STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

November 16, 2022

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

Tatia L. White, P.E., PLS
State Roadway Design Engineer

Sean M. Epperson, P.E.
Division Project Development Engineer

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

DS

DocuSigned by:
John Pilipchuk
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STATE PROJECT: 46891.1.1 (U-5956)

COUNTY: Cabarrus

DESCRIPTION: Realign Union Cemetery Road to Intersect US 29 at Rock Hill Church Road and Construct Improvements Along US 29 from 0.6 Mile West of Rock Hill Church Road to just East of Rock Hill Church Road

SUBJECT: Pavement and Subgrade Investigation Report

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

The proposed work consists of realigning Union Cemetery Road on New alignment and upgrades to US 29 and Cabarrus Ave.

The subgrade beneath the existing roadway primarily consists of silty sand (A-2-4), sandy silt (A-4), sandy clay (A-6), and silty clays (A-7-6).

Anticipated borrow will likely consist of soil types listed above.

The length of this project is 0.861 miles.

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Website: www.ncdot.gov

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

AREAS OF SPECIAL GEOTECHNICAL INTEREST

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

LINE	STATION AND OFFSET	PI
-Y1-	4+74 LTL (RT)	26
-Y1-	51+16 LTLT (LT)	27
-L-	17+33 ASPHALT LOT	31
-L-	51+25 RT LN	35
-L-	50+46 28’ RT (BULK 2)	31

B. Trapped Water within the Pavement:
No trapped water was observed on site.

C. Soils with a High Moisture Content:
In-situ moisture content exceeds the plastic limit (PL) at the following locations.

LINE	STATION AND OFFSET	MOISTURE CONTENT
-Y1-	4+74 LTL RT	28.5%
-Y1-	26+62 LT ISL	34.3%
-Y1-	29+24 RTL (RT)	21.6%
-Y1-	35+27 LTL (RT)	23.2%
-Y1-	36+92 LT OSL	27.5%
-Y1-	36+92 ISL	20.6%
-Y1-	36+92 LTL (LT)	21.4%
-Y1-	49+29 RT OSL	22.8%
-Y1-	51+16 LTL (LT)	22.3%
-L-	17+13 ASPHALT LOT	27.6%
-L-	51+25 RT LN	30.1%

JLP/MJA/JBB

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DocuSigned by:
Jeffrey Brian Barfield 11/16/2022
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5956	1	43

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY CABARRUS

PROJECT DESCRIPTION US 29 – REALIGN UNION CEMETERY RD. TO INTERSECT US 29 AT ROCK HILL CHURCH RD.

PAVEMENT AND SUBGRADE INVESTIGATION

REFERENCE: U-5956

PROJECT: 46891

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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. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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SUBMITTED BY CG2, PLLC.

DATE OCTOBER 2022

Prepared in the Office of:

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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5956	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											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#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			
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
GRAIN SIZE 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 DPT 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
- [ ] CME-55
- [X] CME-550X
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 4" SOLID STEM AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT (4-INCH DIAMETER)
- [ ] _____

HAMMER TYPE:
- [ ] AUTOMATIC
- [ ] MANUAL

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

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [X] DUAL MASS DCP

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: N/A

ELEVATION: FEET

NOTES:
ROADWAY DESIGN FILES PROVIDED BY NCDOT

- PAVEMENT CORE WITH DCP
- HAND AUGER BORING WITH DCP (GRASS SHOULDER)
- BULK SAMPLE

DATE: 8-15-14

Tip No. U-5956| WBS No. 46891.1.1| Cabarrus County

ABBREVIATIONS

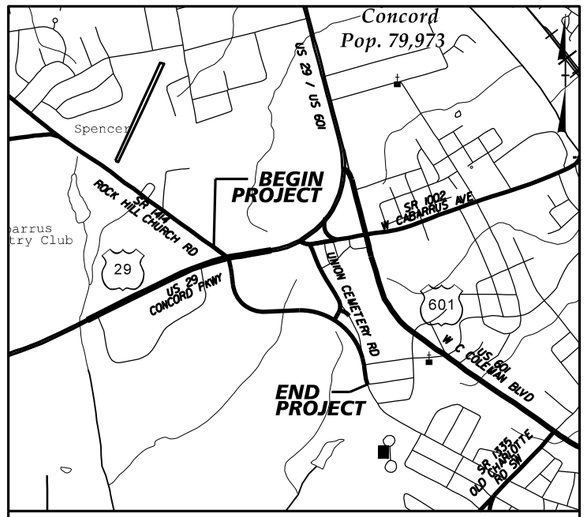
RT LN = Right Lane
LT LN = Left Lane
OSL = Outside Lane
ISL = Inside Lane
OSML = Outside Mid-Lane
ISML = Inside Mid-Lane
PS = Paved Shoulder
LTL = Left Turn Lane
RTL = Right Turn Lane
MID = Middle Lane
CTL = Center Turn Lane
ISWP = Inside Wheel Path
OSWP = Outside Wheel Path
PS = Paved Shoulder
FW = From White Line
FY = From Yellow Line
RT = Right
LT = Left
(I) = Inside
(O) = Outside
BOC = Back of Curb
C&G = Curb and Gutter
EOP = Edge of Pavement

CR = Crown
S = Super
C = Cut
F = Fill
DCP = Dynamic Cone Penetrometer
M = Moist
W = Wet
N/A = Not Observed
NSR = No Sample Recovered
S- = Soil Grab Sample
Ref- = Soil Reference Sample
SS- = Split Spoon Sample
RE = Roadway Embankment
F. = Fine
Cse. = Coarse
ABC = Aggregate Base Course
STBC = Soil Type Base Course
CSS = Cement Stabilized Soil
SG = Subgrade
AF= Artificial Fill
S# = Grass Shoulder Boring with DCP
BGS = Below Ground Surface
WOD = Weight of DCP

TIP PROJECT: U-5956

PROJECT: 46891

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

Note: Not to Scale

ROW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

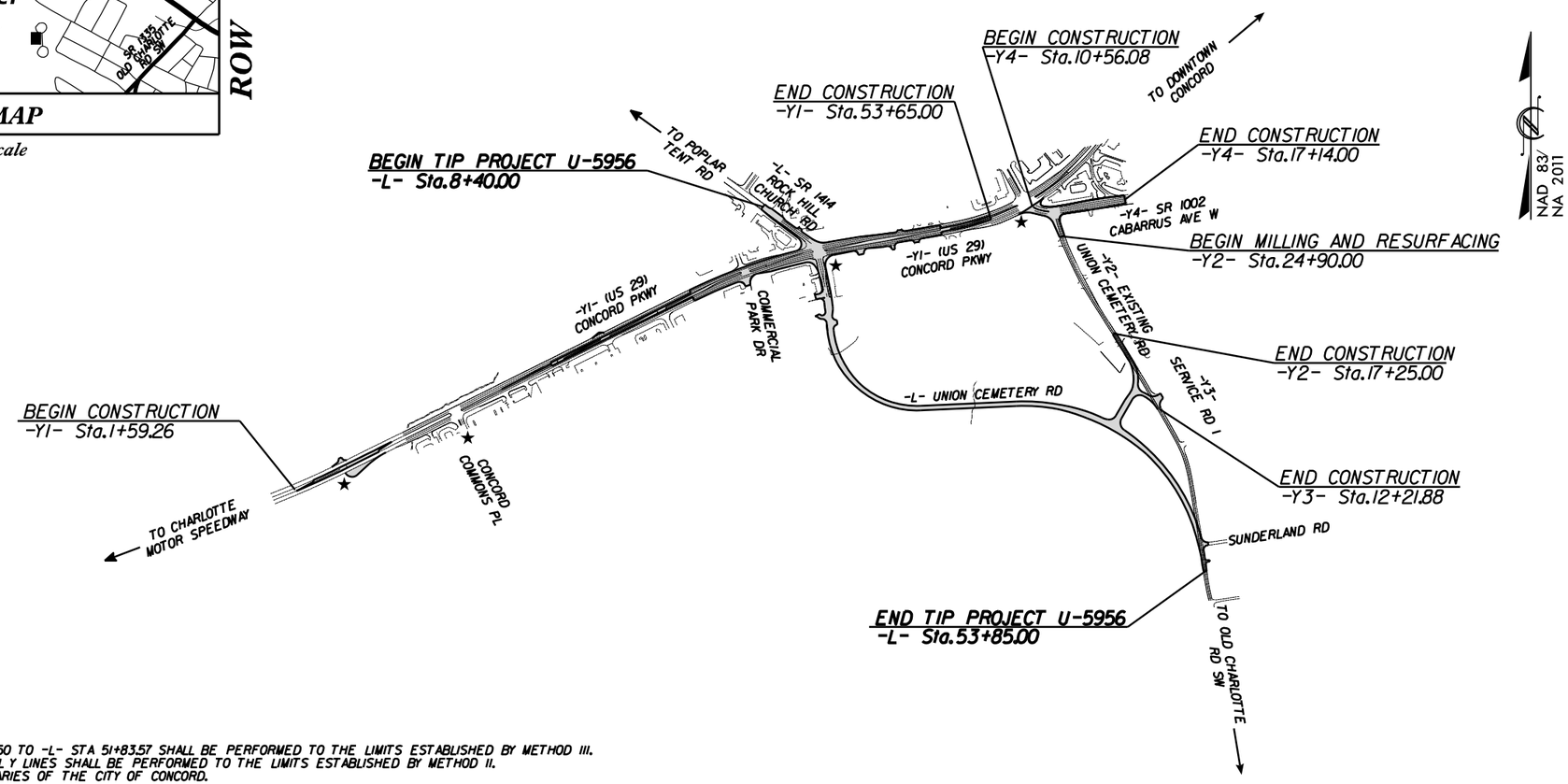
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5956	3	43

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46891.1.1		PE
46891.2.1		UTILITIES
46891.2.2		R/W

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: REALIGN UNION CEMETERY ROAD TO INTERSECT US 29 AT ROCK HILL CHURCH ROAD AND CONSTRUCT IMPROVEMENTS ALONG US 29 FROM 0.6 MILE WEST OF ROCK HILL CHURCH ROAD TO JUST EAST OF ROCK HILL CHURCH ROAD

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND SIGNING



★ TRAFFIC SIGNAL
CLEARING ON THIS PROJECT FROM -L- STA 18+50 TO -L- STA 51+83.57 SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
CLEARING FOR THE REMAINDER OF -L- AND ALL Y LINES SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CONCORD.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

AADT 2020	=	14,900
AADT 2040	=	18,400
K	=	9%
D	=	55%
T	=	8%*
V	=	40 MPH

CLASSIFICATION:
URBAN COLLECTOR
* 1% TTST 7% DUAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5956	=	0.861 MILES
TOTAL LENGTH TIP PROJECT U-5956	=	0.861 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn
NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 17, 2022

LETTING DATE:
NOVEMBER 17, 2023

JASON D. LAWING, P.E.
PROJECT ENGINEER

ANDREW J. WEEKS, E.I.
PROJECT DESIGN ENGINEER

SEAN EPPERSON, P.E.
PROJECT ENGINEER
NCDOT HIGHWAY DIVISION 10

HYDRAULICS ENGINEER
SIGNATURE: P.E.

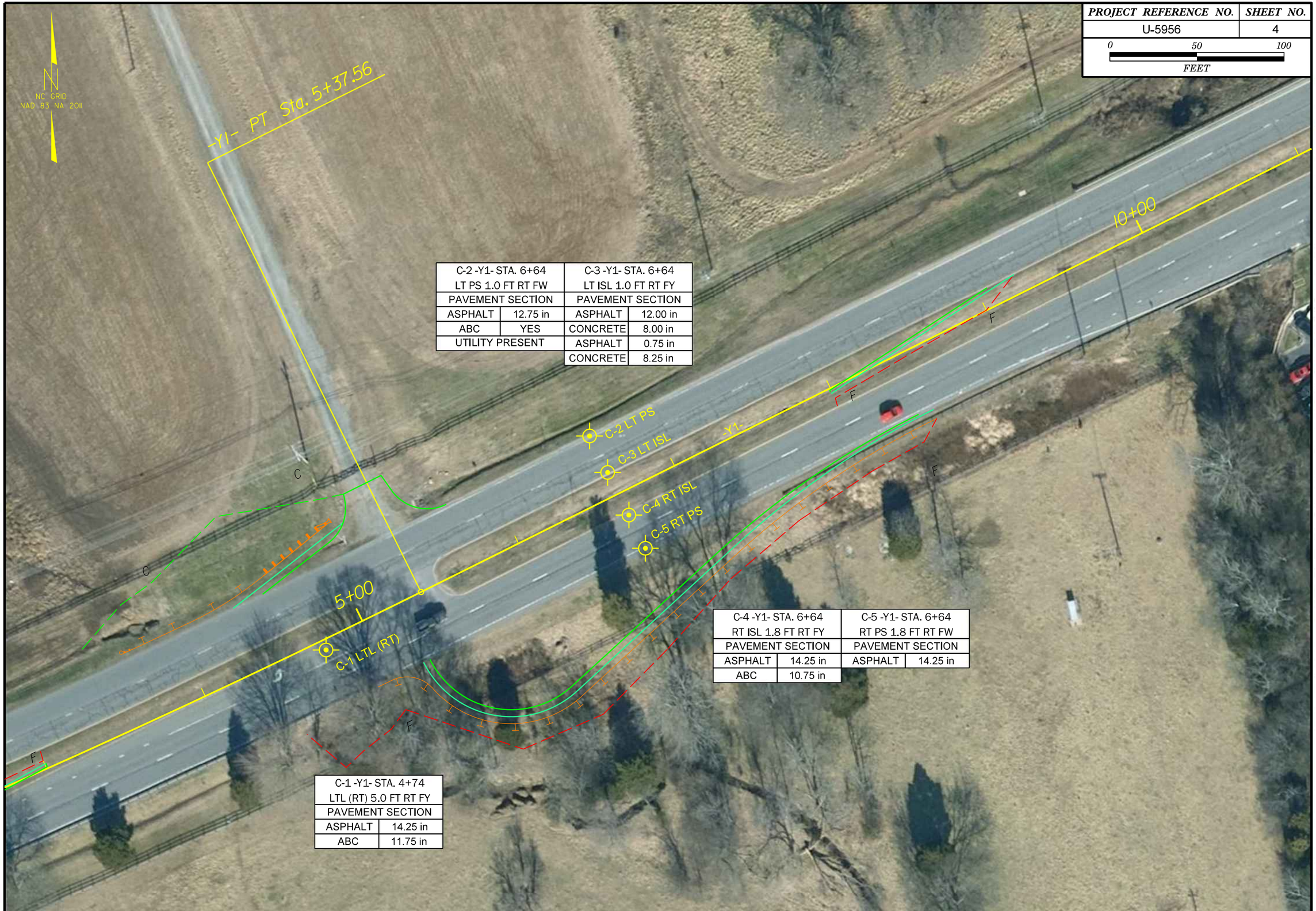
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

$FILE$
$DATE$

PROJECT REFERENCE NO.	SHEET NO.
U-5956	4

0 50 100
FEET



C-2 -Y1- STA. 6+64 LT PS 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	12.75 in
ABC	YES
UTILITY PRESENT	

C-3 -Y1- STA. 6+64 LT ISL 1.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	12.00 in
CONCRETE	8.00 in
ASPHALT	0.75 in
CONCRETE	8.25 in

C-4 -Y1- STA. 6+64 RT ISL 1.8 FT RT FY	
PAVEMENT SECTION	
ASPHALT	14.25 in
ABC	10.75 in

C-5 -Y1- STA. 6+64 RT PS 1.8 FT RT FW	
PAVEMENT SECTION	
ASPHALT	14.25 in

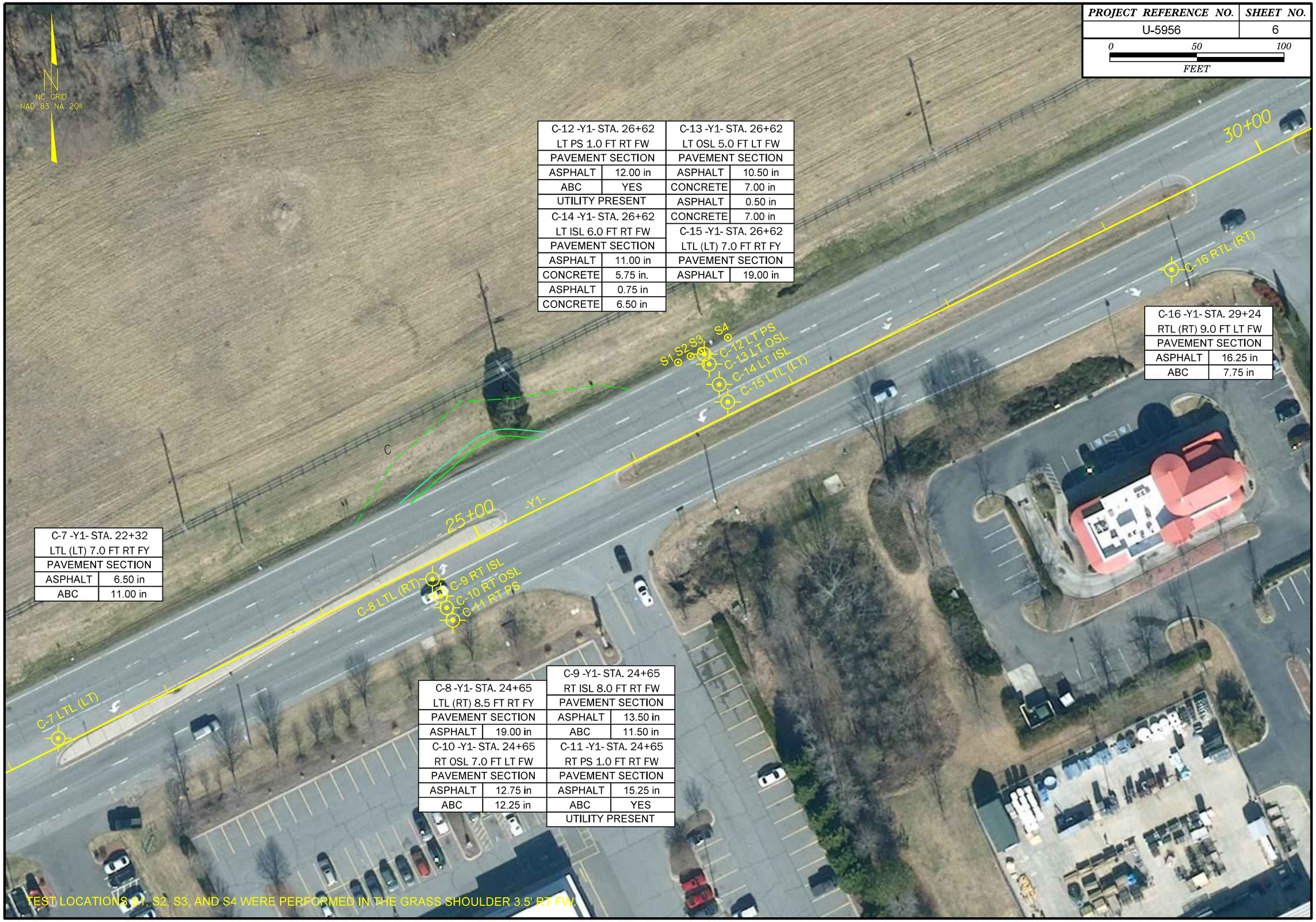
C-1 -Y1- STA. 4+74 LTL (RT) 5.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	14.25 in
ABC	11.75 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	5

0 50 100
FEET

PROJECT REFERENCE NO.	SHEET NO.
U-5956	6

0 50 100
FEET



C-7 -Y1- STA. 22+32 LTL (LT) 7.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	6.50 in
ABC	11.00 in

C-8 -Y1- STA. 24+65 LTL (RT) 8.5 FT RT FY	
PAVEMENT SECTION	
ASPHALT	19.00 in

C-9 -Y1- STA. 24+65 RT ISL 8.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	13.50 in
ABC	11.50 in

C-10 -Y1- STA. 24+65 RT OSL 7.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	12.75 in
ABC	12.25 in

C-11 -Y1- STA. 24+65 RT PS 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	15.25 in
ABC	YES
UTILITY PRESENT	

C-12 -Y1- STA. 26+62 LT PS 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	12.00 in
ABC	YES
UTILITY PRESENT	

C-13 -Y1- STA. 26+62 LT OSL 5.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	10.50 in
CONCRETE	7.00 in
ASPHALT	0.50 in
CONCRETE	7.00 in

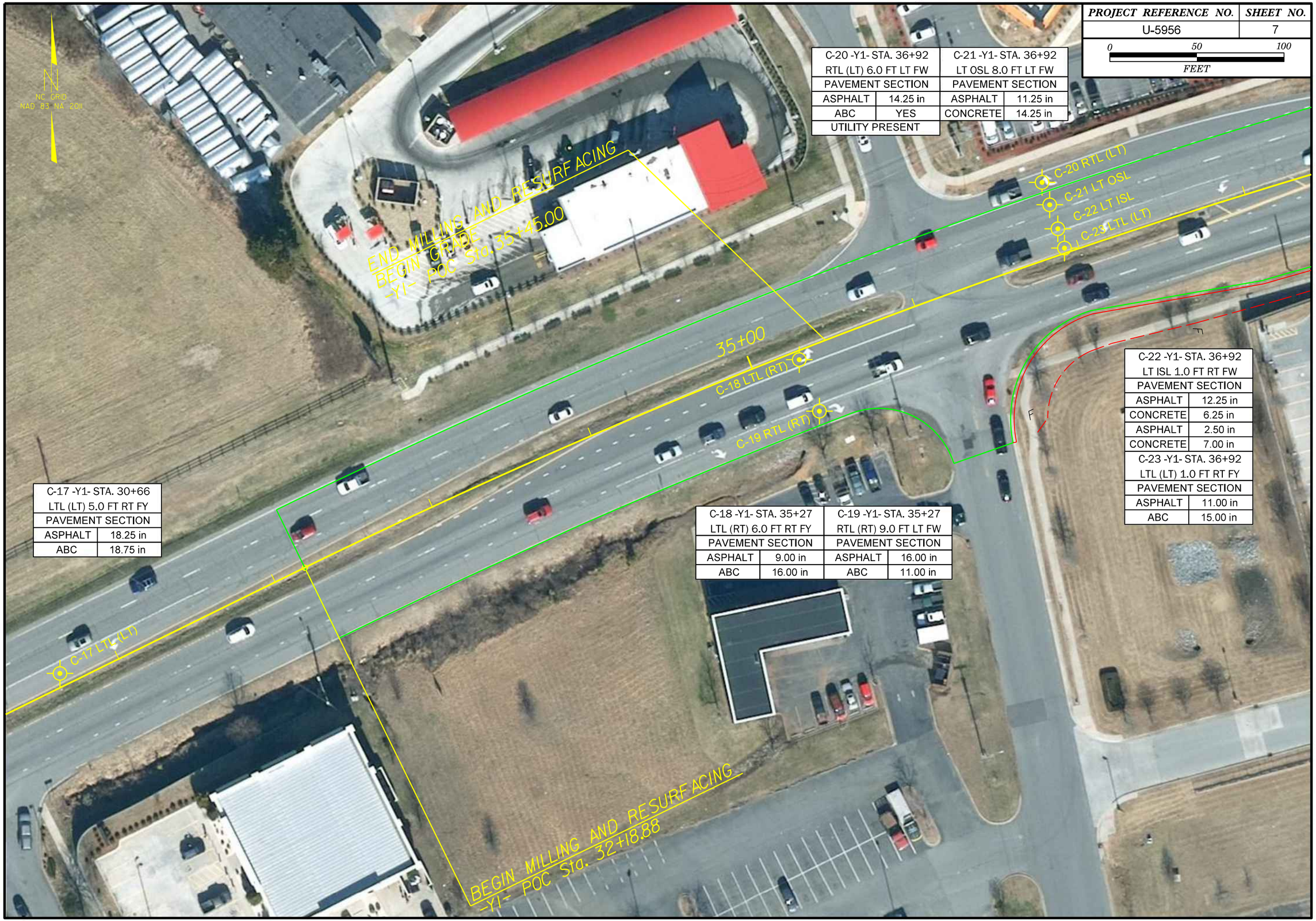
C-14 -Y1- STA. 26+62 LT ISL 6.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	11.00 in
CONCRETE	5.75 in.
ASPHALT	0.75 in
CONCRETE	6.50 in

C-15 -Y1- STA. 26+62 LTL (LT) 7.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	19.00 in

C-16 -Y1- STA. 29+24 RTL (RT) 9.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	16.25 in
ABC	7.75 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	7

0 50 100
FEET



C-20 -Y1- STA. 36+92	
RTL (LT) 6.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	14.25 in
ABC	YES
UTILITY PRESENT	

C-21 -Y1- STA. 36+92	
LT OSL 8.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	11.25 in
CONCRETE	14.25 in

C-22 -Y1- STA. 36+92	
LT ISL 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	12.25 in
CONCRETE	6.25 in
ASPHALT	2.50 in
CONCRETE	7.00 in

C-23 -Y1- STA. 36+92	
LTL (LT) 1.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	11.00 in
ABC	15.00 in

C-17 -Y1- STA. 30+66	
LTL (LT) 5.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	18.25 in
ABC	18.75 in

C-18 -Y1- STA. 35+27	
LTL (RT) 6.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	9.00 in
ABC	16.00 in

C-19 -Y1- STA. 35+27	
RTL (RT) 9.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	16.00 in
ABC	11.00 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	8

0 50 100
FEET

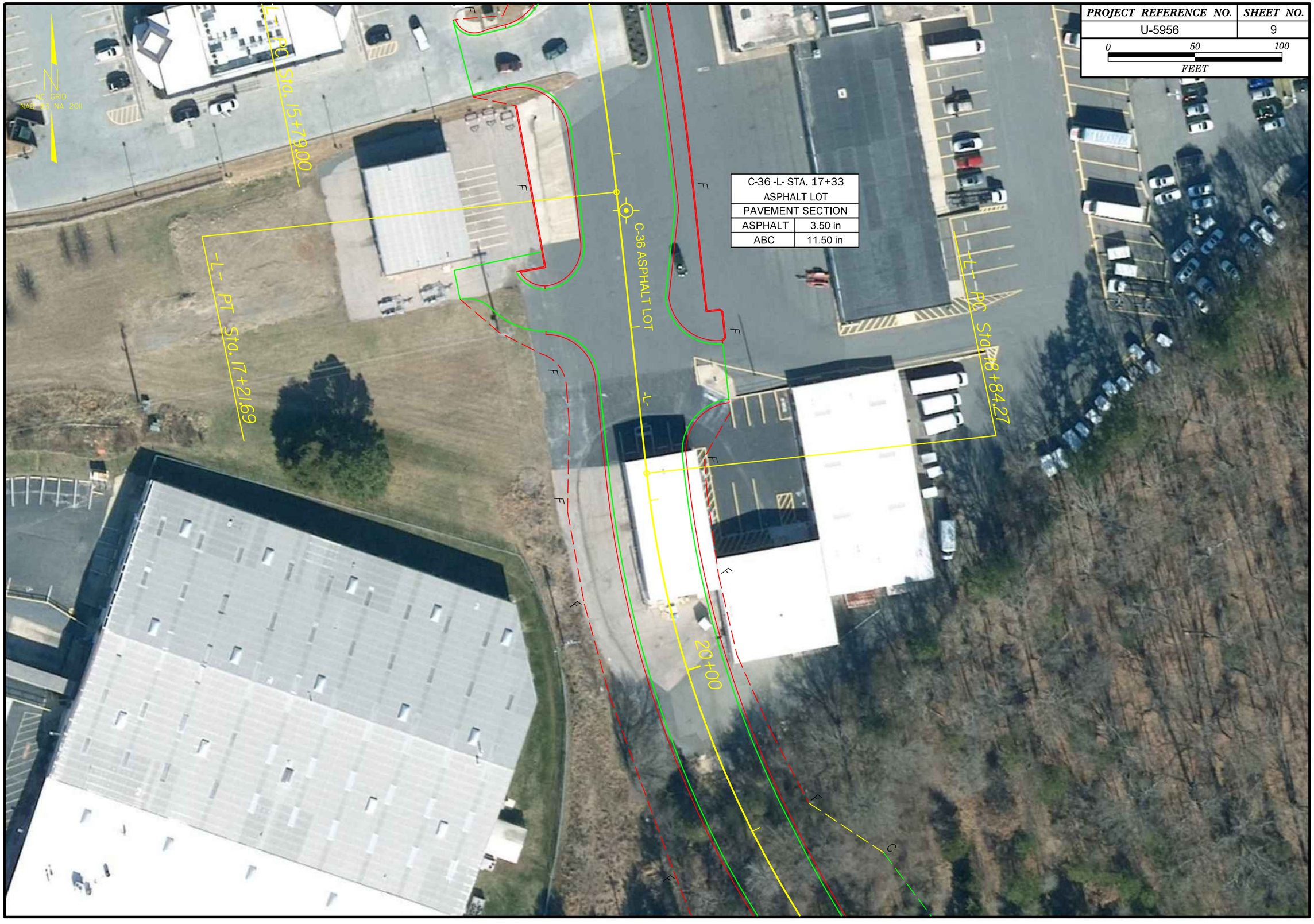
C-28 -Y1- STA. 42+44 RTL (LT) 7.0 FT LT FW		C-29 -Y1- STA. 42+44 LTL (LT) 5.0 FT RT FY	
PAVEMENT SECTION		PAVEMENT SECTION	
ASPHALT	13.00 in	ASPHALT	10.75 in
ABC	3.00 in	ABC	12.25 in

C-24 -Y1- STA. 39+65 LTL (RT) 4.0 FT RT FY		C-25 -Y1- STA. 39+65 RT ISL 7.0 FT RT FW	
PAVEMENT SECTION		PAVEMENT SECTION	
ASPHALT	8.00 in	ASPHALT	13.00 in
ABC	16.00 in	ABC	12.00 in
C-26 -Y1- STA. 39+65 RT OSL 4.5 FT LT FW		C-27 -Y1- STA. 39+65 RT PS 0.2 FT RT FW	
PAVEMENT SECTION		PAVEMENT SECTION	
ASPHALT	13.00 in	ASPHALT	14.00 in
ABC	13.00 in	ABC	11.00 in

C-35 -L- STA. 15+81 CONCRETE LOT	
PAVEMENT SECTION	
CONCRETE	8.75 in
ABC	9.25 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	9

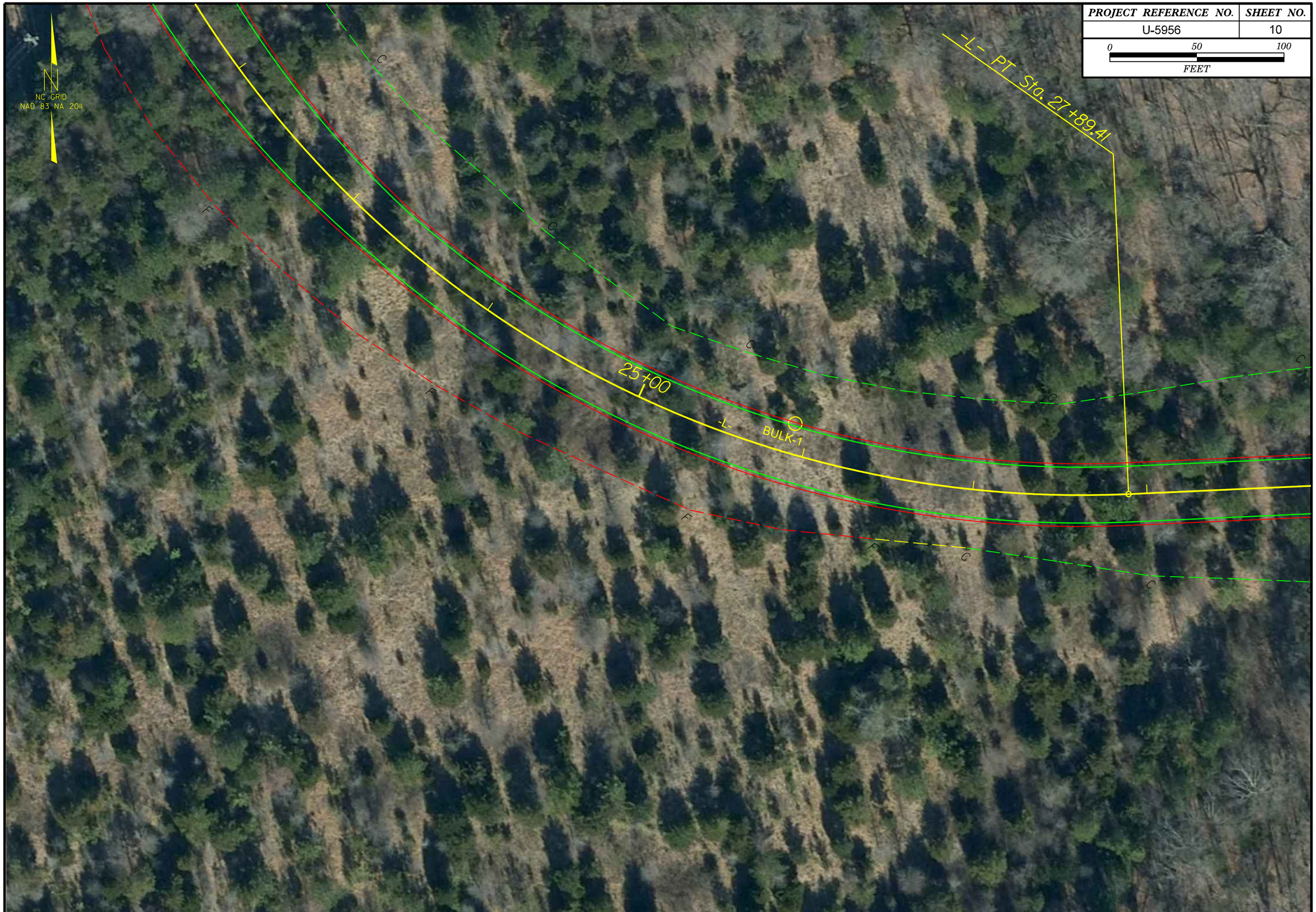
0 50 100
FEET



C-36 -L- STA. 17+33 ASPHALT LOT	
PAVEMENT SECTION	
ASPHALT	3.50 in
ABC	11.50 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	10

0 50 100
FEET



PROJECT REFERENCE NO.	SHEET NO.
U-5956	11

0 50 100
FEET

C-34 -Y1- Sta. 51+16	
LTL (LT) 7.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	8.00 in
ABC	17.00 in

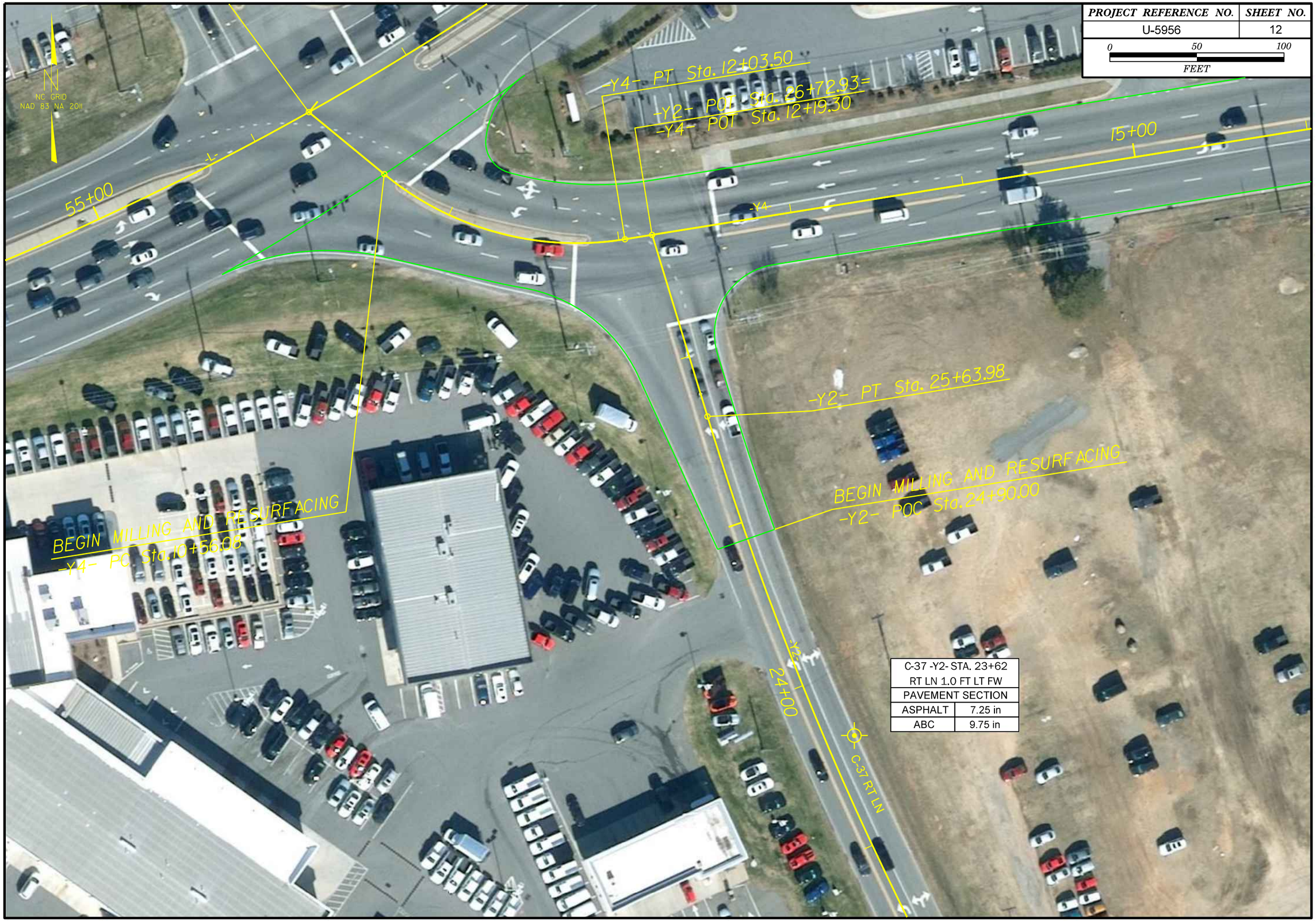
C-31 -Y1- STA. 49+29		C-32 -Y1- Sta. 49+29	
LTL (RT) 5.5 FT RT FY		RT OSL 3.0 FT LT FW	
PAVEMENT SECTION		PAVEMENT SECTION	
ASPHALT	4.00 in	ASPHALT	9.50 in
ABC	16.00 in	ABC	12.50 in

