STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

October 15, 2019

MEMORANDUM TO: Clark Morrison PhD, P.E.
State Pavement Design Engineer

Brenda L. Moore, P.E. CPM
State Roadway Design Engineer

FROM: J. L. Pilipchuk, P.E., L.G.
State Geotechnical Engineer

DocuSigned by:
John Pilipchuk
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STATE PROJECT: 50189.1.1 (U-5777) Turnkey

COUNTY: Catawba

DESCRIPTION: NC 127 from 1st Avenue to southeast of 2nd Avenue

SUBJECT: Geotechnical Recommendations for Pavement Design

The Geotechnical Engineering Unit has completed the evaluation of the pavement and subgrade investigation for this project and presents the following recommendations.

The proposed work consists of widening NC 127 to construct additional lanes and center raised medians.

The subgrade beneath the existing roadway consists of roadway embankment and residual soils. Predominant soil types are sandy clay (A-6) and silty clays (A-7-5, A-7-6).

The project mainline is approximately 65 percent embankment. Anticipated borrow will likely consists of residual sandy clay (A-6) and silty clay (A-7).

The length of this project is 0.264 miles.

The design soil type is a silty clay (A-7)

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

Telephone: 919-707-6850
Fax: 919-250-4237
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

ENVIRONMENTAL DESIGN INPUTS							
DESIGN SOIL TYPE(S)	PASSING #200 SIEVE (%)	OPTIMUM MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	LL	PI	ASSUMED SPECIFIC GRAVITY (G_S)	CBR (0.2")
Silty Clay (A-7-6)	58.2	18.0	109.4	47	23	2.65	6.4
Sandy Clay (A-6)	57.7	20.0	103.1	40	20	2.65	6.7

AREAS OF SPECIAL GEOTECHNICAL INTEREST

A. Highly Plastic Clays:
Locations of clays with a PI of 26 or greater.

LINE	STATION AND OFFSET	PI
-L-	16+80 NB OSL	32
-L-	16+80 NB ISL	28

B. Ground Water or Trapped Water within the Pavement:
No ground water or trapped water was observed during this investigation.

C. Soils with a High Moisture Content:
Locations of soils that were classified as wet to saturated or moisture exceeded the plastic limit.

LINE	STATION AND OFFSET	MOISTURE CONTENT
-L-	20+00 SB OSL	20.1
-Y1-	13+25 WB LT LN	25.9

D. Existing Pavement
Overall the existing pavement was observed to be in fair to good condition. Surface pavement distress is primarily characterized by low to moderate severity longitudinal, transverse and some isolated fatigue cracking.

DESIGN AND CONSTRUCTION RECOMMENDATIONS

I. Subgrade Stability

A. Aggregate Stabilization

Stabilizer Aggregate
Recommend a quantity of 50 tons of Stabilizer Aggregate to be included in the project contract as a contingency item.

B. Aggregate Subgrade (Type 1)

1) Recommend a quantity of 200 cubic yards of shallow undercut to be included in the project contract as a contingency item.

2) Geotextile for Soil Stabilization
Recommend 600 square yards of Geotextile for Soil Stabilization to be included in the project contract as a contingency item.

3) Class IV Subgrade Stabilization
Recommend 400 tons of Class IV Subgrade Stabilization material to be included in the project contract as a contingency item. This material needs to be calculated as waste.

II. Miscellaneous

A. Proof Rolling
It is recommended that proof rolling not be performed on this project.

Note: For additional recommendations and quantities refer to the forthcoming Geotechnical Report-Design and Construction Recommendations.

JLP/JBB

ATTACHMENT 1:	Pavement and Subgrade Inventory	18
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
Summary of Quantities

WBS Number: 50189.1.1 County: Catawba Project Engineer:
TIP Number: U-5777 Field Office / PEF: Project Geologist: J. B. Barfield
Description: NC 127 from 1st Avenue to southeast of 2nd Avenue

Pay Item No.	Pay Item/ Quantity Adjustment	Spec Book Section No. or Special Provision (SP) Reference	Report Section	Alignment	Begin Station	End Station	Quantity	Units / %
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	I. B	Contingency	N/A	N/A	600	SY
						Total Quantity of Geotextile for Soil Stabilization =	**600**	**SY**
1099500000-E	Shallow Undercut	505 - Aggregate Subgrade	I. B	Contingency	N/A	N/A	200	CY
						Total Quantity of Shallow Undercut =	**200**	**CY**
1099700000-E	Class IV Subgrade Stabilization	505 - Aggregate Subgrade	I. B	Contingency	N/A	N/A	400	TON
						Total Quantity of Class IV Subgrade Stabilization =	**400**	**TON**
1110000000-E	Stabilizer Aggregate	510 - Aggregate Stabilization	I. A	Contingency	N/A	N/A	50	TON
						Total Quantity of Stabilizer Aggregate =	**50**	**TON**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5777	1	18

REFERENCE: U-5777

PROJECT: 50189.1.1

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *CATAWBA*

PROJECT DESCRIPTION *NC 127 – 1ST AVENUE SE TO 2ND AVENUE SE*

PAVEMENT AND SUBGRADE INVENTORY

CONTENTS

CAUTION NOTICE

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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

INVESTIGATED BY *A. BLYTHE*

DRAWN BY *J. NELSON*

CHECKED BY *V. MITCHEV*

SUBMITTED BY *V. MITCHEV*

DATE *AUGUST 2019*

3201 SPRING FOREST ROAD
RALEIGH, NC 27616
(919) 872-2660

NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV

DocuSigned by:
Vladimir G. Mitchev 10/16/2019
BCFD5C... SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5777	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

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	
	A-1-a	A-1-b			A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL															
% PASSING #10	50 MX														
#40	30 MX		50 MX	51 MN											
#200	15 MX		25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL	—			—	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI	6 MX			NP	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0			0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND					SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD								FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	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				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	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.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES 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.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

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

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

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
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT / CPT / DMT / VST / PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

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
HI. - 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
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [X] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [X] CORE BIT (4.0 INCH)
- [X] 3.5 inch auger

HAMMER TYPE:
- [ ] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N _____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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. 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)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
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.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
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.

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. *IF TESTED, WOULD YIELD SPT REFUSAL*
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. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V 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. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
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.

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 PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED 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.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

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.

TERMS AND DEFINITIONS

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, SUCH 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.

FLOAT - 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 (RQD) - 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 (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.

STRATA CORE RECOVERY (SREC.) - 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.

BENCH MARK:

ELEVATION: FEET

NOTES:

NB - Northbound Lane	OSS - Outside Shoulder
SB - Southbound Lane	ISS - Inside Shoulder
OSL - Outside Lane	GM - Grass Median
ISL - Inside Lane	OGS - Outside Grass Shoulder
CL - Center Lane	PS - Paved Shoulder
LTL - Left Turn Lane	RT LN - Right LN
CTL - Center Turn Lane	LT LN - Left Lane
RTL - Right Turn Lane	COL - Collector Lane
DECEL - Deceleration Lane	RT - Right
ACCEL - Acceleration Lane	LT - Left

DATE: 8-15-14

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U–5777	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

–Y– 14+20 EB LN GUTTER	
Pavement Structure	
Asphalt	1.75″
Concrete	7.0″
ABC	–

–Y– 14+20 EB LN OWP	
Pavement Structure	
Asphalt	5.5″
Concrete	–
ABC	6.0″

–Y1– 13+25 WB LT LN	
Pavement Structure	
Asphalt	4.75″
Concrete	5.25″
ABC	3.0″

–L– 13+85 SB OSL	
Pavement Structure	
Asphalt	4.0″
Concrete	–
ABC	11.0″

–L– 13+85 SB ISL	
Pavement Structure	
Asphalt	6.0″
Concrete	–
ABC	12.0″

–L– 16+80 NB ISL	
Pavement Structure	
Asphalt	4.75″
Concrete	–
ABC	12.0″

–L– 16+80 NB OSL	
Pavement Structure	
Asphalt	5.25″
Concrete	–
ABC	12.0″

–Y1– 11+15 WB RTL	
Pavement Structure	
Asphalt	4.5″
Concrete	–
ABC	4.0″

8/17/99

REVISIONS

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U–5777	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L– 20+00 SB RTL	
Pavement Structure	
Asphalt	2.75″
ABC	10.0″

–L– 20+00 SB OSL	
Pavement Structure	
Asphalt	4.5″
ABC	11.0″

–L– 20+00 SB ISL	
Pavement Structure	
Asphalt	3.5″
ABC	12.0″

–L– 21+95 SB LTL	
Pavement Structure	
Asphalt	3.75″
ABC	12.0″
–L– 21+95 NB ISL	
Pavement Structure	
Asphalt	4.25″
ABC	11.0″
–L– 21+95 NB OSL	
Pavement Structure	
Asphalt	3.0″
ABC	12.0″

–L– 23+30 NB RTL	
Pavement Structure	
Asphalt	13.25″
ABC	7.0″

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PAVEMENT INVESTIGATION DATA SHEET

Project:	50189.1.1	County:	CATAWBA	Date:	07/30/19
TIP:	U-5777	Route:	NC 127 from 1st Avenue SE to 2nd Avenue SE Add Turn Lanes	Notes By:	A. BLYTHE

		Width				Thickness						Subgrade						GPS Coordinates	
Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount) (ft)	Lane(s) (ft)	Shoulder(s) (ft)	Offset Distance (ft)	Crown "C" or Super "S"	Gross to Top of Soil (in)	Asphalt (in)	Concrete (in)	ABC (in)	Stabilized Soil Subgrade (in)	Pavement Layering	Description	Sample Number	AASHTO Classification	Soil Moisture	Probe Depth (ft)	Asphalt Notes	Northing	Easting
L - 13+85 SB OSL	1.0 Cut	12.00	N/A	1.0 C&G	S	15.00	4.00	N/A	11.00	N/A	Asphalt ABC	No Auger for Utilities.	N/A	N/A	N/A	N/A	No Visible Distress	728537.78	1307452.07
L - 13+85 SB ISL	1.0 Cut	11.00	N/A	6.0 C&G	S	18.00	6.00	N/A	12.00	N/A	Asphalt ABC	No Auger for Utilities.	N/A	N/A	N/A	N/A	No Visible Distress	728537.50	1307468.62
L - 16+80 NB OSL	1.0 Cut	12.00	N/A	1.0 C&G	S	17.25	5.25	N/A	12.00	N/A	Asphalt ABC	0.0-5.0' = Residual Soils, Red, Sandy Silty Clay	S-1	A-7-5	D	5.00	Moderate Severity Transverse Cracking, Low Severity Longitudinal Cracking in IWP and OWP	728829.38	1307548.47
L - 16+80 NB ISL	1.0 Cut	11.00	N/A	5.5 C&G	S	16.75	4.75	N/A	12.00	N/A	Asphalt ABC	0.0-2.5' = Residual Soils, Red, Sandy Silty Clay 2.5-5.0' = Residual Soils, Red, Sandy Clay	S-13 REF S-3	A-7-6 A-6	D D	5.00	Low Severity Longitudinal Cracking, Low Severity Transverse Cracking	728836.89	1307530.50
L - 20+00 SB RTL	AG	10.00	N/A	1.0 C&G	C	12.75	2.75	N/A	10.00	N/A	Asphalt ABC	0.0-5.0' = Residual Soils, Red, Sandy Silty Clay	REF S-11	A-7-6	D	5.00	Moderate Severity Transverse Cracking, Low Severity Longitudinal Cracking in IWP	729147.81	1307444.58
L - 20+00 SB OSL	AG	9.00	N/A	4.5 FW	C	15.50	4.50	N/A	11.00	N/A	Asphalt ABC	0.0-5.0' = Residual Soils, Red, Sandy Silty Clay	S-11	A-7-6	D	5.00	Low Severity Longitudinal Cracking, Low Severity Transverse Cracking	729150.44	1307463.04
L - 20+00 SB ISL	AG	11.00	N/A	3.0 C&G	C	15.50	3.50	N/A	12.00	N/A	Asphalt ABC	0.0-5.0' = Residual Soils, Red, Sandy Silty Clay	REF S-11	A-7-6	D	5.00	Low Severity Fatigue Cracking in IWP	729150.88	1307470.73
L - 21+95 SB LTL	AG	12.50	N/A	11.0 C&G	S	15.75	3.75	N/A	12.00	N/A	Asphalt ABC	0.0-3.0' = Residual Soils, Red, Sandy Clay 3.0-5.0' = Residual Soils, Red, Sandy Silty Clay	REF S-3 S-10	A-6 A-7-6	M M	5.00	Low Severity Fatigue Cracking	729347.96	1307448.70
L - 21+95 NB OSL	AG	15.00	N/A	1.0 C&G	S	15.00	3.00	N/A	12.00	N/A	Asphalt ABC	0.0-2.5' = Residual Soils, Red, Sandy Clay 2.5-5.0' = Residual Soils, Tan, Sandy Clay	S-3 S-4	A-6 A-6	M M	5.00	No Visible Distress	729346.10	1307468.05
L - 21+95 NB ISL	AG	15.00	N/A	7.5 FW	S	15.25	4.25	N/A	11.00	N/A	Asphalt ABC	0.0-5.0' = Residual Soils, Red, Sandy Clay	REF S-3	A-6	M	5.00	Low Severity Fatigue Cracking	729345.82	1307460.46
L - 23+30 NB RTL	1.0 Cut	14.00	N/A	9.5 C&G	S	20.25	13.25	N/A	7.00	N/A	Asphalt ABC	0.0-3.0' = Residual Soils, Orange, Sandy Clay 3.0-5.0' = Residual Soils, Orange, Sandy Silty Clay	S-6 S-7	A-6 A-7-5	M M	5.00	No Visible Distress	729485.82	1307441.06
Y - 14+20 EB LN GUTTER	2.0 Cut	17.00	N/A	0.5 C&G	C	8.75	1.75	7.00	N/A	N/A	Asphalt Concrete	No Auger for Utilities.	N/A	N/A	N/A	N/A	Moderate Severity Transverse Cracking, Concrete in Core from Concrete Gutter	728642.75	1307358.95
Y - 14+20 EB LN OWP	2.0 Cut	17.00	N/A	6.0 C&G	C	11.50	5.50	N/A	6.00	N/A	Asphalt ABC	No Auger for Utilities.	N/A	N/A	N/A	N/A	Moderate Severity Transverse Cracking	728650.08	1307351.84
Y1 - 11+15 WB RTL	AG	12.00	N/A	4.5 FW	C	8.50	4.50	N/A	4.00	N/A	Asphalt ABC	0.0-5.0' = Residual Soils, Red, Sandy Silty Clay	S-15	A-7-6	D	5.00	Moderate Severity Longitudinal Cracking, Moderate Severity Transverse Cracking	728975.41	1307635.28
Y1 - 13+25 WB LT LN	AG	14.50	N/A	2.0 FW	S	13.00	4.75	5.25	3.00	N/A	Asphalt Concrete ABC	0.0-1.5' = Residual Soils, Red, Sandy Clay DCP Stopped @ 1.5' for Utilities	S-2	A-6	W	1.50	Low Severity Longitudinal Cracking, Low Severity Transverse Cracking	728932.13	1307424.88

Notes:

OSL = Outside Lane
ISL = Inside Lane
CL = Center Lane
LTL = Left Turn Lane

CTL = Center Turn Lane
RTL = Right Turn Lane
DECEL = Deceleration Lane
ACCEL = Acceleration Lane

OSS = Outside Shoulder
ISS = Inside Shoulder
GM = Grass Median
OGS = Outside Grass Shoulder

