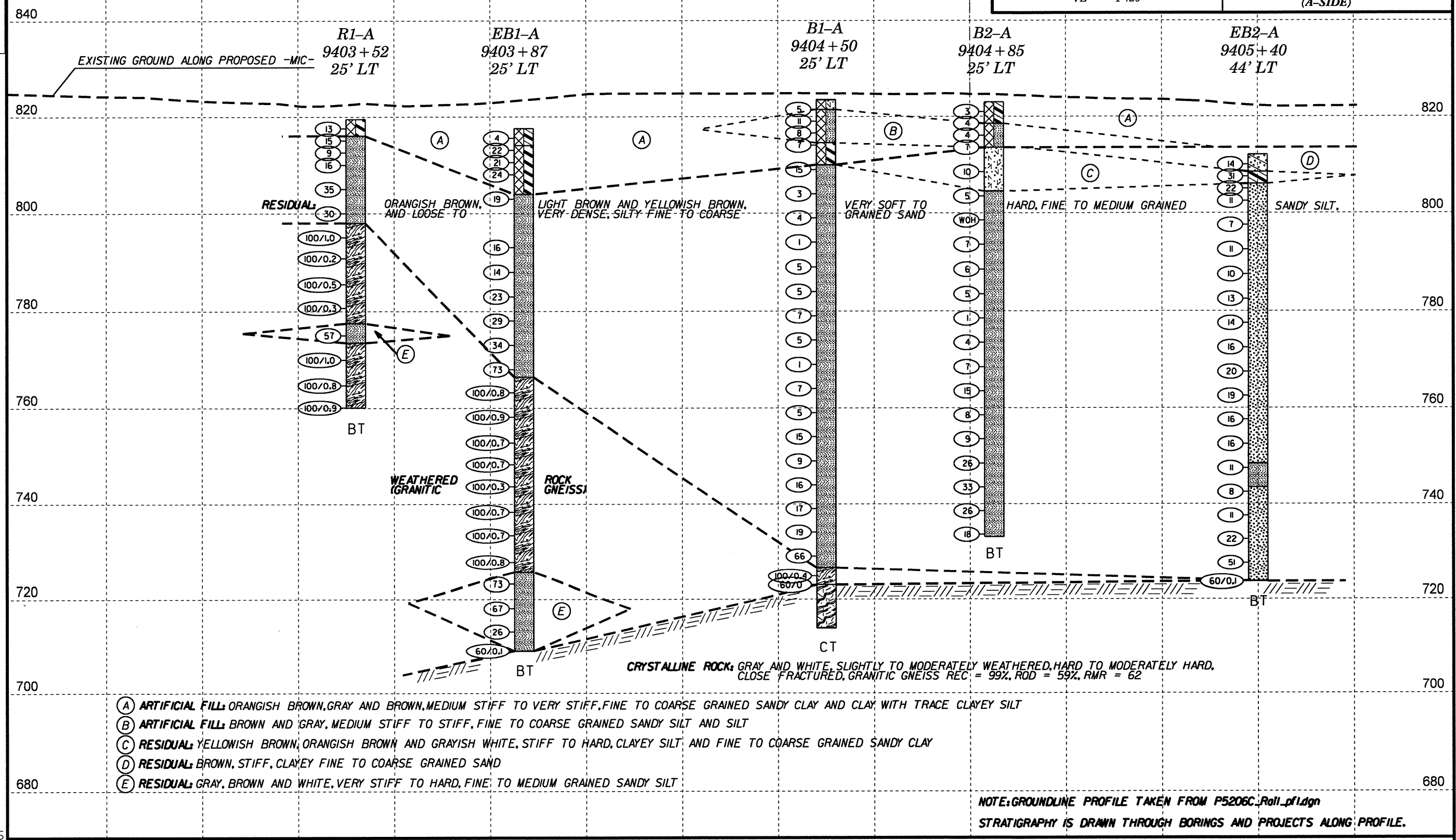
PROJECT	52000.1.STR07TIB(P-5206C) REID TO NORTH KANNAPOLIS		
TITLE			
LOCATION			
DGN BY	PO	RAILROAD	NORTH CAROLINA RR & NORFOLK SOUTHERN RR
DNW BY	SLK	VAL SEC	V-8/2
CHK BY	MB	DATE	MAY 2013
SCALE			1" = 100'
DRAWING			SITE PLAN

0164DEL P1062

APPROXIMATE LOCATION ON -Y10- (KIMBALL ROAD EXTENSION)



PROJECT REFERENCE NO.	SHEET
52000.1.STR07TIB (P-5206C)	4 OF 20
PROFILE ALONG -MIC- (A-SIDE)	



- (A) **ARTIFICIAL FILL:** ORANGISH BROWN, GRAY AND BROWN, MEDIUM STIFF TO VERY STIFF, FINE TO COARSE GRAINED SANDY CLAY AND CLAY WITH TRACE CLAYEY SILT
- (B) **ARTIFICIAL FILL:** BROWN AND GRAY, MEDIUM STIFF TO STIFF, FINE TO COARSE GRAINED SANDY SILT AND SILT
- (C) **RESIDUAL:** YELLOWISH BROWN, ORANGISH BROWN AND GRAYISH WHITE, STIFF TO HARD, CLAYEY SILT AND FINE TO COARSE GRAINED SANDY CLAY
- (D) **RESIDUAL:** BROWN, STIFF, CLAYEY FINE TO COARSE GRAINED SAND
- (E) **RESIDUAL:** GRAY, BROWN AND WHITE, VERY STIFF TO HARD, FINE TO MEDIUM GRAINED SANDY SILT

NOTE: GROUNDLINE PROFILE TAKEN FROM P5206C_Rail_pf1.dgn
STRATIGRAPHY IS DRAWN THROUGH BORINGS AND PROJECTS ALONG PROFILE.