C-33 -Y1- STA. 49+29	
RT PS 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	8.75 in
ABC	YES
UTILITY PRESENT	

C-30 -Y1- STA. 46+45	
RTL (RT) 5.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	11.25 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	12

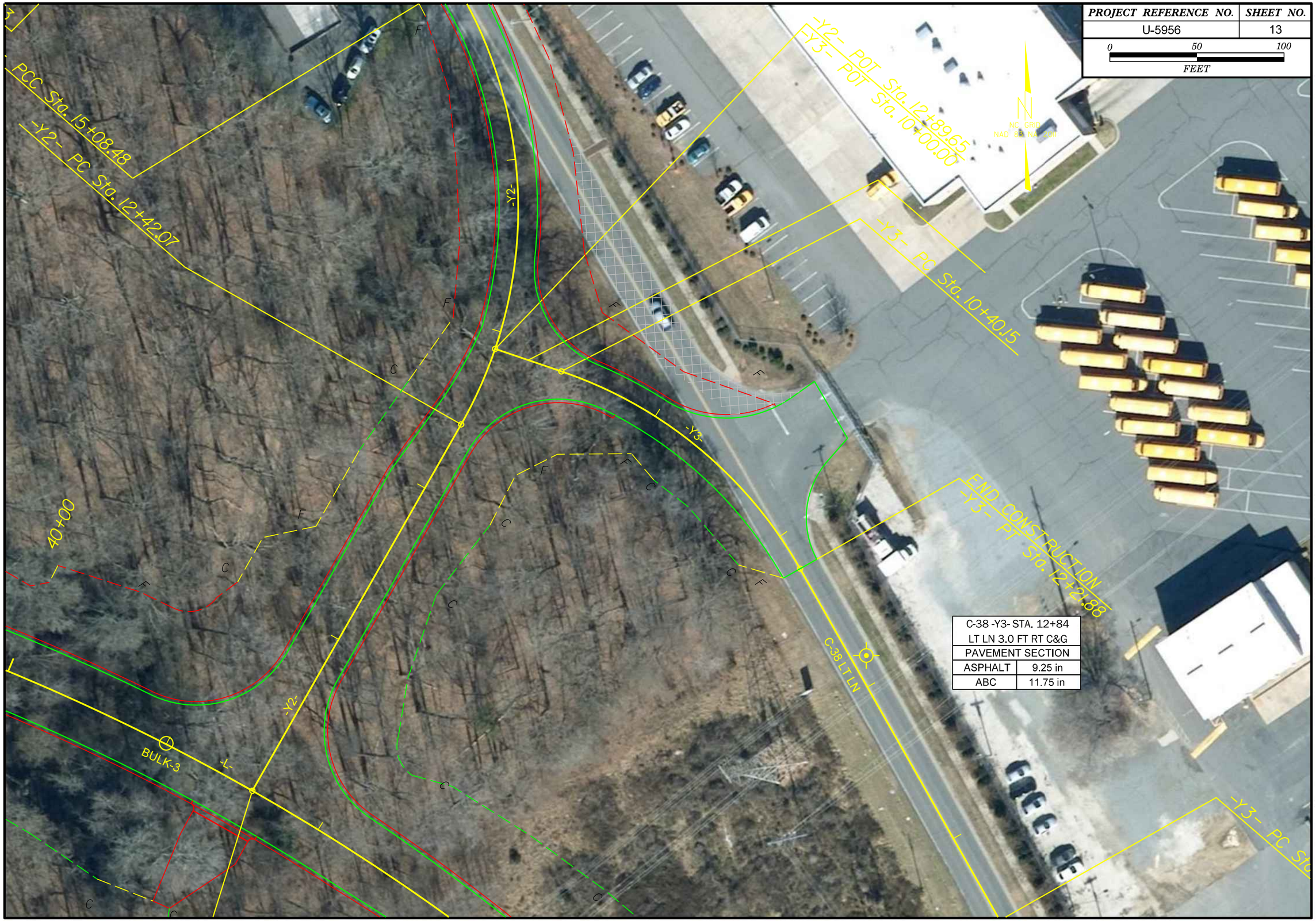
0 50 100
FEET



C-37 -Y2- STA. 23+62 RT LN 1.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	7.25 in
ABC	9.75 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	13

0 50 100
FEET



C-38 -Y3- STA. 12+84	
LT LN 3.0 FT RT C&G	
PAVEMENT SECTION	
ASPHALT	9.25 in
ABC	11.75 in

PROJECT REFERENCE NO.	SHEET NO.
U-5956	14

0 50 100
FEET

C-39 -L- STA. 51+25 RT LN 4.0 FT LT EOP		C-40 -L- STA. 51+25 RT PS 1.0 FT LT EOP	
PAVEMENT SECTION		PAVEMENT SECTION	
ASPHALT	11.00 in	ASPHALT	10.75 in

PAVEMENT INVESTIGATION DATA SHEET

Project:	46891.1.1
TIP:	U-5956

Route:	US 29 - Realign Union Cemetary Rd. to Intersect US 29 at Rock Hill Church Rd.
County:	Cabarrus

Date Performed:	8/7 to 8/9, 9/18/22
Field Personnel:	M. Brewer, T. Wenner, D. Underwood, C. Odom, P. Tomasic, L. Ard

		Width (ft)		(ft)	(in)	Thickness (in)						Subgrade						GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount) (ft)	Lane	Shoulder	Offset Distance (See Notes)	Crown "Cr" or Super "S"	Gross to Top of Soil	Asphalt	ABC	Stabilized Subgrade	Concrete	Pavement Layering	Description (Depth - ft)	Soil Sample Number	AASHTO Classification	Soil Moisture	Boring Depth (ft)	Asphalt Notes	Northing	Easting
C-1 -Y1- Sta. 4+74 LTL (RT)	Fill 5.0	12.0	-	5.0 RT FY	Cr.	26.00	14.25	11.75			Asphalt ABC SG	2.2-5.0: RE - Brown-Gray, Silty CLAY, Highly Plastic, Trace Organics	S-1	A-7-6(6)	M	5	Low to Moderate Severity Fatigue Cracking	601,091	1,515,095
C-2 -Y1- Sta. 6+64 LT PS	Fill 5.0	12.0	3.0 PS	1.0 RT FW	Cr.	N/A	12.75	Yes			Asphalt ABC	Unmarked gas line at test location. No Auger/DCP Performed	-	-	-	-	No Distress Observed	601,214	1,515,247
C-3 -Y1- Sta. 6+64 LT ISL	Fill 5.0	12.0	1.0 PS	1.0 RT FY	Cr.	29.00	12.00 0.75			8.00 8.25	Asphalt/Conc. Asphalt/Conc. SG	2.4-5.0: RE - Gray-Brown, Silty Fine to Coarse SAND Trace Organics	S-3	A-2-4	M	5	No Distress Observed	601,193	1,515,257
C-4 -Y1- Sta. 6+64 RT ISL	Fill 5.0	12.0	-	1.8 RT FY	Cr.	25.00	14.25	10.75			Asphalt ABC SG	2.1-5.0: RE - Brown, Fine to Coarse Sandy SILT	S-4	A-4(0)	M	5	Low Severity Trasnverse Cracking	601,169	1,515,269
C-5 -Y1- Sta. 6+64 RT PS	Fill 5.0	12.0	3.0 PS	1.8 RT FW	Cr.	14.25	14.25				Asphalt SG	1.2-3.0: RE - Brown, Fine to Coarse Sandy SILT 3.0: Auger Refusal	Ref-4	A-4	M	3 AR	Low Severity Longitudinal Cracking	601,150	1,515,279
C-6 -Y1- Sta.18+03 LTL (LT)	Fill 5.0	12.0	2.0 PS	5.0 RT FY	Cr.	31.00	18.00	13.00			Asphalt ABC SG	2.6-3.0: RE - Tan, Silty Fine to Coarse SAND 3.0-5.0: RE - Red-Brown, Fine to Coarse Sandy CLAY, Petroleum Odor, Moderately Plastic	S-6A S-6B	A-2-4 A-6(7)	M M	5	No Distress Observed	601,693	1,516,280
C-7 -Y1- Sta.22+32 LTL (LT)	Fill 5.0	12.0	Concrete Median	7.0 RT FY	Cr.	17.50	6.50	11.00			Asphalt ABC SG	1.5-5.0: RE - Tan, Fine to Coarse Sandy SILT	S-7	A-4(0)	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking, **Full Depth Bottom-Up Crack In Core**	601,883	1,516,665
C-8 -Y1- Sta. 24+65 LTL (RT)	At Grade	12.0	Concrete Median	8.5 RT FY	Cr.	19.00	19.00				Asphalt SG	1.6-5.0: RES - Orange-Brown, Fine to Coarse Sandy SILT	Ref-7	A-4	M	5	Low Severity Transverse Cracking	601,974	1,516,880
C-9 -Y1- Sta. 24+65 RT ISL	At Grade	12.0	Concrete Median	8.0 RT FW	Cr.	25.00	13.50	11.50			Asphalt ABC SG	2.1-5.0: RES - Tan-Orange, Fine to Coarse Sandy SILT	S-9	A-4(1)	M	5	Low Severity Transverse Cracking	601,965	1,516,885
C-10 -Y1- Sta. 24+65 RT OSL	At Grade	12.0	3.0 PS	7.0 LT FW	Cr.	25.00	12.75	12.25			Asphalt ABC SG	2.2-5.0: RES - Tan-Orange, Fine to Coarse Sandy SILT, trace mica	S-10	A-4(3)	M	5	No Distress Observed	601,958	1,516,888
C-11 -Y1- Sta. 24+65 RT PS	At Grade	12.0	3.0 PS	1.0 RT FW	Cr.	N/A	15.25	Yes			Asphalt ABC	Water line within 2.0 feet of test location. No Auger/DCP Performed	-	-	-	-	No Distress Observed	601,951	1,516,892
C-12 -Y1- Sta. 26+62 LT PS	Fill 5.0	12.0	2.0 PS	1.0 RT FW	Cr.	N/A	12.00	Yes			Asphalt ABC	Unmarked gas line within 5.0 feet of test location. No Auger/DCP Performed	-	-	-	-	Low Severity Transverse Cracking	602,104	1,517,036
C-13 -Y1- Sta. 26+62 LT OSL	Fill 5.0	12.0	2.0 PS	5.0 LT FW	Cr.	25.00	10.50 0.50			7.00 7.00	Asphalt Concrete Asphalt/Conc.	2.1-5.0: RE - Red-Brown, Silty CLAY, with F. to Cse, Sand, Mod. Plastic	Ref-14	A-7-6	-	5	Low Severity Transverse Cracking	602,098	1,517,039
C-14 -Y1- Sta. 26+62 LT ISL	Fill 5.0	12.0	-	6.0 RT FW	Cr.	24.00	11.00 0.75			5.75 6.50	Asphalt/Conc. Asphalt/Conc. SG	2.0-5.0: RE - Red-Brown, Silty CLAY, with F. to Cse, Sand, Mod. Plastic	S-14	A-7-6(9)	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking	602,086	1,517,044
C-15 -Y1- Sta. 26+62 LTL (LT)	Fill 5.0	12.0	1.0 PS	7.0 RT FY	Cr.	19.00	19.00				Asphalt SG	1.6-5.0: RE - Red-Brown, Silty CLAY, with Fine to Coarse Sand, Moderately Plastic	Ref-14	A-7-6	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking	602,076	1,517,049

Notes:
Offset Distance: Left and Right Relative to the Direction of Travel

Prepared by: CTW
Reviewed by: DMB

PAVEMENT INVESTIGATION DATA SHEET

Project:	46891.1.1
TIP:	U-5956

Route:	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
County:	Cabarrus

Date Performed:	8/7 to 8/9, 9/18/22
Field Personnel:	M. Brewer, T. Wenner, D. Underwood, C. Odom, P. Tomasic, L. Ard

		Width (ft)		(ft)	(in)	Thickness (in)						Subgrade						GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount) (ft)	Lane	Shoulder	Offset Distance (See Notes)	Crown "Cr" or Super "S"	Gross to Top of Soil	Asphalt	ABC	Stabilized Subgrade	Concrete	Pavement Layering	Description (Depth - ft)	Soil Sample Number	AASHTO Classification	Soil Moisture	Boring Depth (ft)	Asphalt Notes	Northing	Easting
C-16 -Y1- Sta. 29+24 RTL (RT)	Fill 5.0	12.0	-	9.0 LT FW	Cr.	24.00	16.25	7.75			Asphalt ABC SG	2.0-5.0: RE - Tan-Orange, Clayey Fine to Coarse SAND, Moderately Plastic	S-16	A-2-6(1)	M	5	No Distress Observed	602,152	1,517,304
C-17 -Y1- Sta. 30+66 LTL (LT)	Fill 5.0	12.0	1.0 PS	5.0 RT FY	Cr.	37.00	18.25	18.75			Asphalt ABC SG	3.1-5.0: RE - Gray, Silty, Fine to Coarse SAND, with little gravel	S-17	A-2-4	M	5	Low Severity Transverse Cracking **6 inch Top-Down Crack in Core**	602,255	1,517,412
C-18 -Y1- Sta. 35+27 LTL (RT)	Fill 5.0	10.0	1.0 PS	6.0 RT FY	Cr.	25.00	9.00	16.00			Asphalt ABC SG	2.1-5.0: RE - Red-Brown, Silty CLAY, Moderately Plastic	S-18	A-7-6(11)	M	5	No Distress Observed	602,435	1,517,836
C-19 -Y1- Sta. 35+27 RTL (RT)	Fill 6.0	12.0	2.0 PS	9.0 LT FW	Cr.	27.00	16.00	11.00			Asphalt ABC SG	2.3-5.0: RE - Tan-Orange, Fine to Coarse Sandy CLAY, Moderately Plastic	S-19	A-6(2)	M	5	No Distress Observed, Small Patch Over Water Line (~2.0' x 2.0')	602,405	1,517,847
C-20 -Y1- Sta. 36+92 RTL (LT)	Fill 5.0	12.0	2.0 PS	6.0 LT FW	Cr.	N/A	14.25	Yes			Asphalt ABC	Gas line within 5.0 feet of test location. No Auger/DCP Performed	-	-	-	-	No Distress Observed	602,537	1,517,975
C-21 -Y1- Sta. 36+92 LT OSL	Fill 5.0	12.0	-	8.0 LT FW	Cr.	25.50	11.25			14.25	Asphalt Concrete SG	2.2-5.0: RE - Tan-Orange, Fine to Coarse Sandy CLAY, trace gravel, Moderately Plastic	S-21	A-6(12)	M	5	No Distress Observed	602,524	1,517,980
C-22 -Y1- Sta. 36+92 LT ISL	Fill 5.0	12.0	1.0 PS	1.0 RT FW	Cr.	28.00	12.25 2.50			6.25 7.00	Asphalt/Conc. Asphalt/Conc. SG	2.3-5.0: RE - Tan-Orange, Fine to Coarse Sandy CLAY, Moderately Plastic	S-22	A-6(12)	M	5	No Distress Observed	602,510	1,517,984
C-23 -Y1- Sta. 36+92 LTL (LT)	Fill 5.0	12.0	1.0 PS	1.0 RT FY	Cr.	26.00	11.00	15.00			Asphalt ABC SG	2.2-5.0: RE - Brown, Fine to Coarse Sandy CLAY, Moderately Plastic	S-23	A-6(6)	M	5	No Distress Observed	602,499	1,517,988
C-24 -Y1- Sta. 39+65 LTL (RT)	Fill 5.0	12.0	-	4.0 RT FY	Cr.	24.00	8.00	16.00			Asphalt ABC SG	2.0-5.0: RE - Tan-Orange, Fne to Coarse Sandy CLAY, Moderately Plastic	Ref-26	A-6	M	5	Low to Moderate Severity Longitudinal and Transverse Cracking	602,573	1,518,251
C-25 -Y1- Sta. 39+65 RT ISL	Fill 5.0	12.0	-	7.0 RT FW	Cr.	25.00	13.00	12.00			Asphalt ABC SG	2.2-5.0: RE - Tan, Silty Fine to Coarse SAND	S-25	A-2-4	M	5	Low to Moderate Severity Longitudinal and Transverse Cracking	602,558	1,518,255
C-26 -Y1- Sta. 39+65 RT OSL	Fill 5.0	12.0	3.0 PS	4.5 LT FW	Cr.	25.00	14.00	11.00			Asphalt ABC SG	2.2-5.0: RE - Tan-Orange, Fine to Coarse Sandy CLAY, Moderately Plastic	S-26	A-6(5)	M	5	No Distress Observed	602,547	1,518,258
C-27 -Y1- Sta. 39+65 RT PS	Fill 5.0	12.0	3.0 PS	0.2 RT FW	Cr.	26.00	13.50	12.50			Asphalt ABC SG	2.2-5.0: RE -Tan-Orange, Fine to Coarse Sandy CLAY	S-27	A-6(2)	M	5	No Distress Observed **5 inch Bottom-Up Crack in Core**	602,543	1,518,259
C-28 -Y1- Sta. 42+44 RTL (LT)	Fill 5.0	12.0	3.0 Concrete Curb & Gutter	7.0 LT FW	Cr.	16.00	13.00	3.00			Asphalt ABC SG	1.3-5.0: RE - Red-Brown, Fine to Coarse Sandy CLAY	S-28	A-6(6)	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking	602,678	1,518,515
C-29 -Y1- Sta. 42+44 LTL (LT)	Fill 5.0	10.0	1.0 PS	5.0 RT FY	Cr.	23.00	10.75	12.25			Asphalt ABC SG	1.9-5.0: RE - Red-Brown, Fine to Coarse Sandy CLAY, Moderately Plastic	S-29	A-6(7)	M	5	Moderate to High Severity Transverse and Longitudinal Cracking	602,643	1,518,521
C-30 -Y1- Sta. 46+45 RTL (RT)	At Grade	10.0	-	5.0 LT FW	Cr.	11.25	11.25				Asphalt SG	Gas line within 5.0 feet of test location. No Auger/DCP Performed	-	-	-	-	Low to Moderate Severity Transverse and Longitudinal Cracking	602,664	1,518,925

Notes:
Offset Distance: Left and Right Relative to the Direction of Travel

Prepared by: CTW
Reviewed by: DMB

PAVEMENT INVESTIGATION DATA SHEET

Project:	46891.1.1
TIP:	U-5956

Route:	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
County:	Cabarrus

Date Performed:	8/7 to 8/9, 9/18/22
Field Personnel:	M. Brewer, T. Wenner, D. Underwood, C. Odom, P. Tomasic, L. Ard

		Width (ft)		(ft)	(in)	Thickness (in)						Subgrade						GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount) (ft)	Lane	Shoulder	Offset Distance (See Notes)	Crown "Cr" or Super "S"	Gross to Top of Soil	Asphalt	ABC	Stabilized Subgrade	Concrete	Pavement Layering	Description (Depth - ft)	Soil Sample Number	AASHTO Classification	Soil Moisture	Boring Depth (ft)	Asphalt Notes	Northing	Easting
C-31 -Y1- Sta. 49+29 LTL (RT)	At Grade	12.0	2.0 PS	5.5 RT FY	Cr.	20.00	4.00	16.00			Asphalt ABC SG	1.7-5.0: RES - Tan-Orange, Silty CLAY, Moderately Plastic	S-31	A-7-6(9)	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking **Full Depth Crack in Core**	602,745	1,519,199
C-32 -Y1- Sta. 49+29 RT OSL	Fill 5.0	12.0	3.0 PS	3.0 LT FW	Cr.	22.00	9.50	12.50			Asphalt ABC SG	1.8-5.0: RE - Tan-Orange, Fine to Coarse Sandy CLAY, Moderately Plastic	S-32	A-6(8)	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking	602,720	1,519,203
C-33 -Y1- Sta. 49+29 RT PS	Fill 5.0	12.0	3.0 PS	1.0 RT FW	Cr.	N/A	8.75	Yes			Asphalt ABC	Gas line within 5.0 feet of test location. No Auger/DCP Performed	-	-	-	-	Low to Moderate Severity Transverse and Longitudinal Cracking	602,716	1,519,204
C-34 -Y1- Sta. 51+16 LTL (LT)	At Grade	12.0	2.0 PS Concrete Median	7.0 RT FY	Cr.	25.00	8.00	17.00			Asphalt ABC SG	2.1-5.0: RES - Red-Brown, Silty CLAY, Highly Plastic	S-34	A-7-6(13)	M	5	Moderate Severity Transverse Cracking	602,793	1,519,382
C-35 -L- Sta. 15+81 CONCRETE LOT	Fill 10.0	-	-	-	-	18.00		9.25		8.75	Concrete ABC SG	1.5-5.0: AF - Red-Brown, Fine to Coarse Sandy CLAY	S-35	A-6(7)	M	5	No Distress Observed	602,371	1,518,485
C-36 -L- Sta. 17+33 ASPHALT LOT	Fill 10.0	-	-	-	-	15.00	3.50	11.50			Asphalt ABC SG	1.3-5.0: AF - Red-Brown, Silty CLAY, Highly Plastic	S-36	A-7-6(20)	M	5	Low to Moderate Severity Longitudinal Cracking	602,219	1,518,502
C-39 -L- Sta. 51+25 RT LN	At Grade	12.0	-	4.0 LT EOP	Cr.	11.00	11.00				Asphalt SG	0.9-5.0: RES - Tan-Orange, Silty CLAY, Highly Plastic	S-39	A-7-6(20)	M	5	Moderate to High Severity Transverse and Longitudinal Cracking, Cracks Sealed	600,658	1,521,061
C-40 -L- Sta. 51+25 RT PS	At Grade	12.0	-	1 .0 LT EOP	Cr.	10.75	10.75				Asphalt SG	0.9-5.0: RES - Tan-Orange, Fine to Coarse Sandy CLAY	S-40	A-6(8)	M	5	Moderate to High Severity Transverse and Longitudinal Cracking, Cracks Sealed	600,657	1,521,058
C-37 -Y2- Sta. 23+62 RT LN	Fill 5.0	12.0	2.0 PS	1.0 LT FW	Cr.	17.00	7.25	9.75			Asphalt ABC SG	1.4-5.0: RE - Red-Brown, Fine to Coarse Sandy CLAY	S-37	A-6(2)	M	5	Low to Moderate Severity Transverse and Longitudinal Cracking, Cracks Sealed **2 inch Bottom-Up Crack in Core**	602,609	1,520,179
C-38 -Y3- Sta. 12+84 LT LN	At Grade	12.0	3.0 Concrete Curb & Gutter	3.0 RT C&G	Cr.	21.00	9.25	11.75			Asphalt ABC SG	1.8-5.0: RE - Red-Brown, Fine to Coarse Sandy SILT	S-38	A-4(2)	M	5	Moderate to High Severity Transverse and Longitudinal Cracking, Cracks Sealed **6 inch Bottom-Up Crack in Core**	601,478	1,520,827
S1 -Y1- Sta. 26+47 Grass Shoulder	Fill 5.0	-	-	3.5 RT FW	Cr.	-	-	-	-	-	Grass Shoulder	1.0-1.5: RE - Red-Brown, Silty CLAY, with F. to Cse, Sand, Mod. Plastic	Ref-14	A-7-6	-	1.5	No Distress Observed	602,099	1,517,021
S2 -Y1- Sta. 26+55 Grass Shoulder	Fill 5.0	-	-	3.5 RT FW	Cr.	-	-	-	-	-	Grass Shoulder	1.0-1.5: RE - Red-Brown, Silty CLAY, with F. to Cse, Sand, Mod. Plastic	Ref-14	A-7-6	-	1.5	No Distress Observed	602,102	1,517,028
S3 -Y1- Sta. 26+62 Grass Shoulder	Fill 5.0	-	-	3.5 RT FW	Cr.	-	-	-	-	-	Grass Shoulder	1.0-1.5: RE - Red-Brown, Silty CLAY, with F. to Cse, Sand, Mod. Plastic	Ref-14	A-7-6	-	1.5	No Distress Observed	602,105	1,517,034
S4 -Y1- Sta. 26+79 Grass Shoulder	Fill 5.0	-	-	3.5 RT FW	Cr.	-	-	-	-	-	Grass Shoulder	1.0-1.5: RE - Red-Brown, Silty CLAY, with F. to Cse, Sand, Mod. Plastic	Ref-14	A-7-6	-	1.5	No Distress Observed	602,113	1,517,049

Notes:
Offset Distance: Left and Right Relative to the Direction of Travel

Prepared by: CTW
Reviewed by: DMB

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET

WBS NO.	PROJECT TIP I.D.	ROUTE
46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
COUNTY	**FIELD PROFESSIONAL**	**FIELD CREW**
Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-1 -Y1- Sta. 4+74 LTL (RT) 5.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval						Datum		Cut/Fill	
DCP	Cumulative cm per blow						ABC		5.0 ft Fill	
1.70	70.70									
2.60	71.60									
3.70	72.60									
4.30	73.60									
4.90	74.70									
5.60	75.90									
6.20	76.60									
6.80	77.70									
7.50	78.70									
8.40	79.50									
9.80	80.40									
10.00	81.20									
10.90	82.40									
11.50	83.50									
12.20	84.30									
12.80	85.40									
13.40	85.60									
13.80	86.50									
14.60	87.70									
15.20	88.30									
16.00	89.00									
16.60	89.50									
17.10	90.00									
17.70	90.50									
18.20	91.00									
18.70	91.70									
19.60	92.30									
20.10	92.90									
20.70	93.50									
21.40	94.20									
22.00	94.90									
22.80	95.50									
24.00	96.20									
25.70	96.80									
26.40	97.40									
28.00	98.30									
31.90	98.90									
35.00	99.70									
38.60	100.40									
41.80	101.00									
44.30	101.80									
46.40	102.60									
48.20	103.30									
49.90	104.10									
51.50	105.00									
53.00	105.80									
54.30	106.40									
55.70	107.10									
57.20	107.60									
58.50	109.20									
60.10	109.60									
60.60	110.50									
61.10										
62.00										
62.60										
63.10										
63.80										
64.40										
65.00										
65.80										
66.30										
67.00										
67.90										
68.80										
69.70										

Test Location	Date Run
C-3 -Y1- Sta. 6+64 LT ISL 1.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval						Datum		Cut/Fill	
DCP	Cumulative cm per blow						SG (A-2-4)		5.0 ft Fill	
3.40	17.76	50/2.0"								
5.30	17.82									
8.20	17.88									
11.00	17.94									
12.40	18.00									
12.50	18.06									
12.60	18.12									
12.70	18.18									
12.80	18.24									
12.90	18.30									
13.04	DCP REF.									
13.18	AUGER 2.0									
13.32	TO 20.3 cm									
13.46	0.00									
13.60	0.07									
13.70	0.15									
13.80	0.22									
13.90	0.30									
14.00	0.37									
14.10	0.44									
14.20	0.52									
14.30	0.59									
14.40	0.67									
14.50	0.74									
14.60	0.81									
14.71	0.89									
14.82	0.96									
14.93	1.04									
15.04	1.11									
15.15	1.18									
15.26	1.26									
15.37	1.33									
15.48	1.41									
15.59	1.48									
15.70	1.55									
15.84	1.63									
15.98	1.70									
16.12	1.78									
16.26	1.85									
16.40	1.92									
16.44	2.00									
16.48	2.07									
16.52	2.15									
16.56	2.22									
16.60	2.29									
16.64	2.37									
16.68	2.44									
16.72	2.52									
16.76	2.59									
16.80	2.66									
16.92	2.74									
17.04	2.81									
17.16	2.89									
17.28	2.96									
17.40	3.03									
17.43	3.11									
17.46	3.18									
17.49	3.26									
17.52	3.33									
17.55	3.40									
17.58	3.48									
17.61	3.55									
17.64	3.63									
17.67	3.70									
17.70	DCP REF.									

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET

WBS NO.	PROJECT TIP I.D.	ROUTE
46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
COUNTY	**FIELD PROFESSIONAL**	**FIELD CREW**
Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-4 -Y1- Sta. 6+64 RT ISL 1.8 FT RT FY	8/7 to 8/9/22

Type	Test Interval						Datum		Cut/Fill	
DCP	Cumulative cm per blow						ABC		5.0 ft Fill	
1.10	1.50	13.80	48.15							
1.90	1.70	14.00	48.30							
2.40	1.90	14.30	48.43							
2.70	2.10	14.60	48.56							
3.00	2.30	14.80	48.69							
3.30	2.50	15.10	48.82							
3.47	2.68	15.40	48.95							
3.65	2.86	15.80	49.08							
3.82	3.04	16.10	49.21							
3.99	3.22	16.50	49.34							
4.16	3.40	16.80	49.47							
4.34	3.60	17.30	49.60							
4.51	3.80	17.70	49.75							
4.68	4.10	18.20	49.90							
4.85	4.30	18.60	50.05							
5.03	4.50	19.10	50.20							
5.20	4.68	19.50	50.35							
5.32	4.86	20.00	50.50							
5.44	5.04	20.40	50.65							
5.56	5.22	20.90	50.80							
5.68	5.40	21.30	50.95							
5.80	5.60	22.00	51.10							
5.92	5.80	22.60	51.24							
6.04	6.10	23.30	51.39							
6.16	6.30	23.90	51.53							
6.28	6.50	24.60	51.68							
6.40	6.70	26.00	51.82							
6.52	6.90	27.40	51.97							
6.64	7.20	28.80	52.11							
6.76	7.40	30.20	52.26							
6.88	7.60	31.60	52.40							
7.00	7.90	33.60	DCP REF.							
7.12	8.10	35.40	50/3.0"							
7.24	8.40	36.10								
7.36	8.60	37.30								
7.48	8.90	37.90								
7.60	8.99	38.70								
7.66	9.08	39.40								
7.71	9.17	40.10								
7.77	9.26	41.10								
7.82	9.35	41.90								
7.88	9.44	42.70								
7.93	9.53	43.50								
7.99	9.62	44.00								
8.04	9.71	44.40								
8.10	9.80	44.80								
8.15	10.00	45.30								
8.21	10.20	45.45								
8.26	10.50	45.60								
8.32	10.70	45.75								
8.37	10.90	45.90								
8.43	11.05	46.05								
8.48	11.20	46.20								
8.54	11.35	46.35								
8.59	11.50	46.50								
8.65	11.65	46.65								
8.70	11.80	46.80								
DCP REF.	11.95	46.95								
AUGER 12.9	12.10	47.10								
TO 21.6 CM	12.25	47.25								
0.00	12.40	47.40								
0.30	12.70	47.55								
0.60	12.90	47.70								
0.90	13.20	47.85								
1.20	13.50	48.00								

Test Location	Date Run
C-5 -Y1- Sta. 6+64 RT PS 1.8 FT RT FW	8/7 to 8/9/22

Type	Test Interval						Datum		Cut/Fill	
DCP	Cumulative cm per blow						SG (A-4)		5.0 ft Fill	
3.90	100.00									
7.40	100.40									
10.60	101.20									
13.60	101.50									
15.80	102.30									
18.70	103.40									
21.80	104.00									
25.30	104.30									
29.80	105.10									
34.50	105.60									
38.10	106.10									
41.40										
44.80										
47.80										
51.20										
53.80										
55.80										
57.90										
59.40										
60.90										
62.20										
63.20										
64.10										
65.30										
66.30										
67.50										
68.60										
69.70										
71.10										
72.30										
73.40										
74.60										
75.40										
76.50										
77.30										
78.20										
79.50										
80.30										
81.30										
82.10										
82.70										
83.40										
83.90										
84.60										
85.60										
86.70										
88.60										
89.20										
89.70										
90.20										
91.50										
92.50										
92.90										
93.40										
94.20										
94.40										
95.10										
95.80										
96.10										
96.80										
97.30										
97.80										
98.40										
99.10										
99.40										

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET

WBS NO.	PROJECT TIP I.D.	ROUTE
46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
COUNTY	**FIELD PROFESSIONAL**	**FIELD CREW**
Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-6 -Y1- Sta. 18+03 LTL (LT) 5.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		ABC	5.0 ft Fill
0.50	DCP REF.	54.20		
1.00	AUGER 14.6	54.70		
1.50	TO 33.0 CM	55.20		
2.00	2.90	55.70		
2.50	5.70	56.10		
3.10	8.20	56.50		
3.70	11.90	56.90		
4.30	14.80	57.30		
4.90	16.10	57.70		
5.50	17.60	57.83		
6.80	18.70	57.96		
8.00	20.00	58.09		
9.30	21.00	58.22		
10.50	21.20	58.35		
12.30	21.40	58.48		
12.60	21.60	58.61		
12.80	21.80	58.74		
13.10	22.00	58.87		
13.30	22.30	59.00		
13.60	22.60	59.02		
13.90	23.00	59.03		
14.10	23.30	59.05		
14.40	23.60	59.06		
14.60	24.00	59.08		
14.90	24.40	59.09		
15.05	24.70	59.11		
15.20	25.10	59.12		
15.35	25.50	59.14		
15.50	26.20	59.15		
15.65	26.90	59.17		
15.80	27.50	59.18		
15.95	28.20	59.20		
16.10	28.90	59.21		
16.25	29.60	59.23		
16.40	30.30	59.24		
16.57	30.90	59.26		
16.74	31.60	59.27		
16.91	32.30	59.29		
17.08	33.20	59.30		
17.25	34.20	59.32		
17.42	35.10	59.33		
17.59	36.10	59.35		
17.76	37.00	59.36		
17.93	38.40	59.38		
18.10	39.30	59.39		
18.12	40.50	59.41		
18.13	42.60	59.42		
18.15	43.40	59.44		
18.16	44.60	59.45		
18.18	45.60	59.47		
18.19	46.60	59.48		
18.21	47.80	59.50		
18.22	49.10	59.51		
18.24	50.30	59.53		
18.25	50.60	59.54		
18.27	50.80	59.56		
18.28	51.10	59.57		
18.30	51.30	59.59		
18.31	51.60	59.60		
18.33	51.90	DCP REF.		
18.34	52.20	50/1.0"		
18.36	52.60			
18.37	52.90			
18.39	53.20			
18.40	53.70			