PS = Paved Shoulder
RT LN = Right Lane
LT LN = Left Lane
COL = Collector Lane

RT = Right
LT = Left
(I) = Inside
(O) = Outside

NB = Northbound
SB = Southbound
FW = From White
FY = From Yellow

WP = Wheel Path
IWP = Inside Wheel Path
OWP = Outside Wheel Path
C&G = Curb & Gutter

FCG = From Curb & Gutter
AG = At Grade

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

PAVEMENT INVESTIGATION DATA SHEET

Project:	50189.1.1	County:	CATAWBA	Date:	07/30/19
TIP:	U-5777	Route:	NC 127 from 1st Avenue SE to 2nd Avenue SE Add Turn Lanes	Notes By:	A. BLYTHE

		Width				Thickness						Subgrade						GPS Coordinates	
Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount) (ft)	Lane(s) (ft)	Shoulder(s) (ft)	Offset Distance (ft)	Crown "C" or Super "S"	Gross to Top of Soil (in)	Asphalt (in)	Concrete (in)	ABC (in)	Stabilized Soil Subgrade (in)	Pavement Layering	Description	Sample Number	AASHTO Classification	Soil Moisture	Probe Depth (ft)	Asphalt Notes	Northing	Easting
L - 16+80 NB OES	1.0 Cut	N/A	N/A	2.0 C&G	N/A	0.00	N/A	N/A	N/A	N/A	N/A	0.0-4.0' = Residual Soils, Red, Sandy Clay	BULK-2	A-6	D	4.00	N/A	728833.93	1307556.38
L - 20+00 SB OES	AG	N/A	N/A	2.0 C&G	N/A	0.00	N/A	N/A	N/A	N/A	N/A	0.0-4.0' = Residual Soils, Red, Sandy Silty Clay	BULK-1	A-7-6	D	4.00	N/A	729169.14	1307433.20

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound	WP = Wheel Path	FCG = From Curb & Gutter
ISL = Inside Lane	RTL = Right Turn Lane	ISS = Inside Shoulder	RT LN = Right Lane	LT = Left	SB = Southbound	IWP = Inside Wheel Path	AG = At Grade
CL = Center Lane	DECEL = Deceleration Lane	GM = Grass Median	LT LN = Left Lane	(I) = Inside	FW = From White	OWP = Outside Wheel Path	
LTL = Left Turn Lane	ACCEL = Acceleration Lane	OGS = Outside Grass Shoulder	COL = Collector Lane	(O) = Outside	FY = From Yellow	C&G = Curb & Gutter	

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

CONE PENETROMETER DATA CODE SHEET

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE

COUNTY	ENGINEER	TECHNICIANS
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATIONS DESCRIPTION	DATE RUN
L - 13+85 SB OSL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	CUT	728537.8	1307452.1

Cumulative Penetration in Centimeters

0.3	10.3	22.7
0.7	10.4	23.1
1.0	10.6	23.5
1.2	10.7	23.7
1.6	10.9	24.0
2.0	11.0	24.3
2.3	11.1	24.6
2.6	11.3	25.0
2.8	11.5	25.5
3.0	11.6	26.1
3.3	11.8	26.7
3.5	12.0	27.3
3.8	12.2	28.0
3.9	12.3	28.6
4.1	12.5	29.1
4.3	12.6	29.8
4.5	12.7	30.5
4.7	13.0	31.4
4.8	13.3	32.1
5.2	13.5	33.0
5.5	13.7	
5.7	13.9	
5.8	14.1	
6.0	14.3	
6.1	14.5	
6.3	14.7	
6.5	14.9	
6.6	15.2	
6.7	15.4	
6.8	15.7	
6.9	15.9	
7.0	16.1	
7.2	16.4	
7.3	16.6	
7.4	16.9	
7.5	17.1	
7.7	17.3	
7.9	17.8	
8.0	18.0	
8.2	18.3	
8.3	18.5	
8.5	18.8	
8.6	19.0	
8.7	19.2	
8.8	19.5	
9.0	19.9	
9.1	20.2	
9.3	20.5	
9.4	20.9	
9.5	21.3	
9.7	21.6	
9.9	22.0	
10.1	22.4	

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE

COUNTY	ENGINEER	TECHNICIANS
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATION DESCRIPTION	DATE RUN
L - 13+85 SB ISL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	CUT	728537.5	1307468.6

Cumulative Penetration in Centimeters

1.3	13.1	
1.8	13.3	
2.1	13.5	
2.5	13.8	
2.8	14.1	
3.1	14.2	
3.3	14.3	
3.6	14.6	
3.9	14.9	
4.2	15.1	
4.4	15.4	
4.6	15.6	
4.8	15.8	
5.0	16.1	
5.2	16.5	
5.5	16.6	
5.7	16.9	
5.9	17.2	
6.1	17.3	
6.2	17.7	
6.4	18.2	
6.6	18.6	
6.9	19.0	
7.1	19.3	
7.2	19.5	
7.4	20.1	
7.5	20.6	
7.7	21.1	
7.8	21.5	
7.9	21.9	
8.0	22.3	
8.2	22.8	
8.4	23.1	
8.7	23.8	
9.0	24.3	
9.2	24.8	
9.5	25.2	
9.7	25.7	
9.9	26.1	
10.0	26.6	
10.2	27.1	
10.3	27.6	
10.5	28.0	
10.8	28.5	
11.0	28.9	
11.3	29.5	
11.5	30.0	
11.6	30.8	
11.9	31.6	
12.0	33.1	
12.4		
12.7		
12.8		

CONE PENETROMETER DATA CODE SHEET

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE

COUNTY	ENGINEER	TECHNICIANS
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATIONS DESCRIPTION	DATE RUN
L - 16+80 NB OSL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	CUT	728829.4	1307548.5

1.2	14.9	73.1
1.7	15.3	74.1
2.2	15.6	75.1
2.6	16.0	76.0
2.8	16.3	76.8
3.1	16.7	77.6
3.3	17.1	78.4
3.6	17.5	79.3
3.9	17.9	80.2
4.2	18.4	81.1
4.4	18.9	82.0
4.7	19.5	82.9
4.9	20.1	83.9
5.2	20.7	84.6
5.3	21.4	85.5
5.5	22.3	86.3
5.8	23.4	87.1
6.0	24.5	88.0
6.2	25.8	88.8
6.4	27.0	89.6
6.6	28.9	90.6
7.0	30.9	91.4
7.2	33.1	92.4
7.5	35.3	93.3
7.7	37.2	94.0
7.9	38.8	94.8
8.1	40.5	95.7
8.3	42.3	97.7
8.6	43.9	98.3
8.8	45.6	99.0
8.9	47.2	99.9
9.2	48.6	100.7
9.3	50.1	101.6
9.6	51.5	102.4
9.8	53.0	103.2
10.1	54.3	104.1
10.3	55.5	105.0
10.6	56.6	105.7
10.8	57.7	107.5
11.1	58.8	
11.4	59.8	
11.6	60.9	
11.9	62.0	
12.1	63.1	
12.4	64.1	
12.6	65.3	
12.8	66.4	
13.1	67.4	
13.4	68.2	
13.8	69.1	
14.0	70.2	
14.3	71.4	
14.6	72.2	

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE

COUNTY	ENGINEER	TECHNICIANS
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATION DESCRIPTION	DATE RUN
L - 16+80 NB ISL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	CUT	728836.9	1307530.5

1.1	12.5	41.9
1.9	12.7	43.7
2.5	12.8	45.5
2.9	13.1	47.9
3.0	13.4	49.8
3.4	13.6	51.7
3.7	13.8	53.3
4.0	14.0	55.4
4.2	14.2	56.9
4.4	14.5	58.7
4.6	14.8	60.0
4.9	15.1	61.3
5.0	15.4	62.3
5.1	15.6	63.3
5.2	15.8	64.6
5.5	16.0	66.3
5.7	16.3	67.3
5.8	16.6	68.3
6.0	16.9	69.4
6.1	17.2	70.8
6.5	17.8	73.7
6.7	18.1	75.2
6.8	18.4	76.6
6.9	18.8	77.9
7.1	19.1	79.1
7.4	19.5	80.9
7.5	19.8	82.7
7.7	20.3	84.3
7.9	20.7	85.8
8.1	21.0	87.5
8.2	21.4	89.1
8.4	21.8	90.3
8.6	22.2	91.7
8.7	22.6	93.2
8.8	23.1	94.6
9.0	23.5	96.0
9.2	24.0	97.3
9.4	24.6	98.5
9.6	25.1	99.8
9.8	25.8	101.4
10.1	26.5	102.9
10.3	27.3	104.5
10.6	28.2	106.2
10.8	29.2	107.9
10.9	30.2	109.1
11.1	31.2	
11.3	32.5	
11.5	34.0	
11.7	35.9	
11.9	37.1	
12.1	38.1	
12.3	39.8	

SG = Subgrade
SS = Stabilized Soil
CTBC = Cement-Treated Base Course
ABC = Aggregate Base Course
ESG = Estimated Subgrade

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

CONE PENETROMETER DATA CODE SHEET				TIP	PROJECT I.D.		ROUTE	
				U-5777	50189.1.1		NC 127 from 1st to 2nd Ave. SE	
				COUNTY	ENGINEER		TECHNICIANS	
				Catawba	VLAD MITCHEV		Andrew Blythe	
TEST LOCATIONS DESCRIPTION				DATE RUN	TEST LOCATION DESCRIPTION		DATE RUN	
L - 20+00 SB RTL				7/30-7/31/2019	L - 20+00 SB OSL		7/30-7/31/2019	
DATUM	CUT/ FILL	NORTHING		EASTING	DATUM	CUT/ FILL	NORTHING	EASTING
ABC	AG	729147.8		1307444.6	ABC	AG	729150.4	1307463.0
Cumulative Penetration in Centimeters					Cumulative Penetration in Centimeters			
0.7	12.1	34.8	74.9	98.2	1.4	13.2	49.4	107.8
1.2	12.2	36.3	75.4	98.6	2.1	13.3	51.5	108.6
1.6	12.5	37.5	76.0	99.0	2.5	13.6	53.6	
2.4	12.7	38.9	76.5	99.3	2.7	13.7	55.4	
2.8	12.8	40.2	77.1	99.8	3.0	13.8	57.0	
3.2	13.0	41.4	77.5	100.1	3.3	14.2	58.7	
3.4	13.2	42.5	77.9	100.4	3.5	14.5	60.3	
3.6	13.5	43.4	78.5	100.7	3.6	14.6	62.0	
3.7	13.6	44.3	79.0	101.1	3.9	14.8	63.5	
4.0	13.7	45.3	79.5	101.5	4.1	15.1	65.1	
4.1	13.9	46.3	79.9	101.7	4.2	15.2	66.4	
4.4	14.3	47.2	80.4	102.2	4.3	15.4	67.8	
4.7	14.6	48.0	80.9	102.5	4.7	15.6	68.9	
4.9	14.7	48.9	81.3	103.0	4.9	15.9	70.4	
5.1	14.8	49.6	81.8	103.3	5.1	16.1	71.6	
5.2	14.9	50.3	82.3	103.7	5.5	16.4	72.8	
5.4	15.2	51.2	82.7	104.0	5.6	16.6	73.9	
5.6	15.4	52.1	83.2	104.5	5.8	16.9	75.2	
5.8	15.7	52.7	83.7	104.9	6.0	17.1	76.3	
6.0	15.9	53.4	84.2	105.1	6.1	17.4	77.5	
6.1	16.2	54.2	84.6	105.6	6.3	17.7	78.9	
6.3	16.4	55.0	85.1	106.1	6.5	17.9	79.9	
6.4	16.6	55.8	85.5	106.2	6.7	18.2	81.1	
6.5	16.9	56.1	85.9	106.7	7.0	18.5	82.2	
6.6	17.2	57.3	86.3	107.1	7.3	18.8	83.3	
6.7	17.6	57.6	86.7	107.3	7.6	18.9	84.3	
6.8	17.7	58.3	87.2	107.7	7.8	19.2	85.2	
6.9	18.0	58.9	87.7	107.9	7.9	19.4	86.1	
7.2	18.3	59.8	88.1	108.4	8.1	19.7	87.3	
7.3	18.6	60.5	88.6	108.7	8.2	20.0	88.2	
7.6	18.9	61.2	89.0	109.2	8.4	20.3	89.2	
7.8	19.2	62.0	89.4	109.3	8.7	20.7	90.1	
8.2	19.4	62.6	89.9	109.4	8.9	21.0	91.1	
8.3	19.8	63.2	90.3	109.7	9.1	21.4	91.9	
8.5	20.0	63.8	90.7	110.1	9.3	21.9	92.8	
8.7	20.2	64.4	91.1	110.5	9.4	22.3	93.4	
8.9	20.6	65.1	91.5	110.9	9.6	23.0	94.3	
9.1	21.0	65.7	91.9	111.7	9.7	23.4	95.1	
9.3	21.3	66.3	92.2	112.0	9.9	24.1	96.0	
9.4	21.6	66.9	92.6	112.5	10.1	24.9	96.7	
9.5	22.1	67.4	93.0	112.7	10.3	25.9	97.6	
9.6	22.5	68.1	93.5	113.1	10.4	26.8	98.6	
9.9	23.0	68.8	93.8	113.4	10.6	27.8	99.3	
10.1	23.3	69.3	94.3	113.7	10.7	29.0	100.0	
10.4	23.9	69.9	94.6	114.1	11.0	30.3	100.8	
10.6	24.4	70.5	95.0		11.2	32.1	101.7	
10.9	25.0	71.1	95.4		11.5	34.0	102.6	
11.0	25.7	71.6	95.7		11.7	36.1	103.3	
11.1	26.6	72.2	96.2		12.0	38.3	104.2	
11.3	27.8	72.8	96.6		12.2	40.6	105.0	
11.4	29.5	73.3	97.1		12.3	42.8	105.6	
11.5	31.8	73.9	97.3		12.5	45.0	106.5	
11.9	33.4	74.5	97.8		12.9	47.2	107.3	