9403+00 9403+20 9403+40 9403+60 9403+80 9404+00 9404+20 9404+40 9404+60 9404+80 9405+00 9405+20 9405+40 9405+60

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NO.	BY	DATE	REVISION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

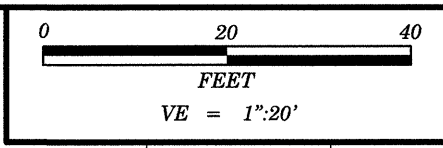
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: TGS ENGINEERS
975 WALNUT STREET, SUITE 141
CARY, NC 27511
PH (919) 319 8850
CORP. LICENSE NO. IC-0275

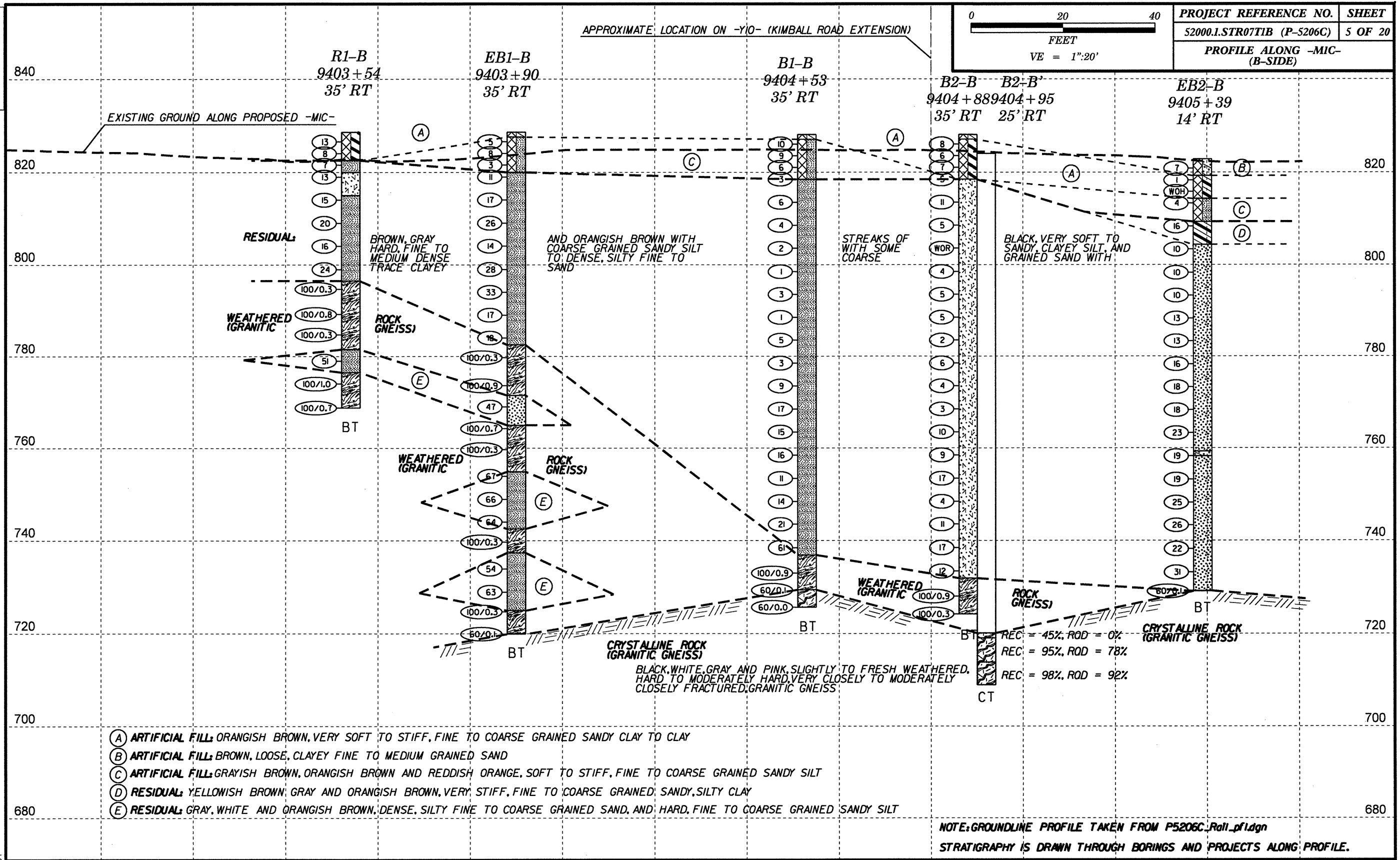
PROJECT 52000.1.STR07TIB(P-5206C) REID TO NORTH KANNAPOLIS		MILE POST	
TITLE		DRAWING	
LOCATION		SCALE 1" = 20' Horiz., 1" = 20' Vert.	
DGN BY MB	RAILROAD NORTH CAROLINA RR & NORFOLK SOUTHERN RR	DATE MAY 2013	PROFILE ALONG A-SIDE
DWN BY SLK	VAL SEC V-8/2		
CHK BY MB			

0164DEL P1062

APPROXIMATE LOCATION ON -Y10- (KIMBALL ROAD) EXTENSION



PROJECT REFERENCE NO.	SHEET
52000.1.STR07TIB (P-5206C)	5 OF 20
PROFILE ALONG -MIC- (B-SIDE)	



- (A) ARTIFICIAL FILL: ORANGISH BROWN, VERY SOFT TO STIFF, FINE TO COARSE GRAINED SANDY CLAY TO CLAY
- (B) ARTIFICIAL FILL: BROWN, LOOSE, CLAYEY FINE TO MEDIUM GRAINED SAND
- (C) ARTIFICIAL FILL: GRAYISH BROWN, ORANGISH BROWN AND REDDISH ORANGE, SOFT TO STIFF, FINE TO COARSE GRAINED SANDY SILT
- (D) RESIDUAL: YELLOWISH BROWN, GRAY AND ORANGISH BROWN, VERY STIFF, FINE TO COARSE GRAINED, SANDY, SILTY CLAY
- (E) RESIDUAL: GRAY, WHITE AND ORANGISH BROWN, DENSE, SILTY FINE TO COARSE GRAINED SAND, AND: HARD, FINE TO COARSE GRAINED SANDY SILT

NOTE: GROUNDLINE PROFILE TAKEN FROM P5206C_Roll.plt.dgn
STRATIGRAPHY IS DRAWN THROUGH BORINGS AND PROJECTS ALONG PROFILE.