Test Location	Date Run
C-7 -Y1- Sta. 22+32 LTL (LT) 7.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow			ABC	5.0 ft Fill
0.50	3.20	31.80	65.00	83.68	
1.10	3.50	32.10	65.70	83.77	
1.18	3.90	32.30	66.50	83.86	
1.25	4.20	32.60	67.10	83.95	
1.33	4.60	32.90	68.10	84.04	
1.41	4.90	33.20	69.10	84.13	
1.48	5.30	33.80	70.30	84.22	
1.56	6.00	34.10	71.10	84.31	
1.63	6.60	34.60	72.10	84.40	
1.71	7.30	35.30	72.60	84.43	
1.79	7.90	36.10	73.10	84.45	
1.86	8.60	36.90	73.50	84.48	
1.94	9.70	38.00	74.00	84.50	
2.02	10.80	39.00	74.50	84.53	
2.09	12.00	40.00	74.80	84.55	
2.17	13.10	40.80	75.10	84.58	
2.25	14.20	41.50	75.30	84.60	
2.32	15.20	42.40	75.60	84.63	
2.40	16.40	43.20	75.90	84.65	
2.47	17.50	44.00	76.10	84.68	
2.55	18.00	44.90	76.40	84.70	
2.63	18.60	45.90	76.60	84.73	
2.70	19.00	46.30	76.90	84.75	
2.78	19.40	47.40	77.10	84.78	
2.86	19.70	48.00	77.30	84.80	
2.93	20.00	48.70	77.50	84.83	
3.01	20.20	49.00	77.70	84.85	
3.09	20.50	50.20	77.90	84.88	
3.16	20.80	50.70	78.10	84.90	
3.24	21.10	51.00	78.28	DCP REF.	
3.31	21.40	51.20	78.46	50/1.0"	
3.39	21.70	51.50	78.64		
3.47	22.00	52.00	78.82		
3.54	22.30	52.20	79.00		
3.62	22.60	52.40	79.18		
3.70	23.10	52.60	79.36		
3.77	23.70	52.80	79.54		
3.85	24.90	53.00	79.72		
3.93	25.90	53.20	79.90		
4.00	26.80	53.40	80.10		
4.08	27.50	53.60	80.30		
4.15	27.90	53.80	80.50		
4.23	28.40	54.00	80.70		
4.31	28.90	54.18	80.90		
4.38	29.10	54.36	81.08		
4.46	29.30	54.54	81.26		
4.54	29.60	54.72	81.44		
4.61	29.80	54.90	81.62		
4.69	30.00	55.30	81.80		
4.77	30.06	55.70	81.98		
4.84	30.12	56.20	82.16		
4.92	30.18	56.60	82.34		
4.99	30.24	57.00	82.52		
5.07	30.30	57.60	82.70		
5.15	30.36	58.10	82.78		
5.22	30.42	58.70	82.86		
5.30	30.48	59.20	82.94		
DCP REF	30.54	59.80	83.02		
AUGER 21.9	30.60	60.40	83.10		
TO 27.2 CM	30.74	61.00	83.18		
0.90	30.88	61.50	83.26		
1.80	31.02	62.10	83.34		
2.10	31.16	62.70	83.42		
2.50	31.30	63.50	83.50		
2.80	31.60	64.20	83.59		

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET

WBS NO.	PROJECT TIP I.D.	ROUTE
46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
COUNTY	**FIELD PROFESSIONAL**	**FIELD CREW**
Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-8 -Y1- Sta. 24+65 LTL (RT) 8.5 FT RT FY	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		SG (A-4)	At Grade
3.20	76.06			
4.60	76.40			
5.60	77.00			
6.10	77.60			
6.50	78.20			
7.00	78.80			
7.40	79.40			
7.90	79.60			
8.50	79.90			
9.20	80.10			
9.80	80.40			
10.50	80.60			
11.10	81.20			
11.80	81.70			
12.40	82.30			
13.10	82.80			
13.70	83.40			
14.40	84.10			
15.20	84.90			
16.00	85.50			
16.80	86.40			
17.60	87.00			
18.40	87.30			
19.90	88.10			
21.10	89.80			
22.60	90.50			
24.00	91.40			
25.60	92.30			
27.50	93.40			
29.10	94.80			
30.60	95.30			
31.60	96.50			
32.70	97.30			
34.30	98.10			
35.50	98.80			
36.70				
37.80				
39.50				
41.00				
43.30				
45.70				
48.10				
50.40				
52.40				
54.40				
56.00				
57.60				
59.30				
60.70				
61.80				
63.00				
64.20				
65.20				
66.50				
67.30				
68.10				
68.70				
69.90				
71.00				
72.40				
73.00				
75.00				
75.40				
75.70				
76.10				

Test Location	Date Run
C-9 -Y1- Sta. 24+65 RT ISL 8.0 FT RT FW	8/7 to 8/9/22

Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow			ABC	At Grade
0.20	2.10	18.00	78.10		
0.40	2.40	19.00	78.70		
0.60	2.60	20.00	79.20		
0.80	2.90	21.20	79.80		
1.00	3.20	22.30	80.40		
1.20	3.34	23.20	81.00		
1.40	3.48	24.10	81.60		
1.70	3.62	25.10	82.30		
1.90	3.76	26.10	83.10		
2.10	3.90	27.00	83.80		
2.21	4.04	27.90	84.50		
2.32	4.18	29.10	85.40		
2.43	4.32	30.30	86.00		
2.54	4.46	31.60	86.50		
2.65	4.60	32.80	87.40		
2.76	4.72	34.10	88.10		
2.87	4.84	35.30	88.60		
2.98	4.96	36.20	89.70		
3.09	5.08	37.30	91.00		
3.20	5.20	38.30	92.20		
3.38	5.40	39.40			
3.56	5.60	40.60			
3.74	5.90	41.50			
3.92	6.10	42.90			
4.10	6.30	43.80			
4.28	6.48	45.00			
4.46	6.66	46.10			
4.64	6.84	47.20			
4.82	7.02	48.30			
5.00	7.20	49.80			
5.08	7.36	50.70			
5.15	7.52	52.00			
5.23	7.68	53.10			
5.30	7.84	54.20			
5.38	8.00	55.20			
5.45	8.15	56.00			
5.53	8.30	57.00			
5.60	8.45	57.90			
5.68	8.60	58.60			
5.75	8.75	59.00			
5.83	8.90	59.50			
5.90	9.05	59.90			
5.98	9.20	60.40			
6.05	9.35	61.00			
6.13	9.50	61.70			
6.20	9.70	62.40			
6.28	9.90	62.80			
6.35	10.20	63.30			
6.43	10.40	65.50			
6.50	10.60	66.70			
6.65	10.80	67.80			
6.80	11.00	68.50			
6.95	11.30	68.90			
7.10	11.50	69.70			
7.25	11.70	70.60			
7.40	12.00	72.10			
7.55	12.40	73.00			
7.70	12.70	73.70			
7.85	13.10	74.30			
8.00	13.40	74.90			
DCP REF.	14.20	75.40			
AUGER 19.3	15.20	75.90			
TO 27.3 CM	15.90	76.50			
1.10	16.50	77.00			
1.80	17.10	77.50			

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner/M. Brewer	C. Odom, L. Ard, P. Tomasic, D. Underwood

Test Location	Date Run	Test Location	Date Run
C-10 -Y1- Sta. 24+65 RT OSL 7.0 FT LT FW	8/7 to 8/9/22	C-13 -Y1- Sta. 26+62 LT OSL 5.0 FT LT FW	9/18/2022

Type	Test Interval		Datum	Cut/Fill	Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		ABC	At Grade	DCP	Cumulative cm per blow		SG (A-7-6)	5.0 ft Fill
0.20	1.30	56.60			4 (WOD)	79.45			
0.50	1.50	57.60			21.20	79.50			
0.80	1.80	58.50			36.50	79.58			
1.00	2.00	59.00			59.90	79.66			
1.30	2.20	59.60			65.50	79.74			
1.60	2.40	60.10			68.50	79.82			
1.90	2.60	60.70			69.70	79.90			
2.20	2.80	61.30			70.80	79.98			
2.40	3.00	61.90			71.60	80.06			
2.70	3.20	62.40			72.10	80.14			
3.00	3.36	63.00			72.60	80.22			
3.20	3.52	63.60			73.10	80.30			
3.40	3.68	64.20			74.00				
3.60	3.84	64.90			74.30				
3.80	4.00	65.60			74.50				
4.00	4.30	66.20			75.00				
4.20	4.60	66.80			76.50				
4.40	4.90	67.10			76.61				
4.60	5.20	67.70			76.72				
4.80	5.50	68.20			76.83				
5.00	5.90	68.90			76.94				
5.18	6.20	69.30			77.05				
5.36	6.60	69.90			77.16				
5.54	7.00	70.30			77.27				
5.72	7.70	70.70			77.38				
5.90	8.20	71.30			77.49				
6.06	8.90	72.60			77.60				
6.22	9.50	73.40			77.65				
6.38	10.20	73.90			77.70				
6.54	11.40	74.80			77.75				
6.70	13.00	75.40			77.80				
6.78	14.40	76.00			77.85				
6.86	15.90	76.50			77.90				
6.94	17.30	77.00			77.95				
7.02	18.80	77.70			78.00				
7.10	20.10	78.30			78.05				
7.18	21.60	79.10			78.10				
7.26	23.30	79.80			78.15				
7.34	25.00	80.60			78.20				
7.42	26.80	81.50			78.25				
7.50	28.50	82.00			78.30				
7.60	30.30	82.40			78.35				
7.70	32.00	83.20			78.40				
7.80	33.40	83.40			78.45				
7.90	34.70	83.60			78.50				
8.00	35.80	83.80			78.55				
8.10	36.90	84.00			78.60				
8.20	37.70	84.20			78.64				
8.30	38.50	84.40			78.68				
8.40	39.30	84.60			78.72				
8.50	40.30	84.80			78.76				
8.61	41.10	85.00			78.80				
8.72	42.10	85.20			78.84				
8.83	43.00	85.36			78.88				
8.94	44.00	85.52			78.92				
9.05	45.60	85.68			78.96				
9.16	47.10	85.84			79.00				
9.27	48.50	86.00			79.05				
9.38	49.60	86.12			79.10				
9.49	50.50	86.24			79.15				
9.60	51.50	86.36			79.20				
DCP REF.	52.60	86.48			79.25				
AUGER 13.7	53.90	86.60			79.30				
TO 23.3 CM	54.90				79.35				
1.10	55.90				79.40				

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner/M. Brewer	C. Odom, L. Ard, P. Tomasic, D. Underwood

Test Location	Date Run	Test Location	Date Run
C-14 -Y1- Sta. 26+62 LT ISL 6.0 FT RT FW	9/18/2022	C-15 -Y1- Sta. 26+62 LTL (LT) 7.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill	Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		SG (A-7-6)	5.0 ft Fill	DCP	Cumulative cm per blow		SG (A-7-6)	5.0 ft Fill
6.10					1.80	91.50			
9.90					3.50	92.80			
12.80					5.40	93.70			
15.80					7.00	95.20			
19.10					8.10	96.50			
22.60					9.30	97.50			
31.20					10.30	98.40			
36.60					11.80	99.60			
38.00					13.10	100.40			
40.00					14.50				
42.50					16.00				
45.60					17.80				
48.70					19.60				
52.30					21.20				
56.50					22.30				
59.50					23.30				
62.50					24.50				
66.80					25.80				
71.30					26.40				
76.50					26.80				
79.60					27.20				
82.50					27.70				
					28.10				
					28.50				
					29.50				
					30.00				
					30.90				
					31.80				
					32.80				
					34.50				
					36.40				
					38.10				
					39.90				
					42.10				
					44.20				
					46.40				
					48.40				
					50.10				
					52.00				
					53.60				
					55.50				
					57.20				
					59.30				
					61.50				
					63.30				
					65.00				
					66.50				
					68.10				
					69.50				
					71.10				
					72.60				
					73.70				
					74.30				
					76.70				
					78.20				
					79.60				
					80.90				
					82.30				
					83.80				
					84.80				
					86.00				
					87.20				
					88.20				
					89.50				
					90.70				

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-16 -Y1- Sta. 29+24 RTL (RT) 9.0 FT LT FW	8/7 to 8/9/22

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				ABC		5.0 ft Fill	
1.40	94.10							
2.50	95.40							
3.04	97.60							
3.58	98.90							
4.12	100.60							
4.66								
5.20								
5.54								
5.88								
6.22								
6.56								
6.90								
7.38								
7.86								
8.34								
8.82								
9.30								
9.90								
10.50								
10.90								
11.50								
11.90								
12.30								
12.90								
13.60								
14.30								
14.70								
15.30								
16.00								
16.90								
18.90								
20.50								
24.10								
29.40								
34.10								
36.60								
42.70								
46.00								
49.40								
52.30								
54.50								
56.00								
57.60								
59.00								
60.40								
61.90								
63.20								
64.30								
65.40								
66.60								
68.50								
70.10								
72.10								
73.80								
75.50								
76.90								
78.80								
81.10								
84.20								
86.70								
88.10								
89.40								
90.90								
91.70								
93.00								

Test Location	Date Run
C-17 -Y1- Sta. 30+66 LTL (LT) 5.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				ABC		5.0 ft Fill	
1.80	22.20	70.20						
2.50	22.60	71.40						
2.70	23.00	72.10						
3.00	23.30	73.00						
4.10	23.60	74.00						
4.50	23.90	75.10						
5.00	24.20	76.70						
5.40	24.50	77.50						
5.80	24.90	79.30						
6.10	25.40	81.00						
6.50	25.80	84.30						
6.80	26.30	87.00						
7.40	26.70	89.50						
7.70	27.10	91.90						
8.00	27.50	94.10						
8.30	28.00	96.00						
8.60	28.40	98.60						
8.90	28.80							
9.20	29.20							
9.50	29.60							
9.80	29.90							
10.10	30.30							
10.40	30.70							
10.80	31.20							
11.10	31.80							
11.50	32.30							
11.80	32.90							
12.20	33.40							
12.50	34.00							
12.80	34.60							
13.10	35.40							
13.40	36.00							
13.70	36.70							
13.86	37.20							
14.02	37.70							
14.18	38.10							
14.34	38.60							
14.50	39.10							
14.70	39.80							
14.90	40.50							
15.10	41.10							
15.30	41.80							
15.50	42.50							
15.70	43.40							
15.90	44.30							
16.20	45.30							
16.40	46.20							
16.60	47.10							
16.80	48.70							
17.00	50.20							
17.20	51.60							
17.40	53.40							
17.60	54.70							
17.90	56.50							
18.30	57.90							
18.60	58.90							
19.00	59.50							
19.30	60.60							
19.60	61.70							
20.00	62.80							
20.30	64.00							
20.70	65.40							
21.00	66.70							
21.40	67.80							
21.80	69.20							

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-18 -Y1- Sta. 35+27 LTL (RT) 6.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				ABC		5.0 ft Fill	
1.40	19.30	58.50						
2.20	19.60	60.30						
2.60	19.80	61.80						
2.80	20.10	63.30						
3.30	20.30	64.50						
3.60	20.50	66.00						
3.90	20.80	67.20						
4.20	21.00	68.40						
4.50	21.30	69.60						
4.80	21.50	70.70						
5.10	21.70	71.50						
5.40	22.00	72.30						
5.70	22.20	73.30						
6.00	22.50	74.10						
6.30	22.70	75.10						
6.60	22.90	76.10						
6.90	23.20	77.20						
7.20	23.40	78.00						
7.50	23.70	80.10						
7.80	23.90	81.20						
8.10	24.20	82.50						
8.40	24.50	83.70						
8.70	24.70	84.60						
9.00	25.00	85.70						
9.30	25.30	86.60						
9.60	25.60	87.40						
9.90	25.90	88.70						
10.30	26.30	89.80						
10.60	26.60	90.50						
10.90	26.90	91.50						
11.20	27.10	92.30						
11.50	27.40	93.40						
11.70	27.60	94.50						
12.00	27.90	95.40						
12.30	28.10	96.10						
12.50	28.50	96.80						
12.70	28.80	97.40						
13.00	29.20	97.80						
13.20	29.50	98.30						
13.40	29.90	98.70						
13.60	30.20	99.40						
13.80	30.50	99.90						
14.10	30.80	100.50						
14.30	31.10	101.00						
14.50	31.40	101.80						
14.80	31.80	102.90						
15.10	32.20	104.70						
15.30	32.60	106.20						
15.60	33.00	107.00						
15.90	33.40	108.40						
16.10	33.90	109.70						
16.40	34.50	110.60						
16.60	35.00	111.40						
16.90	35.60	112.40						
17.10	36.10	113.20						
17.30	38.50	113.90						
17.50	41.10	114.60						
17.70	43.30	116.00						
17.90	46.40	117.80						
18.10	48.70	119.30						
18.30	51.10							
18.50	52.80							
18.70	54.50							
18.90	56.90							
19.10	57.10							

Test Location	Date Run
C-19 -Y1- Sta. 35+27 RTL (RT) 9.0 FT LT FW	8/7 to 8/9/22

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				ABC		6.0 ft Fill	
2.40	21.30	102.90						
3.50	21.70	104.30						
4.10	22.10	105.70						
4.50	22.50	106.60						
5.10	22.90	108.00						
5.40	23.30	109.20						
5.58	23.80	110.70						
5.76	24.20							
5.94	24.70							
6.12	25.10							
6.30	25.60							
6.50	26.10							
6.70	26.60							
6.90	27.10							
7.10	27.60							
7.30	28.10							
7.50	28.60							
7.70	29.10							
7.90	29.80							
8.10	30.30							
8.30	30.90							
8.48	31.60							
8.66	32.50							
8.84	33.30							
9.02	34.00							
9.20	34.90							
9.40	35.80							
9.60	36.80							
9.90	37.90							
10.10	38.70							
10.30	39.60							
10.60	40.80							
10.90	42.70							
11.10	44.20							
11.40	49.00							
11.70	53.40							
11.90	56.80							
12.20	60.10							
12.40	63.20							
12.70	65.50							
12.90	67.80							
13.20	70.00							
13.50	71.90							
13.90	73.70							
14.20	75.50							
14.50	76.90							
14.80	78.50							
15.10	79.80							
15.40	81.00							
15.70	82.30							
16.00	83.60							
16.40	85.00							
16.80	86.50							
17.10	87.40							
17.50	88.90							
17.90	90.10							
18.20	91.40							
18.60	92.60							
18.90	93.90							
19.30	95.40							
19.60	96.70							
19.90	98.00							
20.30	99.40							
20.60	100.50							
21.00	101.40							

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-21 -Y1- Sta. 36+92 LT OSL 8.0 FT LT FW	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	SG (A-6)	5.0 ft Fill
4.40			
8.20			
12.40			
17.10			
20.90			
24.60			
29.80			
36.30			
44.10			
51.90			
58.40			
64.10			
75.00			
83.00			

Test Location	Date Run
C-22 -Y1- Sta. 36+92 LT ISL 1.0 FT RT FW	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	SG (A-6)	5.0 ft Fill
1.90			
3.90			
5.80			
8.80			
13.60			
18.90			
21.70			
23.50			
24.70			
25.90			
27.80			
30.00			
32.50			
36.60			
41.10			
45.00			
49.60			
53.60			
55.90			
58.10			
60.40			
62.30			
64.10			
65.60			
67.20			
69.00			
70.00			
71.30			
72.40			
73.40			

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-23 -Y1- Sta. 36+92 LTL (LT) 1.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	ABC	5.0 ft Fill
0.50	28.80		
1.10	29.80		
1.90	30.80		
2.40	32.20		
2.90	33.10		
4.10	34.40		
4.50	35.30		
4.68	36.10		
4.86	36.80		
5.04	37.80		
5.22	38.80		
5.40	39.70		
5.70	40.70		
6.00	41.80		
6.20	43.10		
6.50	44.20		
6.80	45.80		
7.10	47.10		
7.50	48.60		
7.80	50.80		
8.00	52.10		
8.30	54.10		
8.50	55.80		
8.80	57.30		
9.10	58.90		
9.50	60.50		
9.80	61.70		
10.20	63.10		
10.50	64.90		
10.80	66.40		
11.10	68.40		
11.30	70.10		
11.60	72.00		
11.90	73.60		
12.20	75.60		
12.50	77.40		
12.70	79.40		
13.00	81.70		
13.30	83.90		
13.60	86.10		
14.00	87.50		
14.30	88.90		
14.70	90.20		
15.00	91.60		
15.40	92.70		
15.80	94.00		
16.20	95.20		
16.60	96.40		
17.00	97.60		
17.40	99.00		
17.70	100.40		
18.10	101.50		
18.40	102.60		
18.80	103.50		
19.30	104.40		
19.90	105.60		
20.40	106.40		
21.00	107.40		
21.50	108.30		
22.60	109.30		
23.50	109.90		
24.70	111.00		
26.30	111.80		
27.00	112.50		
28.10	113.30		

Test Location	Date Run
C-24 -Y1- Sta. 39+65 LTL (RT) 4.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow			ABC	5.0 ft Fill
0.30	16.70	32.90	90.50	98.01	
0.60	16.90	33.50	90.80	98.04	
0.80	17.10	34.10	91.10	98.06	
1.10	17.30	34.50	91.40	98.08	
1.40	17.50	35.20	91.70	98.10	
1.60	17.62	36.10	92.10	98.12	
1.80	17.74	37.30	92.40	98.15	
2.10	17.86	38.70	92.80	98.17	
2.30	17.98	40.70	93.10	98.19	
2.50	18.10	44.30	93.40	98.21	
2.80	18.26	47.80	93.80	98.23	
3.20	18.42	52.90	94.10	98.26	
3.50	18.58	56.60	94.50	98.28	
3.90	18.74	59.10	94.80	98.30	
4.20	18.90	60.70	95.10	DCP REF	
4.50	19.06	62.40	95.30	50/1.0"	
4.80	19.22	64.40	95.60		
5.00	19.38	66.90	95.80		
5.30	19.54	67.60	96.10		
5.60	19.70	69.70	96.21		
5.90	19.88	71.70	96.32		
6.10	20.06	72.80	96.43		
6.40	20.24	74.00	96.54		
6.60	20.42	75.20	96.65		
6.90	20.60	76.10	96.76		
7.10	20.78	77.70	96.87		
7.30	20.96	78.30	96.98		
7.60	21.14	79.10	97.09		
7.80	21.32	79.90	97.20		
8.00	21.50	80.70	97.22		
8.20	21.80	81.70	97.24		
8.40	22.00	82.60	97.27		
8.70	22.30	83.00	97.29		
8.90	22.50	83.50	97.31		
9.10	22.80	84.10	97.33		
9.40	23.10	84.70	97.35		
9.60	23.30	85.20	97.38		
9.90	23.60	85.50	97.40		
10.10	23.80	85.90	97.42		
10.40	24.10	86.02	97.44		
10.60	24.30	86.14	97.46		
10.80	24.60	86.26	97.49		
11.00	24.80	86.38	97.51		
11.20	25.00	86.50	97.53		
11.40	25.30	86.62	97.55		
11.70	25.50	86.74	97.57		
12.00	25.70	86.86	97.60		
12.40	25.90	86.98	97.62		
12.70	26.20	87.10	97.64		
13.00	26.40	87.24	97.66		
13.30	26.60	87.38	97.68		
13.50	26.80	87.52	97.71		
13.80	27.10	87.66	97.73		
14.00	27.30	87.80	97.75		
14.30	27.50	87.94	97.77		
14.50	27.70	88.08	97.79		
14.70	27.90	88.22	97.82		
15.00	28.20	88.36	97.84		
15.20	28.40	88.50	97.86		
15.40	28.60	88.80	97.88		
15.60	29.40	89.10	97.90		
15.80	30.20	89.40	97.93		
16.10	30.90	89.70	97.95		
16.30	31.70	90.00	97.97		
16.50	32.50	90.20	97.99		

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-25 -Y1- Sta. 39+65 RT ISL 7.0 FT RT FW	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		ABC	5.0 ft Fill
3.40	23.70	59.60		
4.80	24.00	59.71		
5.40	24.30	59.82		
6.10	24.60	59.93		
6.90	24.90	60.04		
7.50	25.10	60.15		
7.90	25.30	60.26		
8.50	25.60	60.37		
8.90	25.80	60.48		
9.30	26.00	60.59		
9.70	26.20	60.70		
10.20	26.50	60.71		
10.60	26.70	60.72		
11.10	27.00	60.73		
11.50	27.20	60.74		
11.90	27.34	60.75		
12.20	27.48	60.76		
12.60	27.62	60.77		
12.90	27.76	60.78		
13.30	27.90	60.79		
13.60	28.10	60.80		
13.90	28.30	60.81		
14.20	28.50	60.82		
14.50	28.70	60.83		
14.80	28.90	60.84		
15.14	29.10	60.85		
15.48	29.40	60.86		
15.82	29.60	60.87		
16.16	29.90	60.88		
16.50	30.10	60.89		
16.66	30.26	60.90		
16.82	30.42	60.91		
16.98	30.58	60.92		
17.14	30.74	60.93		
17.30	30.90	60.94		
17.50	31.08	60.95		
17.70	31.26	60.96		
18.00	31.44	60.97		
18.20	31.62	60.98		
18.40	31.80	60.99		
18.56	32.10	61.00		
18.72	32.30	61.01		
18.88	32.60	61.02		
19.04	32.80	61.03		
19.20	33.10	61.04		
19.36	33.40	61.05		
19.52	33.70	61.06		
19.68	34.10	61.07		
19.84	34.40	61.08		
20.00	34.70	61.09		
20.20	35.10	61.10		
20.40	35.50	DCP REF.		
20.60	35.90	50/1.0"		
20.80	36.30			
21.00	36.70			
21.20	39.00			
21.40	41.20			
21.60	42.50			
21.80	44.00			
22.00	45.90			
22.30	48.50			
22.60	51.60			
22.80	55.80			
23.10	58.10			
23.40	59.10			

Test Location	Date Run
C-26 -Y1- Sta. 39+65 RT OSL 4.5 FT LT FW	8/7 to 8/9/22

Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow			ABC	5.0 ft Fill
0.80	19.20	58.00	98.08		
1.30	19.50	59.70	98.22		
1.80	19.70	61.10	98.36		
2.40	20.00	61.90	98.50		
2.90	20.20	62.50	98.53		
3.40	20.50	63.00	98.55		
3.80	20.70	63.50	98.58		
4.20	21.00	64.30	98.60		
4.50	21.20	65.10	98.63		
4.90	21.50	66.00	98.65		
5.30	21.70	66.90	98.68		
5.70	22.00	67.50	98.70		
6.00	22.30	68.00	98.73		
6.40	22.50	69.00	98.75		
6.70	22.80	69.60	98.78		
7.10	23.10	70.50	98.80		
7.40	23.26	71.10	98.83		
7.70	23.42	71.90	98.85		
8.00	23.58	73.10	98.88		
8.30	23.74	74.00	98.90		
8.60	23.90	75.20	98.93		
8.80	24.06	76.40	98.95		
9.10	24.22	77.50	98.98		
9.30	24.38	78.40	99.00		
9.60	24.54	80.00	DCP REF.		
9.80	24.70	80.60	50/1.5"		
10.10	24.88	81.70			
10.50	25.06	82.70			
10.80	25.24	83.60			
11.20	25.42	84.50			
11.50	25.60	85.80			
11.90	25.80	87.50			
12.30	26.10	89.00			
12.60	26.30	90.00			
13.00	26.60	91.00			
13.40	26.80	91.80			
13.57	26.98	92.80			
13.74	27.16	93.90			
13.91	27.34	95.50			
14.08	27.52	95.61			
14.25	27.70	95.72			
14.42	28.10	95.83			
14.59	28.60	95.94			
14.76	29.00	96.05			
14.93	29.50	96.16			
15.10	29.90	96.27			
15.30	30.60	96.38			
15.50	31.20	96.49			
15.70	31.80	96.60			
15.90	32.30	96.65			
16.10	32.90	96.70			
16.30	33.70	96.75			
16.50	34.30	96.80			
16.70	35.30	96.85			
16.90	36.50	96.90			
17.10	38.50	96.95			
17.28	40.30	97.00			
17.46	42.60	97.05			
17.64	44.50	97.10			
17.82	46.70	97.24			
18.00	48.90	97.38			
18.20	51.40	97.52			
18.50	54.40	97.66			
18.70	55.90	97.80			
19.00	57.10	97.94			

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-27 -Y1- Sta. 39+65 RT PS 0.2 FT RT FW	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		ABC	5.0 ft Fill
0.40	17.90	71.20		
0.70	18.60	71.20		
1.10	19.80	71.20		
1.40	21.40	71.20		
1.80	22.10	71.20		
2.00	22.60	71.20		
2.30	23.20	71.20		
2.50	23.90	71.20		
2.80	24.70	71.20		
3.00	25.20	71.20		
3.06	25.80	71.20		
3.12	26.60	71.20		
3.18	27.50	71.20		
3.24	28.70	71.20		
3.30	30.90	71.20		
3.42	33.10	71.20		
3.54	35.30	71.20		
3.66	37.00	71.20		
3.78	38.60	71.20		
3.90	39.60	71.20		
4.04	41.90	71.20		
4.18	43.50	71.20		
4.32	44.20	71.20		
4.46	44.90	71.20		
4.60	45.40	71.20		
4.90	46.00	71.20		
5.20	46.70	71.20		
5.50	47.60	71.20		
5.80	48.60	71.20		
6.10	49.50	71.20		
6.40	50.70	71.20		
6.60	51.50	71.20		
6.90	51.90	71.20		
7.10	52.50	71.20		
7.40	53.10	71.20		
7.60	53.50	71.20		
7.80	54.20	71.20		
8.10	55.30	71.20		
8.30	56.90	71.20		
8.50	58.20	71.20		
8.90	59.20	71.20		
9.20	60.30	71.20		
9.60	61.00	71.20		
9.90	61.40	71.20		
10.30	61.90	71.20		
10.50	62.60	71.20		
10.80	63.80	DCP REF		
11.00	65.60	50/0"		
11.30	67.20			
11.50	69.10			
11.80	70.30			
12.10	70.39			
12.40	70.48			
12.70	70.57			
13.00	70.66			
13.30	70.75			
13.60	70.84			
14.00	70.93			
14.30	71.02			
14.60	71.11			
15.20	71.20			
15.70	71.20			
16.30	71.20			
16.80	71.20			
17.40	71.20			

Test Location	Date Run
C-28 -Y1- Sta. 42+44 RTL (LT) 7.0 FT LT FW	8/7 to 8/9/22

Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow			ABC	5.0 ft Fill
1.10	60.50				
1.90	62.20				
2.40	64.10				
2.70	65.80				
3.10	67.30				
3.40	69.30				
3.80	71.10				
4.10	72.70				
5.00	74.70				
5.50	76.20				
5.90	78.00				
6.60	79.80				
7.10	81.60				
7.70	83.20				
8.00	84.80				
8.40	86.80				
8.70	88.30				
9.10	89.70				
9.40	91.60				
9.80	93.00				
10.40	94.70				
11.00	96.10				
11.60	97.60				
12.20	99.20				
12.80	100.70				
13.80	102.20				
14.60	103.80				
15.10	105.80				
15.70	107.40				
16.10	109.20				
16.60	110.60				
17.10	112.10				
17.60					
18.10					
18.60					
19.10					
19.70					
20.30					
21.00					
21.80					
22.60					
23.50					
24.30					
25.30					
26.50					
27.60					
28.90					
30.20					
31.50					
32.50					
33.70					
34.90					
36.20					
37.80					
39.10					
40.80					
42.30					
45.20					
46.90					
49.10					
51.40					
53.40					
55.10					
56.90					
58.80					

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-29 -Y1- Sta. 42+44 LTL (LT) 5.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	ABC	5.0 ft Fill

1.10	72.80						
3.00	73.70						
3.90	75.00						
4.50	76.70						
5.20	78.80						
6.10	80.70						
6.50	82.10						
7.40	83.70						
8.20	86.00						
8.70	88.10						
9.30	90.00						
9.80	91.60						
11.00	92.80						
11.60	94.10						
12.20	95.50						
12.90	96.40						
13.50	98.40						
14.10	100.00						
14.70	101.10						
15.30	102.80						
15.90	104.10						
16.50	105.30						
17.10	106.70						
17.60	107.90						
18.00	109.80						
18.50	111.40						
18.90							
19.40							
20.50							
21.20							
23.30							
24.10							
24.70							
25.60							
26.40							
27.20							
27.80							
29.30							
31.30							
33.80							
36.10							
38.10							
39.40							
40.90							
42.90							
44.60							
46.30							
47.90							
50.20							
51.30							
53.50							
54.40							
55.50							
57.00							
58.20							
59.20							
60.20							
61.40							
62.80							
64.10							
65.20							
66.40							
68.20							
70.10							
71.20							

Test Location	Date Run
C-31 -Y1- Sta. 49+29 LTL (RT) 5.5 FT RT FY	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	ABC	At Grade

1.30	13.30	40.80					
1.50	13.50	42.80					
1.70	13.70	43.90					
1.90	13.90	45.10					
2.10	14.10	46.40					
2.30	14.30	47.80					
2.50	14.60	48.70					
2.70	14.80	49.90					
2.90	15.10	51.20					
3.10	15.30	53.40					
3.30	15.60	55.30					
3.46	15.80	57.60					
3.62	16.00	59.80					
3.78	16.20	62.90					
3.94	16.40	65.70					
4.10	16.60	68.50					
4.40	16.78	71.10					
4.70	16.96	73.70					
4.90	17.14	76.10					
5.20	17.32	78.40					
5.50	17.50	80.50					
5.60	17.80	82.50					
5.70	18.10	84.80					
5.90	18.30	87.10					
6.00	18.60	89.10					
6.10	18.90	91.00					
6.19	19.10	93.40					
6.28	19.40	95.10					
6.37	19.60	97.00					
6.46	19.90	98.70					
6.55	20.10	100.70					
6.64	20.30	102.50					
6.73	20.60	104.20					
6.82	20.80	105.90					
6.91	21.10	107.50					
7.00	21.30	109.10					
7.14	21.50	111.20					
7.28	21.70	112.80					
7.42	22.00	114.50					
7.56	22.20	116.10					
7.70	22.40	117.40					
7.84	22.70	118.70					
7.98	23.00	120.00					
8.12	23.30	121.00					
8.26	23.60	122.00					
8.40	23.90	123.30					
8.60	24.10	124.70					
8.80	24.40	126.20					
9.00	24.60	127.70					
9.20	24.90	129.20					
9.50	25.10	131.00					
9.70	25.40	132.60					
9.90	25.70	134.40					
10.10	25.90	135.70					
10.30	26.20	137.50					
10.50	26.50						
10.80	27.60						
11.10	29.10						
11.30	30.80						
11.60	32.90						
11.90	35.10						
12.20	36.20						
12.50	37.40						
12.70	38.50						
13.00	39.70						

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run
C-32 -Y1- Sta. 49+29 RT OSL 3.0 FT LT FW	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	ABC	5.0 ft Fill

1.90	38.40						
2.90	40.00						
3.60	41.80						
3.90	44.10						
4.20	46.10						
4.50	47.90						
4.80	49.90						
5.10	51.80						
5.50	53.50						
5.80	55.10						
6.20	56.50						
6.50	57.80						
6.90	59.40						
7.30	60.80						
7.60	62.20						
8.00	63.70						
8.30	65.30						
8.70	66.60						
9.00	68.00						
9.30	69.50						
9.50	70.60						
9.80	71.70						
10.10	73.60						
10.30	75.40						
10.50	76.80						
10.70	78.20						
10.90	79.60						
11.10	81.10						
11.40	82.60						
11.80	84.10						
12.10	85.70						
12.50	87.00						
12.80	88.60						
12.96	90.40						
13.12	92.40						
13.28	93.90						
13.44	95.40						
13.60	95.80						
13.90	97.10						
14.10	98.50						
14.40	99.70						
14.60	100.80						
14.90	101.60						
15.20	103.20						
15.50	104.50						
15.90	105.80						
16.20	107.00						
16.50	107.70						
17.00	108.80						
17.40	110.30						
17.90	112.10						
18.30	113.40						
18.80							
19.70							
20.40							
21.00							
21.60							
22.40							
23.00							
24.10							
25.40							
27.10							
29.70							
32.90							
35.60							

Test Location	Date Run
C-34 -Y1- Sta. 51+16 LTL (LT) 7.0 FT RT FY	8/7 to 8/9/22

Type	Test Interval	Datum	Cut/Fill
DCP	Cumulative cm per blow	ABC	At Grade

2.40	74.10						
3.60	75.70						
4.30	77.30						
5.10	78.50						
6.40	79.80						
7.20	81.10						
7.60	82.10						
8.20	84.30						
8.70	85.60						
9.40	87.10						
10.00	88.20						
10.50	89.40						
11.00	91.10						
11.80	92.90						
12.50	94.90						
13.20	96.40						
14.00	96.90						
14.60	97.90						
15.20	98.60						
15.80	99.00						
16.30	99.30						
17.00	99.70						
18.60	100.00						
20.70	100.40						
22.10	100.60						
22.90	100.80						
23.40	101.10						
24.40	101.30						
25.40	101.50						
26.00	101.70						
27.20	101.90						
27.80	102.10						
28.50	102.30						
29.20	102.50						
30.30	102.70						
30.90	102.90						
31.40	103.20						
31.70	103.40						
34.40	103.60						
35.50	103.80						
36.50	104.10						
37.60	104.30						
38.60	104.60						
39.70	104.80						
41.00	105.10						
42.40	105.30						
44.30	105.60						
45.00	105.80						
47.00	106.10						
48.40	106.50						
49.60	107.00						
51.20	107.40						
52.40	107.90						
54.00	108.30						
55.40	108.80						
57.00	109.10						
58.30	109.60						
60.10	110.00						
61.70	110.60						
63.80	110.90						
65.50	111.40						
67.00							
68.90							
71.00							
73.00							