CONE PENETROMETER DATA CODE SHEET				TIP	PROJECT I.D.		ROUTE	
				U-5777	50189.1.1		NC 127 from 1st to 2nd Ave. SE	
				COUNTY	ENGINEER		TECHNICIANS	
				Catawba	VLAD MITCHEV		Andrew Blythe	
TEST LOCATIONS DESCRIPTION				DATE RUN	TEST LOCATION DESCRIPTION		DATE RUN	
L - 20+00 SB ISL				7/30-7/31/2019	L - 21+95 SB LTL		7/30-7/31/2019	
DATUM	CUT/ FILL	NORTHING		EASTING	DATUM	CUT/ FILL	NORTHING	EASTING
ABC	AG	729150.9		1307470.7	ABC	AG	729348.0	1307448.7
Cumulative Penetration in Centimeters					Cumulative Penetration in Centimeters			
0.8	11.2	22.6	92.2		0.9	13.6	28.5	81.0
1.4	11.4	23.4	92.9		1.4	13.8	29.3	81.5
2.0	11.5	24.1	93.7		1.7	14.0	30.3	82.3
2.4	11.6	24.8	94.5		1.9	14.3	31.5	83.0
2.8	11.65	25.8	95.2		2.4	14.5	33.0	83.6
3.1	11.7	27.1	95.8		2.7	14.7	34.5	84.3
3.5	11.9	28.2	96.4		3.1	14.8	36.1	85.1
3.8	12.1	29.5	97.0		3.4	15.2	37.7	85.7
4.3	12.3	31.0	97.6		3.6	15.4	39.4	86.4
4.4	12.5	32.5	98.3		3.9	15.7	40.9	87.0
4.6	12.7	34.2	99.0		4.2	15.9	42.4	87.7
4.8	12.9	36.2	99.7		4.3	16.1	43.9	88.6
5.0	13.0	38.5	100.3		4.5	16.3	45.5	89.1
5.2	13.1	41.3	101.0		4.8	16.5	46.9	89.8
5.4	13.2	44.3	101.6		5.1	16.7	48.3	90.5
5.6	13.4	46.9	102.3		5.4	17.0	49.7	91.2
5.7	13.6	49.1	102.9		5.6	17.2	51.1	91.8
5.8	13.7	51.5	103.6		5.9	17.4	52.3	92.6
6.0	13.9	53.2	104.2		6.1	17.5	53.4	93.3
6.1	14.0	55.1	104.9		6.3	17.8	54.5	93.9
6.3	14.2	57.3	105.8		6.5	18.1	55.8	94.7
6.4	14.4	59.0	106.3		6.9	18.3	57.0	95.3
6.6	14.7	60.6	106.9		7.1	18.5	58.0	95.8
6.9	14.9	62.3	107.4		7.3	18.8	59.1	96.5
7.0	15.1	63.8	107.9		7.7	19.1	60.0	97.2
7.2	15.3	65.0	108.5		8.0	19.3	61.0	97.6
7.3	15.5	66.5	108.9		8.2	19.6	62.0	98.2
7.4	15.7	67.4	109.6		8.3	20.0	62.8	98.9
7.5	15.9	69.0	110.3		8.7	20.2	63.5	99.5
7.7	16.0	70.3	110.9		8.9	20.4	64.5	100.2
7.8	16.3	71.4	111.6		9.0	20.7	65.3	100.8
7.9	16.5	72.6	112.0		9.3	21.0	66.1	101.6
8.0	16.7	73.6	112.5		9.4	21.2	66.9	102.3
8.1	16.9	74.9	113.4		9.6	21.5	67.6	103.0
8.2	17.3	75.7			9.8	21.7	68.2	103.8
8.4	17.5	76.5			10.0	22.0	68.9	104.4
8.6	17.8	77.2			10.1	22.2	69.6	105.0
8.7	18.1	78.3			10.4	22.5	70.3	106.0
8.8	18.4	79.2			10.7	22.8	71.0	106.5
8.9	18.7	80.0			10.8	23.1	71.8	107.2
9.0	19.0	81.0			11.0	23.2	72.4	107.9
9.2	19.3	81.8			11.2	23.3	73.2	108.5
9.4	19.6	82.7			11.3	23.5	73.7	109.1
9.6	19.8	83.4			11.5	23.9	74.5	109.3
9.8	20.1	84.3			11.8	24.1	75.1	110.5
10.0	20.4	85.2			12.0	24.5	76.0	
10.1	20.7	86.7			12.1	24.8	76.7	
10.3	21.0	87.5			12.3	25.3	77.3	
10.5	21.2	88.1			12.5	25.8	77.9	
10.7	21.4	88.8			12.9	26.3	78.5	
10.8	21.6	89.5			13.0	26.9	79.1	
10.9	21.9	90.4			13.2	27.2	79.7	
11.0	22.3	91.1			13.5	27.8	80.4	

SG = Subgrade
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ESG = Estimated Subgrade

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

CONE PENETROMETER DATA CODE SHEET

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE
COUNTY	**ENGINEER**	**TECHNICIANS**
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATIONS DESCRIPTION	DATE RUN
L - 21+95 NB OSL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	AG	729346.1	1307468.1

Cumulative Penetration in Centimeters

1.9	22.5	75.9	107.8
2.7	22.9	76.7	108.8
3.5	23.3	77.4	109.5
4.3	23.8	78.4	109.9
4.7	24.4	79.5	110.8
5.1	24.9	80.4	111.5
5.5	25.6	81.4	112.4
5.9	26.2	82.2	113.0
6.4	26.9	82.9	
6.7	27.9	83.9	
7.1	29.2	84.1	
7.5	31.6	84.7	
7.9	33.5	85.1	
8.3	35.2	85.5	
8.6	36.7	85.9	
9.0	38.0	86.2	
9.3	39.6	86.7	
9.7	41.1	87.0	
10.1	41.7	87.4	
10.5	43.0	87.9	
10.9	43.8	88.4	
11.4	44.6	88.7	
11.8	45.3	89.2	
12.2	46.1	89.7	
12.6	47.1	90.1	
12.9	47.8	90.7	
13.3	48.6	91.2	
13.6	49.4	91.7	
14.1	50.2	92.2	
14.3	50.9	92.8	
14.6	51.6	93.3	
14.9	52.4	93.9	
15.2	53.3	94.6	
15.4	54.3	95.1	
15.7	55.6	95.7	
16.0	57.1	96.4	
16.3	58.6	97.2	
16.6	60.1	97.7	
17.0	61.6	98.4	
17.3	62.9	98.9	
17.8	64.4	99.5	
18.1	65.8	100.0	
18.4	67.4	100.7	
18.8	68.5	101.3	
19.1	69.5	101.9	
19.5	70.2	102.5	
19.9	71.0	103.1	
20.4	71.6	103.6	
20.7	72.4	104.3	
21.0	73.1	105.1	
21.6	73.7	105.5	
21.9	74.4	106.3	
22.3	75.1	107.0	

TEST LOCATION DESCRIPTION	DATE RUN
L - 21+95 NB ISL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	AG	729345.8	1307460.5

Cumulative Penetration in Centimeters

1.0	14.1	45.2	
1.4	14.2	47.0	
2.0	14.5	48.7	
2.5	14.7	51.0	
2.8	14.8	53.3	
3.2	15.0	55.7	
3.5	15.2	58.1	
3.8	15.3	60.4	
4.1	15.6	62.8	
4.4	15.9	65.4	
4.6	16.1	68.1	
4.9	16.3	70.7	
5.1	16.4	73.5	
5.3	16.6	75.6	
5.9	16.9	77.6	
6.1	17.0	80.3	
6.3	17.1	83.5	
6.6	17.4	86.9	
6.8	17.6	90.6	
7.0	17.8	94.3	
7.2	18.0	98.1	
7.6	18.2	102.1	
7.8	18.4	106.8	
8.0	18.6	108.2	
8.2	18.8		
8.5	19.0		
8.6	19.3		
8.8	19.6		
8.9	19.8		
9.1	20.0		
9.3	20.2		
9.5	20.8		
9.7	21.2		
9.9	21.5		
10.2	21.9		
10.4	22.3		
10.6	22.7		
10.8	23.1		
10.9	23.7		
11.1	24.3		
11.4	24.9		
11.5	25.9		
11.8	27.2		
11.9	28.8		
12.1	30.1		
12.3	31.4		
12.5	32.6		
12.8	34.1		
13.0	35.3		
13.2	36.9		
13.5	38.4		
13.7	40.0		
13.9	43.6		

CONE PENETROMETER DATA CODE SHEET

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE
COUNTY	**ENGINEER**	**TECHNICIANS**
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATIONS DESCRIPTION	DATE RUN
L - 23+30 NB RTL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	CUT	729485.8	1307441.1

Cumulative Penetration in Centimeters

0.8	41.8		
1.3	43.0		
1.9	44.1		
2.5	45.7		
2.8	46.6		
3.3	48.2		
3.6	49.8		
4.0	51.5		
4.5	53.4		
5.0	55.3		
5.3	57.2		
5.5	58.8		
6.2	60.2		
6.6	61.2		
7.0	62.2		
7.4	63.1		
8.0	64.3		
8.3	65.5		
8.7	66.6		
9.0	68.1		
9.6	69.0		
10.0	70.3		
10.3	71.5		
10.8	72.9		
11.2	74.3		
11.7	75.7		
12.2	77.2		
12.8	78.6		
13.0	80.0		
13.5	81.3		
14.1	83.2		
14.5	84.8		
15.0	86.4		
15.4			
16.0			
16.7			
18.0			
20.4			
22.6			
24.5			
26.6			
29.3			
30.6			
31.6			
33.0			
33.9			
34.4			
35.1			
35.9			
36.8			
38.0			
39.2			
40.5			

TEST LOCATION DESCRIPTION	DATE RUN
Y - 14+20 EB LN GUTTER	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
SG	CUT	728642.8	1307359.0

Cumulative Penetration in Centimeters

2.2	82.1		
3.8	83.8		
4.8	85.3		
5.5	86.7		
6.0	88.4		
6.7	89.9		
7.3			
8.1			
8.4			
9.1			
10.1			
11.3			
12.7			
14.4			
16.0			
17.7			
19.2			
20.8			
22.5			
24.2			
26.0			
27.9			
29.8			
31.4			
33.3			
35.3			
37.0			
38.8			
40.6			
42.5			
44.6			
46.4			
48.4			
50.2			
51.8			
53.5			
55.0			
56.5			
57.9			
59.5			
61.0			
62.9			
64.5			
66.2			
67.8			
69.5			
71.1			
72.7			
74.4			
75.9			
77.5			
79.0			
80.6			

SG = Subgrade
SS = Stabilized Soil
CTBC = Cement-Treated Base Course
ABC = Aggregate Base Course
ESG = Estimated Subgrade

S&ME, Inc.
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CONE PENETROMETER DATA CODE SHEET

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE

COUNTY	ENGINEER	TECHNICIANS
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATIONS DESCRIPTION	DATE RUN
Y - 14+20 EB LN OWP	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	CUT	728650.1	1307351.8

Cumulative Penetration in Centimeters

1.1	11.8						
1.6	12.1						
2.3	12.3						
2.9	12.5						
3.2	12.7						
3.5	12.9						
3.7	13.2						
4.0	13.5						
4.2	13.7						
4.4	14.0						
4.8	14.3						
5.0	14.6						
5.2	15.0						
5.5	15.3						
5.6	15.6						
5.7	16.0						
6.1	16.3						
6.2	16.6						
6.4	17.0						
6.5	17.4						
6.6	18.0						
6.8	18.5						
6.9	19.0						
7.0	19.5						
7.2	20.2						
7.3							
7.35							
7.45							
7.5							
7.7							
7.9							
8.1							
8.2							
8.4							
8.5							
8.7							
8.9							
9.1							
9.3							
9.4							
9.6							
9.7							
9.9							
10.1							
10.2							
10.4							
10.5							
10.7							
10.9							
11.1							
11.2							
11.4							
11.6							

TEST LOCATION DESCRIPTION	DATE RUN
Y1 - 11+15 WB RTL	7/30-7/31/2019

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	AG	728975.4	1307635.3

Cumulative Penetration in Centimeters

1.1	44.9						
3.7	45.1						
5.9	45.4						
7.5	45.6						
9.0	45.9						
10.6	46.1						
12.2	46.4						
13.5	46.6						
14.6	47.0						
15.6	47.4						
16.6	47.9						
17.5	48.3						
18.4	48.8						
19.6	49.4						
20.6	50.0						
21.7	50.6						
22.7	51.3						
23.8	52.1						
24.9	53.0						
26.3	54.2						
27.6	56.8						
28.9	59.7						
30.1	62.3						
31.5	65.4						
32.6	68.4						
33.8	71.6						
34.8	75.1						
35.6	79.9						
36.3	84.1						
36.8	87.9						
37.4	92.0						
37.8	96.4						
38.6	99.8						
39.0	103.0						
39.4	106.5						
39.8	109.9						
40.2							
40.3							
40.5							
40.8							
41.2							
41.5							
42.0							
42.1							
42.4							
42.8							
43.0							
43.4							
43.6							
43.9							
44.2							
44.4							
44.7							

CONE PENETROMETER DATA CODE SHEET

TIP	PROJECT I.D.	ROUTE
U-5777	50189.1.1	NC 127 from 1st to 2nd Ave. SE

COUNTY	ENGINEER	TECHNICIANS
Catawba	VLAD MITCHEV	Andrew Blythe

TEST LOCATIONS DESCRIPTION	DATE RUN	TEST LOCATION DESCRIPTION	DATE RUN
Y1 - 13+25 WB LT LN	7/30-7/31/2019		

DATUM	CUT/ FILL	NORTHING	EASTING
ABC	AG	728932.1	1307424.9

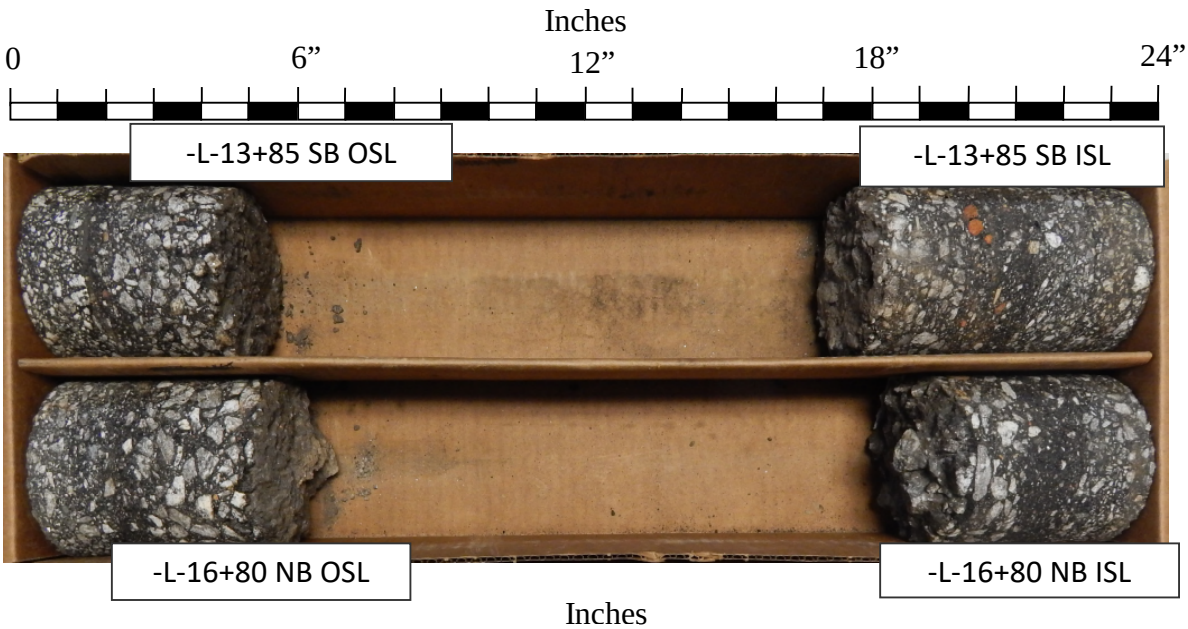
Cumulative Penetration in Centimeters

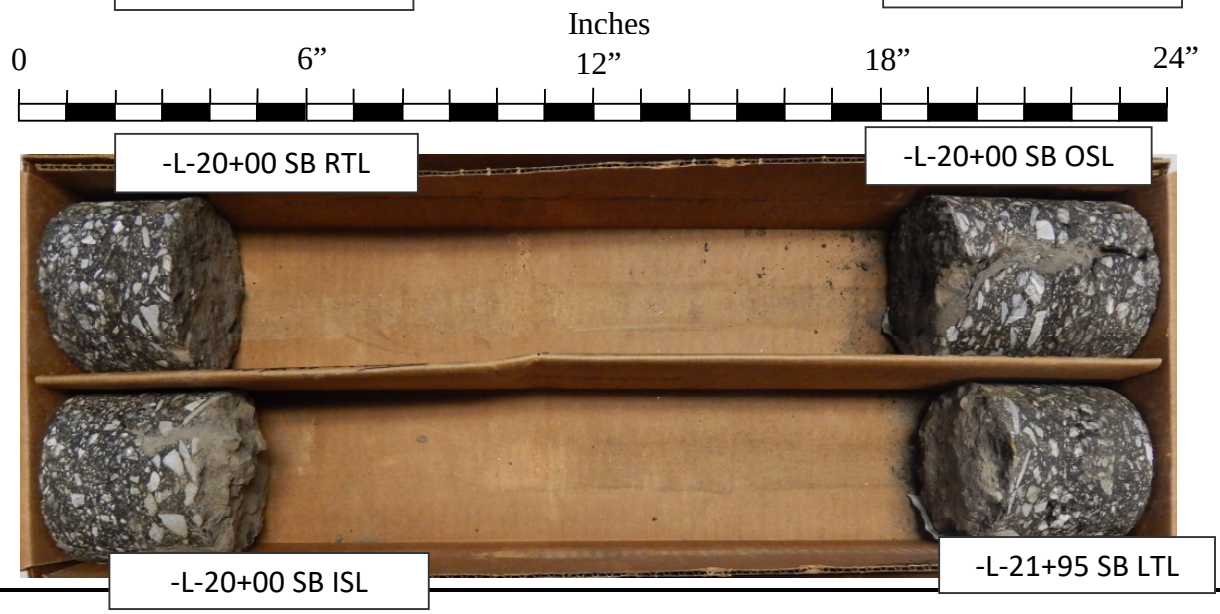
5.0							
8.1							
9.5							
10.7							
11.9							
13.2							
15.7							
19.0							
22.7							
26.7							
30.5							
33.0							
34.7							
36.1							
37.5							
38.7							
40.0							
40.8							
42.0							
43.2							
44.8							
46.2							
47.8							
49.8							
51.7							
53.5							
54.4							
55.0							
55.5							
55.8							
56.2							
56.6							
56.7							
57.0							