9403+00 9403+20 9403+40 9403+60 9403+80 9404+00 9404+20 9404+40 9404+60 9404+80 9405+00 9405+20 9405+40 9405+60

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NO.	BY	DATE	REVISION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: **TGS ENGINEERS**
975 WALNUT STREET, SUITE 141
CARR, NC 27511
PH (919) 319 8850
CORP. LICENSE NO. C-0275

PROJECT	52000.1.STR07TIB(P-5206C) REID TO NORTH KANNAPOLIS		
TITLE			
LOCATION	MILE POST		
DGN BY	MB	RAILROAD	NORTH CAROLINA RR & NORFOLK SOUTHERN RR
DWN BY	SLK	VAL SEC	V-B/2
CHK BY	MB	DATE	MAY 2013
SCALE	1" = 20' Horiz., 1" = 20' Vert.		
PROFILE ALONG B-SIDE			



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

DCN 0164DEL P10b2

WBS 52000.1.STR07T1B	TIP P-5206C	COUNTY ROWAN	GEOLOGIST P. Oree
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)			GROUND WTR (ft)
BORING NO. R1-A	STATION 9403+52	OFFSET 11 ft LT	ALIGNMENT -M1C-
COLLAR ELEV. 819.5 ft	TOTAL DEPTH 59.4 ft	NORTHING 661,040	EASTING 1,525,975
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER W. Duggins	START DATE 04/27/12	COMP. DATE 04/27/12	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				
820													819.5 GROUND SURFACE 0.0	
	818.5	1.0	4	5	8								ARTIFICIAL FILL ORANGISH BROWN, CLAY WITH FINE TO MEDIUM GRAINED SAND 3.5	
815	816.0	3.5	4	5	10								RESIDUAL ORANGISH BROWN, FINE GRAINED SANDY SILT, SLIGHTLY MICACEOUS	
	813.5	6.0	4	4	5								AT 8.5FT: ORANGISH BROWN WITH STREAKS OF BLACK	
810	811.0	8.5	5	8	8								AT 13.5FT: STRATIFIED BROWN AND TAN	
	806.0	13.5	11	15	20								AT 18.5FT: WHITE AND BROWN	
805	801.0	18.5	8	15	15									
	796.0	23.5	27	73/0.5									798.0 WEATHERED ROCK (GRANITIC GNEISS) 21.5	
795	791.0	28.5	100/0.2											
	786.0	33.5	100/0.5											
785	781.0	38.5	100/0.3											
	776.0	43.5	21	21	36								777.5 RESIDUAL GRAY, BROWN AND WHITE, FINE TO MEDIUM GRAINED SANDY SILT 42.0	
775	771.0	48.5	31	69/0.5									773.5 WEATHERED ROCK (GRANITIC GNEISS) 46.0	
	766.0	53.5	17	33	67/0.3									
770	761.0	58.5	53	47/0.4										
													780.1 Boring Terminated at Elevation 760.1 ft In Weathered Rock (Granitic Gneiss) 59.4	

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ NC_DOT.GDT 2/4/13

WBS 52000.1.STR07T1B	TIP P-5206C	COUNTY ROWAN	GEOLOGIST P. Oree and J. Whitt
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)			GROUND WTR (ft)
BORING NO. R1-B	STATION 9403+54	OFFSET 35 ft RT	ALIGNMENT -M1C-
COLLAR ELEV. 828.5 ft	TOTAL DEPTH 59.7 ft	NORTHING 661,079	EASTING 1,525,950
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER W. Duggins	START DATE 05/03/12	COMP. DATE 05/04/12	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				
830													828.5 GROUND SURFACE 0.0	
	827.5	1.0	4	6	7								ARTIFICIAL FILL ORANGISH BROWN, FINE TO MEDIUM GRAINED SANDY CLAY, SLIGHTLY MICACEOUS	
825	825.0	3.5	3	4	4							SS-2	RESIDUAL ORANGISH BROWN WITH STREAKS OF BLACK, FINE TO MEDIUM GRAINED SANDY SILT, HIGHLY MICACEOUS	
	822.5	6.0	2	2	5								820.0 ORANGISH BROWN WITH STREAKS OF BLACK, FINE TO MEDIUM GRAINED SANDY SILT, HIGHLY MICACEOUS 8.5	
820	820.0	8.5	4	5	8							SS-4	ORANGISH BROWN WITH STREAKS OF BLACK, FINE TO MEDIUM GRAINED SANDY SILT, HIGHLY MICACEOUS	
	815.0	13.5	6	6	9								815.0 ORANGISH BROWN WITH STREAKS OF BLACK, FINE TO MEDIUM GRAINED SANDY SILT, HIGHLY MICACEOUS 13.5	
815	810.0	18.5	5	8	12								AT 23.5FT: GREENISH GRAY AND BROWN	
	805.0	23.5	6	7	9									
805	800.0	28.5	8	10	14									
	796.5	32.0	100/0.3										796.5 WEATHERED ROCK (GRANITIC GNEISS) 32.0	
795	795.0	33.5	45	55/0.3										
	781.5	47.0	100/0.8										781.5 RESIDUAL GREENISH GRAY, SANDY SILT, SLIGHTLY MICACEOUS 47.0	
790	785.0	43.5	100/0.3											
	776.5	52.0	100/0.3										776.5 WEATHERED ROCK (GRANITIC GNEISS) 52.0	
785	780.0	48.5	12	17	34									
	771.0	57.5	41	44	56									
775	775.0	53.5	35	51	49/0.2									
	768.8	59.7	100/0.7										768.8 Boring Terminated at Elevation 768.8 ft In Weathered Rock (Granitic Gneiss) 59.7	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

DCN 0164DEL P10b2

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree										
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 9403+87		OFFSET 11 ft LT		ALIGNMENT -M1C-										
COLLAR ELEV. 817.5 ft		TOTAL DEPTH 108.6 ft		NORTHING 661,023		EASTING 1,525,945										
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER W. Duggins		START DATE 04/26/12		COMP. DATE 04/27/12		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						
820														817.5	0.0	GROUND SURFACE
815	816.5	1.0	1	1	3									814.0	3.5	ARTIFICIAL FILL ORANGISH BROWN, FINE TO COARSE GRAINED SANDY CLAY
	814.0	3.5	6	10	12									811.5	6.0	ORANGISH BROWN TO GRAY, CLAY WITH FINE TO COARSE GRAINED SAND
810	809.0	8.5	5	10	11									809.0	8.5	
	804.0	13.5	6	8	11									804.0	13.5	RESIDUAL SPECKLED BROWN AND ORANGE, FINE TO MEDIUM GRAINED SANDY SILT, HIGHLY MICACEOUS
800																
795	794.0	23.5	4	6	10											AT 23.5FT: GREENISH GRAY, STRATIFIED TAN AND BROWN
790	789.0	28.5	4	6	8											AT 33.5FT: BROWNISH ORANGE AND TAN, WITH TRACE COARSE GRAINED SAND
785	784.0	33.5	7	11	12											AT 38.5FT: SPECKLED GRAY AND PINK, WITH LITTLE COARSE GRAINED SAND
780	779.0	38.5	9	14	15											AT 48.5FT: GREENISH GRAY AND WHITE, WITH SOME COARSE GRAINED SAND
775	774.0	43.5	6	12	22											AT 58.5FT: FINE TO MEDIUM GRAINED SAND
770	769.0	48.5	41	38	35											AT 68.5FT: PINK, WITH FINE TO COARSE GRAINED SAND
765	764.0	53.5	61	39/0.3												
760	759.0	58.5	47	53/0.4												
755	754.0	63.5	24	54	46/0.2											
750	749.0	68.5	67	33/0.2												
745	744.0	73.5														
740																