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run	Test Location	Date Run
C-35 -L- Sta. 15+81 CONCRETE LOT	8/7 to 8/9/22	C-36 -L- Sta. 17+33 ASPHALT LOT	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill	Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		ABC	10.0 ft Fill	DCP	Cumulative cm per blow		ABC	10.0 ft Fill
1.40	29.10	101.20			1.00	64.90			
1.70	29.30	102.40			1.60	66.40			
2.00	29.50	103.90			2.00	67.80			
2.30	29.80	105.20			2.60	69.30			
2.60	30.00	106.40			3.20	70.60			
2.90	30.20	108.00			3.50	72.10			
3.20	30.50	109.10			3.80	73.40			
3.50	30.80	110.10			4.20	74.60			
3.70	31.00	111.30			4.80	75.80			
4.02	31.30	112.70			5.20	77.00			
4.30	31.60	113.90			5.50	78.10			
4.50	32.10	114.90			5.90	79.10			
4.70	32.60	115.90			6.50	80.40			
4.90	33.10	117.20			6.80	81.40			
5.10	33.60	118.20			7.00	82.50			
5.40	34.10	119.20			7.50	83.60			
5.60	34.80	122.30			7.90	84.70			
5.80	35.40	123.60			8.50	86.00			
6.00	36.00				8.90	87.10			
6.20	36.40				9.40	88.10			
6.40	37.40				9.80	89.10			
6.70	38.20				10.50	90.20			
7.10	39.30				11.20	91.30			
7.40	40.20				11.60	92.40			
7.80	41.30				12.00	93.20			
8.10	41.80				12.40	94.30			
8.40	43.10				12.90	95.60			
8.80	44.10				13.50	96.40			
9.10	45.10				14.20	97.60			
9.50	48.40				14.60	98.60			
9.80	49.70				15.20	99.70			
10.20	51.10				15.60	100.60			
10.60	52.50				16.40	101.80			
10.90	54.00				16.70	102.50			
11.30	55.60				17.30	104.10			
11.70	57.30				17.70	105.00			
12.40	58.80				18.20	106.40			
13.30	60.30				18.70	107.40			
14.40	62.00				19.50	108.60			
15.20	63.50				20.30	109.60			
15.60	65.20				21.00	110.80			
16.30	66.60				22.10	112.20			
17.40	68.10				23.30	113.50			
18.60	69.50				25.10	114.40			
19.40	71.00				27.80	115.60			
20.30	72.50				30.00	116.90			
20.80	73.60				32.70	117.90			
21.60	75.60				36.20	118.80			
22.00	77.50				38.50	119.90			
22.30	79.20				40.90	120.90			
22.70	80.90				42.70	121.80			
23.00	82.30				44.40	122.90			
23.40	84.50				46.40	123.70			
24.50	86.40				48.20	124.60			
25.30	87.90				49.40	125.50			
25.90	89.40				50.50	126.40			
26.40	90.20				52.30	127.10			
26.80	91.50				53.60	127.80			
27.30	93.00				55.10	128.70			
27.60	94.50				56.60	129.50			
27.90	95.60				57.80	130.30			
28.10	96.90				59.30	131.20			
28.40	98.30				60.70	132.20			
28.60	99.30				62.10	133.60			
28.90	100.20				63.50	134.00			

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location	Date Run	Test Location	Date Run
C-39 -L- Sta. 51+25 RT LN 4.0 FT LT EOP	8/7 to 8/9/22	C-40 -L- Sta. 51+25 RT PS 1.0 FT LT EOP	8/7 to 8/9/22

Type	Test Interval		Datum	Cut/Fill	Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		SG (A-7-6)	At Grade	DCP	Cumulative cm per blow		SG (A-6)	At Grade
2.70					5.40				
4.80					7.60				
6.40					9.70				
7.80					11.70				
9.60					13.70				
11.50					16.50				
13.50					20.20				
15.60					23.50				
17.70					27.60				
19.20					30.70				
21.10					33.80				
23.30					36.80				
25.40					40.60				
27.70					46.90				
29.30					93.40				
30.80					97.30				
32.60					100.20				
34.60					102.60				
36.30					105.00				
38.20					107.30				
40.00					109.80				
42.30					111.90				
43.90					113.70				
45.60					115.50				
47.10					117.40				
49.20					119.00				
51.40									
53.40									
55.30									
57.30									
58.90									
60.40									
62.30									
64.00									
65.50									
66.70									
68.70									
70.50									
72.60									
74.20									
76.20									
78.60									
81.20									
83.30									
85.70									
87.70									
88.90									
91.00									
93.40									
95.00									
97.30									
99.50									
101.50									
103.80									
105.90									
107.60									
109.20									
111.30									
113.50									
115.80									
117.80									
119.40									
121.20									

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	T. Wenner, P.G.	C. Odom, D. Underwood, P. Tomasic

Test Location					Date Run		Test Location						Date Run	
C-37 -Y2- Sta. 23+62 RT LN 1.0 FT LT FW					8/7 to 8/9/22		C-38 -Y3- Sta. 12+84 LT LN 3.0 FT RT C&G						8/7 to 8/9/22	
Type	Test Interval			Datum	Cut/Fill		Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow			ABC	5.0 ft Fill		DCP	Cumulative cm per blow			ABC		At Grade	
2.30							1.50	53.80						
5.40							2.20	56.20						
9.20							3.00	58.40						
11.20							3.70	60.80						
14.40							4.30	62.80						
17.70							5.10	65.00						
20.60							5.60	66.90						
23.00							6.10	69.00						
24.50							6.50	70.50						
25.60							7.00	72.40						
27.10							7.40	74.40						
28.80							7.70	76.00						
30.50							8.10	77.60						
32.10							8.40	79.40						
33.80							8.80	81.00						
35.70							9.10	82.40						
37.30							9.40	84.20						
39.10							9.80	85.90						
41.10							10.10	87.50						
44.10							10.50	89.30						
46.90							10.80	90.60						
49.80							10.96	91.60						
52.90							11.12	93.00						
56.40							11.28	94.50						
60.40							11.44	95.90						
63.80							11.60	97.40						
67.10							11.76	98.50						
70.20							11.92	99.60						
75.10							12.08	100.80						
79.40							12.24	102.00						
83.70							12.40	103.20						
87.40							12.53	104.40						
90.20							12.66	105.60						
92.40							12.79	106.60						
94.90							12.92	108.00						
96.50							13.05	109.10						
97.80							13.18	110.20						
99.40							13.31	111.90						
101.50							13.44	113.20						
103.60							13.57	114.70						
106.30							13.70	115.70						
110.30							14.10	116.60						
114.00							14.40	117.30						
117.90							14.80	118.30						
122.00							15.20							
							15.60							
							15.90							
							16.30							
							16.70							
							17.00							
							17.40							
							18.40							
							19.60							
							21.30							
							24.40							
							27.30							
							29.80							
							32.90							
							35.40							
							38.40							
							41.20							
							43.50							
							46.20							
							49.00							
							51.50							

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	M. Brewer	L. Ard, C. Odom

Test Location				Date Run
S1 -Y1- Sta. 26+47 GRASS SHOULDER 3.5 FT RT FW				9/18/2022
Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		-12" BGS (A-7-6)	5.0 ft Fill
5.00	59.90	84.00		
9.20	60.20	84.40		
10.50	60.50	84.70		
11.30	60.70	85.10		
12.00	61.00	85.40		
13.10	61.30	85.70		
13.60	61.60	86.10		
14.20	62.00	86.40		
14.70	62.30	86.80		
15.30	62.70	87.10		
15.80	63.00	87.40		
16.80	63.40	87.70		
18.50	63.90	88.00		
20.20	64.30	88.30		
21.40	64.80	88.60		
24.20	65.20	88.90		
26.10	65.60	89.10		
28.00	66.00	89.40		
30.10	66.50	89.60		
31.10	66.90	89.90		
33.00	67.30	90.10		
34.30	67.60	90.40		
35.60	67.90	90.60		
36.40	68.10	90.90		
37.00	68.40	91.10		
37.70	68.70	91.30		
38.30	69.00	91.60		
39.00	69.40	91.80		
40.00	69.70	92.10		
40.50	70.10	92.30		
41.20	70.40	92.50		
41.60	70.80	92.80		
42.40	71.20	93.00		
42.70	71.60	93.30		
43.20	72.00	93.50		
43.90	72.40	94.10		
44.80	72.80	94.60		
45.20	73.20	95.20		
45.60	73.50	95.70		
45.90	73.90	96.30		
46.30	74.30			
46.70	74.80			
47.50	75.30			
48.30	75.80			
49.10	76.30			
49.90	76.80			
50.70	77.10			
51.40	77.40			
52.00	77.70			
52.60	78.00			
52.90	78.40			
54.00	78.70			
54.60	79.00			
55.10	79.30			
55.70	79.60			
56.10	80.10			
56.80	80.60			
57.60	81.00			
57.80	81.50			
58.40	82.00			
58.70	82.30			
59.00	82.70			
59.30	83.00			
59.50	83.40			
59.60	83.70			

Test Location						Date Run
S2 -Y1- Sta. 26+55 GRASS SHOULDER 3.5 FT RT FW						9/18/2022
Type	Test Interval			Datum		Cut/Fill
DCP	Cumulative cm per blow			-12" BGS (A-7-6)		5.0 ft Fill
3.40	55.10	78.60	108.70			
8.10	55.50	79.10	109.00			
11.80	55.80	79.50	109.50			
12.40	56.20	80.00				
13.20	56.50	80.50				
14.10	56.90	80.60				
15.00	57.30	81.20				
15.40	57.60	81.80				
16.60	58.00	82.10				
17.00	58.30	82.60				
18.20	58.70	83.00				
19.60	59.20	83.40				
21.20	59.70	83.80				
22.70	60.20	84.20				
24.30	60.60	84.70				
26.70	61.30	85.00				
29.10	61.90	85.30				
30.80	62.20	85.70				
32.70	62.60	86.30				
34.40	63.20	86.70				
35.80	64.00	87.00				
37.50	64.40	87.30				
39.00	64.90	87.90				
40.00	65.20	88.30				
41.20	65.60	88.70				
42.30	65.90	89.10				
42.70	66.30	89.50				
43.40	66.60	89.90				
44.00	67.10	90.50				
44.80	67.26	91.10				
45.50	67.42	91.60				
46.10	67.58	92.00				
46.90	67.74	92.40				
47.30	67.90	92.90				
47.80	68.40	93.50				
48.40	68.70	94.30				
48.90	69.20	94.70				
49.20	69.50	95.20				
49.40	69.90	95.80				
49.60	70.30	96.40				
49.80	70.70	96.90				
50.00	71.10	97.40				
50.20	71.30	97.90				
50.32	71.50	98.40				
50.44	71.80	98.80				
50.56	72.10	99.30				
50.68	72.50	99.90				
50.80	73.00	100.40				
51.10	73.30	100.80				
51.40	73.50	101.50				
51.80	73.70	102.20				
52.10	74.00	102.60				
52.40	74.40	103.10				
52.60	74.80	103.50				
53.20	75.00	104.10				
53.50	75.20	104.50				
53.64	75.50	105.00				
53.78	75.70	105.50				
53.92	76.00	105.90				
54.06	76.20	106.40				
54.20	76.60	106.70				
54.34	77.00	107.30				
54.53	77.30	107.80				
54.72	77.70	108.10				
54.91	78.10	108.40				

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	46891.1.1	U-5956	US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Cabarrus	M. Brewer	L. Ard, C. Odom

Test Location				Date Run
S3 -Y1- Sta. 26+62 GRASS SHOULDER 3.5 FT RT FW				9/18/2022
Type	Test Interval		Datum	Cut/Fill
DCP	Cumulative cm per blow		-12" BGS (A-7-6)	5.0 ft Fill
5.30	67.50			
6.90	67.80			
8.10	68.00			
9.10	68.30			
9.90	68.50			
11.00	68.80			
11.70	69.10			
12.50	69.30			
13.50	69.60			
14.50	69.80			
15.50	70.10			
17.40	70.40			
19.10	70.40			
21.40	71.10			
24.00	71.40			
26.60	71.70			
29.20	71.85			
31.00	71.99			
34.40	72.14			
36.60	72.28			
38.50	72.43			
40.40	72.57			
42.50	72.72			
43.90	72.86			
45.70	73.01			
47.00	73.15			
48.30	73.30			
49.20	73.50			
50.40	73.70			
54.20	73.90			
54.60	74.10			
55.00	74.30			
55.40	74.48			
55.80	74.66			
56.20	74.84			
56.60	75.02			
57.00	75.20			
57.40				
57.90				
58.30				
58.70				
59.10				
59.50				
59.80				
60.20				
60.60				
60.90				
61.20				
61.60				
61.90				
62.20				
62.70				
63.10				
63.60				
64.00				
64.50				
64.80				
65.10				
65.40				
65.70				
66.00				
66.30				
66.60				
66.90				
67.20				

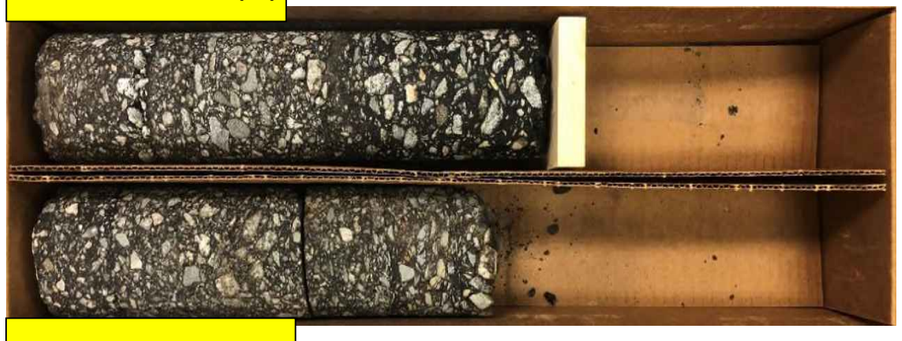
Test Location						Date Run
S4 -Y1- Sta. 26+79 GRASS SHOULDER 3.5 FT RT FW						9/18/2022
Type	Test Interval			Datum		Cut/Fill
DCP	Cumulative cm per blow			-12" BGS (A-7-6)		5.0 ft Fill
4.80	78.90					
7.10	79.50					
8.70	80.00					
10.20	80.60					
11.20	81.10					
12.50	81.70					
13.60	82.20					
15.40	82.50					
17.10	82.80					
18.90	83.20					
21.70	83.50					
25.30	83.80					
29.10	84.00					
33.60	84.30					
39.10	84.50					
44.60	84.80					
50.40	85.00					
55.70	85.50					
59.40	85.90					
62.70	86.40					
64.30	86.80					
65.30	87.30					
66.40	87.60					
67.20	87.90					
67.90	88.20					
68.50	88.50					
69.10	88.80					
69.31	88.90					
69.52	89.10					
69.73	89.20					
69.94	89.40					
70.15	89.50					
70.36						
70.57						
70.78						
70.99						
71.20						
71.40						
71.70						
71.90						
72.10						
72.40						
72.60						
72.80						
73.00						
73.30						
73.50						
73.70						
74.00						
74.20						
74.50						
74.70						
74.90						
75.10						
75.30						
75.50						
75.70						
75.90						
76.10						
76.30						
76.50						
76.70						
77.30						
77.80						
78.40						

CAROLINAS GEOTECHNICAL GROUP

U-5956: US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.

Pavement Core Photographs

C-1 - Y1- Sta. 4+74 LTL (RT)



C-2 - Y1- Sta. 6+64 LT PS

0 1 2

FEET

C-3 - Y1- Sta. 6+64 LT ISL

C-4 - Y1- Sta. 6+64 RT ISL

0 1 2

FEET

C-5 - Y1- Sta. 6+64 RT PS

C-6 - Y1- Sta. 18+03 LTL (LT)

0 1 2

FEET

C-7 -Y1- Sta. 22+32 LTL (LT)

C-8 -Y1- Sta. 24+65 LTL (RT)

0 1 2

FEET

CAROLINAS GEOTECHNICAL GROUP

U-5956: US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.

Pavement Core Photographs

C-9 -Y1- Sta. 24+65 RT ISL

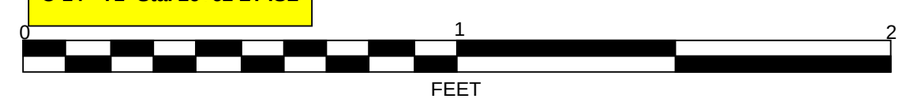
C-10 -Y1- Sta. 24+65 RT OSL

C-11 -Y1- Sta. 24+65 RT PS

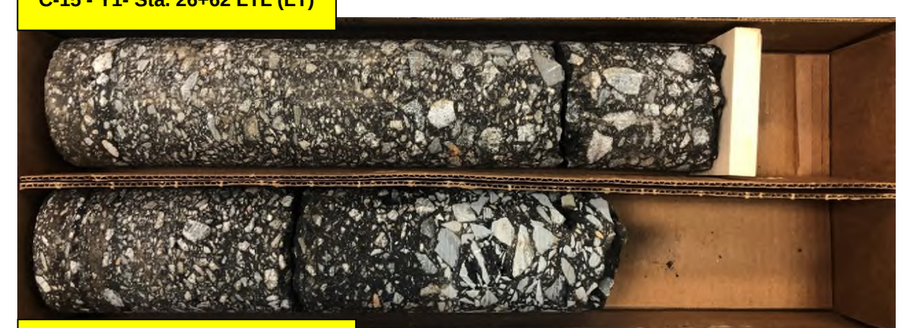
C-12 - Y1- Sta. 26+62 LT PS

C-13 - Y1- Sta. 26+62 LT OSL

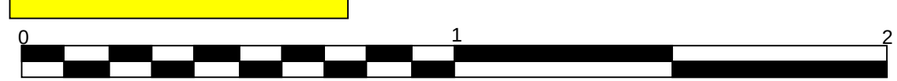
C-14 - Y1- Sta. 26+62 LT ISL



C-15 - Y1- Sta. 26+62 LTL (LT)



C-16 -Y1- Sta. 29+24 RTL (RT)



CAROLINAS GEOTECHNICAL GROUP

U-5956: US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.

Pavement Core Photographs

C-17 -Y1- Sta. 30+66 LTL (LT)

C-18 - L- Sta. 35+27 LTL (RT)

0 1 2
FEET

C-19 -Y1- Sta. 35+27 RTL (RT)

C-20 -Y1- Sta. 36+92 RTL (LT)

0 1 2
FEET

C-21 - Y1- Sta. 36+92 LT OSL

0 1 2
FEET

C-22 - Y1- Sta. 36+92 LT ISL

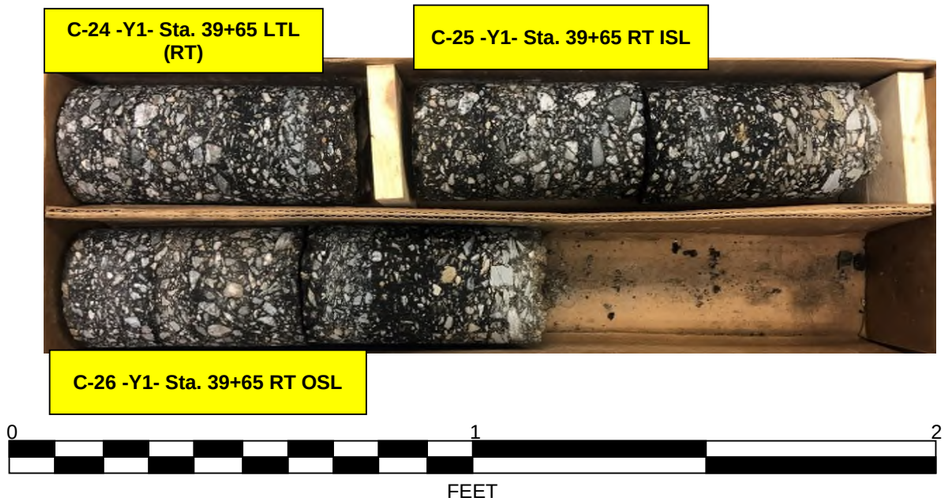
C-23 - Y1- Sta. 36+92 LTL (LT)

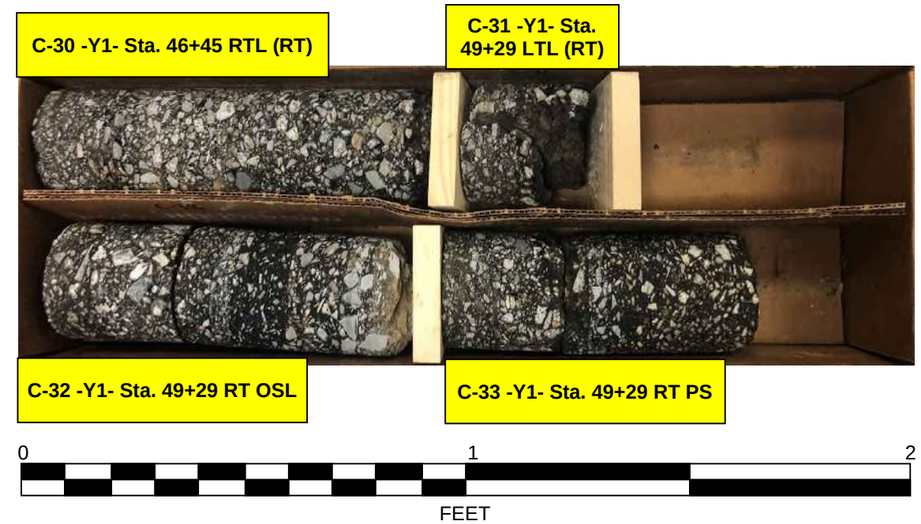
0 1 2
FEET

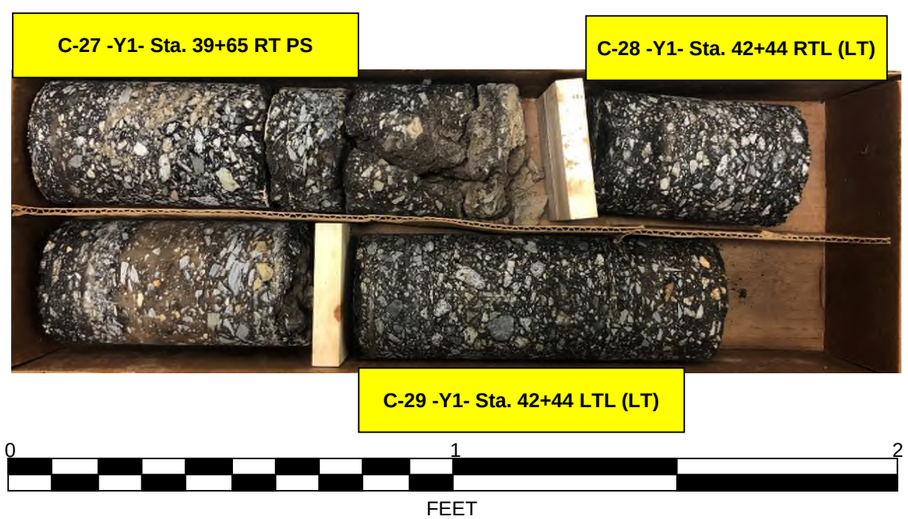
CAROLINAS GEOTECHNICAL GROUP

U-5956: US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.

Pavement Core Photographs



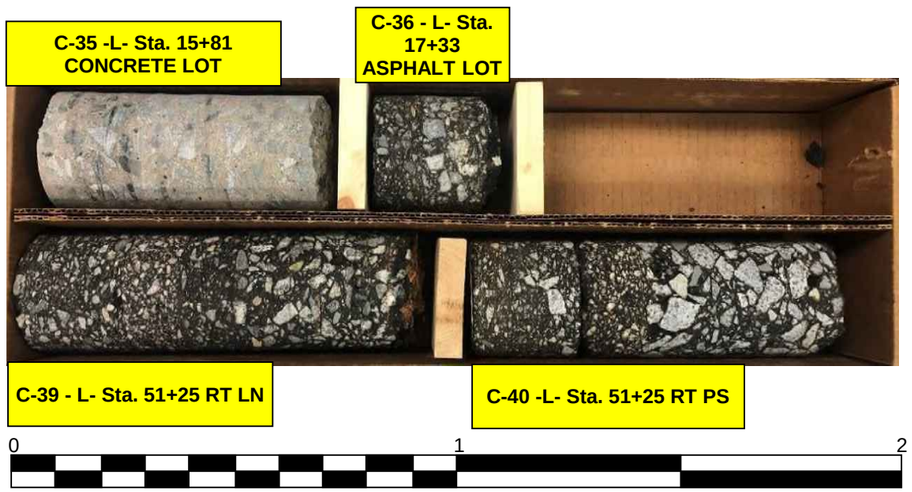


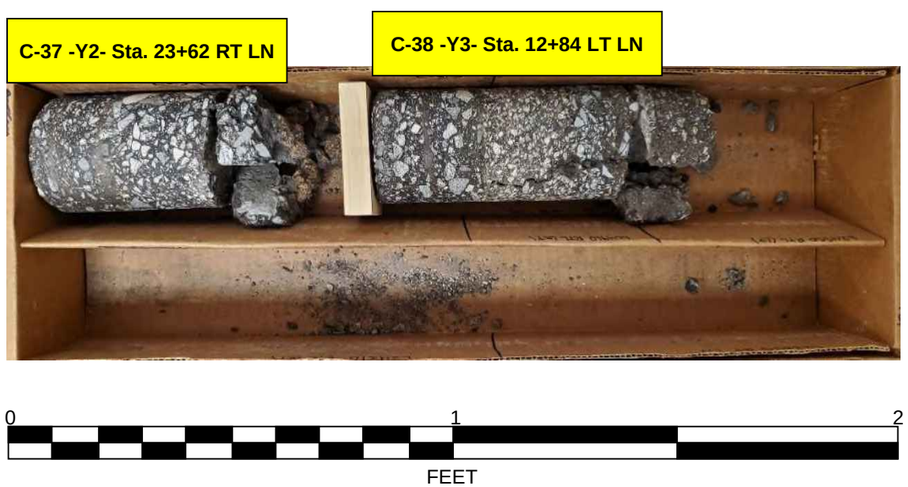


CAROLINAS GEOTECHNICAL GROUP

U-5956: US 29 - Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd.

Pavement Core Photographs





F&ME CONSULTANTS, INC.
3112 DEVINE STREET, COLUMBIA SC 29205
(CERT No.: 130-0212)

Project US-29 Realign Union Cemetery Rd. to Intersect US 29 at Rock Hill Church Rd. **T.I.P. No.** U-5956 **County** Cabarrus **F&ME Job No.** C8806 - Task 00016

Date Received 8/16/2022 **Date Reported** 8/30/2022 **Tested By** F&ME **CERT No.:** 130-04-0212

SOIL TEST RESULTS

SAMPLE NO.	*OFFSET*	*STATION*	*DEPTH INTERVAL (ft.)*	*AASHTO CLASS*	*L.L.*	*P.I.*	*% BY WEIGHT*				*% PASSING (SIEVES)*			*%*	*%*
							C. SAND	*F. SAND*	*SILT*	*CLAY*	*10*	*40*	*200*	*MOISTURE*	*ORGANIC*
S-1	LTL (RT)	-Y1- Sta.4+74	2.2 - 5.0	A-7-6(6)	46	26	27.8%	21.2%	18.1%	32.9%	78.1%	61.0%	42.9%	28.5%	ND
S-3	LT ISL	-Y1- Sta.6+64	2.4 - 5.0	A-2-4	25	5	35.1%	33.0%	21.8%	10.1%	87.2%	68.3%	32.0%	18.9%	ND
S-4	RT ISL	-Y1- Sta.6+64	2.1 - 5.0	A-4(0)	31	2	27.6%	29.3%	24.7%	18.4%	82.6%	67.3%	39.6%	16.2%	ND
S-6A	LTL (LT)	-Y1- Sta.18+03	2.6 - 3.0	A-2-4	22	6	37.9%	28.2%	21.8%	12.1%	67.8%	48.5%	26.2%	7.0%	ND
S-6B	LTL (LT)	-Y1- Sta.18+03	3.0 - 5.0	A-6(7)	40	22	25.3%	22.9%	27.3%	24.5%	87.8%	72.8%	49.1%	16.2%	ND
S-7	LTL (LT)	-Y1- Sta.22+32	1.5 - 5.0	A-4(0)	NP	NP	21.8%	42.7%	25.4%	10.1%	95.9%	84.0%	40.7%	12.8%	ND
S-9	RT ISL	-Y1- Sta.24+65	2.1 - 5.0	A-4(1)	30	8	13.3%	39.4%	26.8%	20.5%	88.5%	83.5%	47.5%	19.9%	ND
S-10	RT OSL	-Y1- Sta.24+65	2.2 - 5.0	A-4(3)	35	8	12.9%	29.1%	25.3%	32.7%	86.8%	79.8%	55.3%	25.4%	ND
S-14	LT ISL	-Y1- Sta.26+62	2.0 - 5.0	A-7-6(9)	44	21	24.5%	21.7%	21.4%	32.4%	99.0%	83.0%	57.1%	34.3%	ND
S-16	RTL (RT)	-Y1- Sta.29+24	2.0 - 5.0	A-2-6(1)	32	17	33.4%	27.5%	22.8%	16.3%	69.1%	53.4%	30.2%	21.6%	ND
S-17	LTL (LT)	-Y1- Sta.30+66	3.1 - 5.0	A-2-4	24	7	38.3%	25.4%	26.2%	10.1%	55.0%	39.6%	22.6%	5.7%	ND
S-18	LTL (RT)	-Y1- Sta.35+27	2.1 - 5.0	A-7-6(11)	45	24	18.9%	18.4%	23.9%	38.8%	85.7%	73.5%	57.0%	23.2%	ND
S-19	RTL (RT)	-Y1- Sta.35+27	2.3 - 5.0	A-6(2)	32	16	24.3%	22.1%	25.3%	28.3%	67.5%	56.1%	39.0%	12.9%	ND
S-21	LT OSL	-Y1- Sta.36+92	2.2 - 5.0	A-6(12)	40	22	13.1%	19.3%	26.8%	40.8%	92.3%	84.8%	66.0%	27.5%	ND
S-22	LT ISL	-Y1- Sta.36+92	2.3 - 5.0	A-6(12)	40	22	15.7%	22.2%	23.5%	38.6%	96.6%	87.0%	63.8%	20.6%	ND
S-23	LTL (LT)	-Y1- Sta.36+92	2.2 - 5.0	A-6(6)	39	21	22.2%	20.5%	21.0%	36.3%	79.0%	67.0%	48.3%	21.4%	ND
S-25	RT ISL	-Y1- Sta.39+65	2.2 - 5.0	A-2-4	NP	NP	36.8%	30.4%	20.7%	12.1%	81.1%	60.6%	30.9%	7.3%	ND
S-26	RT OSL	-Y1- Sta.39+65	2.2 - 5.0	A-6(5)	35	17	24.6%	19.6%	23.4%	32.4%	82.0%	67.5%	48.8%	14.6%	ND
S-27	RT PS	-Y1- Sta.39+65	2.2 - 5.0	A-6(2)	33	15	27.5%	18.6%	11.5%	42.4%	72.3%	57.3%	41.4%	10.3%	ND
S-28	RTL (LT)	-Y1- Sta.42+44	1.3 - 5.0	A-6(6)	33	15	20.0%	20.6%	23.1%	36.3%	89.7%	76.9%	56.8%	15.6%	ND
S-29	LTL (LT)	-Y1- Sta.42+44	1.9 - 5.0	A-6(7)	37	16	14.3%	17.1%	26.0%	42.6%	84.3%	76.6%	60.5%	17.5%	ND
S-31	LTL (RT)	-Y1- Sta.49+29	1.7 - 5.0	A-7-6(9)	42	16	12.5%	28.7%	18.1%	40.7%	96.5%	91.0%	62.2%	25.1%	ND
S-32	RT OSL	-Y1- Sta.49+29	1.8 - 5.0	A-6(8)	38	17	18.4%	22.3%	25.0%	34.3%	93.5%	82.4%	59.7%	22.8%	ND
S-34	LTL (LT)	-Y1- Sta. 51+16	2.1 - 5.0	A-7-6(13)	49	27	17.3%	15.3%	22.9%	44.5%	81.8%	71.8%	57.6%	22.3%	ND
S-35	CONCRETE LOT	-L- Sta. 15+81	1.5 - 5.0	A-6(7)	32	15	16.2%	19.7%	29.6%	34.5%	93.4%	83.2%	63.2%	16.2%	ND
S-36	ASPHALT LOT	-L- Sta. 17+33	1.3 - 5.0	A-7-6(20)	57	31	12.1%	14.9%	21.8%	51.2%	91.5%	83.8%	69.5%	27.6%	ND
S-39	RT LN	-L- Sta. 51+25	0.9 - 5.0	A-7-6(20)	64	35	5.1%	16.8%	27.1%	51.0%	99.7%	97.9%	81.8%	30.1%	ND
S-40	RT PS	-L- Sta. 51+25	0.9 - 5.0	A-6(8)	37	15	14.4%	24.0%	35.2%	26.4%	96.0%	88.0%	64.0%	21.3%	ND
S-37	LT LN	-Y2- Sta.23+62	1.4 - 5.0	A-6(2)	34	15	29.1%	21.7%	22.9%	26.3%	73.8%	57.7%	39.3%	14.7%	ND
S-38	LT LN	-Y3- Sta.12+84	1.8 - 5.0	A-4(2)	28	9	22.1%	20.6%	31.1%	26.2%	85.0%	71.9%	52.0%	17.5%	ND

F&ME CONSULTANTS, INC.