SG = Subgrade
SS = Stabilized Soil
CTBC = Cement-Treated Base Course
ABC = Aggregate Base Course
ESG = Estimated Subgrade

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

Project No.: 50189.1.1	*I.D. No.*: U-5777	*County*: Catawba	*Dates:7/30/19*
Site Description: NC 127 from 1st Avenue SE to 2nd Avenue SE add turn lanes			
Consultant: S&ME, Inc.	*Core Size*: 4 - inch	*Drill Machine:* CME-55	
Geologist / Engineer: Andrew Blythe			



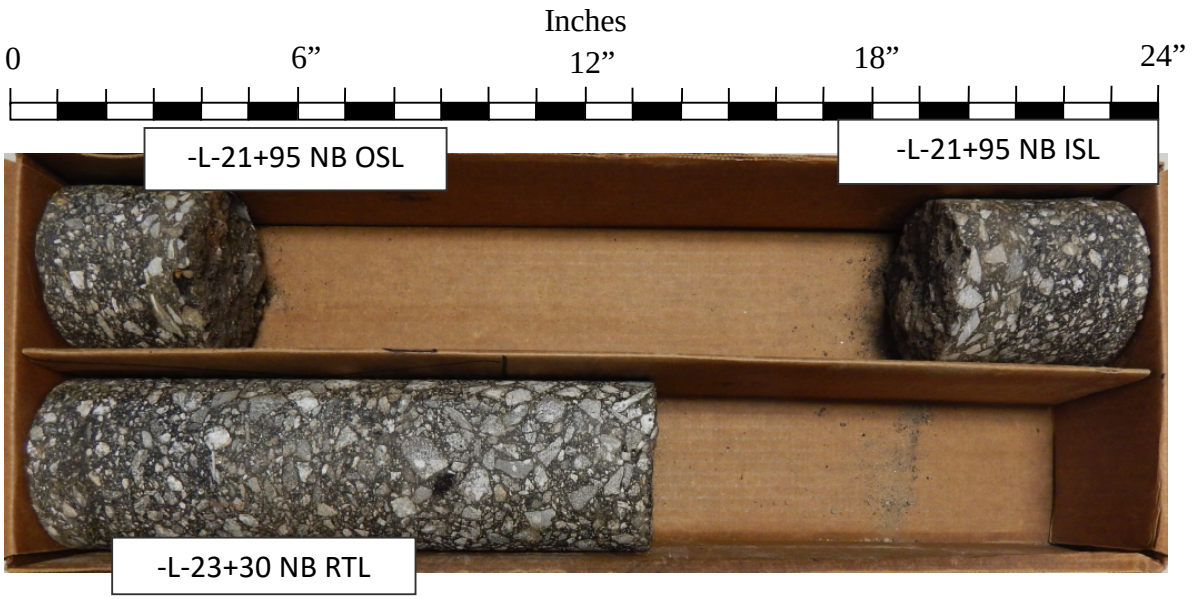


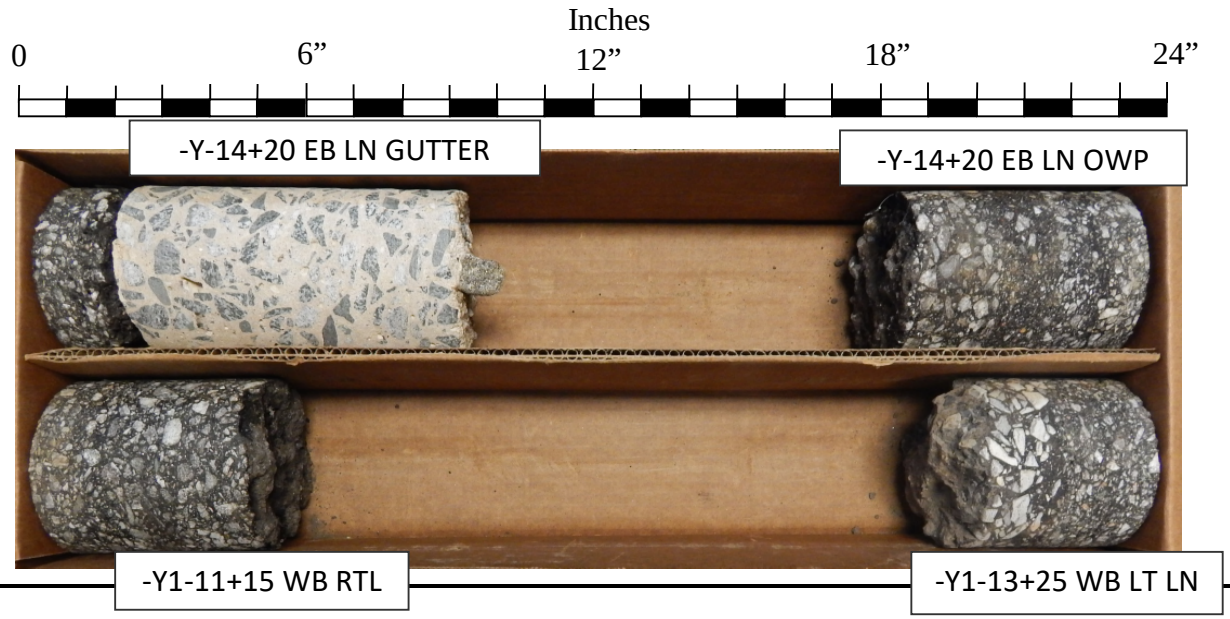
Notes:

OSL = Outside Lane
ISL = Inside Lane
RTL = Right Turn Lane
OSS = Outside Shoulder
ACCEL = Acceleration Lane
PS = Paved Shoulder
LTL = Left Turn Lane
ISS = Inside Shoulder
MED = Median

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

Project No.: 50189.1.1	*I.D. No.*: U-5777	*County*: Catawba	*Dates:7/30/19*
Site Description: NC 127 from 1st Avenue SE to 2nd Avenue SE add turn lanes			
Consultant: S&ME, Inc.	*Core Size*: 4 - inch	*Drill Machine:* CME-55	
Geologist / Engineer: Andrew Blythe			





Notes:

OSL = Outside Lane
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ISS = Inside Shoulder
MED = Median

S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

SUMMARY OF LABORATOTY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6205-19-022			Date Report	8/15/2019
State Project No.:	50189.1.1	County:	Catawba	Date Tested	8/3 - 8/15/19
Federal ID No.:		TIP No.:	U-5777		
Project Name:	NC 127 from 1st Ave. SE to 2nd Ave. Turn Lanes				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Station No.	Sample No.	Boring No.	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #				Total Mortar Fraction (%)				LL	PL	PI	Moist. %
								10	40	60	200	Coarse Sand	Fine Sand	Silt	Clay				
20+00 SB OES	Bulk-1	Bulk 1	N/A	-L-	0.0-4.0	A-7-6	(12)	99	85	76	58.2	23	21	10	46	47	23	24	18.2
16+80 NB OES	Bulk-2	Bulk 2	N/A	-L-	0.0-4.0	A-6	(9)	98	85	76	57.7	22	23	13	42	40	20	20	16.2
16+80 NB OSL	S-1	C-5	N/A	-L-	0.0-5.0	A-7-5	(24)	100	94	90	77.2	10	17	17	56	60	32	28	25.6
16+80 NB ISL	S-13	C-6	N/A	-L-	0.0-2.5	A-7-6	(21)	100	92	87	73.5	13	16	10	61	56	28	28	22.9
11+15 WB RTL	S-15	C-7	N/A	-Y1-	0.0-5.0	A-7-6	(10)	95	81	73	56.4	23	22	7	48	45	23	22	21.7
13+25 WB LT LN	S-2	C-8	N/A	-Y1-	0.0-1.5	A-6	(7)	98	86	77	54.7	22	27	9	42	36	18	18	25.9
21+95 NB OSL	S-3	C-9	N/A	-L-	0.0-2.5	A-6	(4)	94	71	61	44.4	35	21	7	37	38	20	18	15.2
21+95 NB OSL	S-4	C-9	N/A	-L-	2.5-5.0	A-6	(2)	98	76	64	42.3	34	27	11	28	38	24	14	15.0
21+95 SB LTL	S-10	C-11	N/A	-L-	3.0-5.0	A-7-6	(10)	99	84	75	56.1	25	23	10	42	47	24	23	19.3
23+30 NB RTL	S-6	C-12	N/A	-L-	0.0-3.0	A-6	(2)	98	75	64	42.1	35	26	11	28	30	16	14	13.3
23+30 NB RTL	S-7	C-12	N/A	-L-	3.0-5.0	A-7-5	(9)	100	81	70	52.9	30	22	14	34	52	31	21	29.0
20+00 SB OSL	S-11	C-14	N/A	-L-	0.0-5.0	A-7-6	(12)	97	86	78	60.9	19	22	7	52	44	20	24	20.1

References / Comments / Deviations: ND=Not Detemined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT

AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET		104-01-0703	Vlad Mitchev, P.E.	Project Manager
Technician Name:	Signature	Certification #	Technical Responsibility:	Position

SUMMARY OF LABORATOTY TEST DATA

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project No.:	6205-19-022	S&ME Project Name:		Date Report:	8/13/2019
State Project No.:	50189.1.1	County:	Catawba	Date Tested:	8/11 - 8/13/19
Federal ID No.:	N/A	TIP No.:	U-5777		
Client Name:	NCDOT	Client Address:	Raleigh, NC		

Station No.	Sample No.	Boring No.	Offset	Alignment	Sample Depth (ft)	AASHTO Soil Description	AASTHO T-99		AASHTO T-193 CBR #1		AASHTO T-193 CBR #2	
							MDD (pcf)	OPT (%)	0.1"	0.2"	0.1"	0.2"
20+00 SB OES	Bulk-1	Bulk 1	N/A	-L-	4.00	Red Fine to Coarse Sandy Silty CLAY (A-7-6) (12)	109.4	18.0	6.3	6.4	ND	ND
16+80 NB OES	Bulk-2	Bulk 2	N/A	-L-	4.00	Brown Coarse to Fine Sandy Silty CLAY (A-6) (9)	103.1	20.0	5.5	6.7	ND	ND

References / Comments / Deviations: ND=Not Detemined.

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop

AASHTO T 193: The California Bearing Ratio

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET		104-01-0703	Vlad Mitchev, PE	Project Manager
Technician Name:	Signature	Certification #	Technical Responsibility:	Position

Form No. TR-D698-2
Revision No. : 1
Revision Date: 07/25/17

MOISTURE - DENSITY REPORT

Quality Assurance

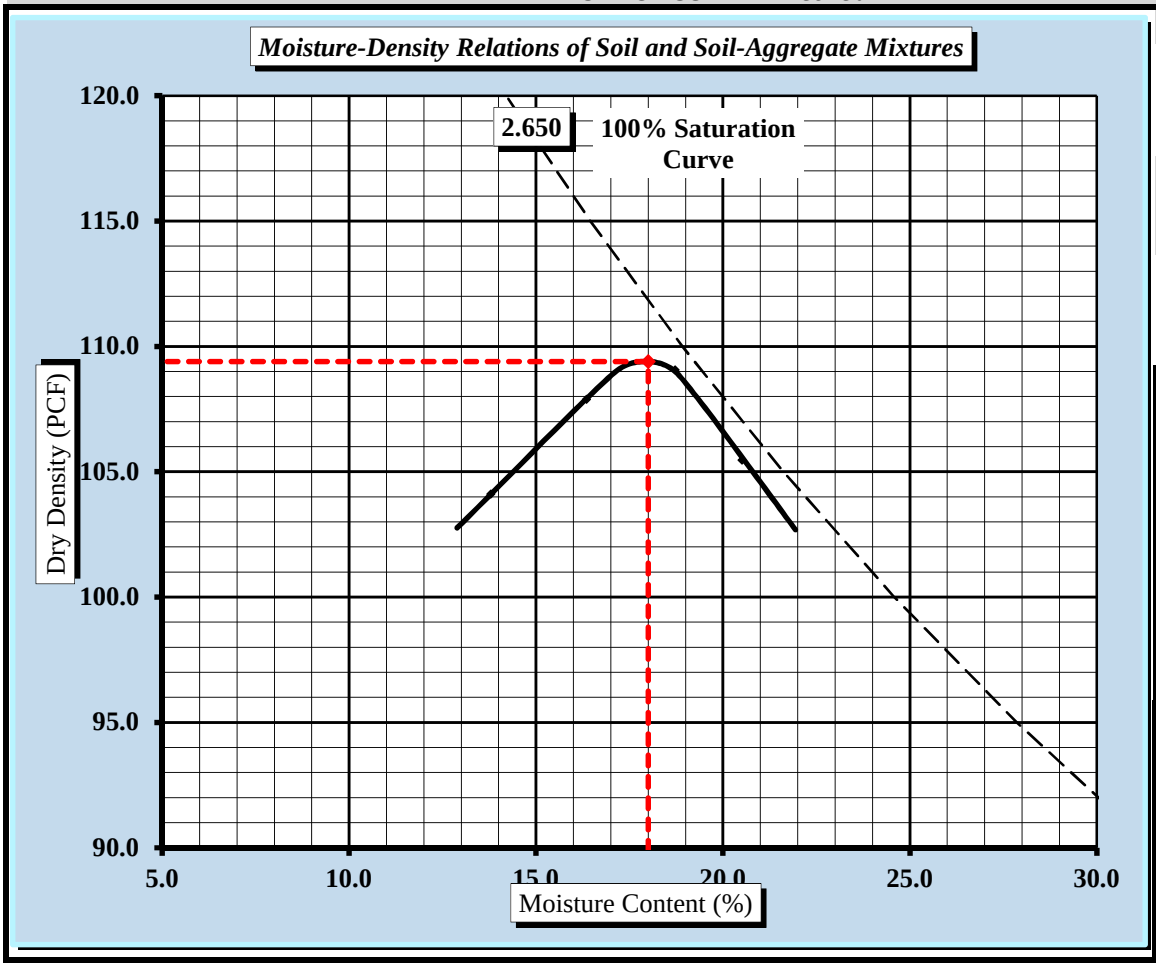
S&ME, Inc. Raleigh: 3201 Spring Forest Road, Raleigh, NC 27616

S&ME Project #:	6205-19-022	Report Date:	8/6/19
Project Name:	NC 127 from 1st Ave. SE to 2nd Ave. SE Turn Lanes	Test Date(s):	8/2 - 8/6/19
Client Name:	NCDOT Geo		
Client Address:	Raleigh, NC		

Boring #:	N/A	Sample #:	Bulk 1	Sample Date:	N/A
Location:	Roadway	Offset:	N/A	Depth (ft):	0.0-4.0
Sample Description:	Red Fine to Coarse Sandy Silty CLAY (A-7-6) (12)				

Maximum Dry Density 109.4 PCF. Optimum Moisture Content 18.0%

AASHTO T99 - - Method A



Soil Properties	
Natural Moisture Content	18.2%
Assumed Specific Gravity	2.650
Liquid Limit	47
Plastic Limit	23
Plastic Index	24
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	99.0%
#10	99.0%
#40	85.0%
#60	76.0%
#200	58.2%
Oversize Fraction	
Bulk Gravity	
% Moisture	
% Oversize	
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☐ Manual Rammer ☒ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations: ND=Not Determined.