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree										
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 9403+87		OFFSET 11 ft LT		ALIGNMENT -M1C-										
COLLAR ELEV. 817.5 ft		TOTAL DEPTH 108.6 ft		NORTHING 661,023		EASTING 1,525,945										
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER W. Duggins		START DATE 04/26/12		COMP. DATE 04/27/12		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						
740																
	739.0	78.5	54	46/0.2												
735	734.0	83.5	44	56/0.2												
730	729.0	88.5	46	47	53/0.3											
725	724.0	93.5	33	39	34											
720	719.0	98.5	16	21	46											
715	714.0	103.5	15	11	15											
710	709.0	108.5														

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ NC_DOT.GDT 2/4/13

WEATHERED ROCK (GRANITIC GNEISS) (continued)

RESIDUAL BROWN, GRAY AND WHITE, FINE TO MEDIUM GRAINED SANDY SILT, HIGHLY MICACEOUS

AT 103.5FT: ORANGISH BROWN AND GRAY

CRYSTALLINE ROCK (GRANITIC GNEISS)

Boring Terminated at Elevation 708.9 ft In Crystalline Rock (Granitic Gneiss)

Shelby Tube sample from 18ft to 20ft. No SPT sample taken at 18.5ft due to collection of undisturbed sample.

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

DCN 0164DEL P10b2

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree								
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)							
BORING NO. EB1-B		STATION 9403+90		OFFSET 35 ft RT		ALIGNMENT -M1C-								
0 HR. FIAD														
COLLAR ELEV. 828.5 ft		TOTAL DEPTH 108.6 ft		NORTHING 661,062		EASTING 1,525,919								
24 HR. FIAD														
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic								
DRILLER W. Duggins		START DATE 05/02/12		COMP. DATE 05/02/12		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
830														
	827.5	1.0	2	2	3									
825	825.0	3.5	2	4	4									
	822.5	6.0	2	1	2									
820	820.0	8.5	4	5	6									
815	815.0	13.5	9	9	8									
810	810.0	18.5	9	12	14									
805	805.0	23.5	5	7	7									
800	800.0	28.5	6	13	15									
795	795.0	33.5	16	16	17									
790	790.0	38.5	5	7	10									
785	785.0	43.5	6	7	11									
780	780.0	48.5	100/0.3											
775	775.0	53.5	82	55	45/0.4									
770	770.0	58.5	15	12	35									
765	765.0	63.5	36	64/0.2										
760	760.0	68.5	100/0.3											
755	755.0	73.5	12	20	47									
750	750.0	78.5												

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree								
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)							
BORING NO. EB1-B		STATION 9403+90		OFFSET 35 ft RT		ALIGNMENT -M1C-								
0 HR. FIAD														
COLLAR ELEV. 828.5 ft		TOTAL DEPTH 108.6 ft		NORTHING 661,062		EASTING 1,525,919								
24 HR. FIAD														
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic								
DRILLER W. Duggins		START DATE 05/02/12		COMP. DATE 05/02/12		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
750			31	29	37									
	745.0	83.5	20	28	36									
745	745.0	83.5	20	28	36									
740	740.0	88.5	100/0.3											
735	735.0	93.5	39	31	23									
730	730.0	98.5	15	25	38									
725	725.0	103.5	100/0.3											
720	720.0	108.5	60/0.1											

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ, NC_DOT.GDT 2/4/13

DCN
0164DEL P 10b2

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree						
SITE DESCRIPTION Bridge on -M1C- (NCR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)					
BORING NO. B1-A		STATION 9404+50		OFFSET 11 ft LT		ALIGNMENT -M1C-						
COLLAR ELEV. 823.5 ft		TOTAL DEPTH 109.7 ft		NORTHING 660,992		EASTING 1,525,889						
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary & Core Boring		HAMMER TYPE Automatic						
DRILLER W. Duggins		START DATE 04/25/12		COMP. DATE 04/25/12		SURFACE WATER DEPTH N/A						
CORE SIZE NQ2		TOTAL RUN 9.0 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	ROD (ft)		REC. (%)	ROD (ft)			
722.8											Begin Coring @ 100.7 ft	
	722.8	100.7	4.0	20:21/1.0 9:27/1.0	(3.9) 98%	(1.7) 43%		(8.9) 99%	(5.3) 59%		CRYSTALLINE ROCK	722.8
	720			4:26/1.0 4:09/1.0							GRAY AND WHITE, SLIGHTLY TO MODERATELY WEATHERED, HARD TO MODERATE HARD, CLOSE FRACTURED, GRANITIC GNEISS	
	718.8	104.7									R1=12, R2=13, R3=7, R4=23, R5=7 RMR=62 ROCK TYPE E	
	715		5.0	6:02/1.0 3:47/1.0	(5.0) 100%	(3.6) 72%	RS-1				CLASS II: GOOD ROCK	
	713.8	109.7		4:21/1.0 3:55/1.0							Boring Terminated at Elevation 713.8 ft In Crystalline Rock (Granitic Gneiss)	109.7

NCDOT CORE SINGLE KANNAPOLIS RAIL - BRIDGE.GPJ NC_DOT.GDT 2/4/13

CORE PHOTOGRAPHS
BRIDGE ON -M1C- (NRCC/NS RAILROAD) OVER -Y10- (KIMBALL ROAD EXTENSION)