3112 DEVINE STREET, COLUMBIA SC 29205
(CERT No.: 130-0212)

Project US-29 Relaign Union Cemetery Rd **T.I.P. No.** U-5956 **County** Cabarrus **F&ME Job No.** C8806 - Task 00016
Date Received 8/16/2022 - 10/20/2022 **Date Reported** 11/7/2022 **Tested By** F&ME **CERT No.:** 130-04-0212

SOIL TEST RESULTS

SAMPLE NO.	*OFFSET*	*STATION*	*DEPTH INTERVAL (ft.)*	*AASHTO CLASS*	*L.L.*	*P.I.*	*% BY WEIGHT*				*% PASSING (SIEVES)*			*%*	*%*
							C. SAND	*F. SAND*	*SILT*	*CLAY*	*10*	*40*	*200*	*MOISTURE*	*ORGANIC*
Bulk-1	14' LT	-L- 25+93	1.0 - 3.0	A-6(10)	35	17	11.5%	16.2%	36.0%	36.3%	96.7%	90.4%	70.1%	14.5%	ND
Bulk-2	28' RT	- L- 50+46	1.0 - 3.0	A-7-6(20)	55	31	12.4%	19.8%	21.2%	46.6%	95.7%	89.3%	68.6%	21.6%	ND
Bulk-3	CL	-L- 41+00	1.0 - 3.0	A-7-6(20)	49	24	1.9%	3.4%	37.8%	56.9%	99.1%	97.9%	95.2%	17.9%	ND

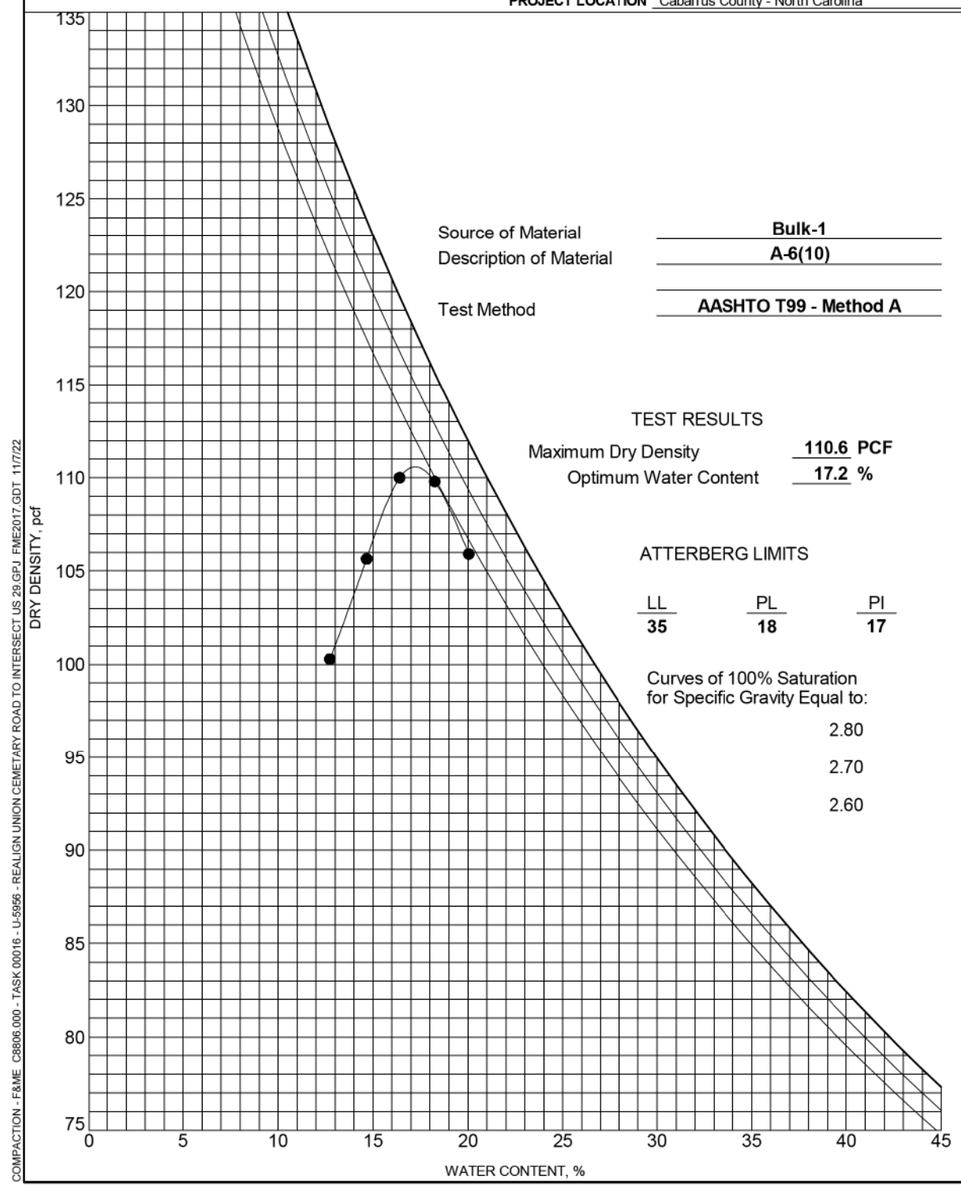
F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID U-5956

PROJECT NAME US 29 - Realign Union Cemetery Road to Intersect US 29

PROJECT LOCATION Cabarrus County - North Carolina



Source of Material: **Bulk-1**

Description of Material: **A-6(10)**

Test Method: **AASHTO T99 - Method A**

TEST RESULTS

Maximum Dry Density **110.6** **PCF**

Optimum Water Content **17.2** **%**

ATTERBERG LIMITS

LL	PL	PI
35	18	17

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806.000 - TASK 00016 - U-5956 - REALIGN UNION CEMETARY ROAD TO INTERSECT US 29.GPJ FME2017.GDT 11/7/22

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

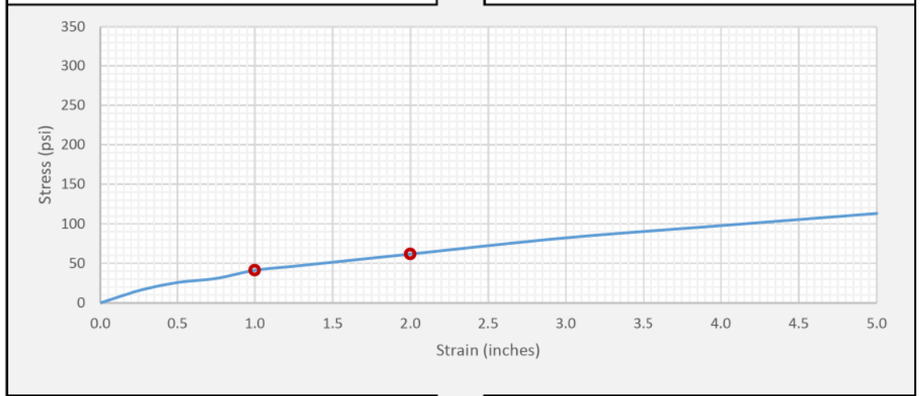
Project Name	US-29 - Realign Union Cemetery Road to Intersect US 29			Project No.	U-5956
Sample Location	Bulk-1 (Specimen A)			FME Lab ID	22-2333
Soil Description	A-6(10)			Depth/Elev.	1.0 - 3.0
Date Sampled	--	Sampled By:	CG2	Date Received	8/5/22
Date Test Began	8/22/22	Date Completed	8/26/22	Tested By	JJW

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	110.6	Optimum Moisture Content (%)	17.2
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
4.1	**4.1**



Before Soaking	
Dry Density (lb/ft^3)	108.9
Moisture Content	18.0%
Percent Compaction	98.5%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	108.4
Moisture Content (Top 1")	19.4%
Percent Compaction	98.0%
Percent Shrink/Swell	0.1%

ADDITIONAL COMMENTS

Desired Percent Compaction = 100%

F&ME CONSULTANTS

F&ME Consultants, Inc.
3112 Devine Street, Columbia, SC 29205

Reviewed By

9/2/22
Date

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without the written approval of F&ME Consultants, Inc.

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

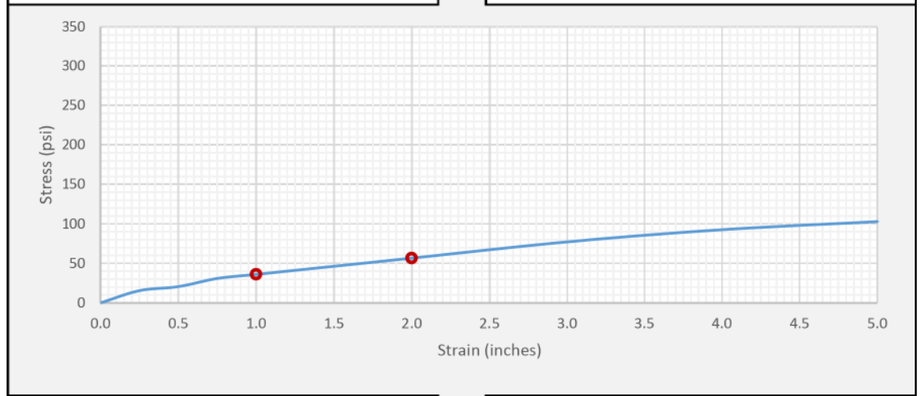
Project Name	US-29 - Realign Union Cemetery Road to Intersect US 29			Project No.	U-5956
Sample Location	Bulk-1 (Specimen B)			FME Lab ID	22-2333
Soil Description	A-6(10)			Depth/Elev.	1.0 - 3.0
Date Sampled	--	Sampled By:	CG2	Date Received	8/5/22
Date Test Began	8/22/22	Date Completed	8/26/22	Tested By	JJW

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	110.6	Optimum Moisture Content (%)	17.2
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
3.6	**3.8**



Before Soaking	
Dry Density (lb/ft^3)	109.6
Moisture Content	18.0%
Percent Compaction	99.1%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	109.5
Moisture Content (Top 1")	19.0%
Percent Compaction	99.0%
Percent Shrink/Swell	0.0%

ADDITIONAL COMMENTS

Desired Percent Compaction = 100%

F&ME CONSULTANTS

F&ME Consultants, Inc.
3112 Devine Street, Columbia, SC 29205

Reviewed By

9/2/22
Date

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PROJECT REFERENCE NO.	SHEET NO.
U–5956	37

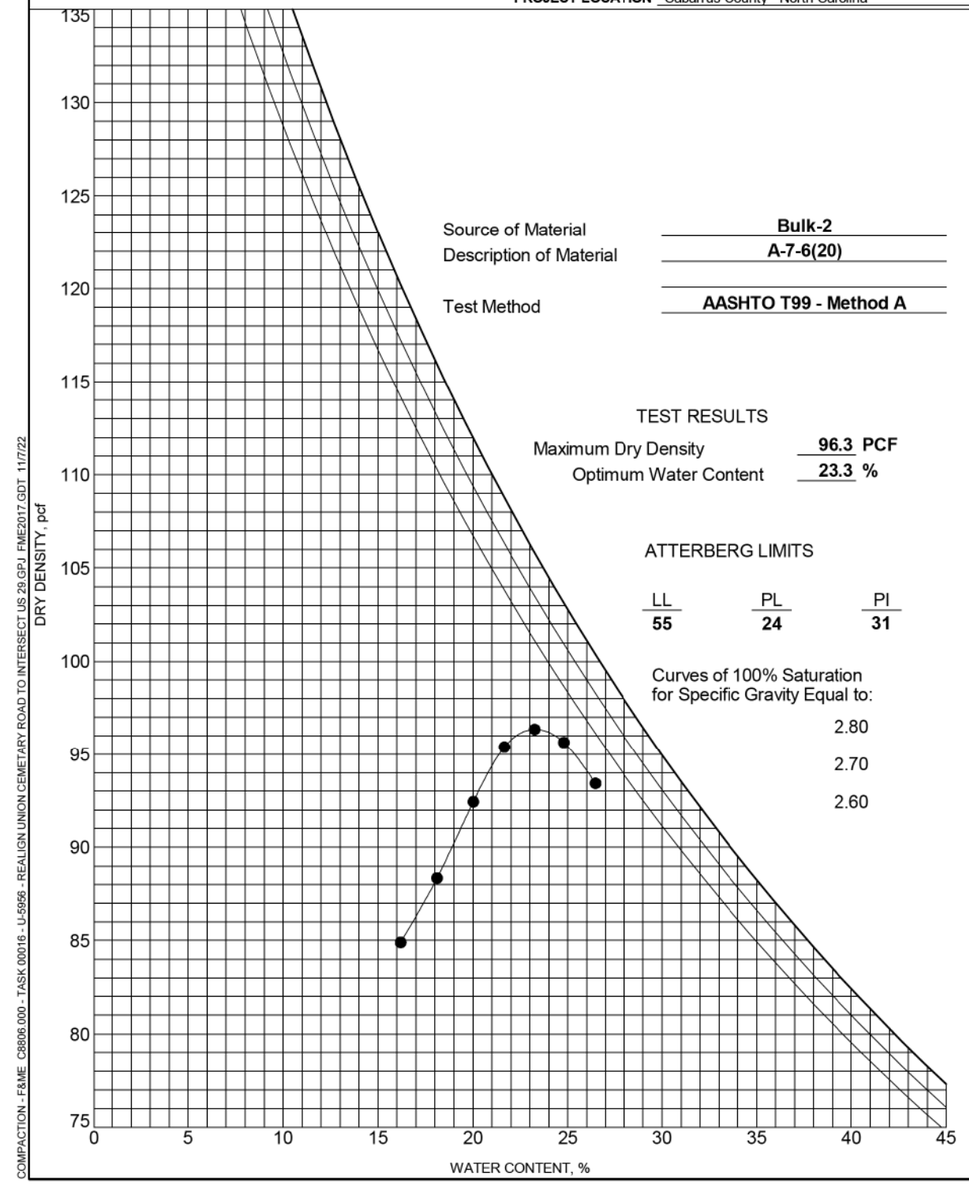
F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID U-5956

PROJECT NAME US 29 - Realign Union Cemetery Road to Intersect US 29

PROJECT LOCATION Cabarrus County - North Carolina



Source of Material: **Bulk-2**

Description of Material: **A-7-6(20)**

Test Method: **AASHTO T99 - Method A**

TEST RESULTS

Maximum Dry Density **96.3** PCF

Optimum Water Content **23.3** %

ATTERBERG LIMITS

LL	PL	PI
55	24	31

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806.000 - TASK 00016 - U-5956 - REALIGN UNION CEMETARY ROAD TO INTERSECT US 29.GPJ FME2017.GDT 11/7/22

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

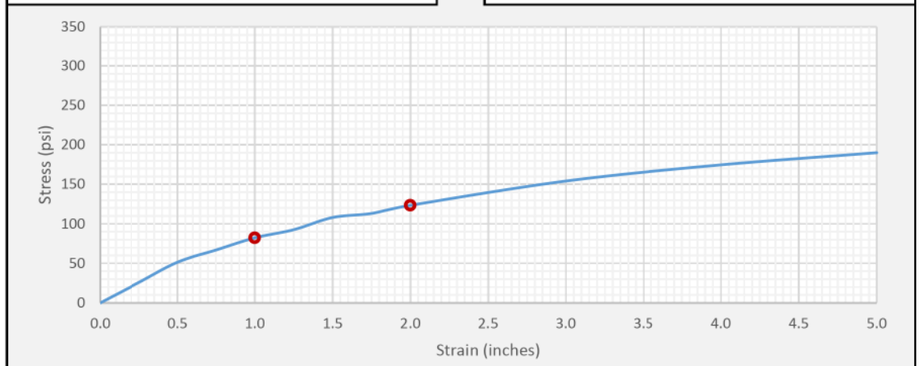
Project Name	US-29 - Realign Union Cemetery Road to Intersect US 29			Project No.	U-5956
Sample Location	Bulk-2 (Specimen A)			FME Lab ID	22-2334
Soil Description	A-7-6(20)			Depth/Elev.	1.0 - 3.0
Date Sampled	--	Sampled By:	CG2	Date Received	8/5/22
Date Test Began	8/22/22	Date Completed	8/26/22	Tested By	JJW

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	96.3	Optimum Moisture Content (%)	23.3
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
8.2	**8.2**



Before Soaking	
Dry Density (lb/ft^3)	96.0
Moisture Content	23.1%
Percent Compaction	99.7%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	91.1
Moisture Content (Top 1")	31.5%
Percent Compaction	94.6%
Percent Shrink/Swell	0.2%

ADDITIONAL COMMENTS

Desired Percent Compaction = 100%

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Reviewed By

9/2/22
Date

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REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

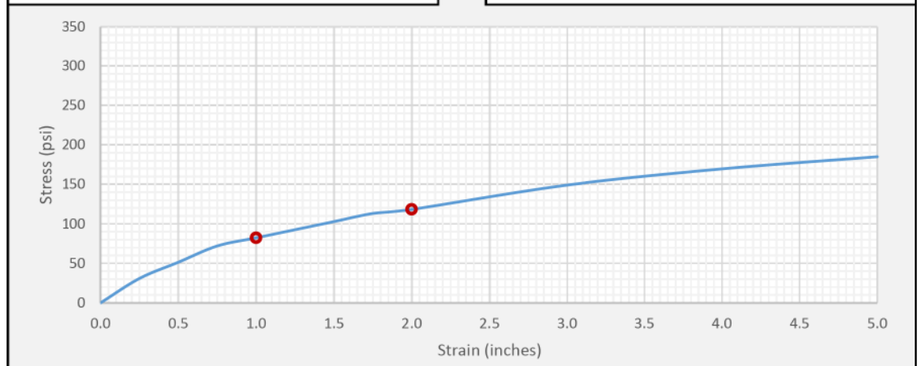
Project Name	US-29 - Realign Union Cemetery Road to Intersect US 29			Project No.	U-5956
Sample Location	Bulk-2 (Specimen B)			FME Lab ID	22-2334
Soil Description	A-7-6(20)			Depth/Elev.	1.0 - 3.0
Date Sampled	--	Sampled By:	CG2	Date Received	8/5/22
Date Test Began	8/22/22	Date Completed	8/26/22	Tested By	JJW

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	96.3	Optimum Moisture Content (%)	23.3
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
8.2	**7.9**



Before Soaking	
Dry Density (lb/ft^3)	95.7
Moisture Content	23.1%
Percent Compaction	99.4%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	91.2
Moisture Content (Top 1")	30.6%
Percent Compaction	94.7%
Percent Shrink/Swell	0.2%

ADDITIONAL COMMENTS

Desired Percent Compaction = 100%

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9/7/22
Date

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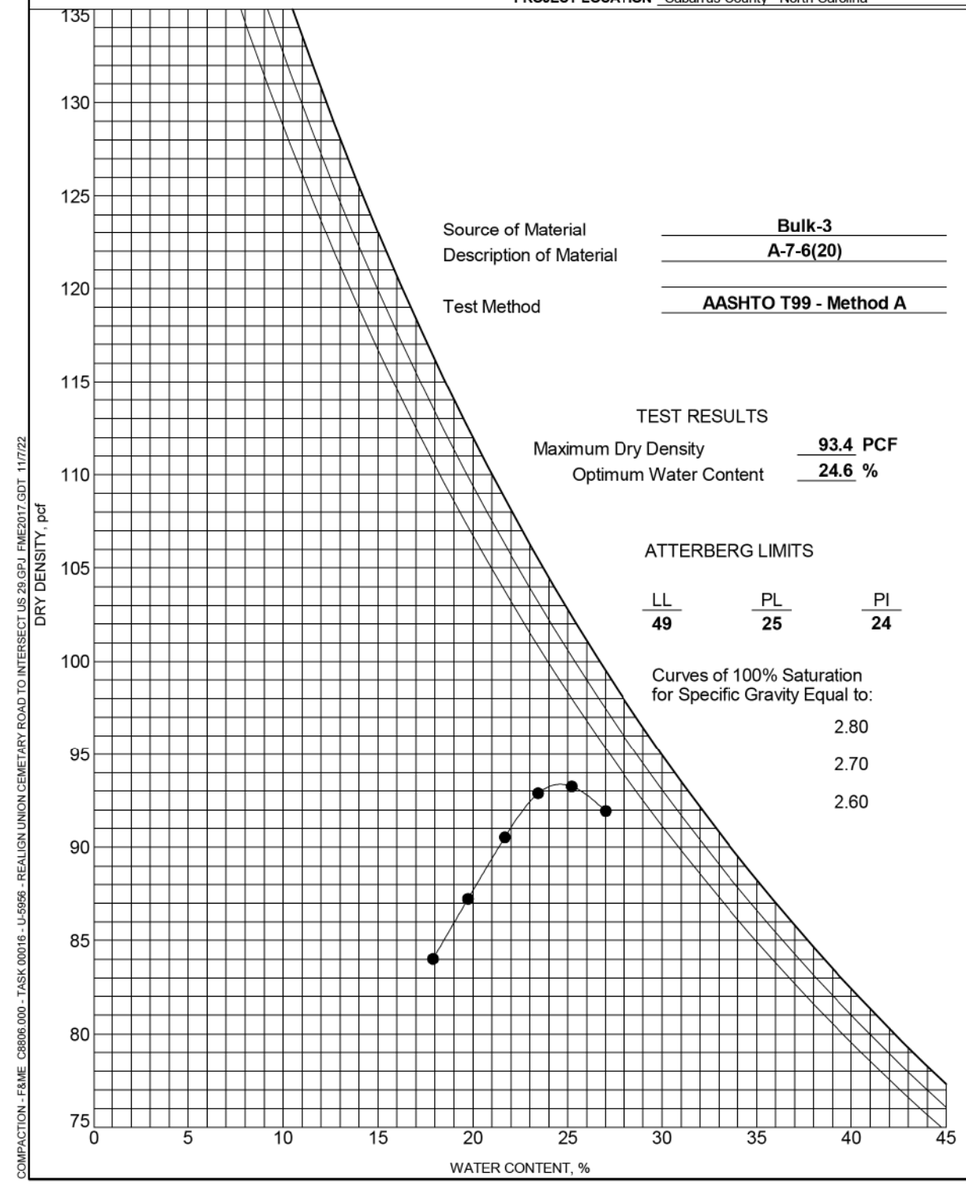
F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID U-5956

PROJECT NAME US 29 - Realign Union Cemetery Road to Intersect US 29

PROJECT LOCATION Cabarrus County - North Carolina



Source of Material: **Bulk-3**

Description of Material: **A-7-6(20)**

Test Method: **AASHTO T99 - Method A**

TEST RESULTS

Maximum Dry Density **93.4** PCF

Optimum Water Content **24.6** %

ATTERBERG LIMITS

LL	PL	PI
49	25	24

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806.000 - TASK 00016 - U-5956 - REALIGN UNION CEMETARY ROAD TO INTERSECT US 29.GPJ FME2017.GDT 11/7/22

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

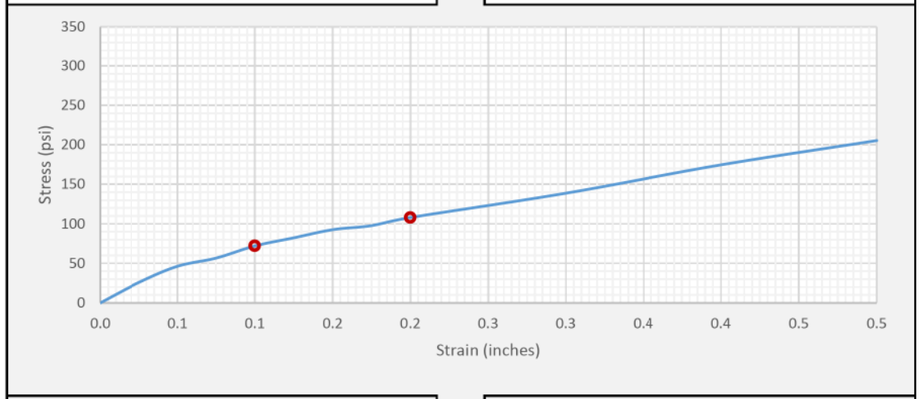
Project Name	US-29 - Realign Union Cemetery Road to Intersect US 29			Project No.	U-5956
Sample Location	Bulk-3 (Specimen A)			FME Lab ID	22-2953
Soil Description	A-7-6(20)			Depth/Elev.	1.0 - 3.0
Date Sampled	--	Sampled By:	CG2	Date Received	10/20/22
Date Test Began	10/24/22	Date Completed	10/28/22	Tested By	NR & CM

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	93.4	Optimum Moisture Content (%)	24.6
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
7.2	**7.2**



Before Soaking	
Dry Density (lb/ft^3)	93.6
Moisture Content	24.6%
Percent Compaction	100.2%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	90.2
Moisture Content (Top 1")	30.9%
Percent Compaction	96.6%
Percent Shrink/Swell	0.7%

ADDITIONAL COMMENTS

Desired Percent Compaction = 100%

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11/1/22
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REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

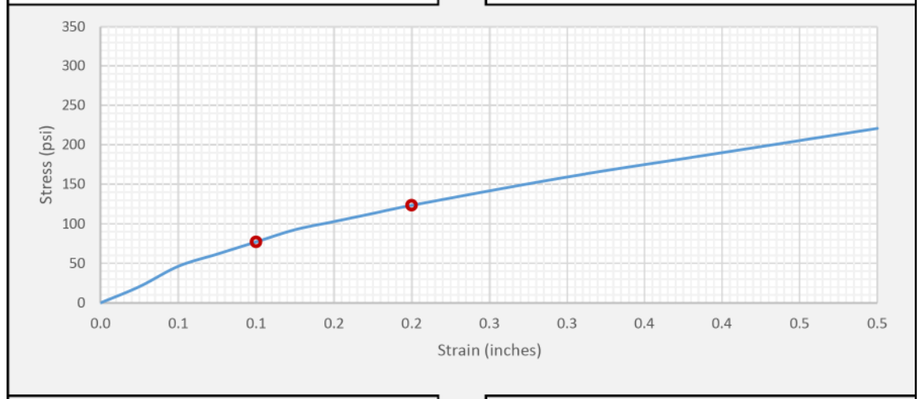
Project Name	US-29 - Realign Union Cemetery Road to Intersect US 29			Project No.	U-5956
Sample Location	Bulk-3 (Specimen B)			FME Lab ID	22-2953
Soil Description	A-7-6(20)			Depth/Elev.	1.0 - 3.0
Date Sampled	--	Sampled By:	CG2	Date Received	10/20/22
Date Test Began	10/24/22	Date Completed	10/28/22	Tested By	NR & CM

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	93.4	Optimum Moisture Content (%)	24.6
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
7.7	**8.2**



Before Soaking	
Dry Density (lb/ft^3)	92.9
Moisture Content	24.4%
Percent Compaction	99.4%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	90.5
Moisture Content (Top 1")	29.7%
Percent Compaction	96.9%
Percent Shrink/Swell	0.8%

ADDITIONAL COMMENTS

Desired Percent Compaction = 100%

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11/1/22
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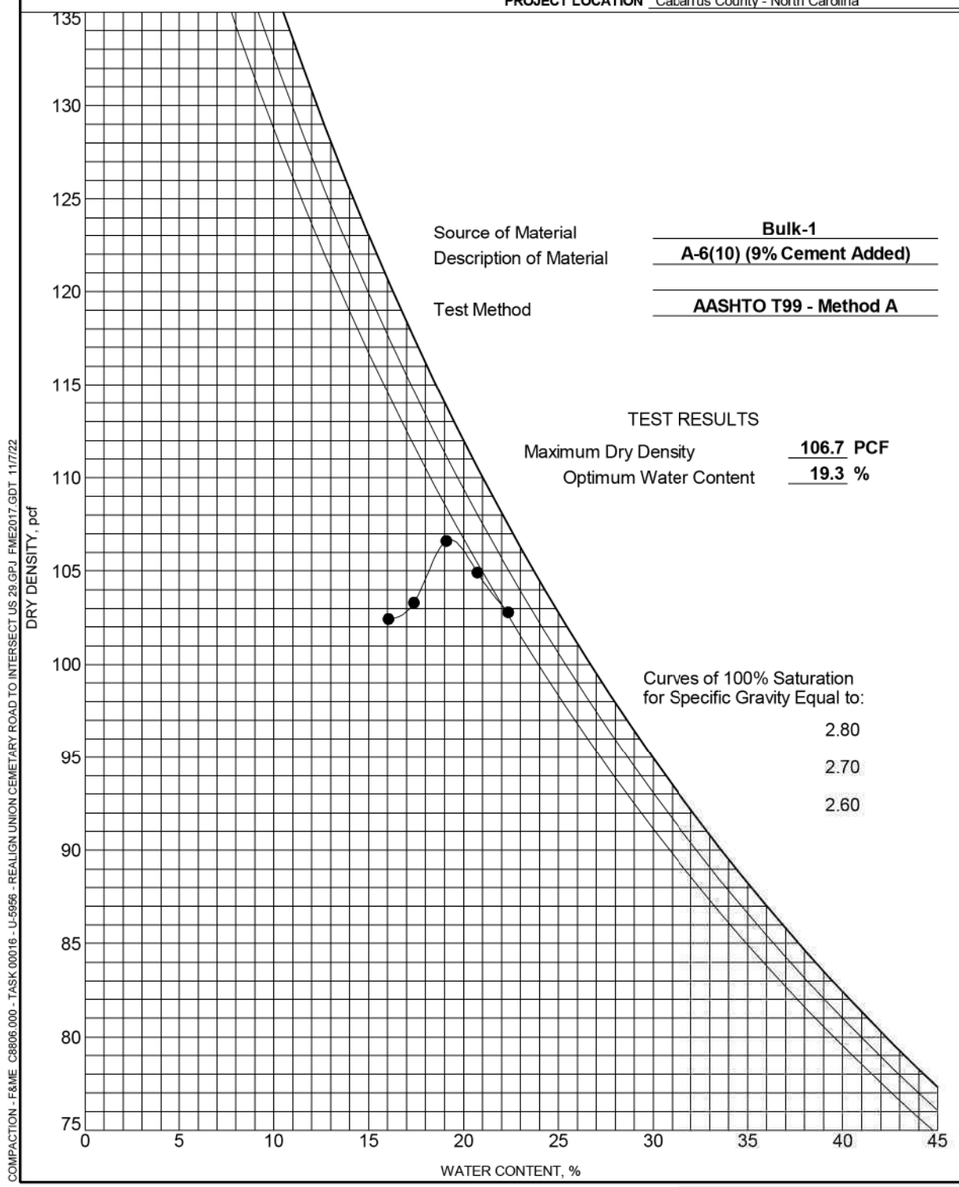
MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID U-5956 **PROJECT NAME** US 29 - Realign Union Cemetery Road to Intersect US 29

PROJECT LOCATION Cabarrus County - North Carolina



COMPACTION - F&ME C8806.000 - TASK 00016 - U-5956 - REALIGN UNION CEMETARY ROAD TO INTERSECT US 29.GPJ FME2017.GDT 11/7/22

REV 08/2021

COMPRESSIVE STRENGTH OF MOLDED SOIL-CEMENT CYLINDERS
ASTM D-1633

SAMPLE INFORMATION

Project Name	US-29 Realign Union Cemetery Road			NCDOT STIP #	U-5956
Sample Location	Bulk-1			FME Lab ID	22-2951
Soil Description	A-6(10)			Depth/Elev.	1.0 - 3.0 ft.
Station	-L- 25+93			Offset	14' LT
Date Sampled	--	Sampled By:	CG2	Date Received	10/20/22
Date Molded	10/27/21	Date Tested	11/04/22	Tested By	A. Abernethy

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Cement Added to Proctor	9%
Max Dry Density (lb/ft^3)	106.7	Optimum Moisture Content (%)	19.3

TESTING RESULTS

% Cement	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
8%	8	19.2%	4.589	3.986	12.48	3,343	270	280
8%	8	18.9%	4.574	3.986	12.48	3,697	295	
10%	8	19.2%	4.867	3.985	12.47	3,798	305	300
10%	8	18.9%	4.906	3.986	12.48	3,582	285	

ADDITIONAL COMMENTS

F&ME CONSULTANTS

F&ME Consultants, Inc.
3112 Devine Street, Columbia, SC 29205

Alex M Abernethy
Reviewed By

130-04-0212
NCDOT Certification No.

11/07/22
Date

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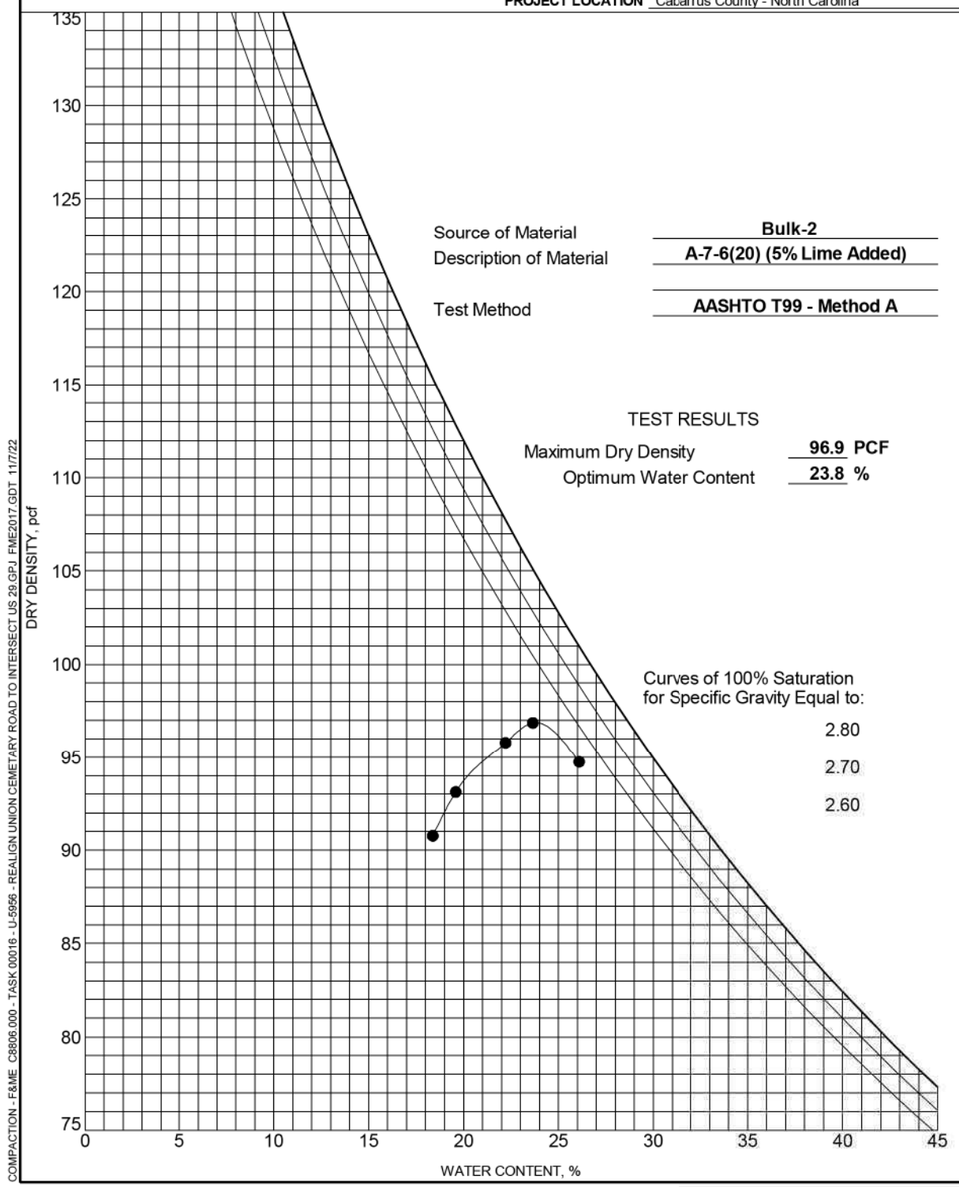
MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID U-5956 **PROJECT NAME** US 29 - Realign Union Cemetery Road to Intersect US 29

PROJECT LOCATION Cabarrus County - North Carolina



COMPACTION - F&ME C8806.000 - TASK 00016 - U-5956 - REALIGN UNION CEMETARY ROAD TO INTERSECT US 29.GPJ FME2017.GDT 11/7/22

REV 08/2021

COMPRESSIVE STRENGTH OF MOLDED SOIL-LIME CYLINDERS
ASTM D-1633

SAMPLE INFORMATION

Project Name	US-29 Realign Union Cemetery Road			NCDOT STIP #	U-5956
Sample Location	Bulk-2			FME Lab ID	22-2952
Soil Description	A-7-6(20)			Depth/Elev.	1.0 - 3.0 ft.
Station	-L- 50+46			Offset	28' RT
Date Sampled	--	Sampled By:	CG2	Date Received	10/20/22
Date Molded	10/27/21	Date Tested	11/04/22	Tested By	A. Abernethy

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Lime Added to Proctor	5%
Max Dry Density (lb/ft^3)	96.9	Optimum Moisture Content (%)	23.8

TESTING RESULTS

% Lime	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
4%	8	23.9%	5.164	3.983	12.46	798	65	65
4%	8	23.6%	5.146	3.982	12.45	723	60	
6%	8	23.3%	5.568	3.988	12.49	1127	90	100
6%	8	23.5%	4.751	3.984	12.47	1328	105	

ADDITIONAL COMMENTS

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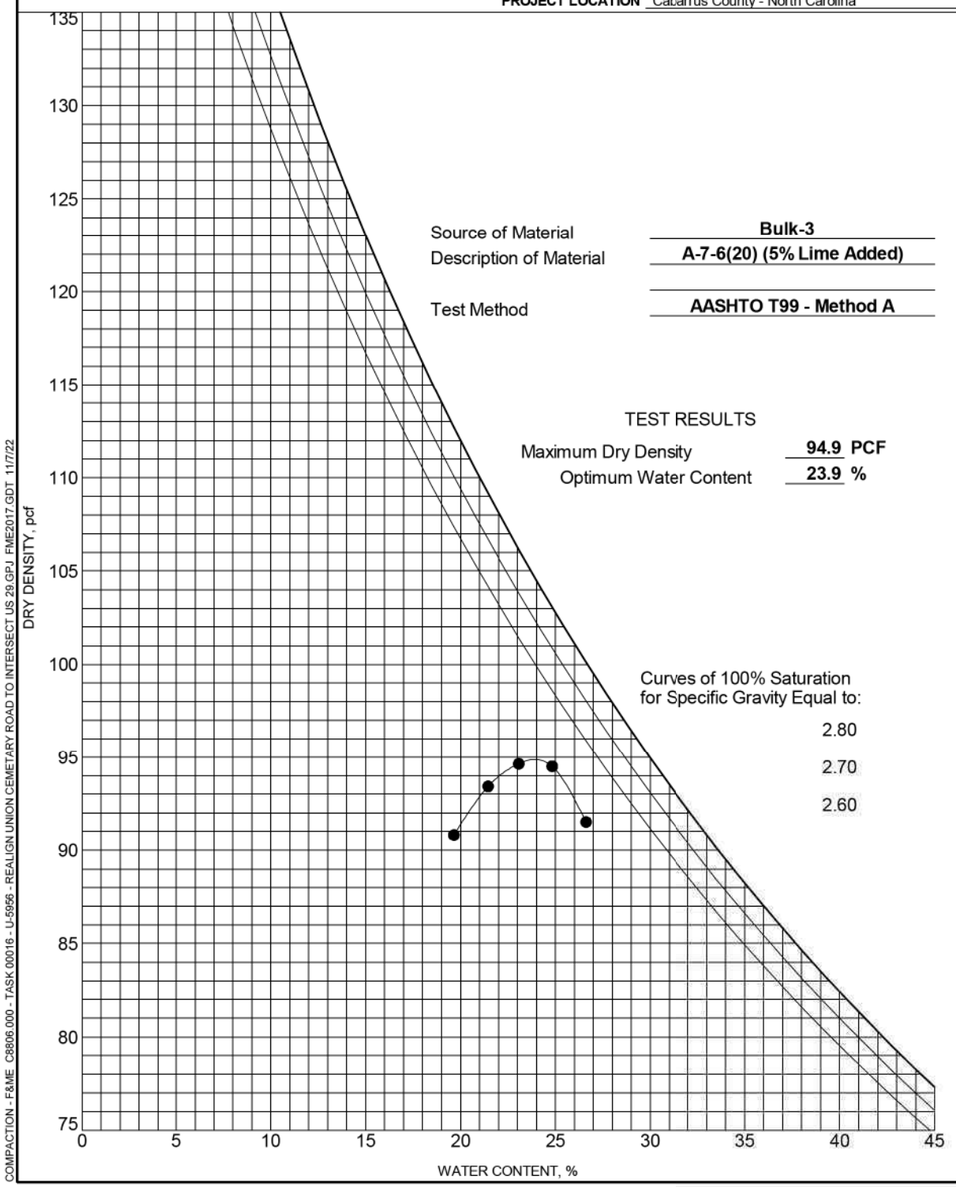
MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID U-5956 **PROJECT NAME** US 29 - Realign Union Cemetery Road to Intersect US 29

PROJECT LOCATION Cabarrus County - North Carolina



COMPACTION - F&ME C8806.000 - TASK 00016 - U-5956 - REALIGN UNION CEMETARY ROAD TO INTERSECT US 29.GPJ FME2017.GDT 11/7/22

REV 08/2021

COMPRESSIVE STRENGTH OF MOLDED SOIL-LIME CYLINDERS
ASTM D-1633

SAMPLE INFORMATION

Project Name	US-29 Realign Union Cemetery Road			NCDOT STIP #	U-5956
Sample Location	Bulk-3			FME Lab ID	22-2953
Soil Description	A-7-6(20)			Depth/Elev.	1.0 - 3.0 ft.
Station	-L- 41+00			Offset	CL
Date Sampled	--	Sampled By:	CG2	Date Received	10/20/22
Date Molded	10/27/21	Date Tested	11/04/22	Tested By	A. Abernethy

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Lime Added to Proctor	5%
Max Dry Density (lb/ft^3)	94.9	Optimum Moisture Content (%)	23.9

TESTING RESULTS

% Lime	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
4%	8	24.8%	4.565	3.810	11.40	416	35	40
4%	8	24.9%	4.756	3.979	12.43	585	45	
6%	8	24.4%	4.853	3.981	12.45	708	55	65
6%	8	24.7%	4.752	3.991	12.51	925	75	

ADDITIONAL COMMENTS

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NCDOT Certification No.