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop

Mal Krajan, ET		Laboratory Manager	8/6/2019
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D698-2
Revision No. : 1
Revision Date: 07/25/17

MOISTURE - DENSITY REPORT

Quality Assurance

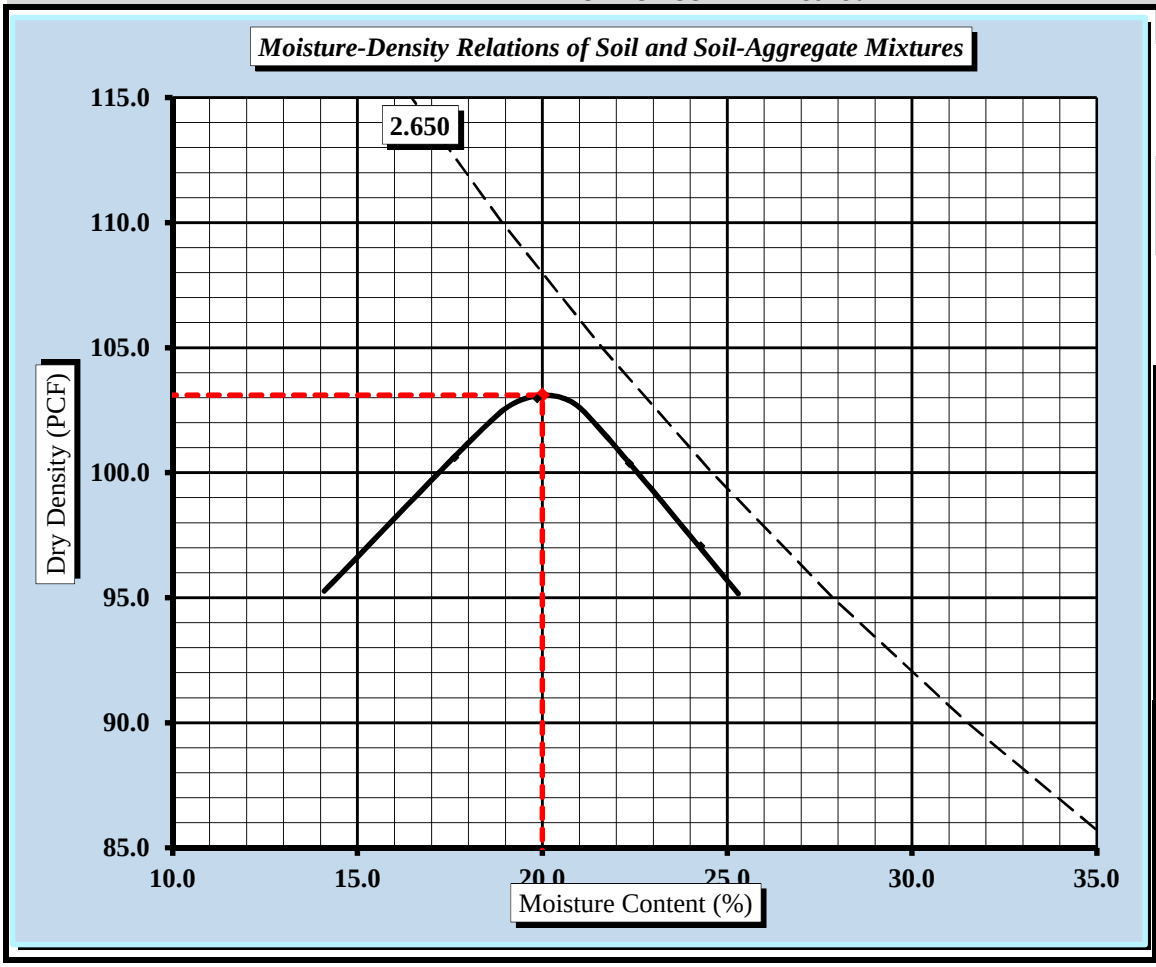
S&ME, Inc. Raleigh: 3201 Spring Forest Road, Raleigh, NC 27616

S&ME Project #:	6205-19-022	Report Date:	8/6/19
Project Name:	NC 127 from 1st Ave. SE to 2nd Ave. SE Turn Lanes	Test Date(s):	8/2 - 8/6/19
Client Name:	NCDOT Geo		
Client Address:	Raleigh, NC		

Boring #:	N/A	Sample #:	Bulk 2	Sample Date:	N/A
Location:	Roadway	Offset:	N/A	Depth (ft):	0.0-4.0
Sample Description:	Brown Coarse to Fine Sandy Silty CLAY (A-6) (9)				

Maximum Dry Density 103.1 PCF. Optimum Moisture Content 20.0%

AASHTO T99 - - Method A



Soil Properties	
Natural Moisture Content	16.2%
Assumed Specific Gravity	2.650
Liquid Limit	40
Plastic Limit	20
Plastic Index	20
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	98.0%
#10	98.0%
#40	85.0%
#60	76.0%
#200	57.7%

Oversize Fraction
Bulk Gravity
% Moisture
% Oversize
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☐ Manual Rammer ☒ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop

Mal Krajan, ET		Laboratory Manager	8/6/2019
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T 193

S&ME, Inc. Raleigh: 3201 Spring Forest Road, Raleigh, NC 27616

Project #:	6205-19-022	Report Date:	8/13/19
Project Name:	NC 127 from 1st Ave. SE to 2nd Ave. SE Turn Lanes	Test Date(s)	8/6 - 8/13/19
Client Name:	NCDOT Geo		
Client Address:	Raleigh, NC		

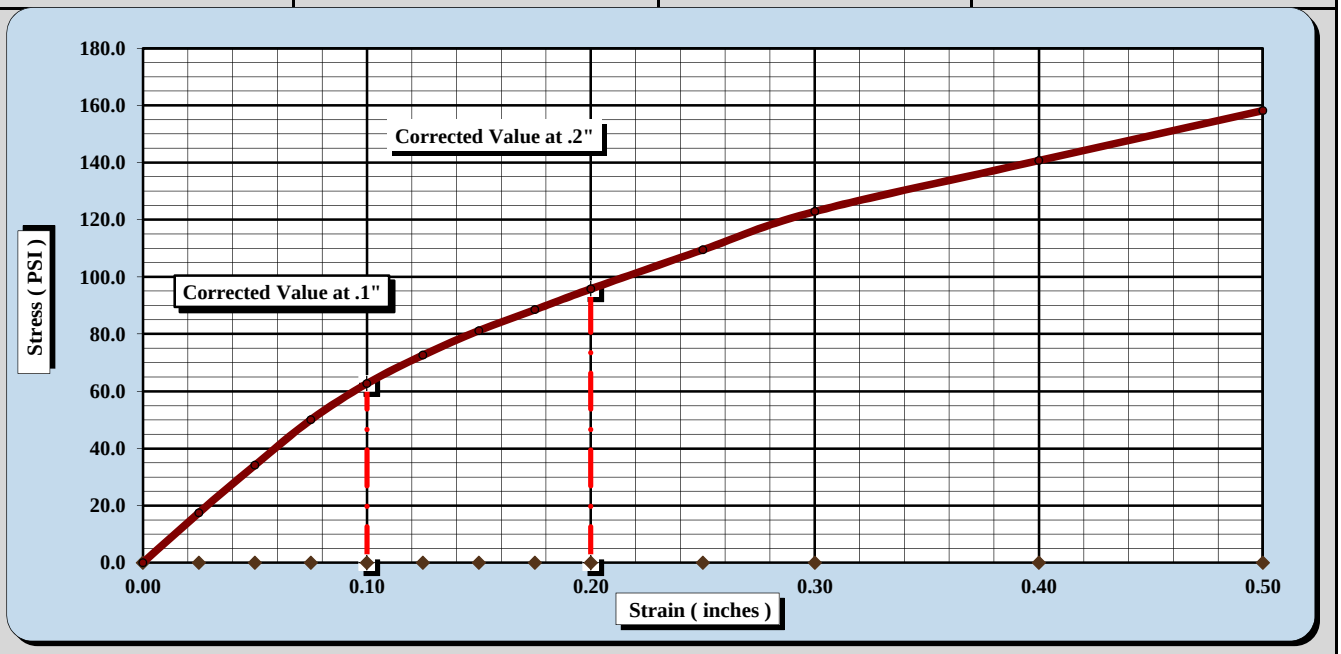
Boring #:	N/A	Sample #:	Bulk-1	Sample Date:	N/A
Station #:	Roadway	Offset:	N/A	Depth (ft):	0.0-4.0

Sample Description: Red Fine to Coarse Sandy Silty CLAY (A-7-6) (12)

AASHTO T99 *Method A* Maximum Dry Density: 109.4 PCF Optimum Moisture Content: 18.0%

Compaction Test performed on grading complying with CBR spec. % Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 6.3	CBR at 0.2 in. 6.4	CBR at 0.1 in. 6.3	CBR at 0.2 in. 6.4



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with AASHTO T 193, Section 5.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56	Final Dry Density (PCF)	108.8
Initial Dry Density (PCF)	109.0	Average Final Moisture Content	18.7%
Moisture Content of the Compacted Specimen	18.3%	Moisture Content (top 1" after soaking)	20.1%
Percent Compaction	99.6%	Percent Swell	0.4%

Soak Time:	96 hrs.	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.9
Liquid Limit	47	Plastic Index	24		

Notes/Deviations/References:

Test specimen compacted to 100% at optimum moisture.

Mal Krajan, ET		Laboratory Manager	8/13/2019
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T 193

S&ME, Inc. Raleigh: 3201 Spring Forest Road, Raleigh, NC 27616

Project #:	6205-19-022	Report Date:	8/13/19
Project Name:	NC 127 from 1st Ave. SE to 2nd Ave. SE Turn Lanes	Test Date(s)	8/6 - 8/13/19
Client Name:	NCDOT Geo		
Client Address:	Raleigh, NC		

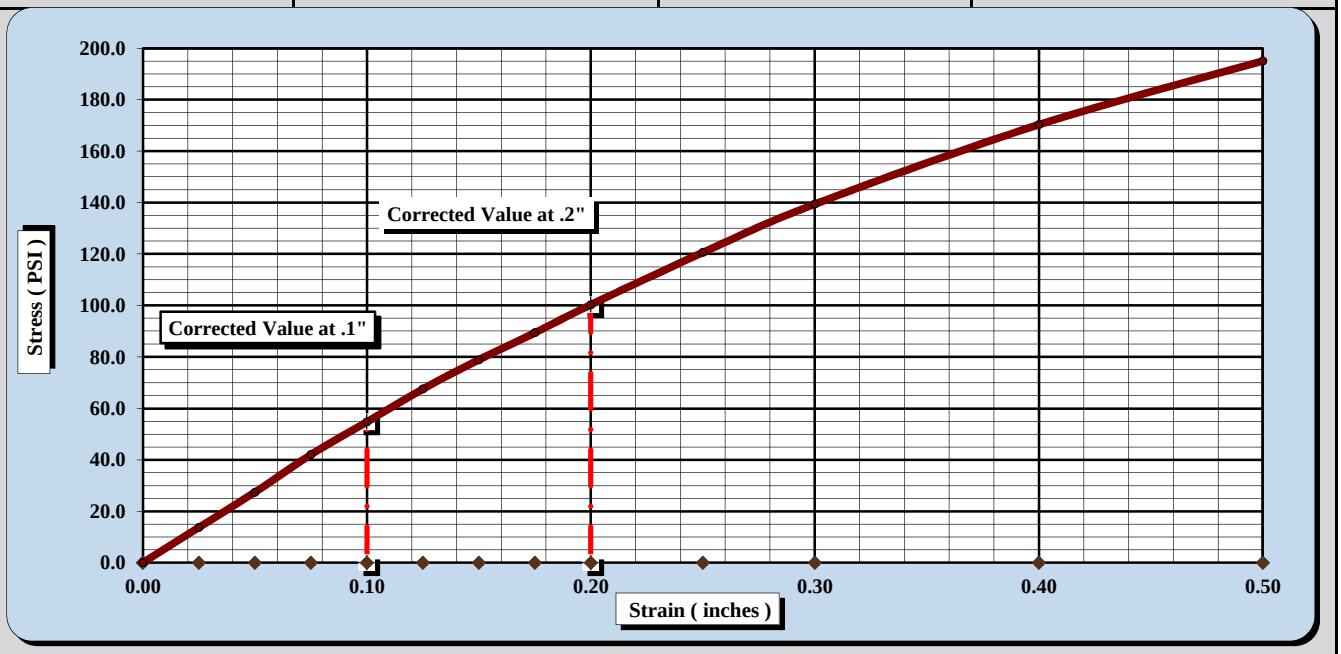
Boring #:	N/A	Sample #:	Bulk-2	Sample Date:	N/A
Station #:	Roadway	Offset:	N/A	Depth (ft):	0.0-4.0

Sample Description: Brown Coarse to Fine Sandy Silty CLAY (A-6) (9)

AASHTO T99 *Method A* Maximum Dry Density: 103.1 PCF Optimum Moisture Content: 20.0%

Compaction Test performed on grading complying with CBR spec. % Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 5.5	CBR at 0.2 in. 6.7	CBR at 0.1 in. 5.5	CBR at 0.2 in. 6.7



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with AASHTO T 193, Section 5.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56	Final Dry Density (PCF)	102.9
Initial Dry Density (PCF)	102.9	Average Final Moisture Content	22.1%
Moisture Content of the Compacted Specimen	20.5%	Moisture Content (top 1" after soaking)	24.3%
Percent Compaction	99.8%	Percent Swell	0.2%

Soak Time:	96 hrs.	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.9
Liquid Limit	47	Plastic Index	24		

Notes/Deviations/References:

Test specimen compacted to 100% at optimum moisture.