B1-A
BOX 1: 100.7 - 109.7 FEET



APPROXIMATE SCALE IN FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT

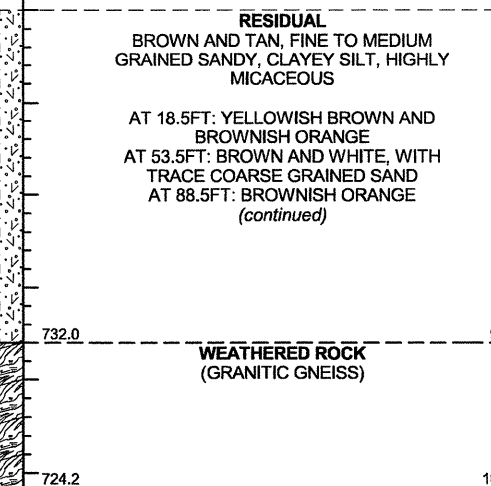
BORELOG REPORT

DCN 0164DEL P10b2

WBS		TIP		COUNTY		GEOLOGIST										
52000.1.STR07T1B		P-5206C		ROWAN		P. Oree										
SITE DESCRIPTION							GROUND WTR (ft)									
Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							0 HR. FIAD									
BORING NO.		STATION		OFFSET		ALIGNMENT										
B2-B		9404+88		35 ft RT		-M1C-										
COLLAR ELEV.		TOTAL DEPTH		NORTHING		EASTING										
828.0 ft		103.8 ft		661,015		1,525,834										
DRILL RIG/HAMMER EFF./DATE							HAMMER TYPE									
TER255 DIEDRICH D-50 77% 07/15/2011							Automatic									
DRILLER		START DATE		COMP. DATE		SURFACE WATER DEPTH										
W. Duggins		05/01/12		05/01/12		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						ELEV. (ft)
830																
															828.0	0.0
GROUND SURFACE																
ARTIFICIAL FILL																
ORANGISH BROWN AND GRAYISH BROWN, FINE TO COARSE GRAINED SANDY CLAY, WITH TRACE ROOTS AND WOOD CHIPS, STRONG ORGANIC ODOR																
825	827.0	1.0	2	3	5											
	824.5	3.5	4	2	4											
	822.0	6.0	3	3	4											
820	819.5	8.5	2	3	2											
	818.5	9.5													818.5	9.5
RESIDUAL																
BROWN AND TAN, FINE TO MEDIUM GRAINED SANDY, CLAYEY SILT, HIGHLY MICACEOUS																
AT 18.5FT: YELLOWISH BROWN AND BROWNISH ORANGE AT 53.5FT: BROWN AND WHITE, WITH TRACE COARSE GRAINED SAND AT 88.5FT: BROWNISH ORANGE																
815	814.5	13.5	3	5	6											
	811.5	16.5														
810	809.5	18.5														
	807.5	20.5	WOR	3	2											
805	804.5	23.5	WOR	0	0											
	803.5	24.5														
800	799.5	28.5	WOR	2	2											
	798.5	29.5														
795	794.5	33.5	WOR	2	3											
	793.5	34.5														
790	789.5	38.5	WOR	2	3											
	788.5	39.5														
785	784.5	43.5	WOR	0	2											
	783.5	44.5														
780	779.5	48.5		1	2	4										
	778.5	49.5														
775	774.5	53.5	WOH	0	4											
	773.5	54.5														
770	769.5	58.5		1	0	3										
	768.5	59.5														
765	764.5	63.5		2	4	6										
	763.5	64.5														
760	759.5	68.5		2	3	6										
	758.5	69.5														
755	754.5	73.5		3	7	10										
	753.5	74.5														
750																

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ INC_DOT.GDT 2/5/13

WBS		TIP		COUNTY		GEOLOGIST										
52000.1.STR07T1B		P-5206C		ROWAN		P. Oree										
SITE DESCRIPTION							GROUND WTR (ft)									
Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							0 HR. FIAD									
BORING NO.		STATION		OFFSET		ALIGNMENT										
B2-B		9404+88		35 ft RT		-M1C-										
COLLAR ELEV.		TOTAL DEPTH		NORTHING		EASTING										
828.0 ft		103.8 ft		661,015		1,525,834										
DRILL RIG/HAMMER EFF./DATE							HAMMER TYPE									
TER255 DIEDRICH D-50 77% 07/15/2011							Automatic									
DRILLER		START DATE		COMP. DATE		SURFACE WATER DEPTH										
W. Duggins		05/01/12		05/01/12		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						ELEV. (ft)
750	749.5	78.5	2	1	3											
Match Line																
	744.5	83.5	2	4	7											
745	744.5	83.5														
	739.5	88.5	6	5	12											
740	739.5	88.5														
	734.5	93.5	10	6	6											
735	734.5	93.5														
	729.5	98.5	5	20	80/0.4											
730	729.5	98.5														
	724.5	103.5														
725	724.5	103.5														
Boring Terminated at Elevation 724.2 ft In Weathered Rock (Granitic Gneiss)																





NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

DCN 0164DEL P10b2

Table with project details: WBS 52000.1.STR07T1B, TIP P-5206C, COUNTY ROWAN, GEOLOGIST P. Oree and J. Whitt. Includes fields for SITE DESCRIPTION, BORING NO., STATION, OFFSET, ALIGNMENT, COLLAR ELEV., TOTAL DEPTH, NORTHING, EASTING, DRILL RIG/HAMMER EFF./DATE, DRILL METHOD, and SURFACE WATER DEPTH.

Table with project details: WBS 52000.1.STR07T1B, TIP P-5206C, COUNTY ROWAN, GEOLOGIST P. Oree and J. Whitt. Includes fields for SITE DESCRIPTION, BORING NO., STATION, OFFSET, ALIGNMENT, COLLAR ELEV., TOTAL DEPTH, NORTHING, EASTING, DRILL RIG/HAMMER EFF./DATE, DRILL METHOD, and SURFACE WATER DEPTH.

Main borelog table for borehole B2-B'. Columns include ELEV (ft), DRIVE ELEV (ft), DEPTH (ft), BLOW COUNT (0.5ft, 0.5ft, 0.5ft), BLOWS PER FOOT (0, 25, 50, 75, 100), SAMP. NO., LOG, SOIL AND ROCK DESCRIPTION, and DEPTH (ft). Depth ranges from 825 ft to 745 ft.

Main borelog table for borehole B2-B'. Columns include ELEV (ft), DRIVE ELEV (ft), DEPTH (ft), BLOW COUNT (0.5ft, 0.5ft, 0.5ft), BLOWS PER FOOT (0, 25, 50, 75, 100), SAMP. NO., LOG, SOIL AND ROCK DESCRIPTION, and DEPTH (ft). Depth ranges from 745 ft to 708.5 ft. Includes annotations for CRSTALLINE ROCK (GRANITIC GNEISS) with REC and RQD values.