11/07/22
Date

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CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

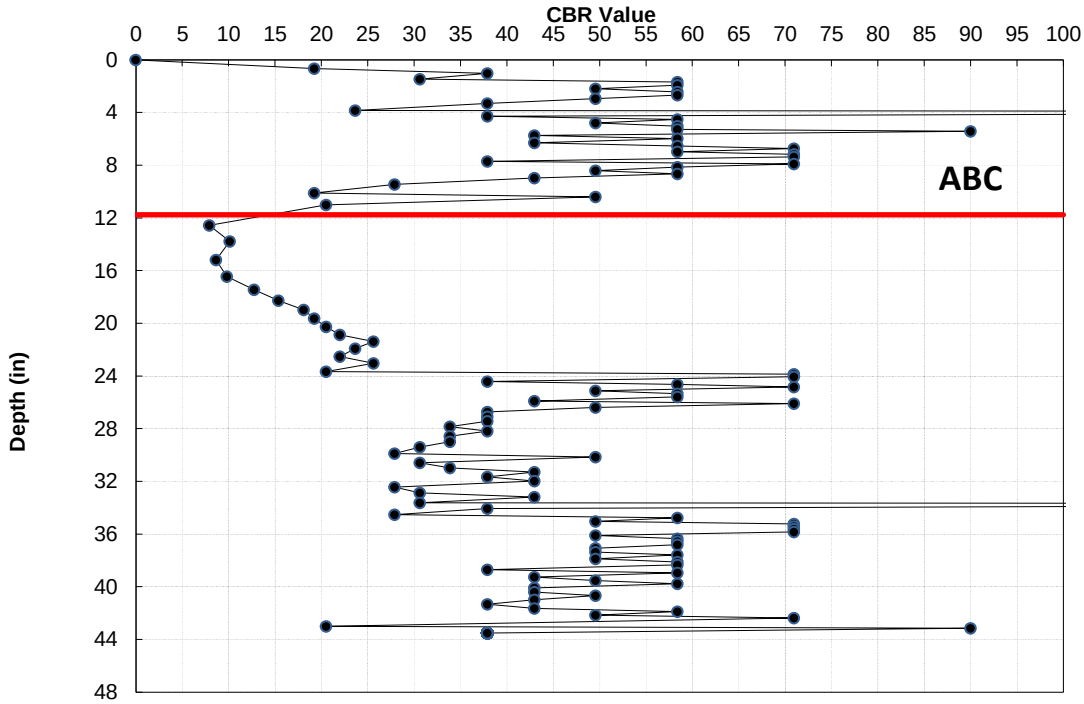
FILE	U5956 DCP Graphs 1

C-1 -Y1- Sta. 4+74 LTL (RT) 1

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 11.0	
# of Values	36
Avg CBR	53.7
Wghtd Avg.	44.3
Max CBR	100+
Min CBR	19.2

Interval 11.0 to 43.5	
# of Values	81
Avg CBR	44.6
Wghtd Avg.	33.2
Max CBR	100+
Min CBR	7.9

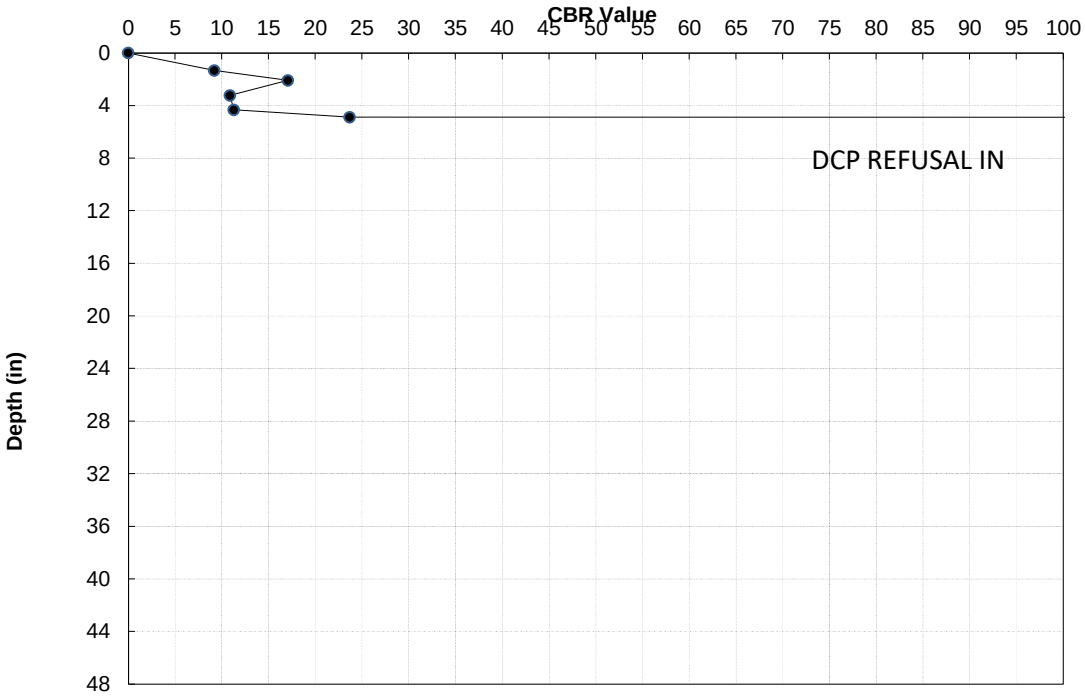


C-3 -Y1- Sta. 6+64 LT ISL 2

Datum = SG
RAW
FILL
08/07/22

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 7.2	
# of Values	75
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	9.2



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

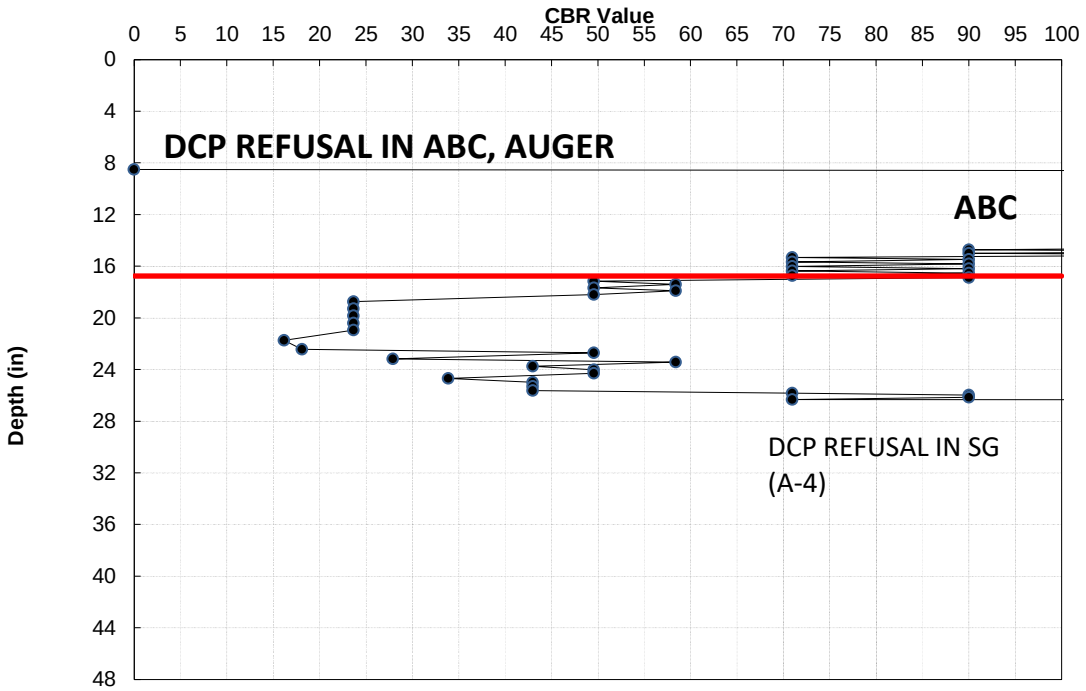
FILE	U5956 DCP Graphs 1

C-4 -Y1- Sta. 6+64 RT ISL 3

Datum = ABC
RAW
FILL
08/07/22

Interval 8.5 to 16.7	
# of Values	89
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	70.9

Interval 16.7 to 29.1	
# of Values	76
Avg CBR	100+
Wghtd Avg.	86.6
Max CBR	100+
Min CBR	16.2

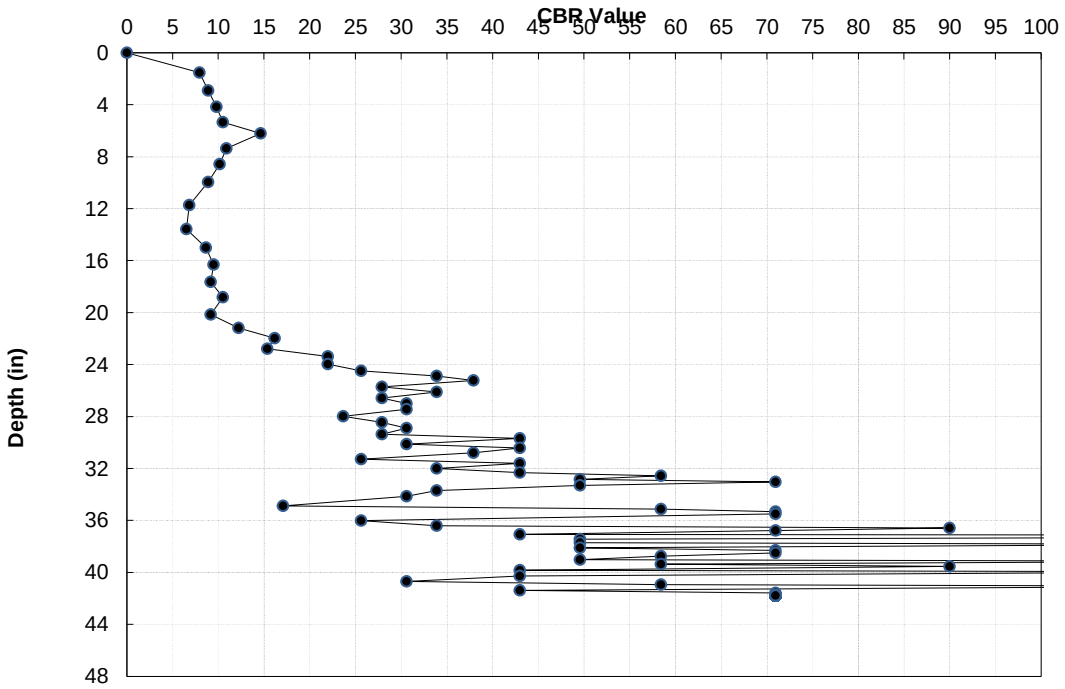


C-5 -Y1- Sta. 6+64 RT PS 4

Datum = SG
RAW
FILL
08/07/22

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 41.8	
# of Values	76
Avg CBR	42.7
Wghtd Avg.	23.7
Max CBR	100+
Min CBR	6.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

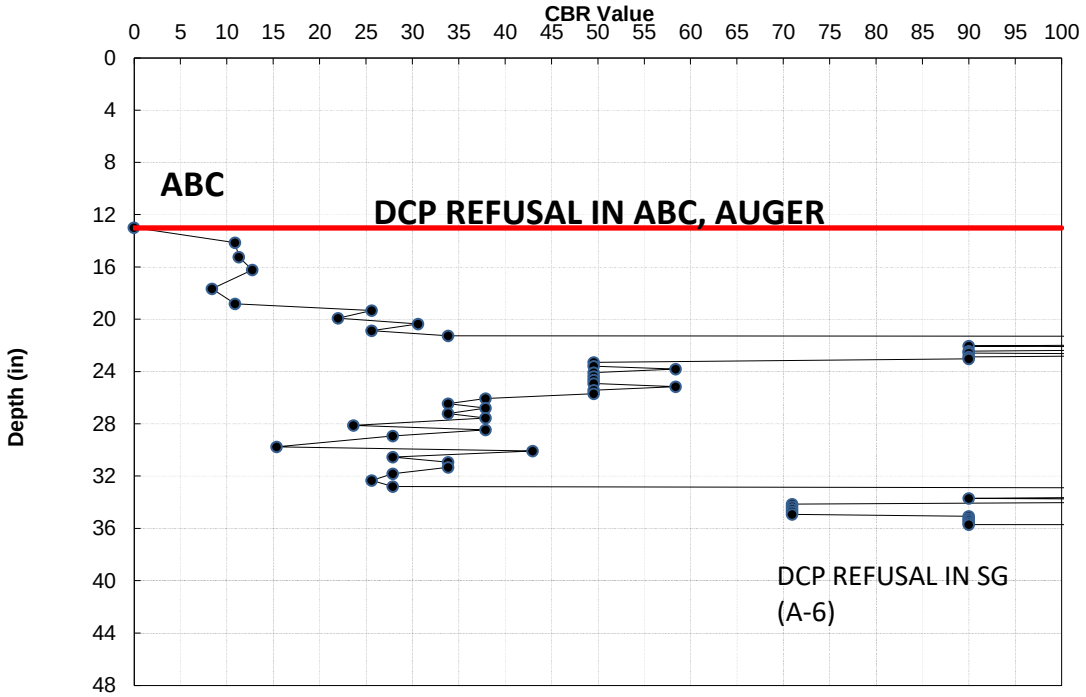
FILE	U5956 DCP Graphs 1

C-6 -Y1- Sta. 18+03 LTL (LT) 5

Datum = ABC
RAW
FILL
08/07/22

Interval 13.0 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 13.0 to 36.5	
# of Values	121
Avg CBR	100+
Wghtd Avg.	72.1
Max CBR	100+
Min CBR	8.4

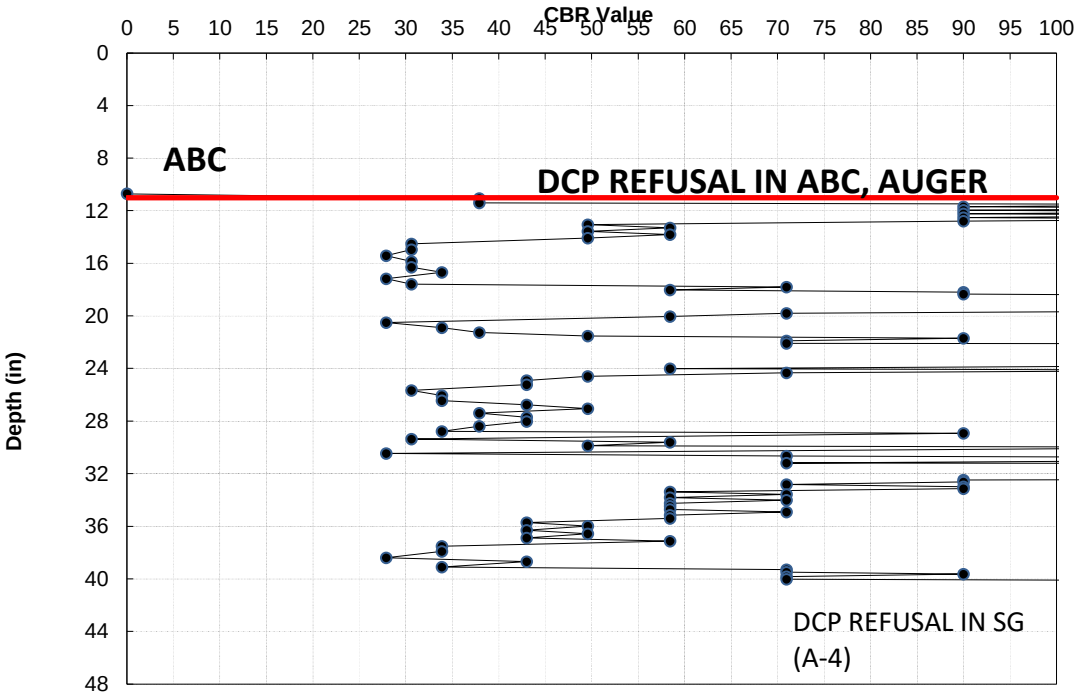


C-7 -Y1- Sta. 22+32 LTL (LT) 6

Datum = ABC
RAW
FILL
08/07/22

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 10.7 to 44.1	
# of Values	229
Avg CBR	100+
Wghtd Avg.	97.6
Max CBR	100+
Min CBR	27.9



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

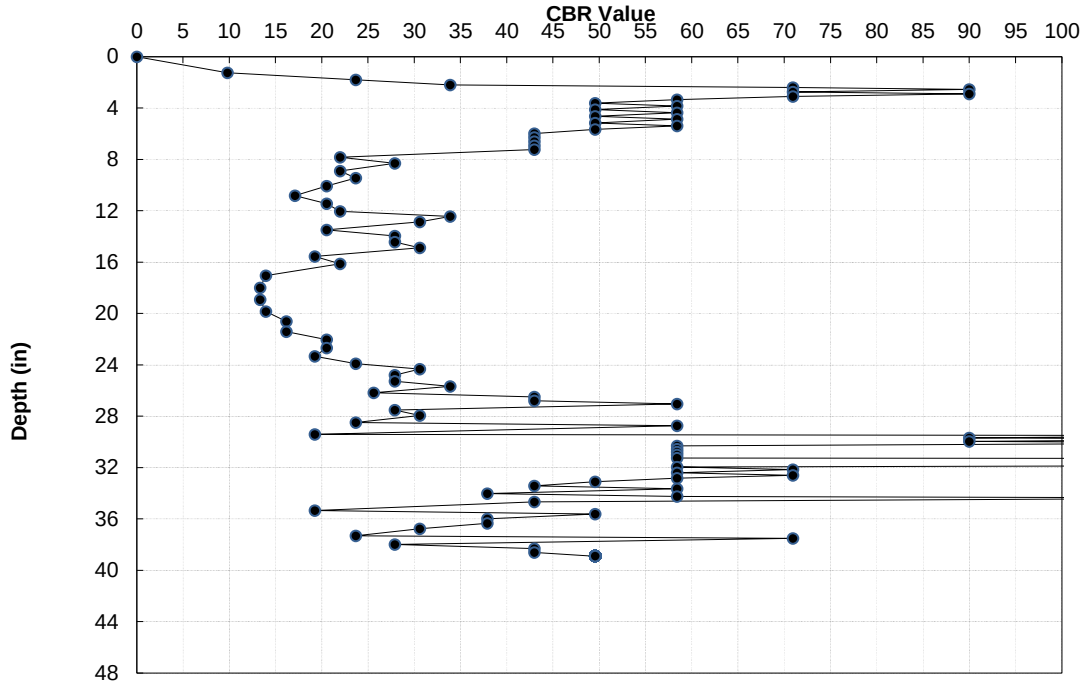
FILE	U5956 DCP Graphs 1

C-8 -Y1- Sta. 24+65 LTL (RT) 7

Datum = SG
RAW
GRADE
08/07/22

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 38.9	
# of Values	100
Avg CBR	50.4
Wghtd Avg.	34.3
Max CBR	100+
Min CBR	9.8

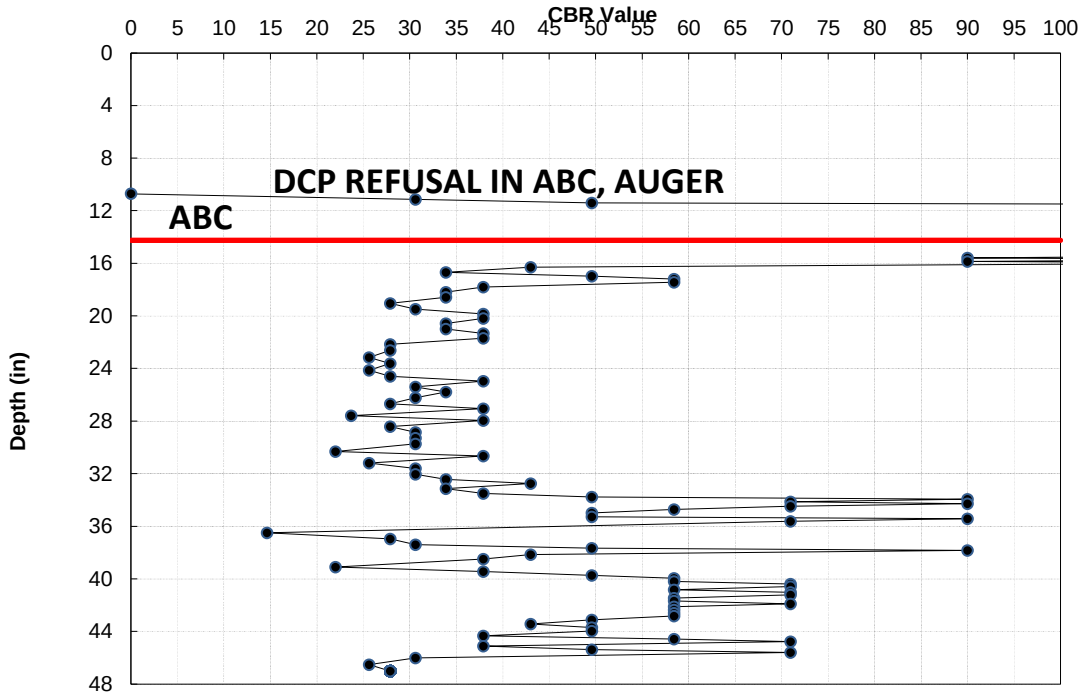


C-9 -Y1- Sta. 24+65 RT ISL 8

Datum = ABC
RAW
GRADE
08/07/22

Interval 10.7 to 14.2	
# of Values	42
Avg CBR	49.6
Wghtd Avg.	#DIV/0!
Max CBR	100+
Min CBR	13.3

Interval 14.2 to 47.0	
# of Values	110
Avg CBR	69.3
Wghtd Avg.	45.5
Max CBR	100+
Min CBR	14.6



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

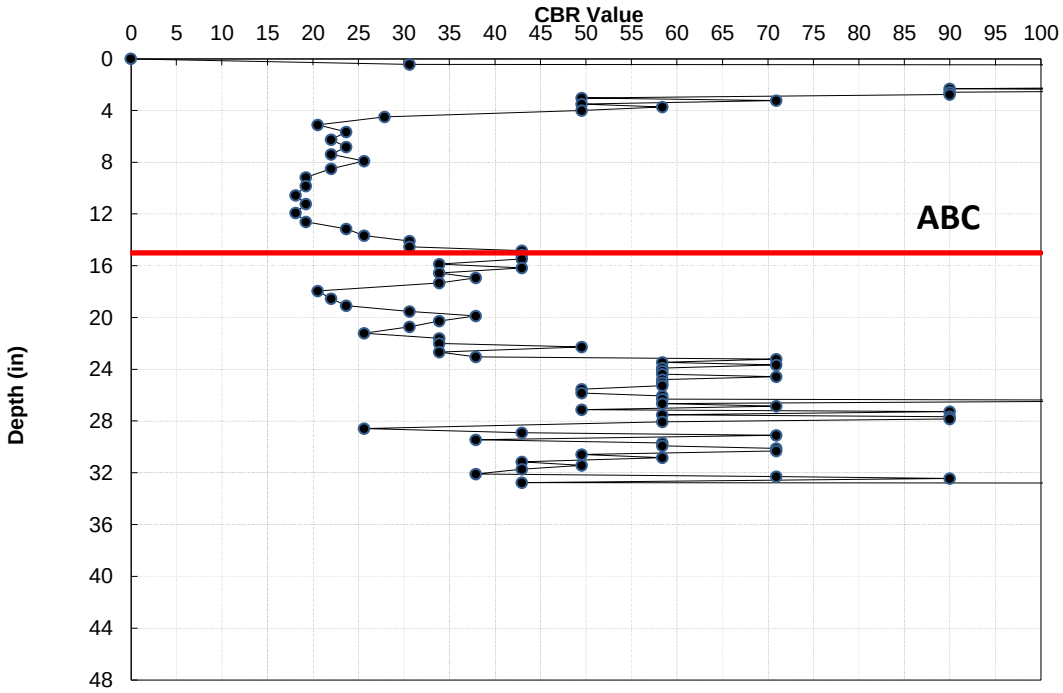
FILE	U5956 DCP Graphs 1

C-10 -Y1- Sta. 24+65 RT OSL 9

Datum = ABC
RAW
GRADE
08/07/22

Interval 0.0 to 14.8	
# of Values	49
Avg CBR	97.5
Wghtd Avg.	44.8
Max CBR	100+
Min CBR	18.1

Interval 14.8 to 34.1	
# of Values	80
Avg CBR	97.9
Wghtd Avg.	57.3
Max CBR	100+
Min CBR	20.5

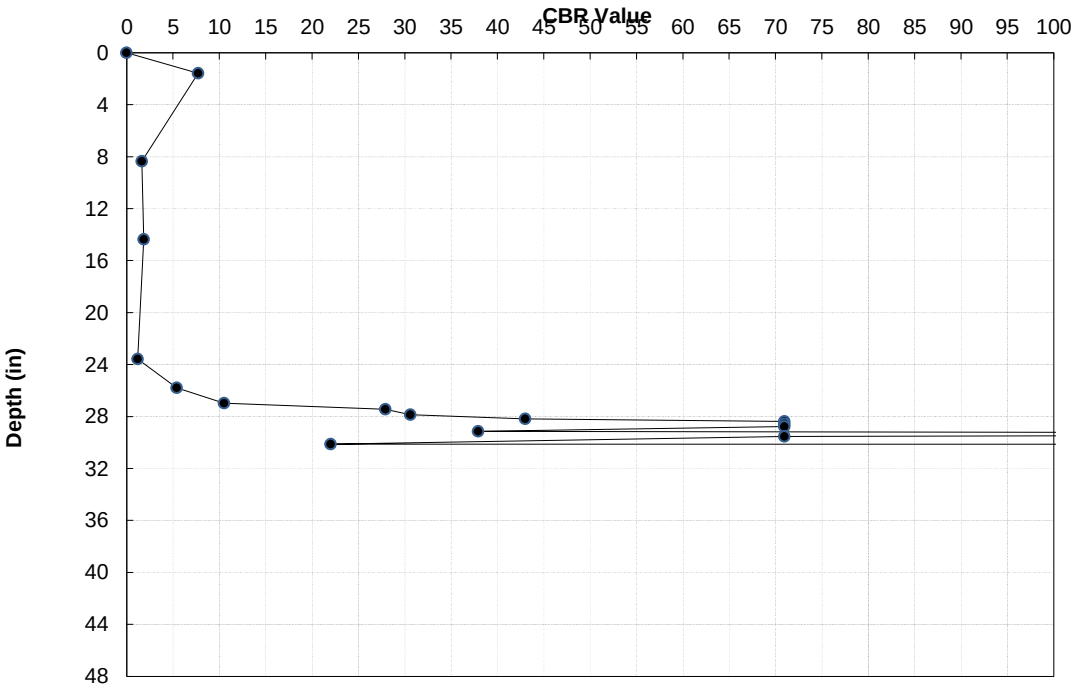


C-13 -Y1- Sta. 26+62 LT OSL 10

Datum = SG
RAW
CUT
8/7/2022

Interval 0.0 to 30.5	
# of Values	26
Avg CBR	100+
Wghtd Avg.	10.6
Max CBR	100+
Min CBR	1.2

Interval 30.5 to 31.6	
# of Values	51
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	100+



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

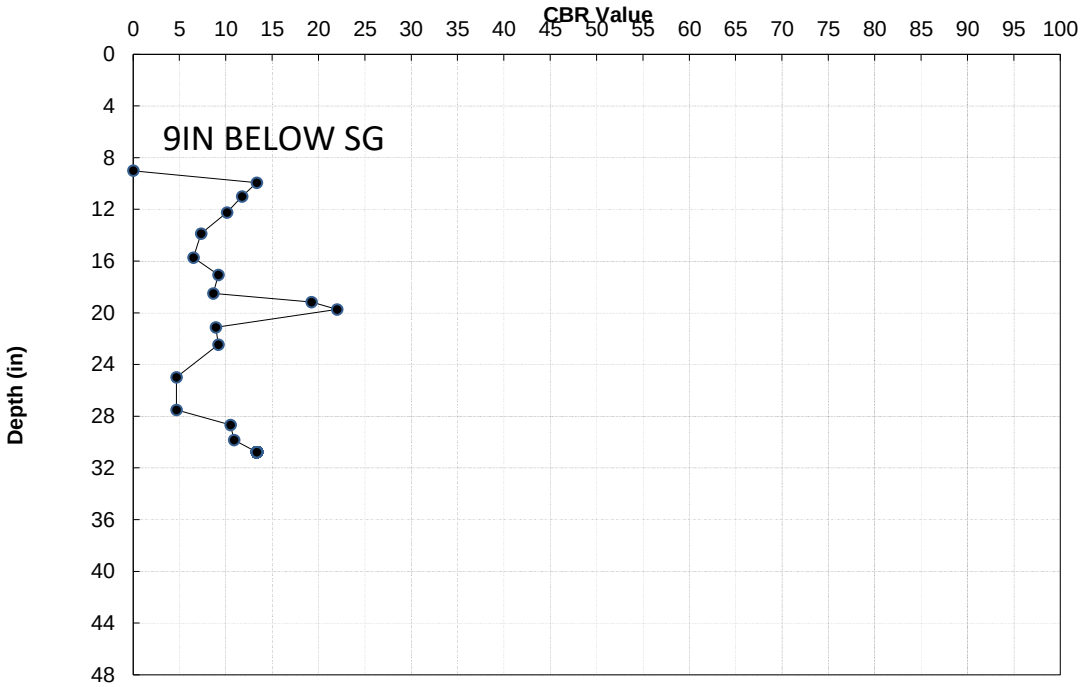
FILE	U5956 DCP Graphs 1

C-14 -Y1- Sta. 26+62 LT ISL 11

Datum = 9IN BELOW SG
RAW
FILL
08/07/22

Interval 0.0 to 18.5	
# of Values	7
Avg CBR	9.6
Wghtd Avg.	9.1
Max CBR	13.3
Min CBR	6.5

Interval 18.5 to 30.8	
# of Values	9
Avg CBR	11.5
Wghtd Avg.	9.0
Max CBR	22.0
Min CBR	4.7

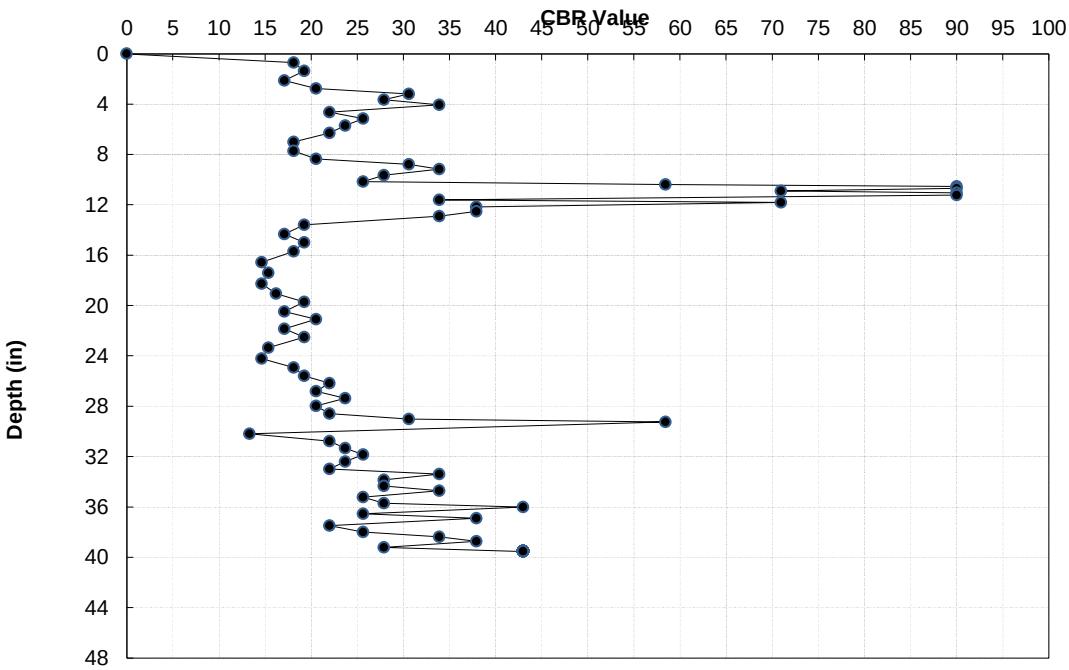


C-15 -Y1- Sta. 26+62 LTL (LT) 12

Datum = SG
RAW
FILL
08/07/22

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 39.5	
# of Values	74
Avg CBR	30.2
Wghtd Avg.	24.5
Max CBR	90.0
Min CBR	13.3



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

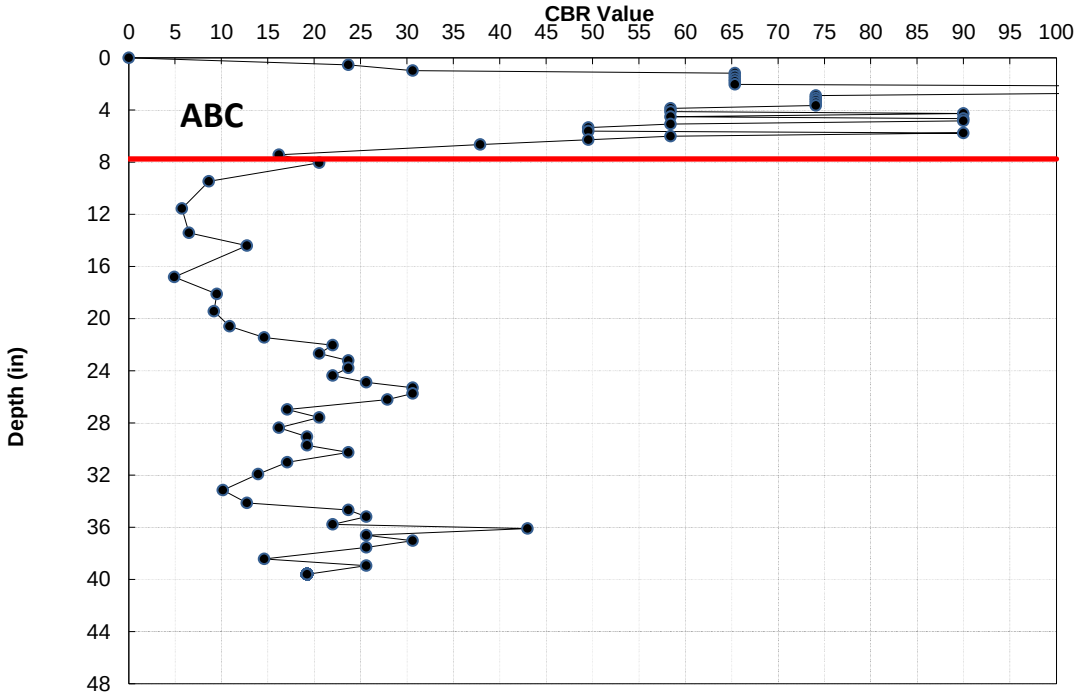
FILE	U5956 DCP Graphs 1

C-16 -Y1- Sta. 29+24 RTL (RT) 13

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 7.4	
# of Values	31
Avg CBR	69.1
Wghtd Avg.	57.4
Max CBR	100+
Min CBR	16.2