Mal Krajan, ET		Laboratory Manager	8/13/2019
Technical Responsibility	*Signature*	*Position*	*Date*

PROJECT NO.	50189.1.1
PROJECT ID	U-5777
ROUTE	NC 127
COUNTY	CATAWBA

GEOLOGIST	J. B. BARFIELD
GEOTECHS	S&ME

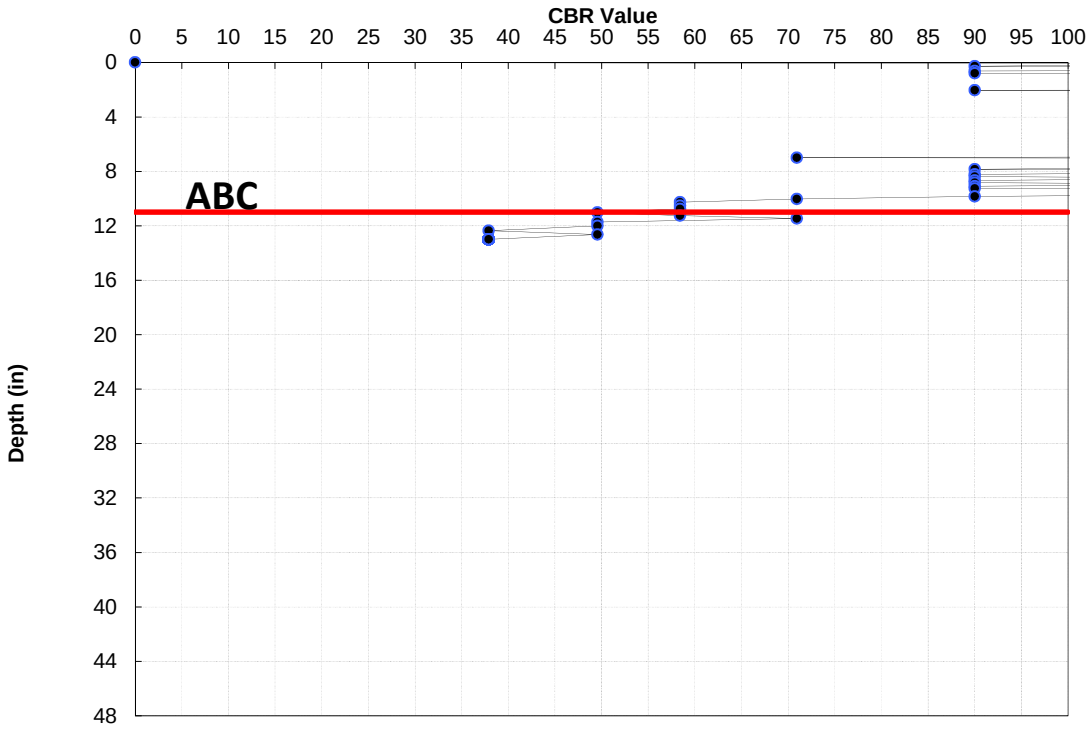
FILE	u5777 DCP

L - 13+85 SB OSL 1

Datum = ABC
RAW
CUT
07/30/19

Interval 0.0 to 11.0	
# of Values	119
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	49.6

Interval 11.0 to 13.0	
# of Values	7
Avg CBR	50.6
Wghtd Avg.	48.5
Max CBR	70.9
Min CBR	37.9

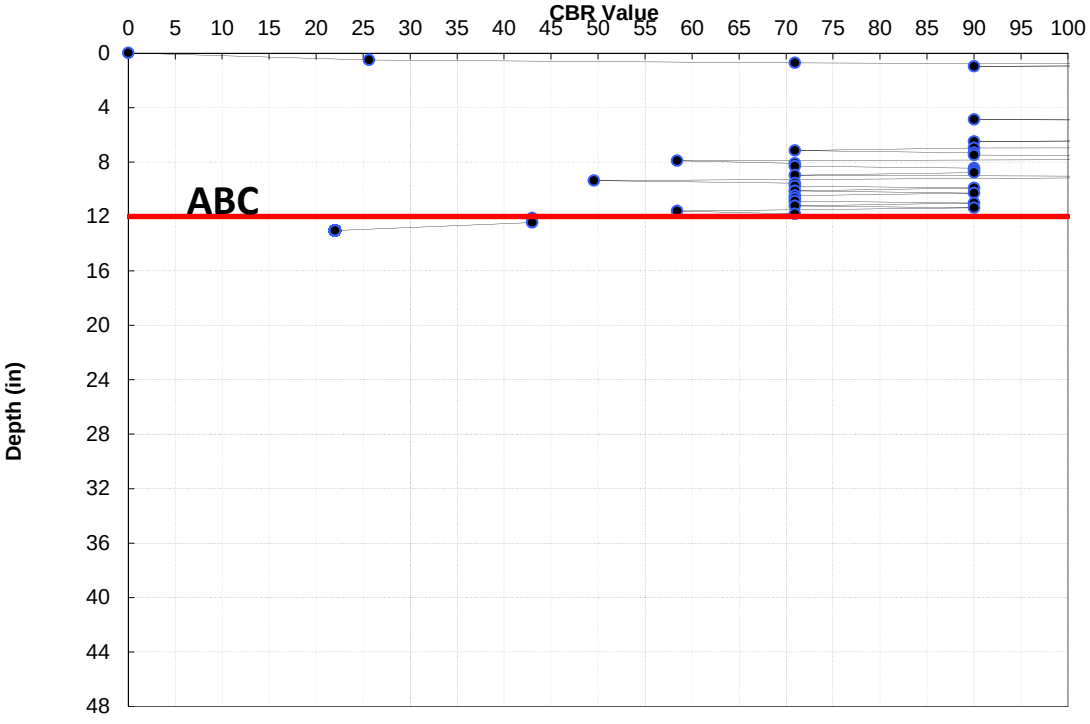


L - 13+85 SB ISL 2

Datum = ABC
RAW
CUT
07/30/19

Interval 0.0 to 12.1	
# of Values	101
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	25.6

Interval 12.1 to 13.0	
# of Values	2
Avg CBR	32.5
Wghtd Avg.	29.2
Max CBR	43.0
Min CBR	22.0



PROJECT NO.	50189.1.1
PROJECT ID	U-5777
ROUTE	NC 127
COUNTY	CATAWBA

GEOLOGIST	J. B. BARFIELD
GEOTECHS	S&ME

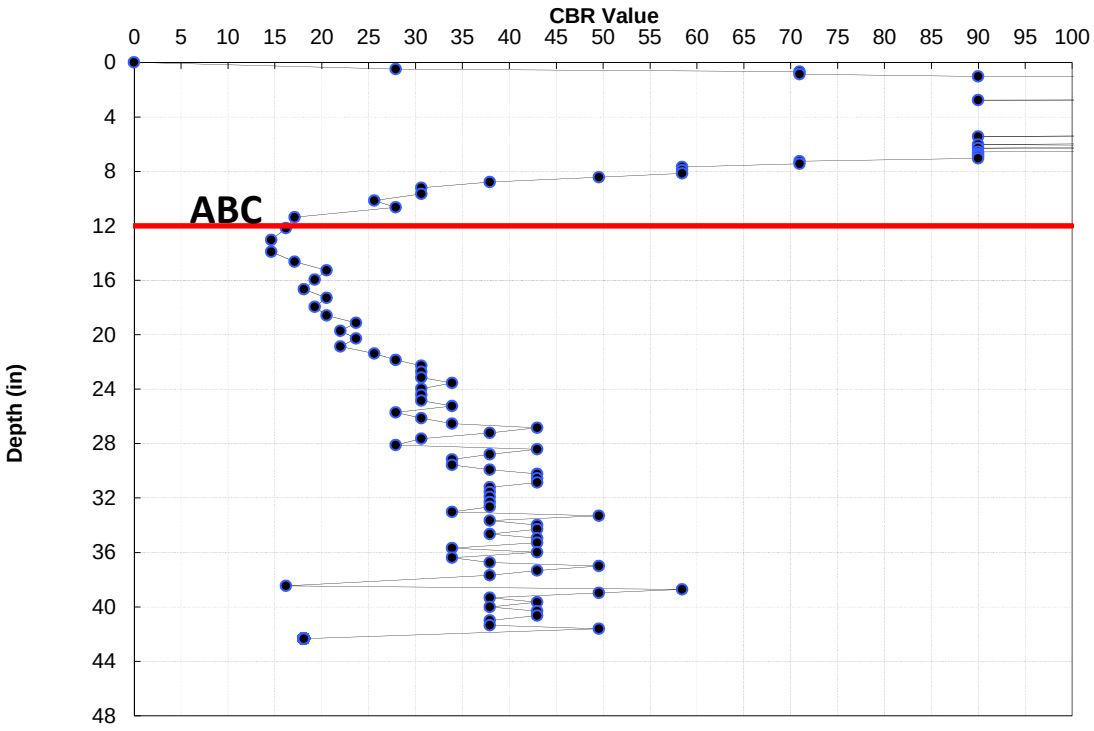
FILE	u5777 DCP

L - 16+80 NB OSL 3

Datum = ABC
RAW
CUT
07/30/19

Interval 0.0 to 12.2	
# of Values	75
Avg CBR	100+
Wghtd Avg.	87.2
Max CBR	100+
Min CBR	16.2

Interval 12.2 to 42.3	
# of Values	70
Avg CBR	34.0
Wghtd Avg.	30.8
Max CBR	58.4
Min CBR	14.6

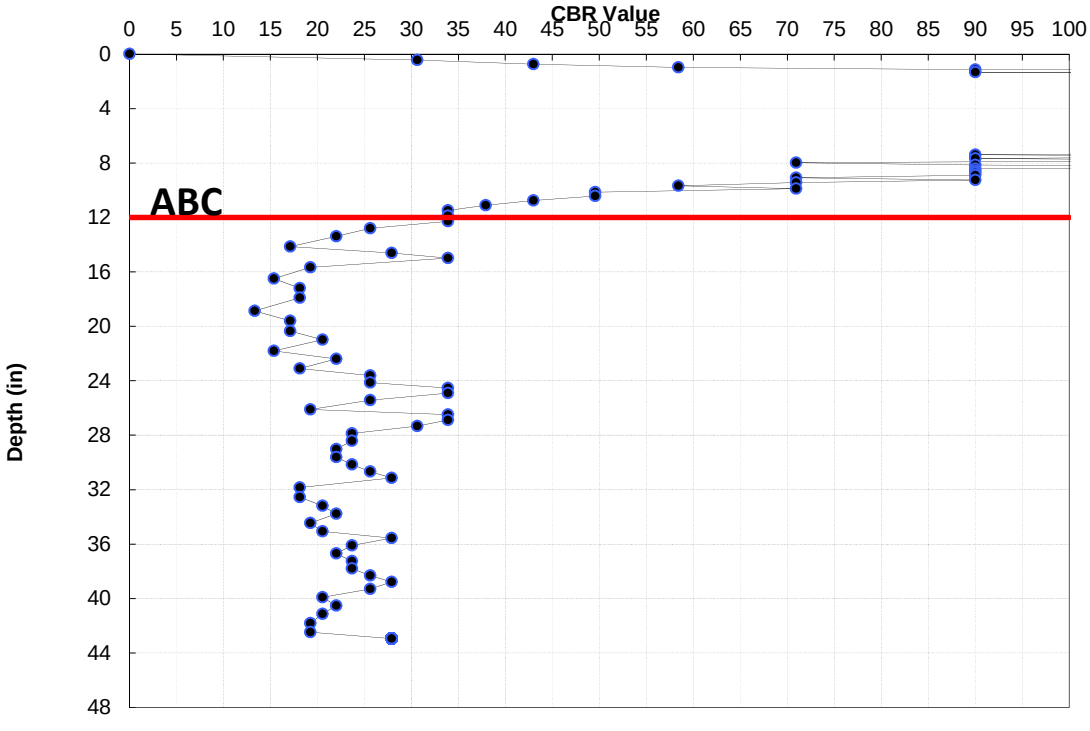


L - 16+80 NB ISL 4

Datum = ABC
RAW
CUT
07/30/19

Interval 0.0 to 11.9	
# of Values	99
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	30.6

Interval 11.9 to 43.0	
# of Values	53
Avg CBR	23.3
Wghtd Avg.	22.2
Max CBR	33.9
Min CBR	13.3



PROJECT NO.	50189.1.1
PROJECT ID	U-5777
ROUTE	NC 127
COUNTY	CATAWBA

GEOLOGIST	J. B. BARFIELD
GEOTECHS	S&ME

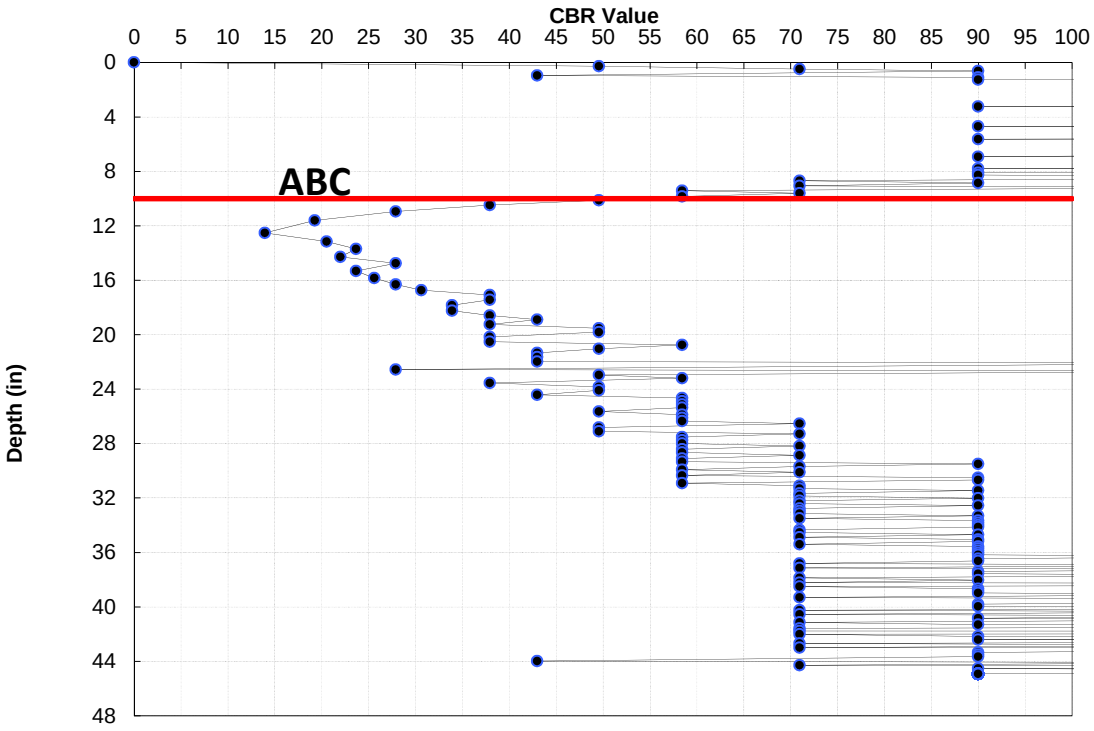
FILE	u5777 DCP

L - 20+00 SB RTL 5

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 10.1	
# of Values	101
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	43.0

Interval 10.1 to 44.9	
# of Values	156
Avg CBR	82.6
Wghtd Avg.	62.1
Max CBR	100+
Min CBR	13.9