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ NC_DOT.GDT 2/5/13

DCN
0164DEL P10b2



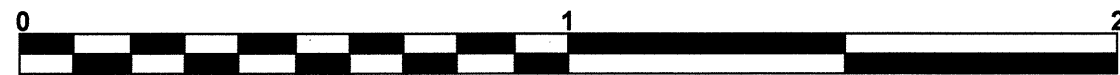
**NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT**

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree and J. Whitt					
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)				
BORING NO. B2-B'		STATION 9404+95		OFFSET 25 ft RT		ALIGNMENT -M1C-					
COLLAR ELEV. 824.0 ft		TOTAL DEPTH 115.5 ft		NORTHING 660,999		EASTING 1,525,827					
DRILL RIG/HAMMER EFF./DATE AME6515 CME-55 93% 05/04/2012				DRILL METHOD H.S. Augers, Mud Rotary & Core Bit		HAMMER TYPE Automatic					
DRILLER D. Harris		START DATE 01/17/13		COMP. DATE 01/21/13		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 11.1 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft)	ROD (ft)	REC. (ft)	ROD (ft)			
719.6	718.5	104.4	1.1	8:03/1.1	(0.5)	(0.0)	(0.5)	(0.0)	719.6 718.5	Begin Coring @ 104.4 ft CRYSTALLINE ROCK WHITE, PINK AND BLACK, VERY SLIGHTLY TO SLIGHTLY WEATHERED, HARD TO MODERATELY HARD, VERY CLOSELY FRACTURED, GRANITIC GNEISS	104.4
715		105.5	5.0	4:13/1.0 4:48/1.0 5:53/1.0 6:18/1.0	45% (4.9) 98%	0% (3.9) 78%	45% (3.8) 95%	0% (3.1) 78%			105.5
	713.5	110.5	5.0	5:53/1.0			(5.9)	(5.5)	714.5 708.5	CRYSTALLINE ROCK BLACK, WHITE, GRAY, AND PINK, FRESH TO VERY SLIGHTLY WEATHERED, HARD TO MODERATELY HARD, CLOSELY FRACTURED, GRANITIC GNEISS	109.5
710				5:16/1.0 5:14/1.0 5:54/1.0 5:22/1.0 5:49/1.0	98% (4.9)	94% (4.7)	98%	92%			115.5
	708.5	115.5								Boring Terminated at Elevation 708.5 ft In Crystalline Rock (Granitic Gneiss)	

NCDOT CORE SINGLE KANNAPOLIS RAIL - BRIDGE.GPJ NC_DOT.GDT 2/5/13

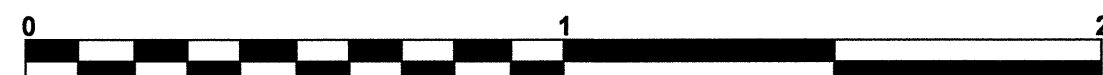
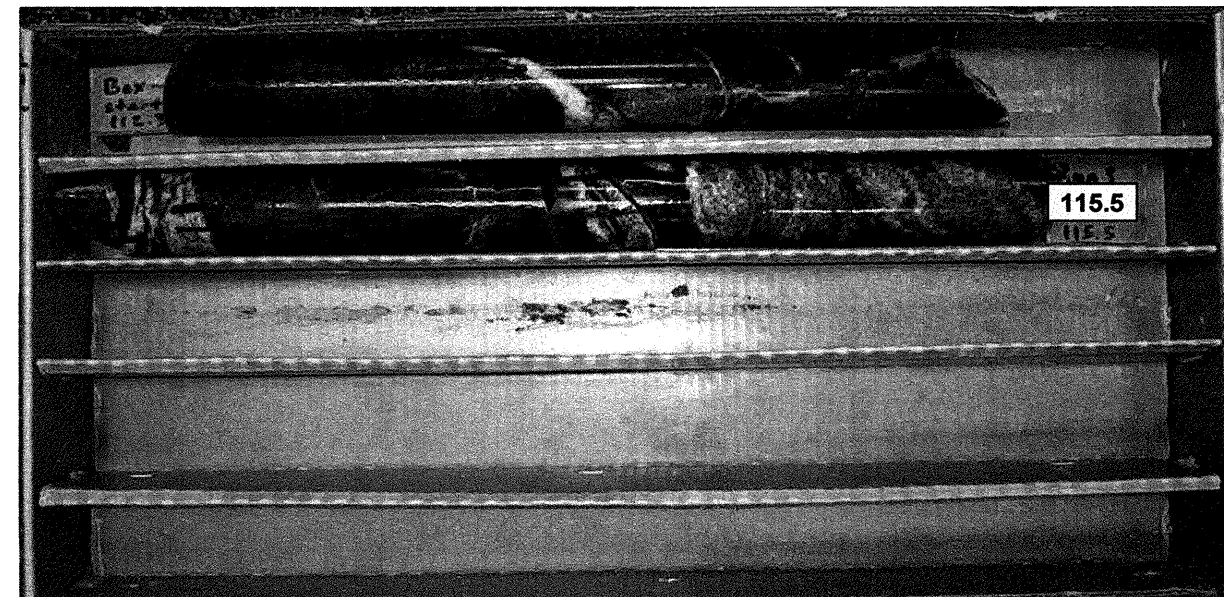
CORE PHOTOGRAPHS
BRIDGE ON -M1C- (NRCC/NS RAILROAD) OVER -Y10- (KIMBALL ROAD EXTENSION)