Interval 7.4 to 39.6	
# of Values	39
Avg CBR	19.4
Wghtd Avg.	15.4
Max CBR	43.0
Min CBR	4.9

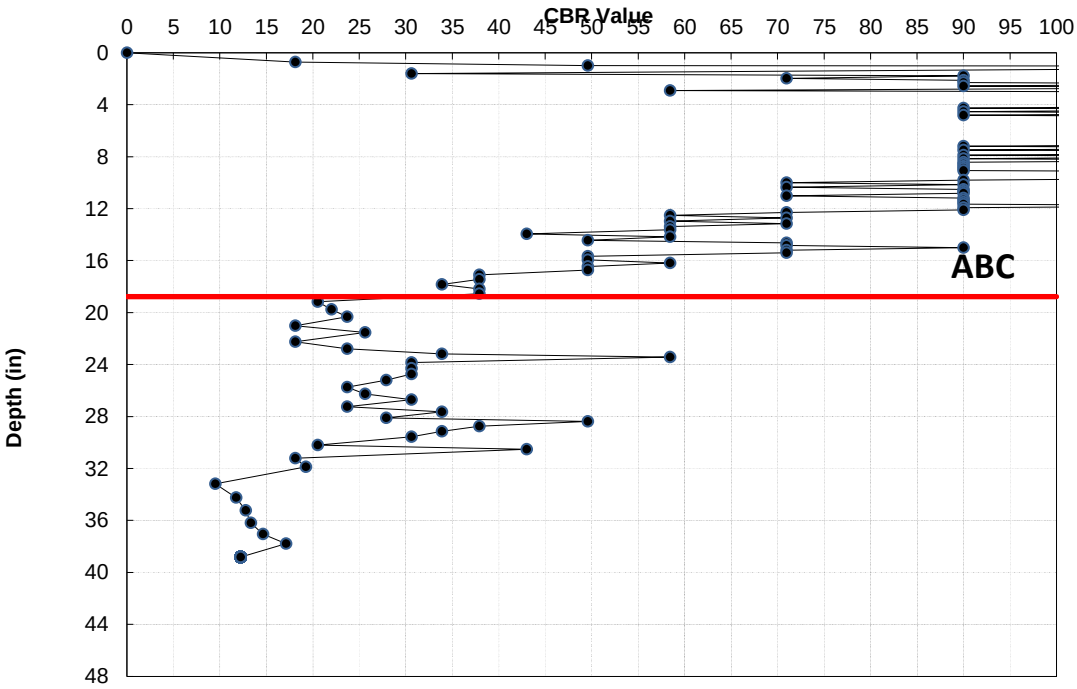


C-17 -Y1- Sta. 30+66 LTL (LT) 14

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 18.5	
# of Values	113
Avg CBR	100+
Wghtd Avg.	86.1
Max CBR	100+
Min CBR	18.1

Interval 18.5 to 38.8	
# of Values	34
Avg CBR	25.7
Wghtd Avg.	21.8
Max CBR	58.4
Min CBR	9.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

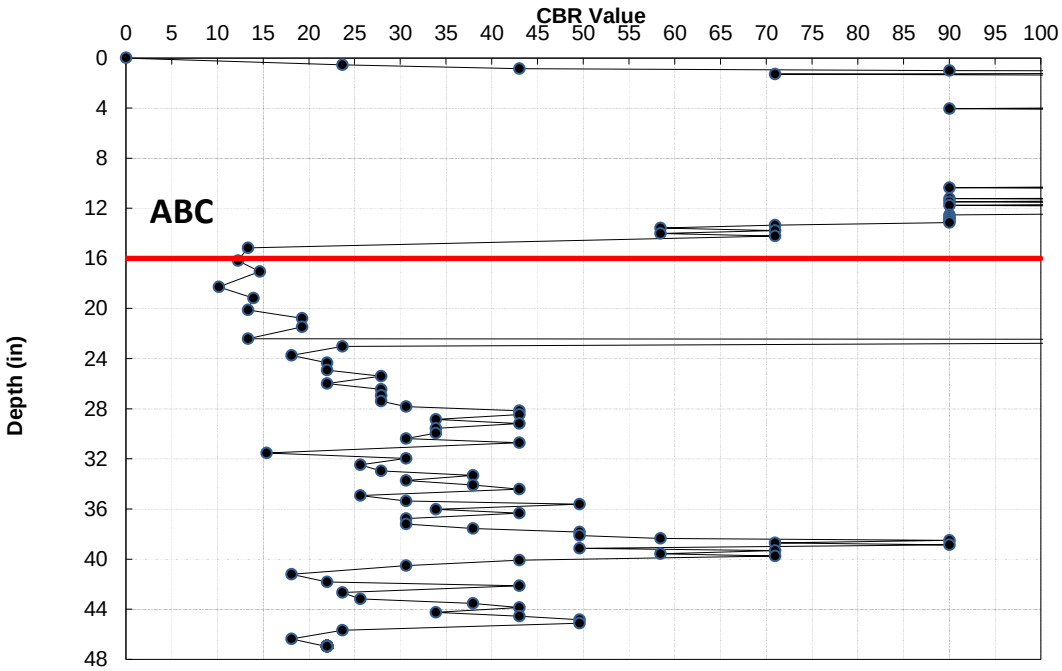
FILE	U5956 DCP Graphs 1

C-18 -Y1- Sta. 35+27 LTL (RT) 15

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 16.2	
# of Values	122
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	12.2

Interval 16.2 to 47.0	
# of Values	68
Avg CBR	37.7
Wghtd Avg.	29.2
Max CBR	100+
Min CBR	10.1

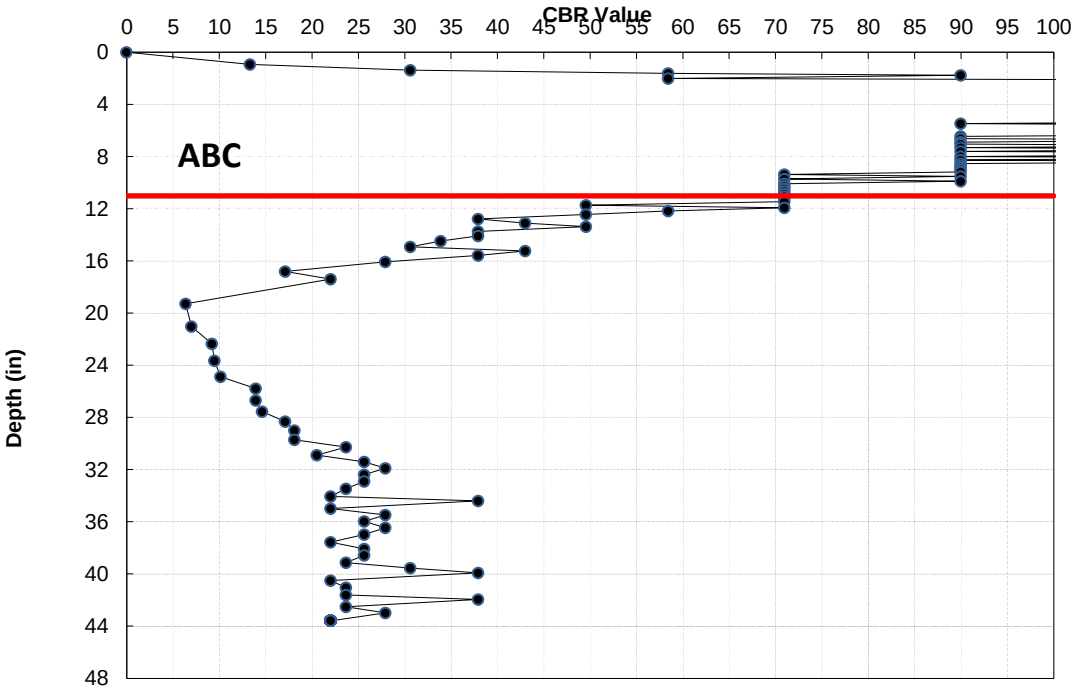


C-19 -Y1- Sta. 35+27 RTL (RT) 16

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 10.9	
# of Values	80
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	13.3

Interval 10.9 to 43.6	
# of Values	57
Avg CBR	29.9
Wghtd Avg.	22.7
Max CBR	70.9
Min CBR	6.4



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

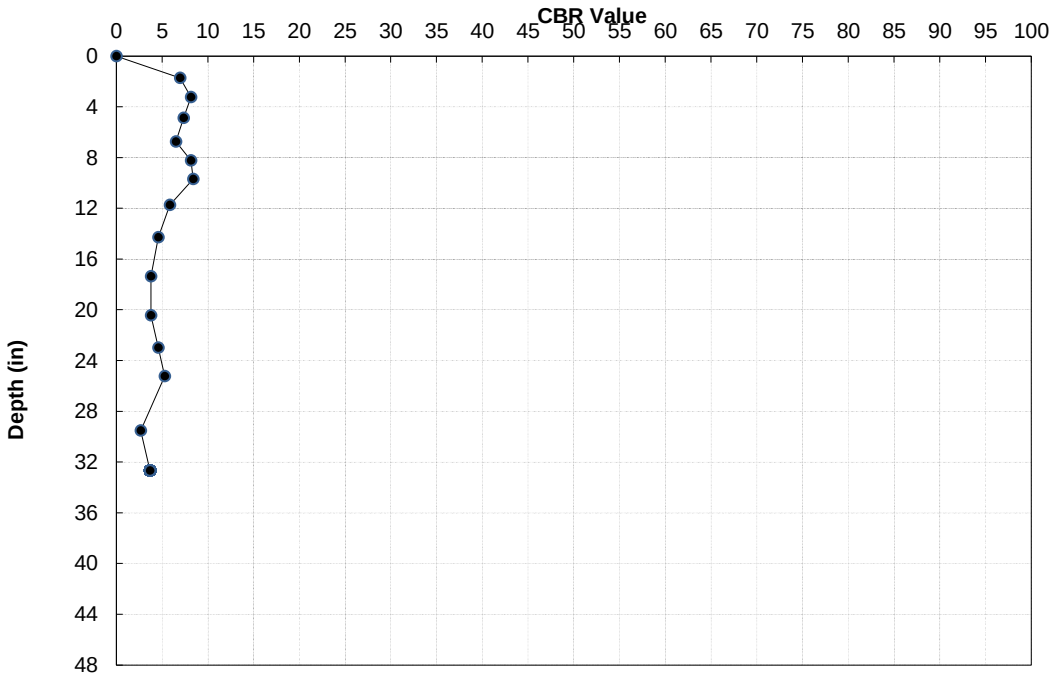
FILE	U5956 DCP Graphs 1

C-21 -Y1- Sta. 36+92 LT OSL 17

Datum = SG
RAW
FILL
08/07/22

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 32.7	
# of Values	14
Avg CBR	5.7
Wghtd Avg.	5.1
Max CBR	8.4
Min CBR	2.7

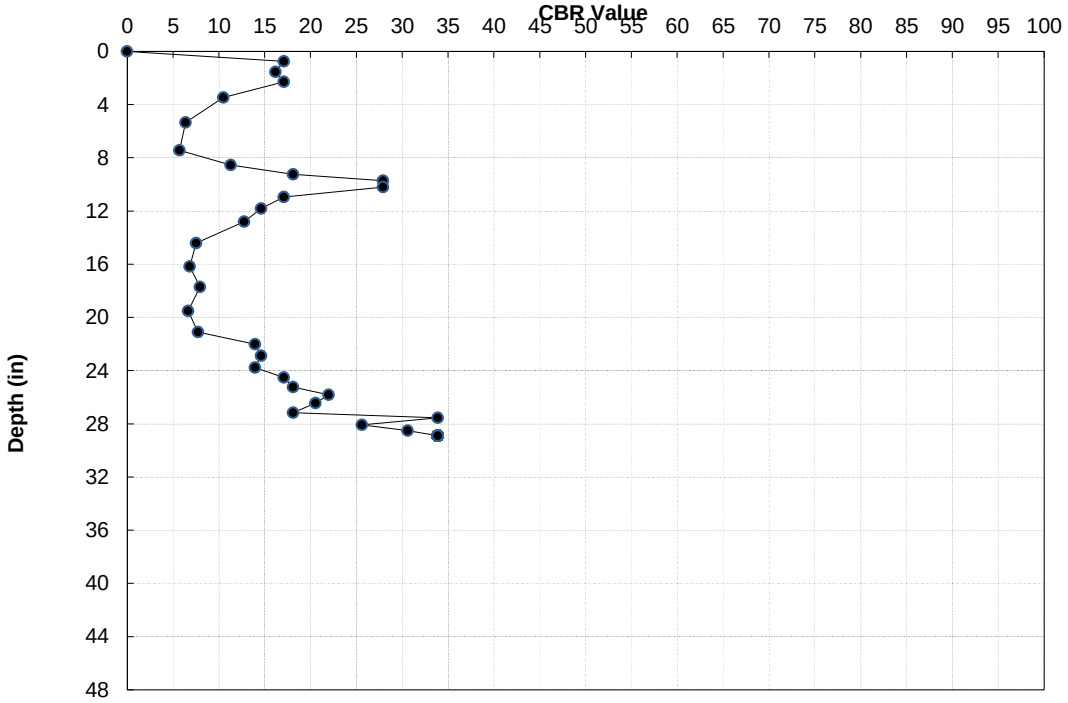


C-22 -Y1- Sta. 36+92 LT ISL 18

Datum = SG
RAW
FILL
08/07/22

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 28.9	
# of Values	30
Avg CBR	16.7
Wghtd Avg.	13.1
Max CBR	33.9
Min CBR	5.7



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

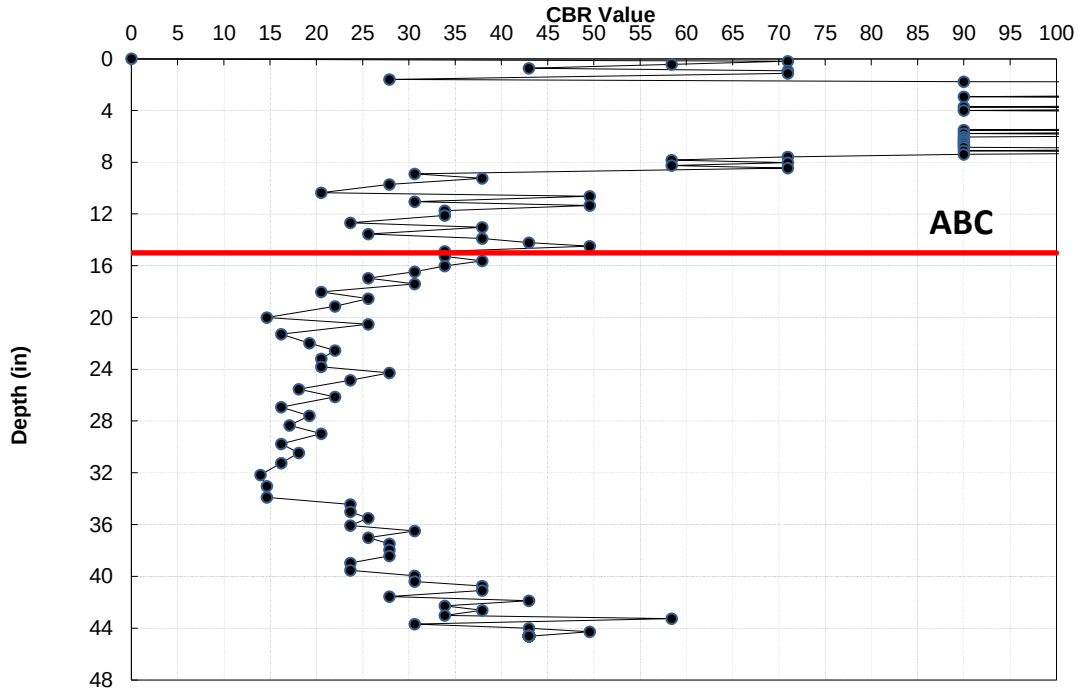
FILE	U5956 DCP Graphs 1

C-23 -Y1- Sta. 36+92 LTL (LT) 19

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 14.9	
# of Values	75
Avg CBR	99.0
Wghtd Avg.	70.3
Max CBR	100+
Min CBR	20.5

Interval 14.9 to 44.6	
# of Values	55
Avg CBR	26.9
Wghtd Avg.	24.2
Max CBR	58.4
Min CBR	13.9

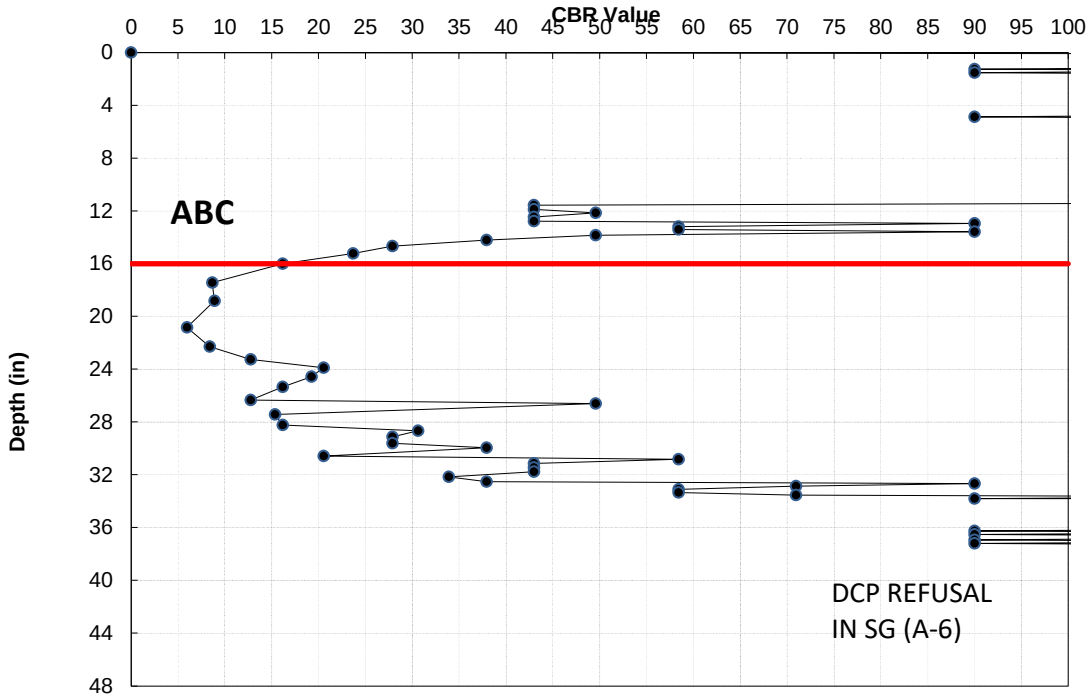


C-24 -Y1- Sta. 29+65 LTL (RT) 20

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 16.0	
# of Values	139
Avg CBR	100+
Wghtd Avg.	#DIV/0!
Max CBR	100+
Min CBR	16.2

Interval 16.0 to 38.7	
# of Values	135
Avg CBR	100+
Wghtd Avg.	84.0
Max CBR	100+
Min CBR	6.0



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

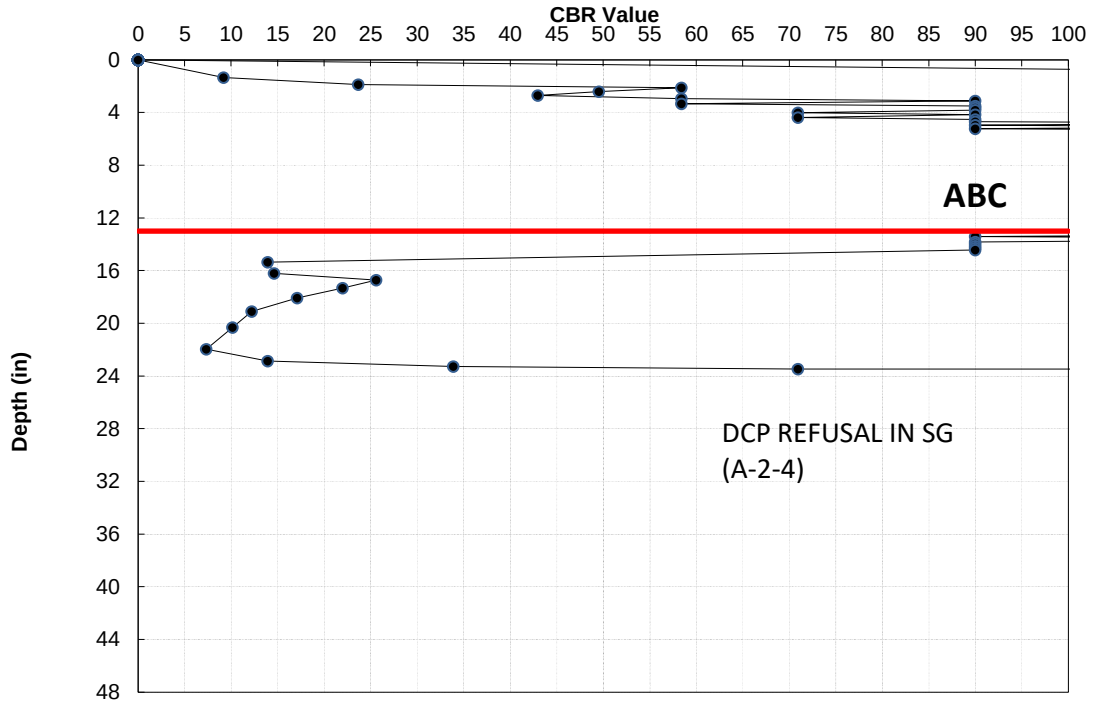
FILE	U5956 DCP Graphs 2

C-25 -Y1- Sta. 39+65 RT ISL 1

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 13.0	
# of Values	110
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	9.2

Interval 13.0 to #####	
# of Values	71
Avg CBR	#VALUE!
Wghtd Avg.	#VALUE!
Max CBR	#VALUE!
Min CBR	#VALUE!

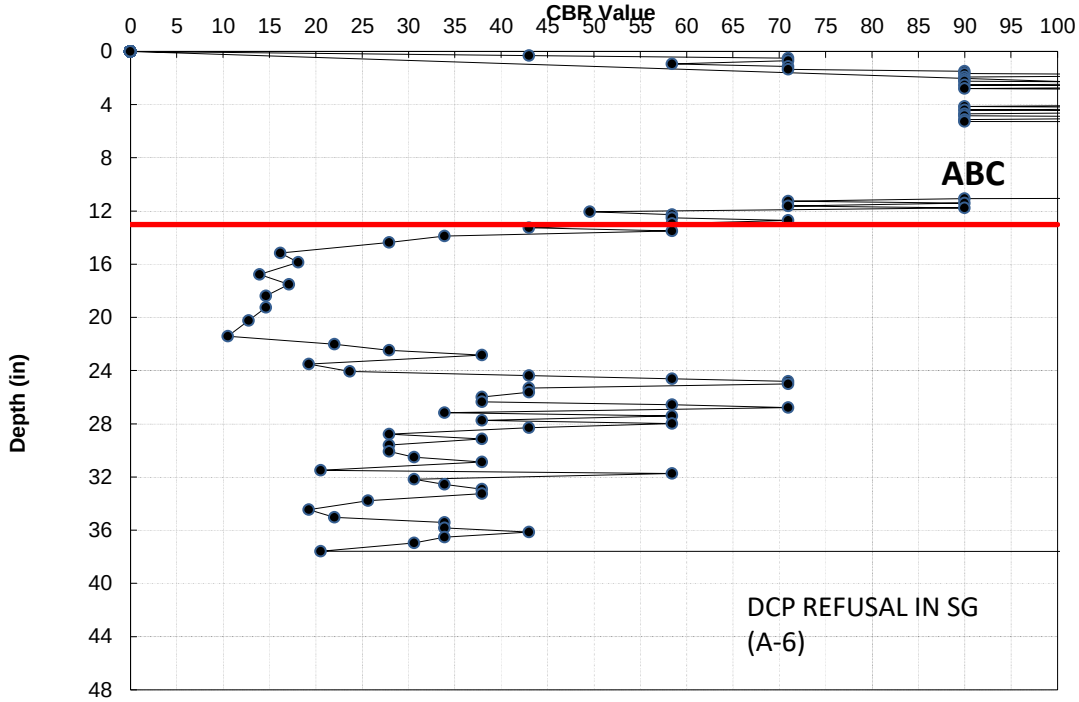


C-26 -Y1- Sta. 39+65 RT OSL 2

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 13.0	
# of Values	116
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	43.0

Interval 13.0 to #####	
# of Values	103
Avg CBR	#VALUE!
Wghtd Avg.	#VALUE!
Max CBR	#VALUE!
Min CBR	#VALUE!



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

FILE	U5956 DCP Graphs 2

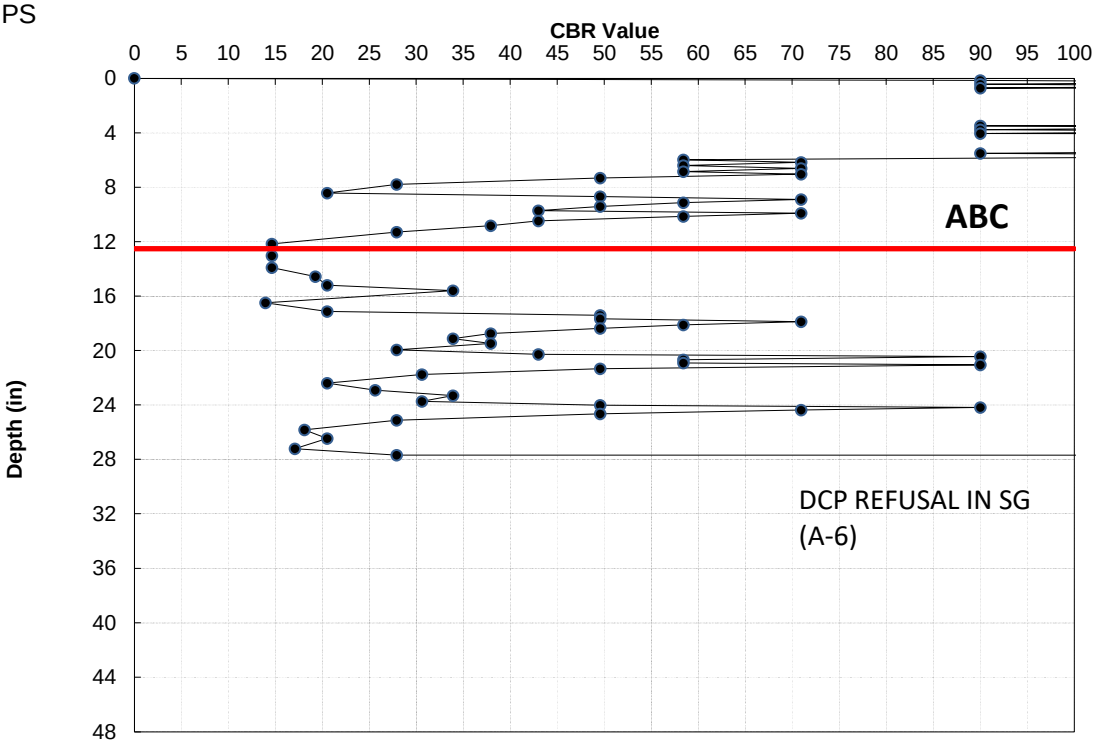
C-27 -Y1- Sta. 39+65 RT PS

3

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 12.2	
# of Values	80
Avg CBR	100+
Wghtd Avg.	93.4
Max CBR	100+
Min CBR	14.6

Interval 12.2 to 28.0	
# of Values	46
Avg CBR	100+
Wghtd Avg.	39.0
Max CBR	100+
Min CBR	13.9



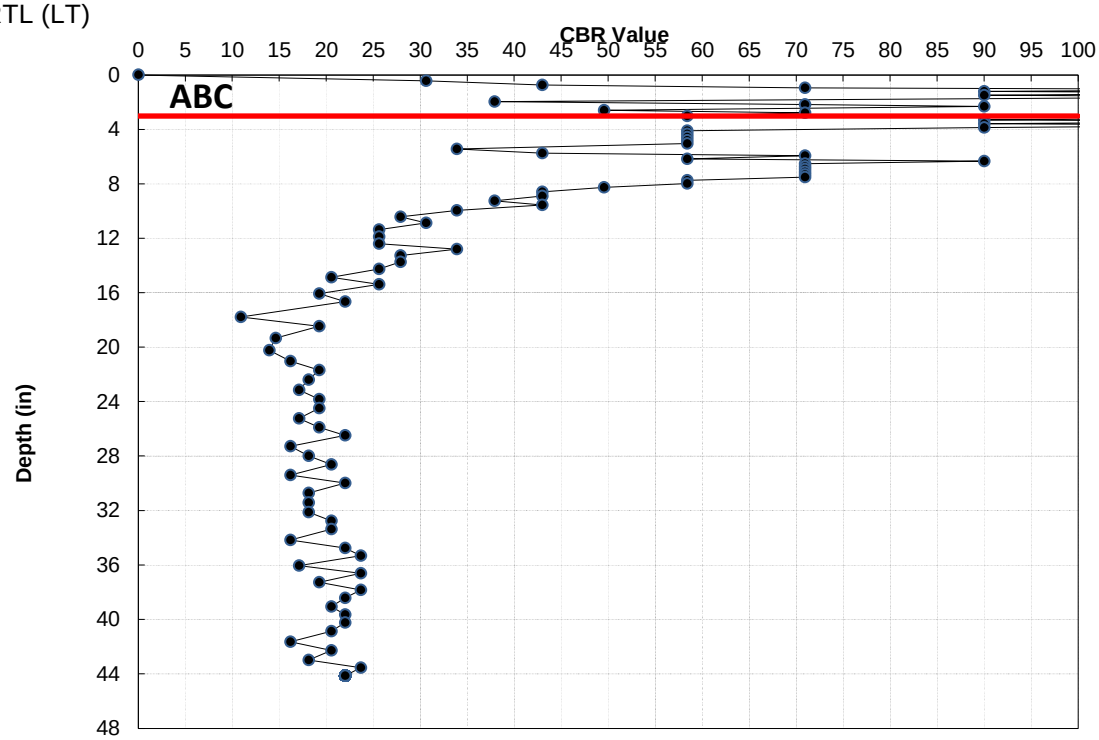
C-28 -Y1- Sta. 42+44 RTL (LT)

4

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 3.0	
# of Values	14
Avg CBR	76.4
Wghtd Avg.	64.1
Max CBR	100+
Min CBR	30.6

Interval 3.0 to 44.1	
# of Values	83
Avg CBR	37.6
Wghtd Avg.	26.5
Max CBR	100+
Min CBR	10.9



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

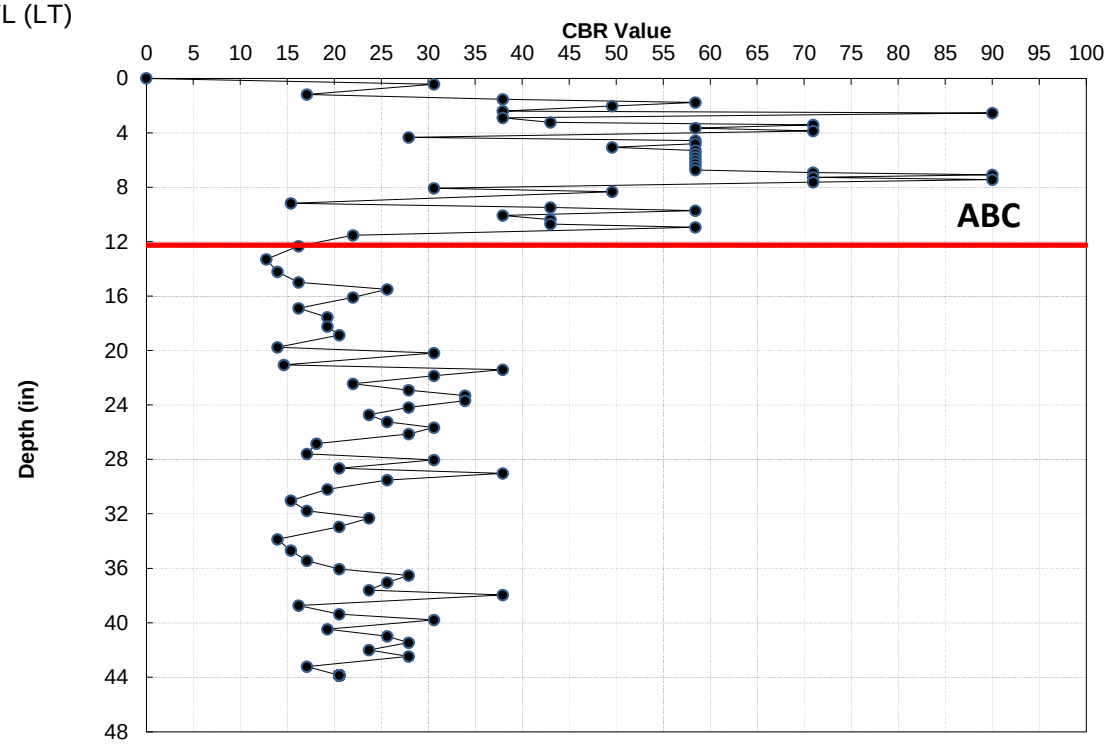
FILE	U5956 DCP Graphs 2

C-29 -Y1- Sta. 42+44 LTL (LT) 5

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 12.3	
# of Values	39
Avg CBR	51.7
Wghtd Avg.	42.8
Max CBR	90.0
Min CBR	15.4

Interval 12.3 to 43.9	
# of Values	52
Avg CBR	23.2
Wghtd Avg.	21.4
Max CBR	37.9
Min CBR	12.8

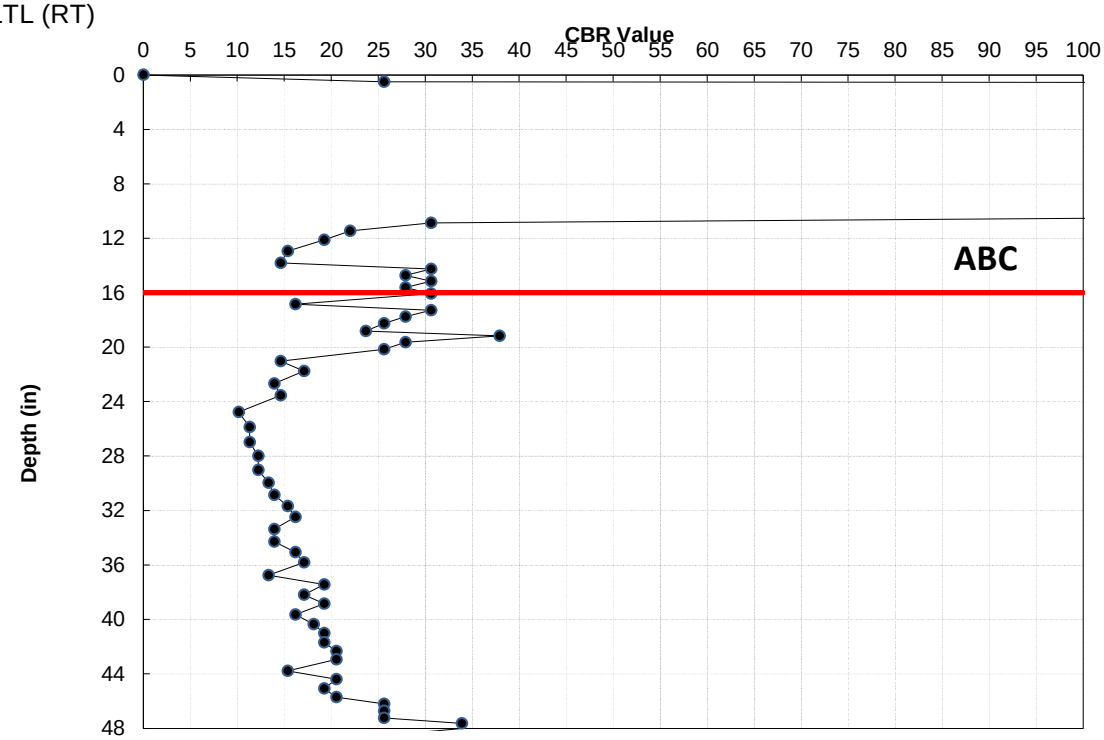


C-31 -Y1- Sta. 49+29 LTL (RT) 6

Datum = ABC
RAW
GRADE
08/07/22

Interval 0.0 to 16.1	
# of Values	131
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	14.6

Interval 16.1 to 54.1	
# of Values	54
Avg CBR	19.8
Wghtd Avg.	18.2
Max CBR	37.9
Min CBR	10.1



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

FILE	U5956 DCP Graphs 2

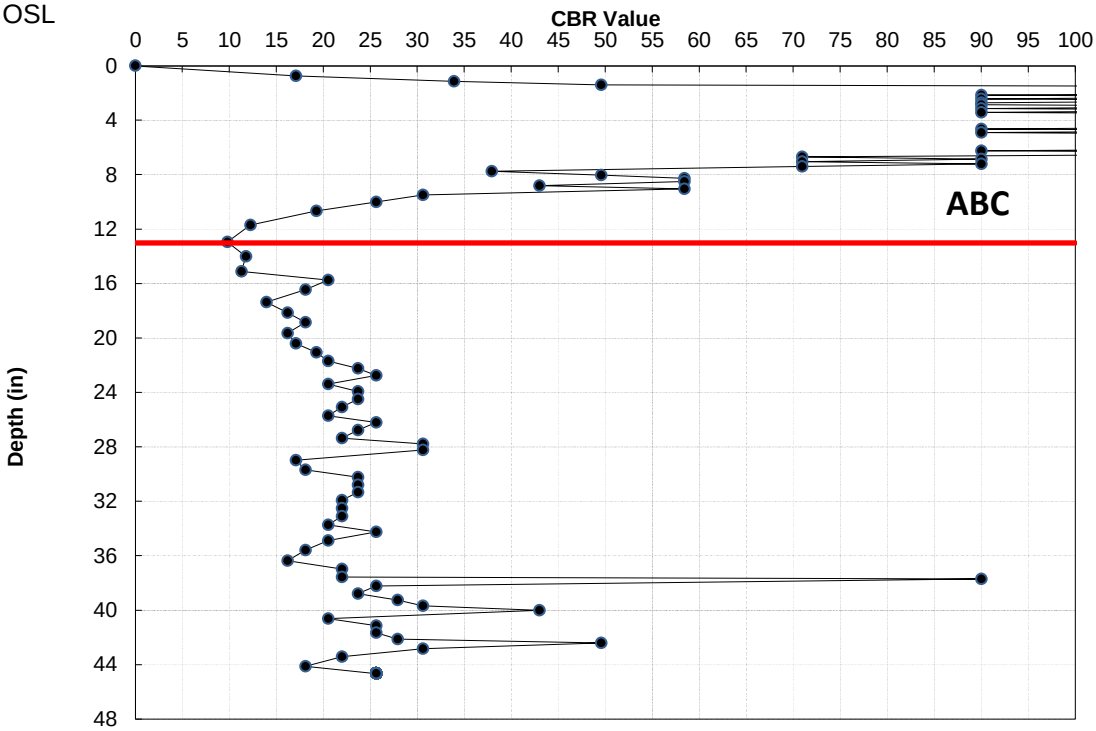
C-32 -Y1- Sta. 49+29 RT OSL

7

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 13.0	
# of Values	64
Avg CBR	100+
Wghtd Avg.	68.9
Max CBR	100+
Min CBR	9.8

Interval 13.0 to 44.6	
# of Values	53
Avg CBR	24.1
Wghtd Avg.	21.7
Max CBR	90.0
Min CBR	#VALUE!