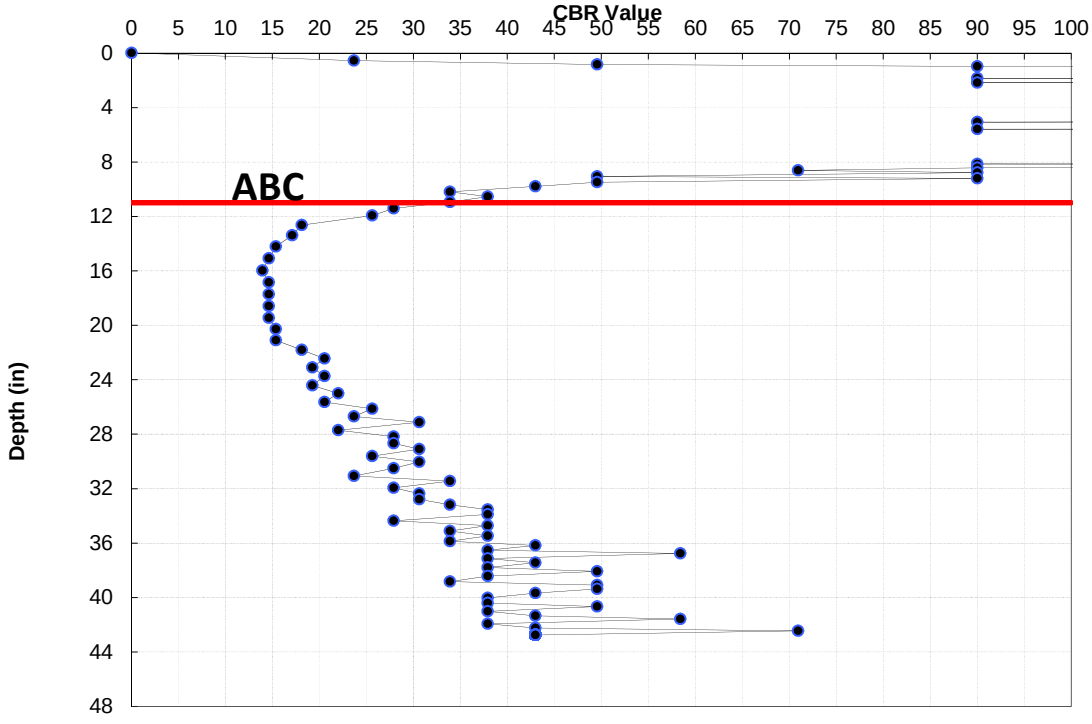


L - 20+00 SB OSL 6

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 10.9	
# of Values	96
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	23.7

Interval 10.9 to 42.8	
# of Values	65
Avg CBR	31.4
Wghtd Avg.	26.9
Max CBR	70.9
Min CBR	13.9



PROJECT NO.	50189.1.1
PROJECT ID	U-5777
ROUTE	NC 127
COUNTY	CATAWBA

GEOLOGIST	J. B. BARFIELD
GEOTECHS	S&ME

FILE	u5777 DCP

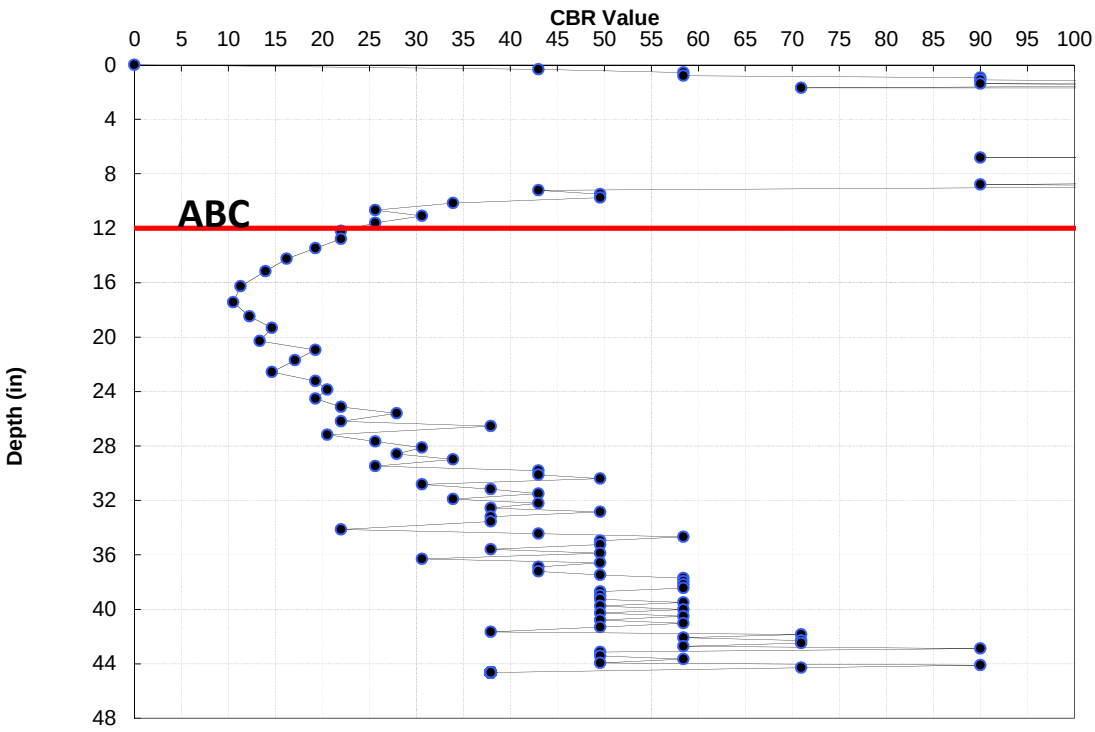
7

L - 20+00 SB ISL

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 12.2	
# of Values	115
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	22.0

Interval 12.2 to 44.6	
# of Values	78
Avg CBR	41.1
Wghtd Avg.	32.0
Max CBR	90.0
Min CBR	10.5



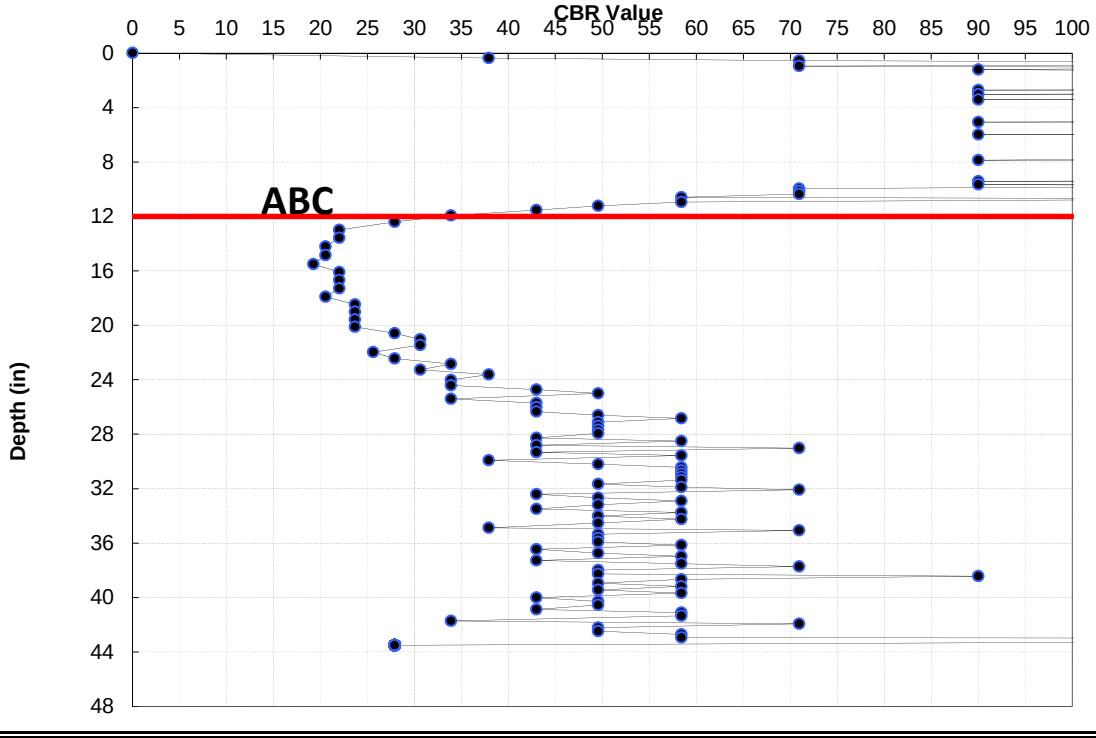
8

L - 21+95 SB LTL

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 11.9	
# of Values	109
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	22.0

Interval 11.9 to 43.5	
# of Values	95
Avg CBR	47.0
Wghtd Avg.	40.6
Max CBR	100+
Min CBR	19.2



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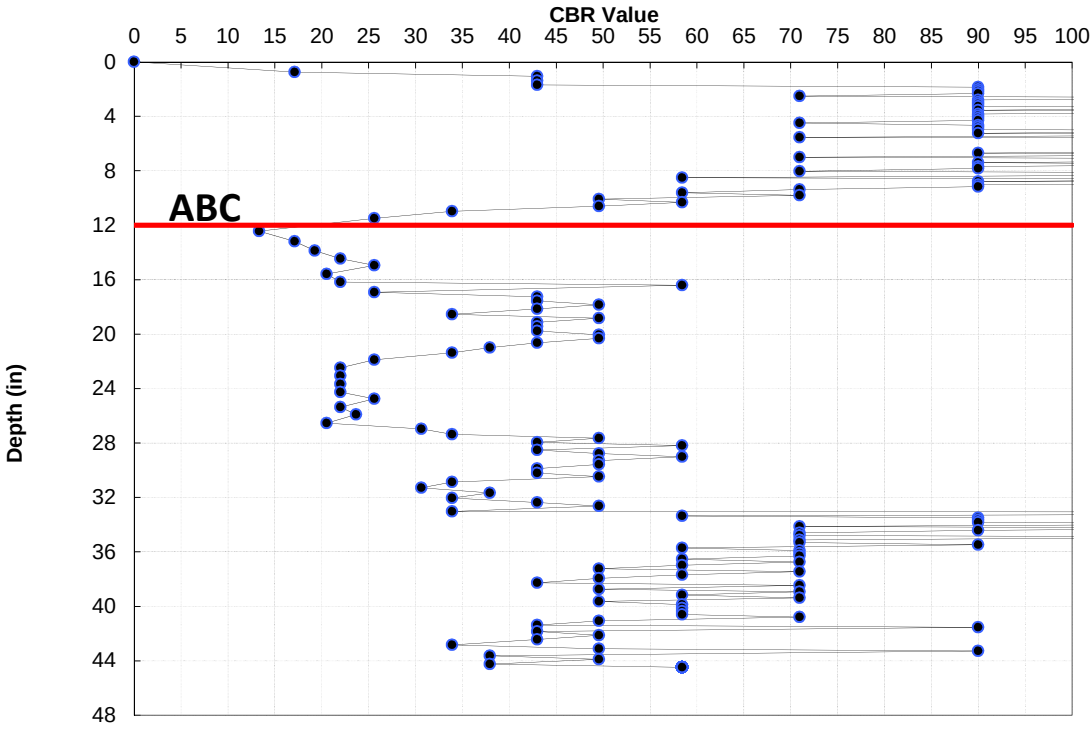
L - 21+95 NB OSL

9

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 12.4	
# of Values	65
Avg CBR	92.9
Wghtd Avg.	73.1
Max CBR	100+
Min CBR	13.3

Interval 12.4 to 44.5	
# of Values	102
Avg CBR	52.8
Wghtd Avg.	43.1
Max CBR	100+
Min CBR	17.1



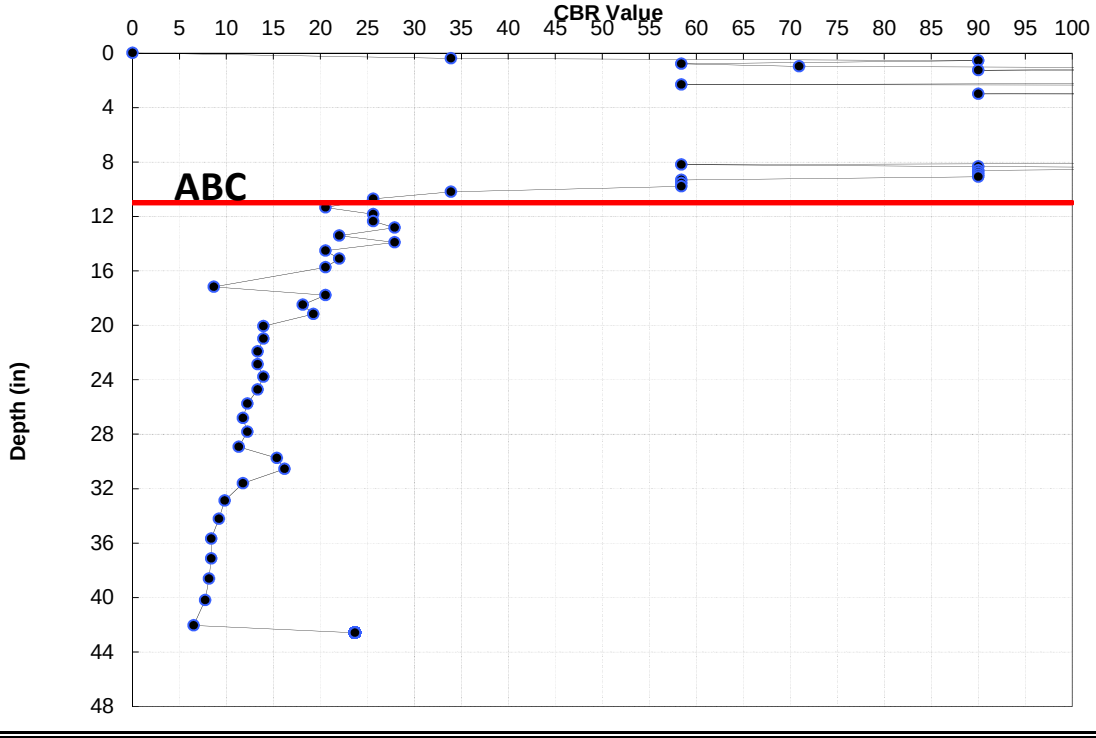
L - 21+95 NB ISL

10

Datum = ABC
RAW
GRADE
7/30/2019

Interval 0.0 to 10.7	
# of Values	96
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	25.6

Interval 10.7 to 42.6	
# of Values	34
Avg CBR	15.7
Wghtd Avg.	13.4
Max CBR	27.9
Min CBR	6.5



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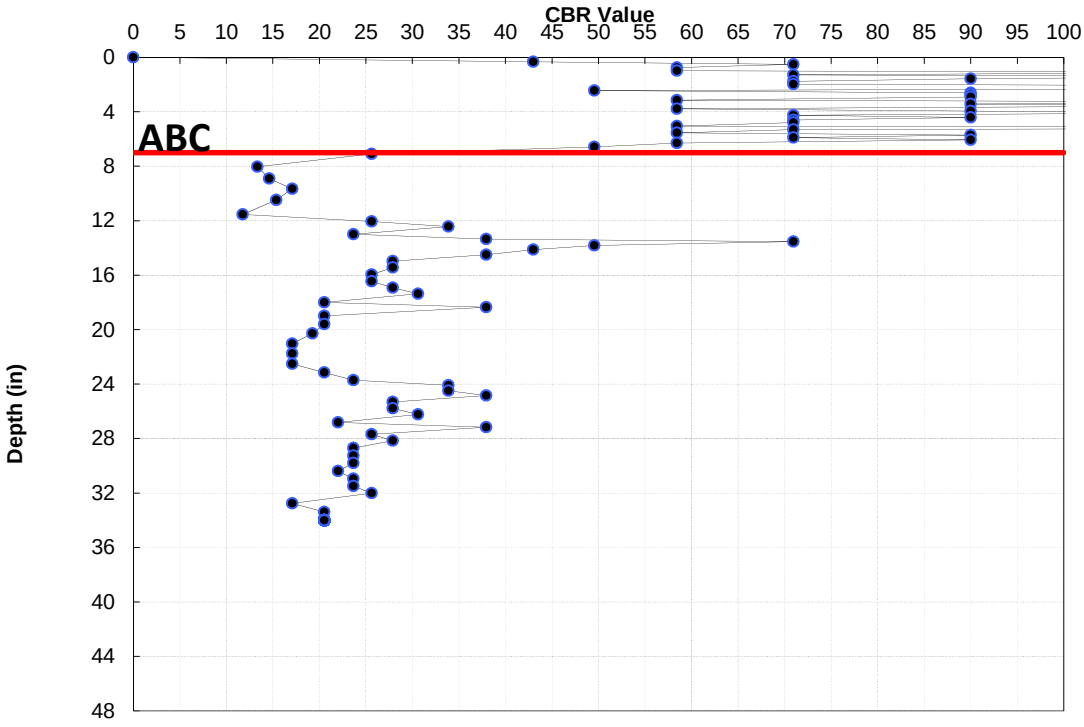
L - 23+30 NB RTL 11