B2-B'
BOX 1: 104.4 - 112.3 FEET



APPROXIMATE SCALE IN FEET

B2-B'
BOX 2: 112.3 - 115.5 FEET



APPROXIMATE SCALE IN FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT

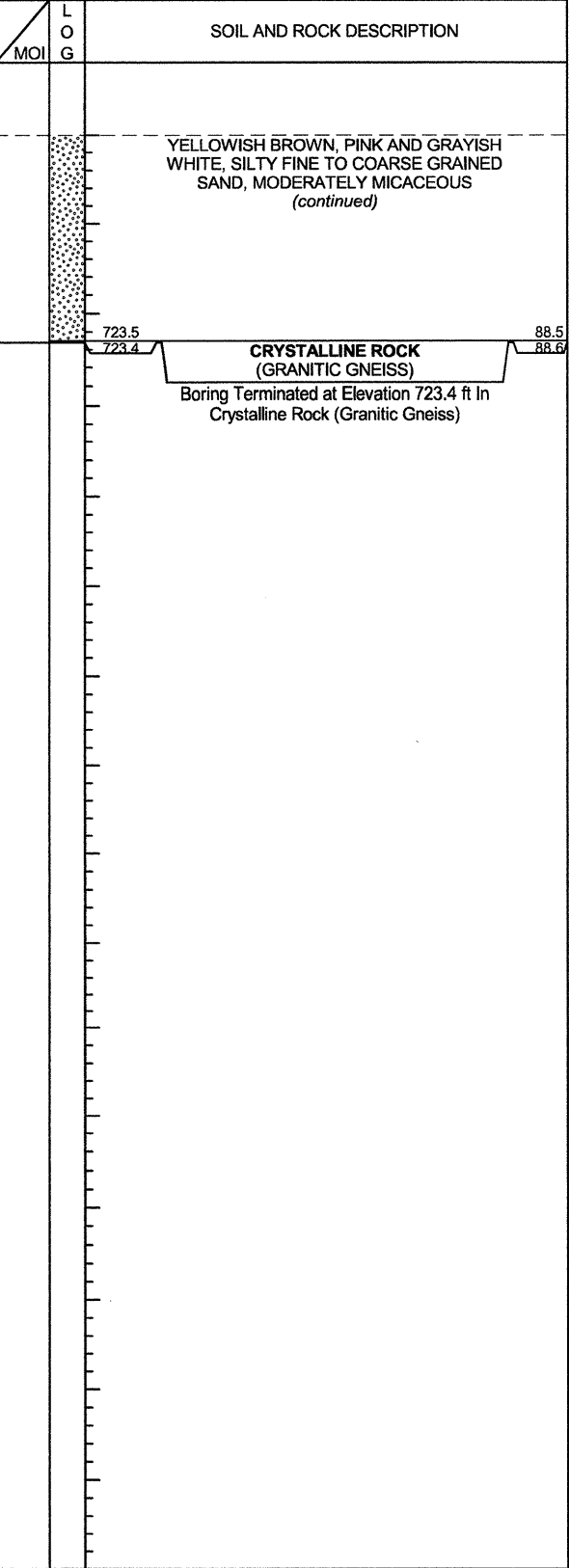
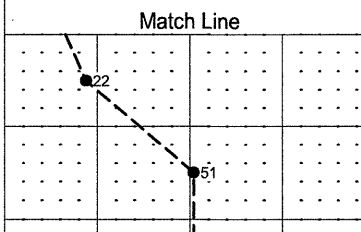
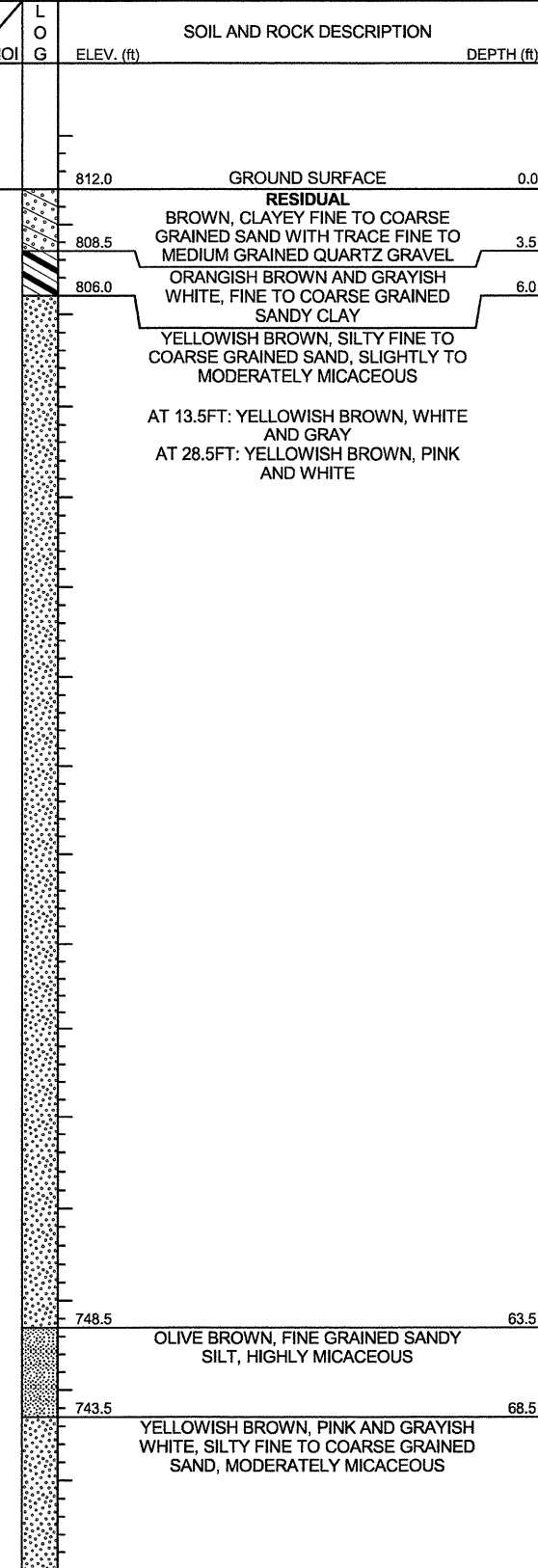
BORELOG REPORT

DCN 0164DEL P10b2

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree										
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 9405+40		OFFSET 30 ft LT		ALIGNMENT -M1C-										
COLLAR ELEV. 812.0 ft		TOTAL DEPTH 88.6 ft		NORTHING 660,936		EASTING 1,525,819										
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER W. Duggins		START DATE 09/12/12		COMP. DATE 09/13/12		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						
815																
810	811.0	1.0	11	8	6											
	808.5	3.5	6	12	19											
	806.0	6.0	7	9	13											
	803.5	8.5	4	5	6											
	798.5	13.5	4	4	3											
	793.5	18.5	3	5	6											
	788.5	23.5	3	4	6											
	783.5	28.5	4	5	8											
	778.5	33.5	4	6	8											
	773.5	38.5	5	6	10											
	768.5	43.5	5	9	11											
	763.5	48.5	5	7	12											
	758.5	53.5	5	6	10											
	753.5	58.5	4	6	10											
	748.5	63.5	2	5	6											
	743.5	68.5	3	3	5											
	738.5	73.5	3	4	7											

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree										
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 9405+40		OFFSET 30 ft LT		ALIGNMENT -M1C-										
COLLAR ELEV. 812.0 ft		TOTAL DEPTH 88.6 ft		NORTHING 660,936		EASTING 1,525,819										
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER W. Duggins		START DATE 09/12/12		COMP. DATE 09/13/12		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						
735																
	733.5	78.5	9	10	12											
	728.5	83.5	13	27	24											
	723.5	88.5	60/0.1													

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ NC_DOT_GDT 2/4/13





DCN 0164DEL P10b2

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree										
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 9405+39		OFFSET 14 ft RT		ALIGNMENT -M1C-										
COLLAR ELEV. 822.8 ft		TOTAL DEPTH 93.6 ft		NORTHING 660,972		EASTING 1,525,799										
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER W. Duggins		START DATE 09/12/12		COMP. DATE 09/12/12		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						
825														822.8	0.0	GROUND SURFACE
	821.8	1.0	4	4	3											ARTIFICIAL FILL
820	819.3	3.5	WOH	0	1									819.3	3.5	BROWN, CLAYEY FINE TO MEDIUM GRAINED SAND WITH TRACE COARSE GRAINED SAND AND TRACE WOOD CHIPS, MODERATELY MICACEOUS
	816.8	6.0	WOH	0	0											BROWN AND GRAY, FINE TO MEDIUM GRAINED SANDY CLAY, MODERATELY MICACEOUS
815	814.3	8.5	WOH	2	2									814.3	8.5	ORANGISH BROWN AND REDDISH ORANGE, FINE TO MEDIUM GRAINED SANDY SILT, MODERATELY MICACEOUS
	809.3	13.5	4	7	9									809.3	13.5	RESIDUAL
810																YELLOWISH BROWN GRAY AND ORANGISH BROWN, FINE TO COARSE GRAINED SANDY SILTY CLAY
	804.3	18.5	3	4	6									804.3	18.5	ORANGISH BROWN AND GRAY, SILTY FINE TO COARSE GRAINED SAND
800	799.3	23.5	4	5	5											AT 23.5FT: GRAYISH BROWN, PINK AND WHITE, SLIGHTLY MICACEOUS AT 58.5FT: PINK AND BROWN
	794.3	28.5	4	4	6											
795																
	789.3	33.5	3	5	8											
790																
	784.3	38.5	4	6	7											
785																
	779.3	43.5	5	7	9											
780																
	774.3	48.5	5	8	10											
775																
	769.3	53.5	5	8	10											
770																
	764.3	58.5	7	10	13											
765																
	759.3	63.5	6	7	12									759.3	63.5	BROWN TO PINK AND BROWN, CLAYEY FINE TO COARSE GRAINED SAND
760														758.3	64.5	ORANGISH BROWN AND PINK, SILTY FINE TO COARSE GRAINED SAND
	754.3	68.5	6	7	12											
755																
	749.3	73.5	8	11	14											
750																
745																

NCDOT BORE DOUBLE KANNAPOLIS RAIL - BRIDGE.GPJ, NC_DOT.GDT 2/4/13

WBS 52000.1.STR07T1B		TIP P-5206C		COUNTY ROWAN		GEOLOGIST P. Oree										
SITE DESCRIPTION Bridge on -M1C- (NCRR/NS Railroad) over -Y10- (Kimball Road Extension)							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 9405+39		OFFSET 14 ft RT		ALIGNMENT -M1C-										
COLLAR ELEV. 822.8 ft		TOTAL DEPTH 93.6 ft		NORTHING 660,972		EASTING 1,525,799										
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER W. Duggins		START DATE 09/12/12		COMP. DATE 09/12/12		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	744.3	78.5	8	11	15											
740	739.3	83.5	8	10	12											
735	734.3	88.5	6	10	21											
730	729.3	93.5	60/0.1											729.3	93.5	CRYSTALLINE ROCK (GRANITIC GNEISS)
														728.2	93.6	Boring Terminated at Elevation 729.2 ft In Crystalline Rock (Granitic Gneiss)

Match Line

TEST SUMMARY
BRIDGE ON -M1C- (NCRR/NS RAILROAD) OVER -Y10- (KIMBALL ROAD EXTENSION)

SOIL TEST RESULTS												
BORING NO.	SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL (ft)	AASHTO CLASS.	% PASSING (SIEVES)			LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	ORGANIC CONTENT (%)
						10	40	200				
R1-B	SS-2	9403+54	35.3ft RT	3.5-5.0	A-7-5	100	98	76	68	27	41.6	--
R1-B	SS-4	9403+54	35.3ft RT	8.5-10.0	A-5	100	98	45	41	7	28.8	--
EB1-B	SS-2	9403+90	35.3ft RT	3.5-5.0	--	--	--	--	--	--	22.6	3.62
EB1-B	SS-5	9403+90	35.3ft RT	13.5-15.0	--	--	--	--	--	--	26.2	NT
B1-B	SS-3	9404+53	35.4ft RT	6.0-7.5	--	--	--	--	--	--	23.2	5.18
B1-B	SS-5	9404+53	35.4ft RT	13.5-15.0	--	--	--	--	--	--	47.3	NT
B2-B	SS-2	9404+88	35.3ft RT	3.5-5.0	--	--	--	--	--	--	20.1	4.35
B2-B	SS-3	9404+88	35.3ft RT	6.0-7.5	A-7-6	91	68	47	45	20	29.3	--
B2-B	SS-7	9404+88	35.3ft RT	23.5-25.0	A-5	100	89	36	47	NP	44.6	--
B2-B	SS-11	9404+88	35.3ft RT	43.5-45.0	A-5	100	90	42	49	2	54.8	--

NOTE: NT = NOT TESTED; NP = NON-PLASTIC

ROCK TEST RESULTS												
BORING NO.	SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL (ft)	LENGTH (in.)	DIAMETER (in.)	AREA (sq. in.)	VOLUME		UNIT WEIGHT (pcf)	COMPRESSIVE STRENGTH (psi)	TESTING METHOD
								(in. ³)	(cf)			
B1-A	RS-1	9404+50	11ft LT	107.1-108.0	4.183	1.979	3.076	12.867	0.007	170.826	15,472	ASTM D-7012-10 METHOD C