Datum = ABC
RAW
CUT
07/30/19

Interval 0.0 to 7.1	
# of Values	37
Avg CBR	84.7
Wghtd Avg.	73.0
Max CBR	100+
Min CBR	25.6

Interval 7.1 to 34.0	
# of Values	49
Avg CBR	26.6
Wghtd Avg.	23.7
Max CBR	70.9
Min CBR	11.8

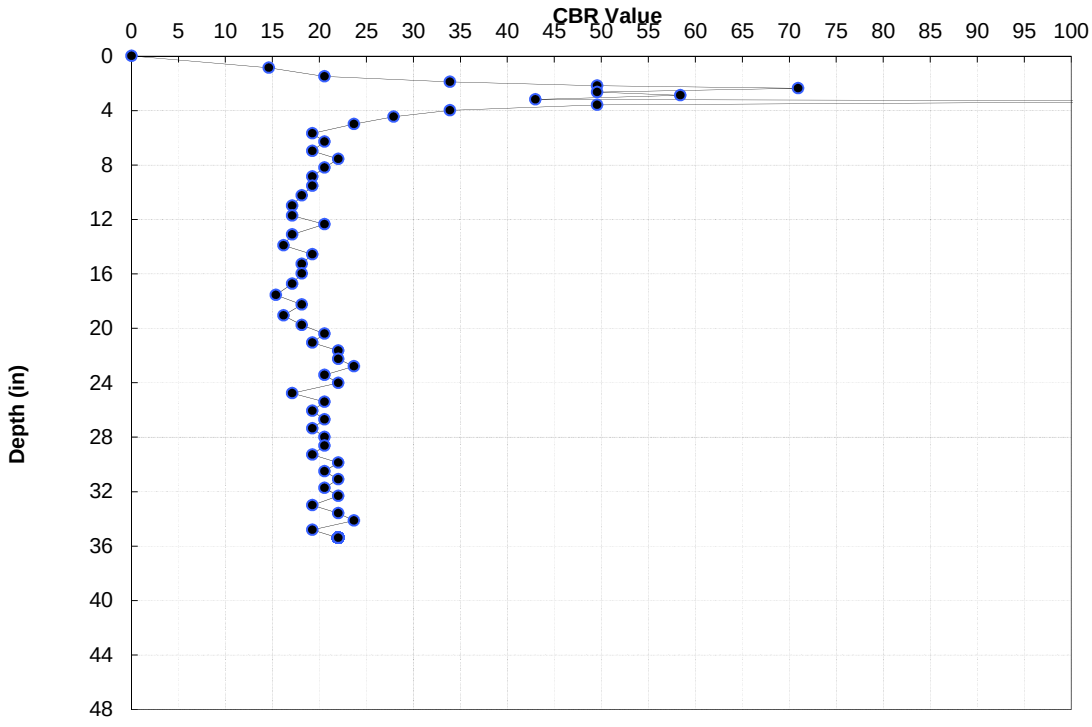


Y - 14+20 EB LN GUTTER 12

Datum = SG
RAW
CUT
07/30/19

Interval 0.0 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 0.0 to 35.4	
# of Values	59
Avg CBR	25.5
Wghtd Avg.	21.6
Max CBR	100+
Min CBR	14.6



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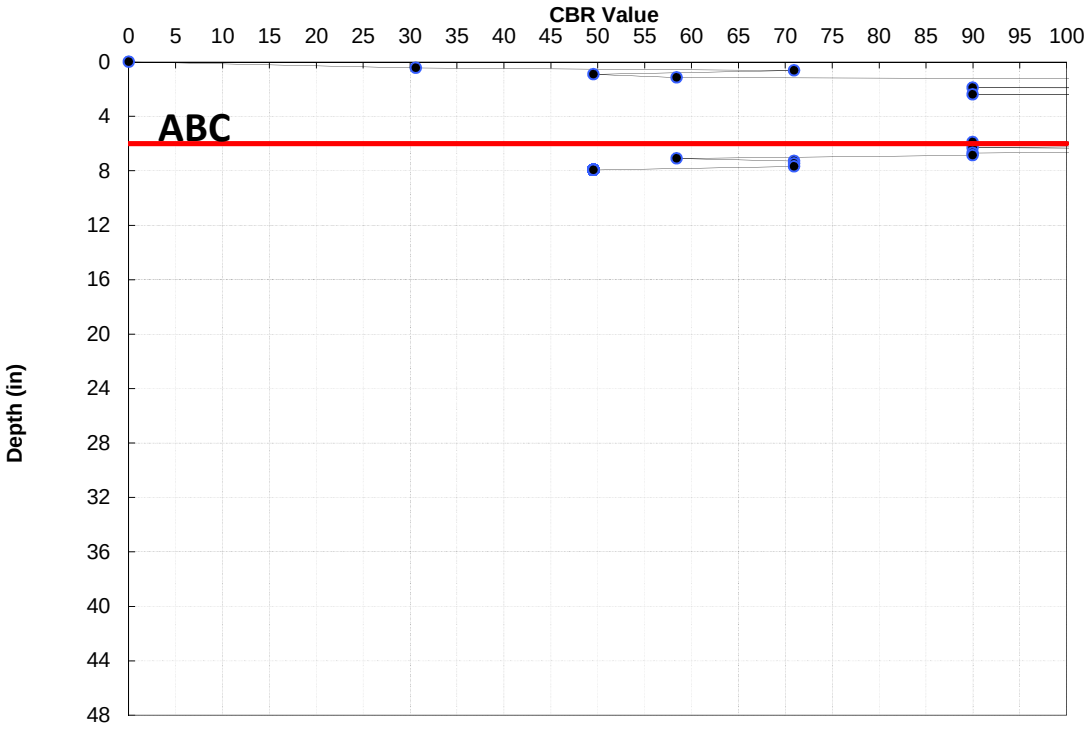
Y - 14+20 EB LN OWP

13

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 6.0	
# of Values	67
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	30.6

Interval 6.0 to 8.0	
# of Values	11
Avg CBR	87.1
Wghtd Avg.	80.2
Max CBR	100+
Min CBR	49.6



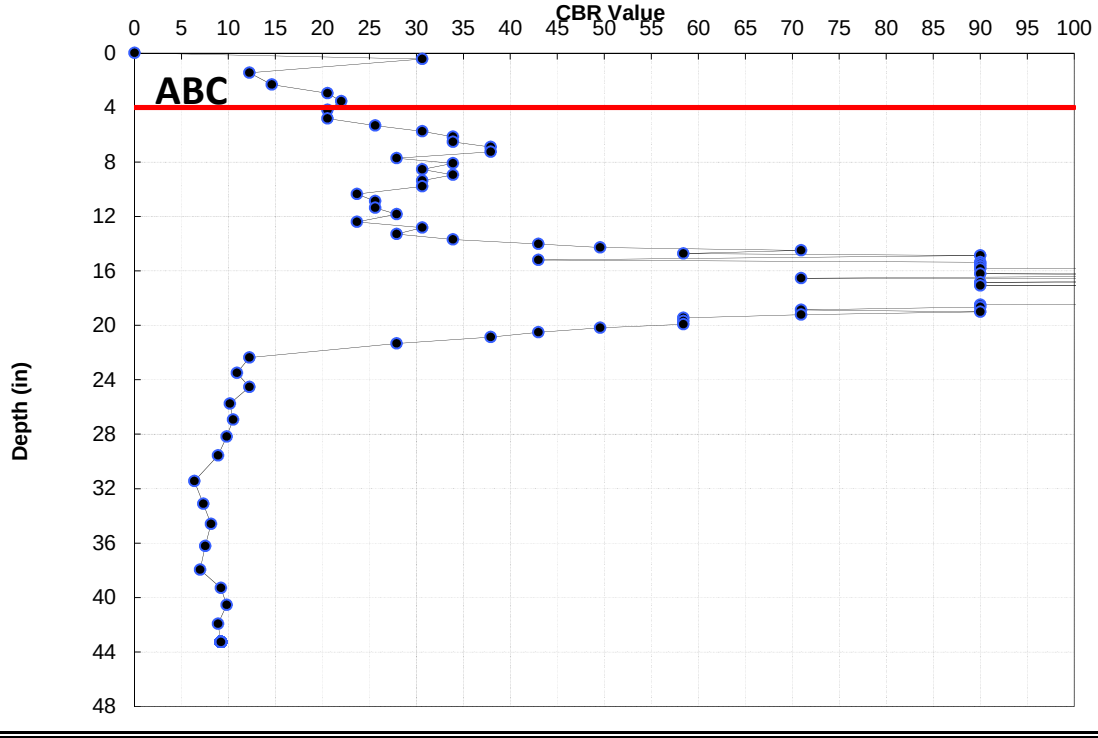
Y1 - 11+15 WB RTL

14

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 4.2	
# of Values	6
Avg CBR	20.1
Wghtd Avg.	18.5
Max CBR	30.6
Min CBR	12.2

Interval 4.2 to 43.3	
# of Values	83
Avg CBR	74.2
Wghtd Avg.	28.0
Max CBR	100+
Min CBR	6.4



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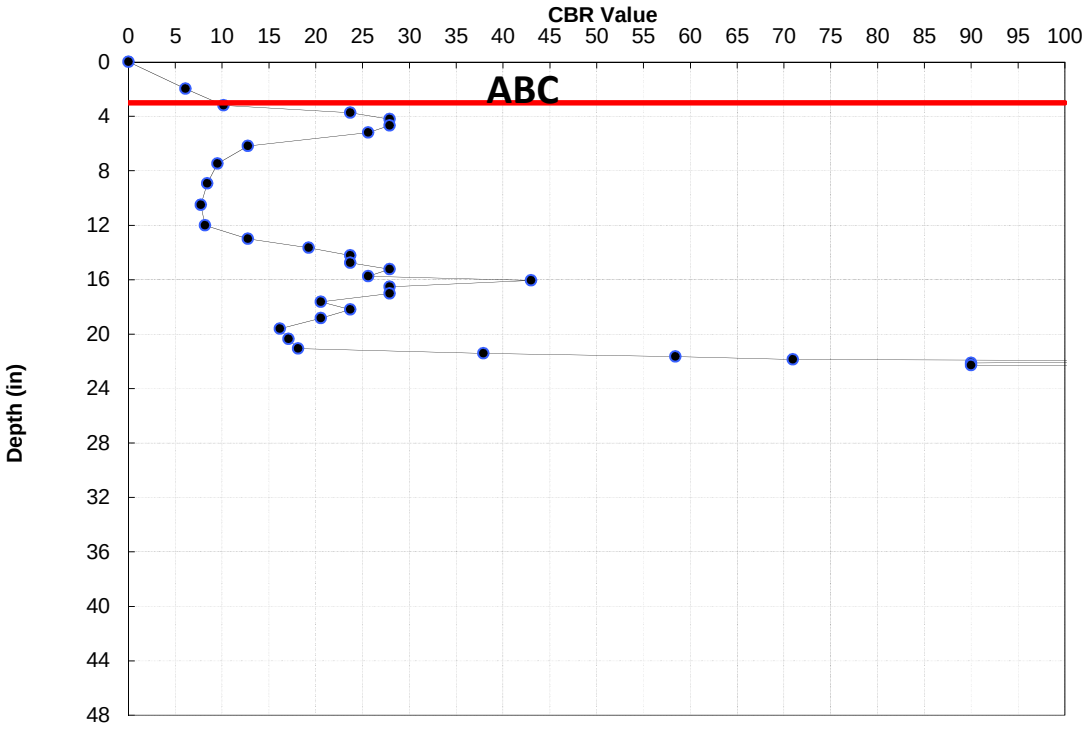
15

Y1 - 13+25 WB LT LN

Datum = ABC
RAW
GRADE
07/30/19

Interval 0.0 to 3.2	
# of Values	2
Avg CBR	8.1
Wghtd Avg.	7.6
Max CBR	10.1
Min CBR	6.1

Interval 3.2 to 22.4	
# of Values	32
Avg CBR	46.4
Wghtd Avg.	21.6
Max CBR	100+
Min CBR	7.7



PAVEMENT CORE EVALUATION

50189.1.1 (U-5777) Catawba County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-L-	13+85 SB OSL	11.00	1.50	S	1	
	4" Asphalt		2.50	I	1	Minor oxidation
-L-	13+85 SB ISL	12.00	4.25	S	3	minor oxidation in 3rd lift, some small voids, sandy matrix
	6.25" Asphalt		2.00	I	1	minor oxidation, some small voids
-L-	16+80 NB OSL	12.00	2.00	S	2	2nd lift has sandy matrix and very fine aggregate, 2" top-down crack
	5.25" Asphalt		3.25	I	1	minor oxidation, low severity stripping in bottom 0.75"
-L-	16+80 NB ISL	12.00	2.75	S	2	2nd lift has sandy matrix and very fine aggregate
	4.75" Asphalt		2.00	I	1	minor oxidation, low severity stripping in bottom 0.75"
-L-	20+00 SB RTL	10.00	1.75	S	2	
	2.75" Asphalt		1.00	I	1	
-L-	20+00 SB OSL	11.00	2.25	S	2	2nd lift minor oxidation
	4.5" Asphalt		2.25	I	1	full-depth crack
-L-	20+00 SB ISL	12.00	2.00	S	1	
	3.5" Asphalt		1.50	I	1	
-L-	21+95 SB LTL	12.00	2.25	S	2	2nd lift minor oxidation, low severity stripping
	3.75" Asphalt		1.50	I	1	minor oxidation, some Flat and Elongated Aggregate (FEA)
-L-	21+95 NB OSL	12.00	2.00	S	1	
	3" Asphalt		1.00	I	1	
-L-	21+95 NB ISL	11.00	2.25	S	1	
	4.25" Asphalt		2.00	I	1	
-L-	23+30 NB RTL	7.00	2.25	S	1	
	13.25" Asphalt		11.00	B	2	
-Y-	14+20 EB LN Gutter	-	1.50	S	1	delaminated, minor oxidation, cored to determine overlay thickness in gutter pan
	1.50" Asphalt		7.25	C	1	Concrete Gutter
-Y-	14+20 EB LN	6.00	3.25	S	3	3rd lift sandy matrix
	5.5" Aspahlt		2.25	I	1	few small voids
-Y1-	11+15 WB RTL	4.00	1.50	S	1	
	4.5" Asphalt		3.00	I	1	
-Y1-	13+25 WB LN	3.00	2.00	S	1	
	10" Asphalt		2.50	I	1	high severity stripping with 5.5" of core missing, full-depth crack, FEA