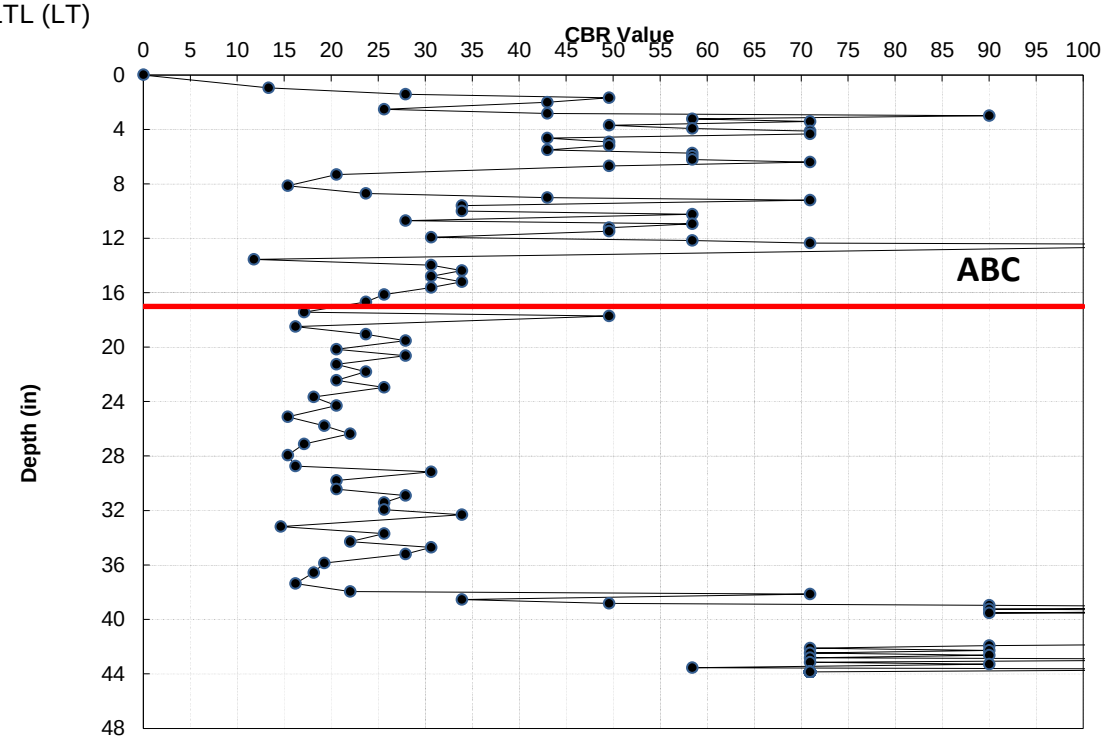
C-34 -Y1- Sta. 51+16 LTL (LT)

8

Datum = ABC
RAW
GRADE
08/07/22

Interval 0.0 to 16.7	
# of Values	46
Avg CBR	100+
Wghtd Avg.	68.9
Max CBR	100+
Min CBR	9.8

Interval 16.7 to 43.9	
# of Values	80
Avg CBR	84.2
Wghtd Avg.	39.7
Max CBR	100+
Min CBR	14.6



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

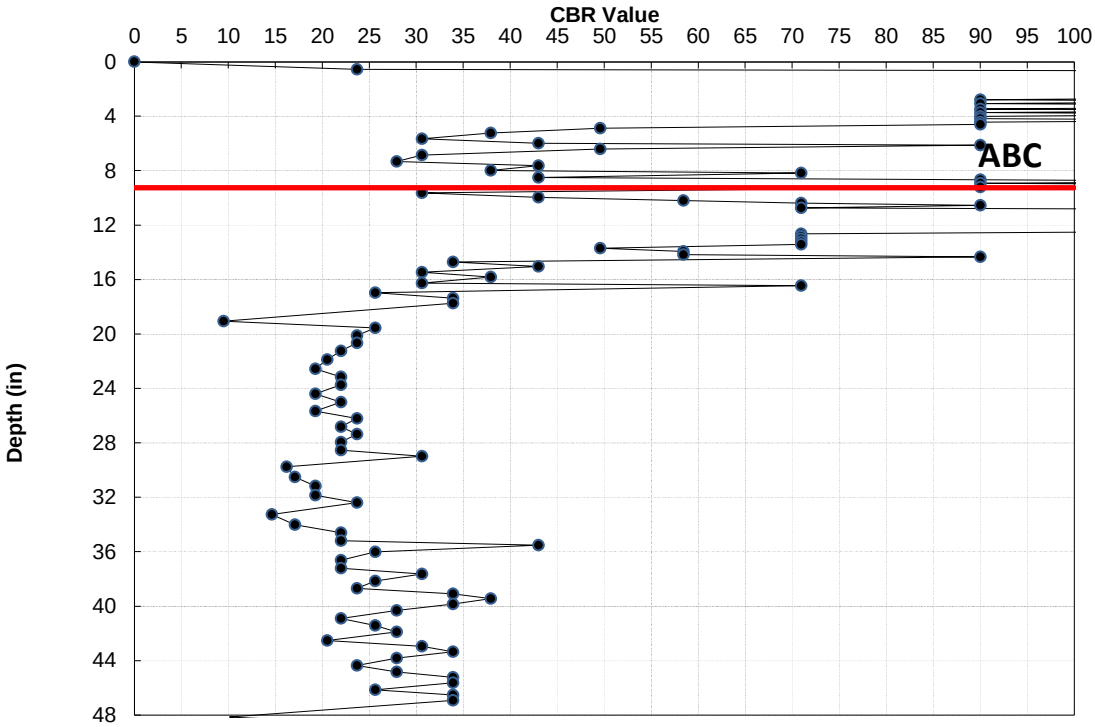
FILE	U5956 DCP Graphs 2

C-35 -L- Sta. 15+81 9

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 9.2	
# of Values	53
Avg CBR	100+
Wghtd Avg.	81.0
Max CBR	100+
Min CBR	23.7

Interval 9.2 to 48.7	
# of Values	95
Avg CBR	55.3
Wghtd Avg.	32.0
Max CBR	100+
Min CBR	9.5

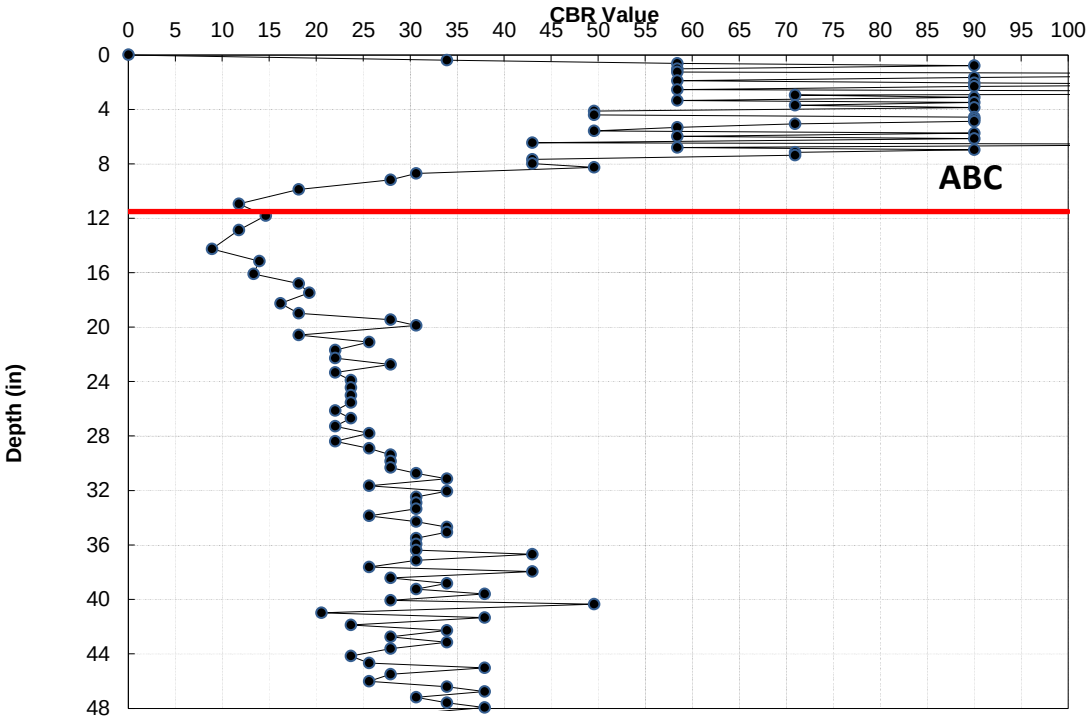


C-36 -L- Sta. 17+33 10

Datum = ABC
RAW
FILL
8/7/2022

Interval 0.0 to 11.8	
# of Values	46
Avg CBR	72.0
Wghtd Avg.	53.4
Max CBR	100+
Min CBR	11.8

Interval 11.8 to 52.8	
# of Values	84
Avg CBR	30.2
Wghtd Avg.	27.0
Max CBR	90.0
Min CBR	8.9



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

FILE	U5956 DCP Graphs 2

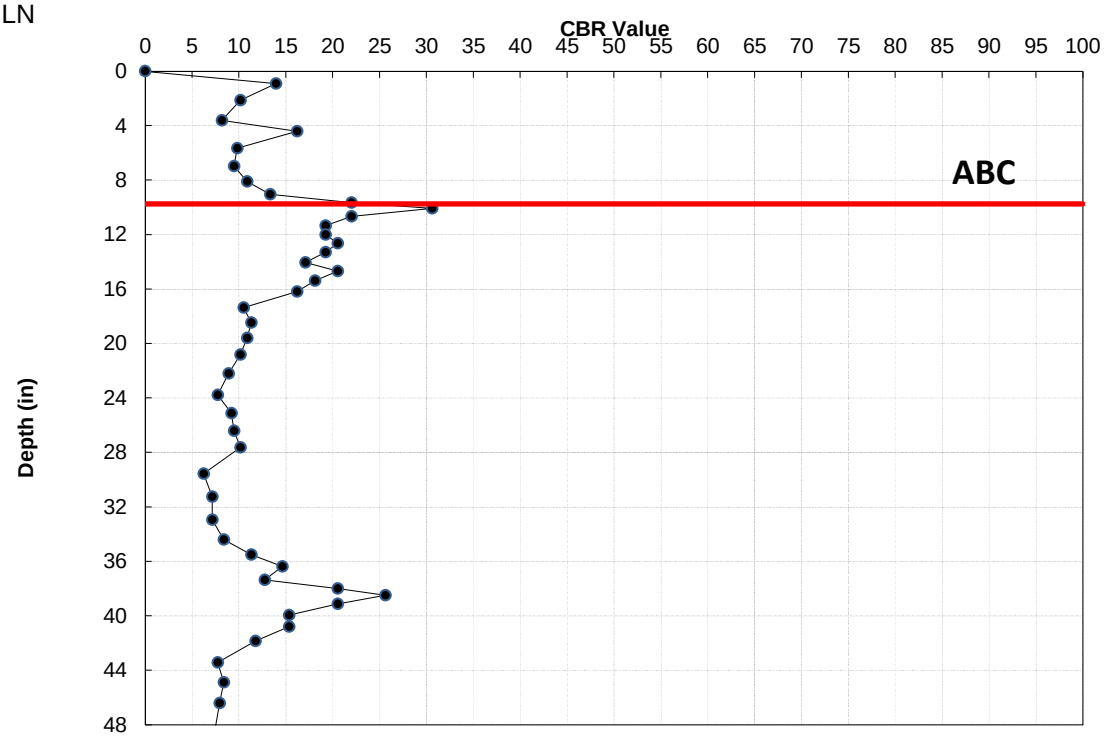
C-37 -Y2- Sta. 23+62 RT LN

11

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 9.6	
# of Values	9
Avg CBR	12.7
Wghtd Avg.	11.7
Max CBR	22.0
Min CBR	8.2

Interval 9.6 to 48.0	
# of Values	36
Avg CBR	13.9
Wghtd Avg.	11.7
Max CBR	30.6
Min CBR	6.2



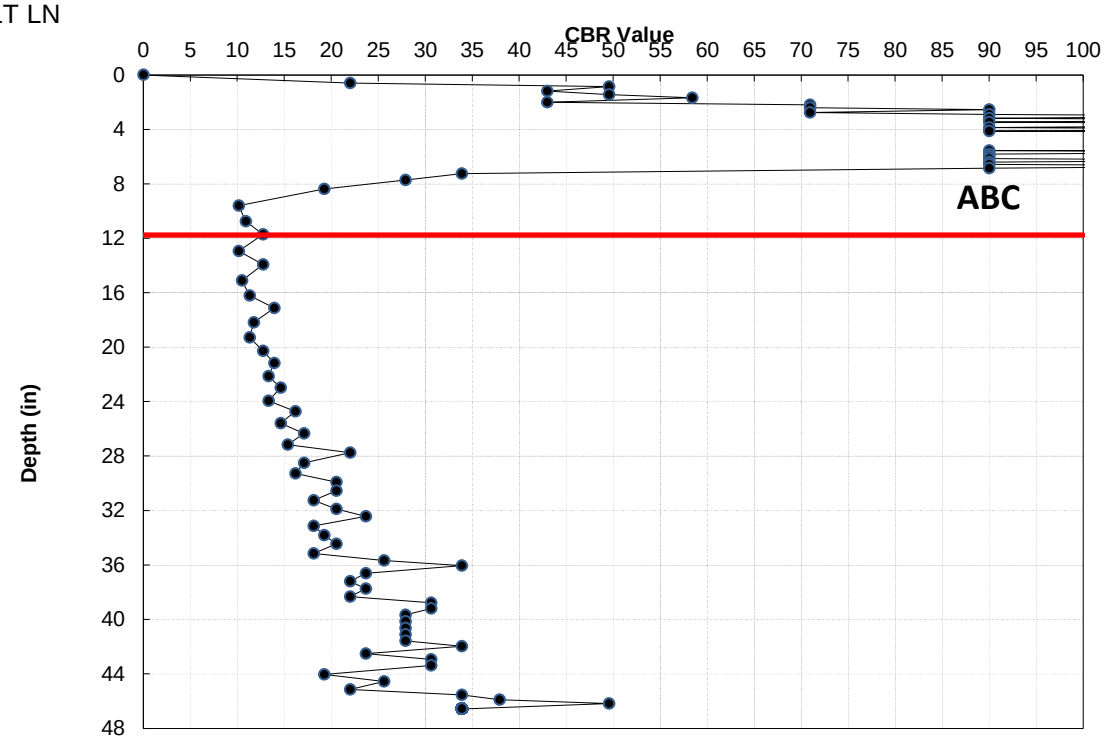
C-38 -Y3- Sta. 12+84 LT LN

12

Datum = ABC
RAW
GRADE
08/07/22

Interval 0.0 to 11.7	
# of Values	57
Avg CBR	100+
Wghtd Avg.	67.6
Max CBR	100+
Min CBR	10.1

Interval 11.7 to 46.6	
# of Values	52
Avg CBR	21.9
Wghtd Avg.	19.2
Max CBR	49.6
Min CBR	10.1



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

FILE	U5956 DCP Graphs 2

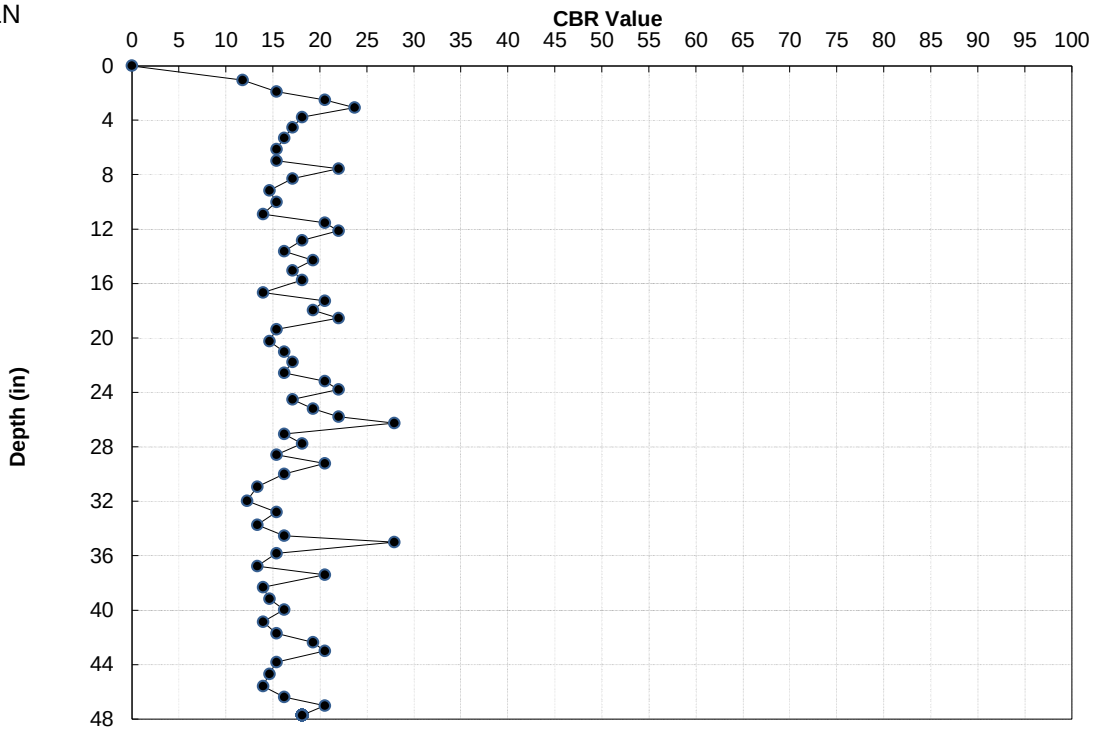
C-39 -L- Sta. 51+25 RT LN

13

Datum = SG
RAW
GRADE
08/07/22

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 47.7	
# of Values	63
Avg CBR	17.4
Wghtd Avg.	16.9
Max CBR	27.9
Min CBR	11.8



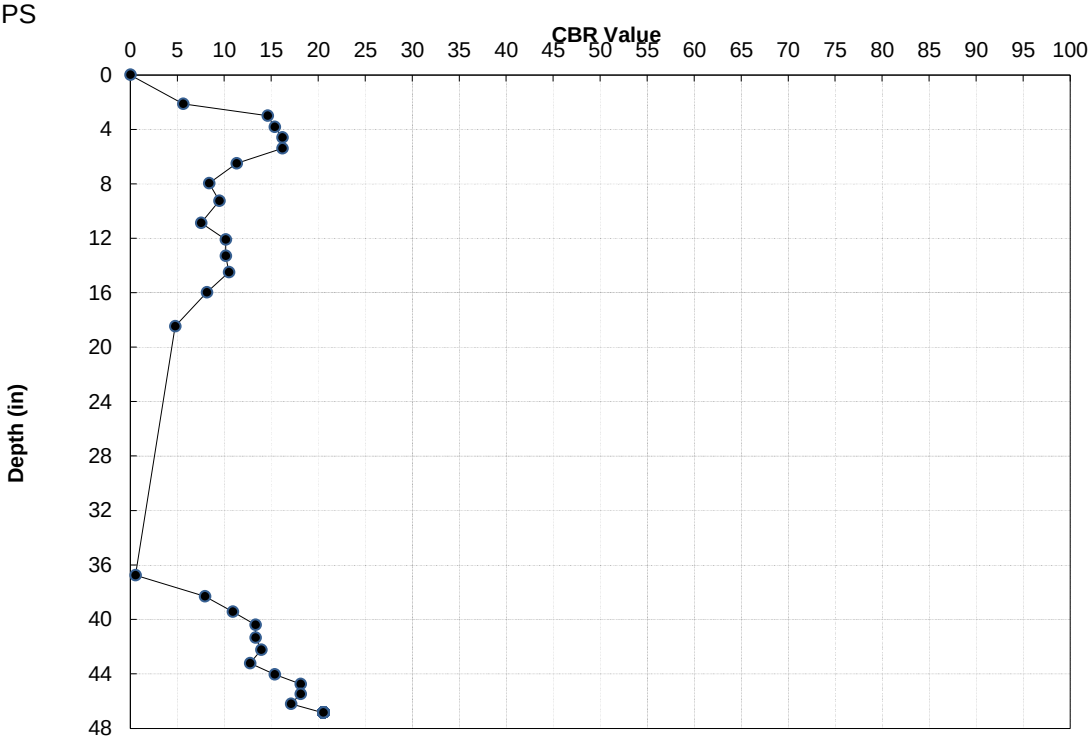
C-40 -L- Sta. 51+25 RT PS

14

Datum = SG
RAW
GRADE
08/07/22

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 46.9	
# of Values	26
Avg CBR	11.9
Wghtd Avg.	6.7
Max CBR	20.5
Min CBR	0.6



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	46891.1.1
PROJECT ID	U-5956
ROUTE	US 29
COUNTY	Cabarrus

GEOLOGIST	LM Howard
GEOTECHS	CG2

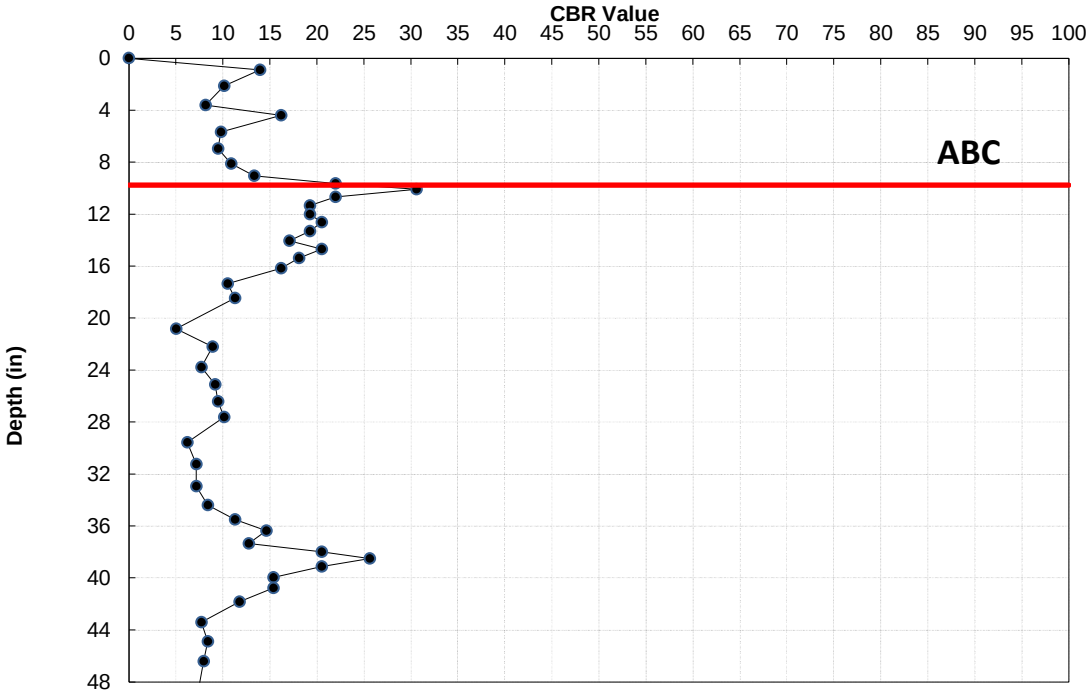
FILE	U5956 DCP Graphs 2

C-37 -Y2- Sta. 23+62 RT LN 15

Datum = ABC
RAW
FILL
08/07/22

Interval 0.0 to 9.6	
# of Values	9
Avg CBR	12.7
Wghtd Avg.	11.7
Max CBR	22.0
Min CBR	8.2

Interval 9.6 to 48.0	
# of Values	35
Avg CBR	13.8
Wghtd Avg.	11.4
Max CBR	30.6
Min CBR	5.0

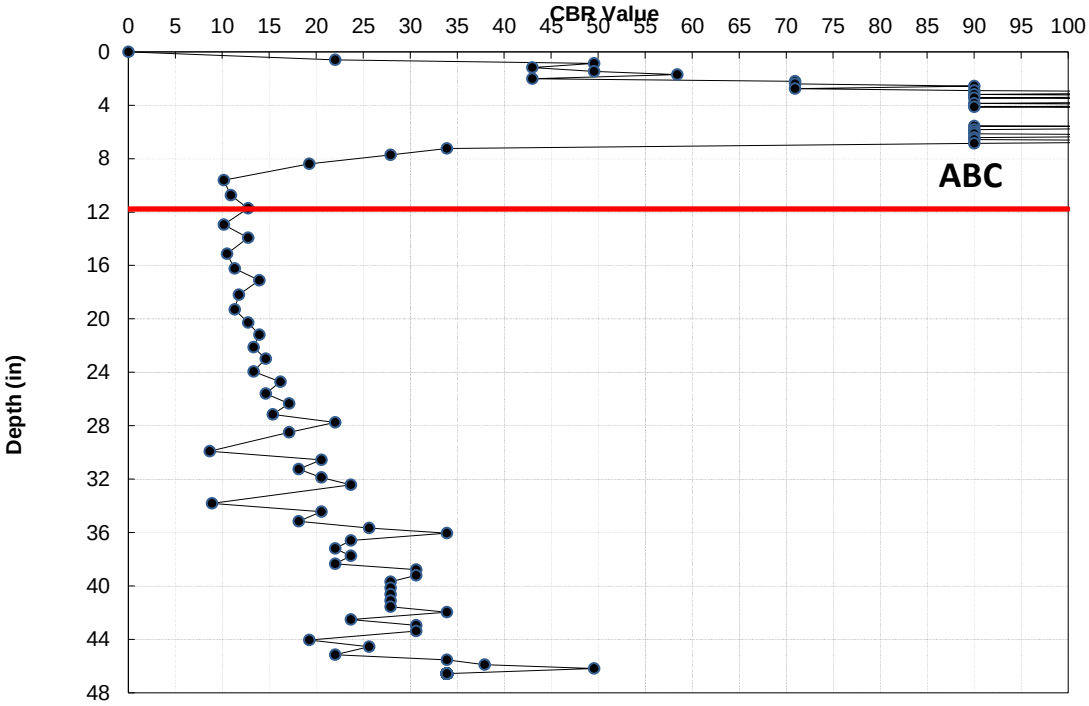


C-38 -Y3- Sta. 12+64 LT LN 16

Datum = ABC
RAW
GRADE
08/07/22

Interval 0.0 to 11.7	
# of Values	57
Avg CBR	100+
Wghtd Avg.	67.6
Max CBR	100+
Min CBR	10.1

Interval 11.7 to 46.6	
# of Values	50
Avg CBR	21.7
Wghtd Avg.	18.4
Max CBR	49.6
Min CBR	8.6



PAVEMENT CORE EVALUATION

46891.1.1 (U-5956) Cabarrus County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y1-	4+74 LTL (RT)	11.75	2.00	S	2	
	Asphalt 14.25"		0.75	B/MS	1	appears similar to mat seal, possibly consolidation of large aggregate, some missing aggregate
			1.00	S	1	low oxidation
			3.50	B	1	low oxidation
			1.00	S	1	low to moderate oxidation, thin hairline crack between upper lift
			6.00	B	1	low to moderate oxidation
-Y1-	6+64 LT PS	Y	2.25	S	1-2	lifts indistinguishable
	Asphalt 12.75"		7.50	I	3	lift 2 delaminated from 3, lift one looks like old surface lift
			0.50	MS	1	flattened and elongated aggregate (FLA)
			1.75	I	1	
			1.00	S	1	some ABC/large aggregate crumbling off
-Y1-	6+64 LT ISL	-	3.50	S	2	oxidation at lift boundaries
	Asphalt 12.75"		5.50	I	3	low to moderate oxidation, lift 3 delaminated from upper and lower lifts
			1.25	S	1	
			1.25	I	1	moderate oxidation and stripping, flattened and elongated aggregate
			0.50	S	1	moderate oxidation
			8.00	C	1	
			0.75	S	1	moderate oxidation and stripping
			8.25	C	1	piece missing from upper corner, about 2" long, 1" wide, possibly mechanical
-Y1-	6+64 RT ISL	16.75	3.75	S	2	low oxidation
	Asphalt 8.25"		3.50	I/B	1	low oxidation
			4.75	S	3	lift 2 different mix, FLA, low to moderate stripping and oxidation, delaminated
			2.50	I	1	low oxidation
-Y1-	6+64 RT PS	-	2.00	S	1	
	Asphalt 14.25"		3.50	I	2	
			8.75	B	2	low oxidation and stripping
-Y1-	18+03 LTL (LT)	13.00	2.00	S	1	
	Asphalt 18"		3.25	I	2	
			12.75	B	2	possibly 3 lifts, mechanical break 8" into lift, low oxidation and stripping
-Y1-	22+32 LTL (LT)	11.00	1.00	S	1	full-depth crack through core but still attached
	Asphalt 6.5"		0.50	MS	1	, low to moderate oxidation and stripping
			1.00	S	1	
			2.50	B	1	missing 1.5" of lift or was measured incorrectly in PIDS
-Y1-	24+65 LTL (RT)	-	3.00	S/MS	2	mat seal lift at bottom of lift 1
	Asphalt 19"		3.50	I	1	
			2.50	S	1	delaminated from upper and lower lifts
			10.00	B	1	

PAVEMENT CORE EVALUATION
46891.1.1 (U-5956) Cabarrus County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y1-	24+65 RT ISL	14.25	3.50	S	2	lift 2 possibly intermediate mix
	Asphalt 11"		3.00	B	1	low to moderate oxidation
			1.00	S	1	delaminated from upper and lower lift
			1.50	I	1	moderate oxidation
			1.25	S	1	low oxidation
			3.00	B	1	low oxidation
-Y1-	24+65 RT OSL	15.00	3.50	S	2	lift 2 possibly intermediate mix
	Asphalt 10.75"		3.00	B	1	low to moderate oxidation
			0.75	S	1	delaminated from upper and lower lift
			1.25	I	1	moderate oxidation
			1.50	S	1	low oxidation
			3.00	B	1	low oxidation
-Y1-	24+65 RT PS	Y	1.50	S	1	
	Asphalt 15.25"		4.00	I	3	
			5.00	B	1	delaminated from upper and lower lift
			1.25	S	1	bleeding at break, low to moderate oxidation
			2.00	I	1	low to moderate oxidation
			1.50	B	1	flat and elongated aggregate (FLA) aggregate, low to moderate oxidation
-Y1-	26+62 LT PS	Y	2.00	S	1	
	Asphalt 12"		4.25	I	2	
			3.25	S	3	delaminated from upper lift
			2.50	I/B	1	moderate oxidation
-Y1-	26+62 LT OSL	-	2.00	S	1	
	Asphalt 10.25"		3.25	I	3	
			2.00	B	1	
			2.50	S	1	delaminated from upper lift
			1.00	I/B	1	low bleeding
			11.00	C	1	at 6", lift 1 delaminated, very thin asphalt layer in between at one point but high oxidation
-Y1-	26+62 LT ISL	-	2.00	S	1	
	Asphalt 10.5"		3.25	I	3	
			2.00	B	1	
			2.50	S	1	delaminated from upper lift
			1.75	I/B	1	delaminated from upper and lower lift
			11.00	C	1	at 6", lift 1 delaminated, very thin asphalt layer in between at one point but high oxidation
-Y1-	26+62 LTL (LT)	-	1.75	S/MS	1	mat seal lift at bottom of lift 1
	Asphalt 19"		4.50	I	2	
			1.75	S	3	
			11.00	B	1	mechanical break after possible lift 2

PAVEMENT CORE EVALUATION
46891.1.1 (U-5956) Cabarrus County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y1-	29+24 RTL RT	7.75	2.25	S	2	
	Asphalt 16.25"		4.75	I	2	
			1.75	S	1	delaminated from upper lift, low oxidation
			2.00	I	1	
			5.50	B	1	
-Y1-	30+66 LTL LT	18.75	5.00	S	3	lift 1 bottom has large aggregate, crack through lifts, moderate oxidation, crumbling, L1&2 I
	Asphalt 18.25"		1.75	I	1	crack through lift, moderate oxidation
			3.75	S	2	1" top-down crack through lift, lift 1 delaminated from upper and lower lifts
			2.00	I	1	low to moderate stripping and oxidation
			5.75	B	1	low oxidation, low to moderate stripping
-Y1-	35+27 LTL (RT)	16.00	2.25	S	1-2	lifts indistinguishable, lift 1 bottom has large aggregate, oxidized at boundary
	Asphalt 9"		1.50	I	1	oxidized at boundaries
			3.00	B	1-2	moderate oxidation and stripping
			2.25	S	1	delaminated, low to moderated oxidation and stripping
-Y1-	35+27 RTL RT	11.00	2.00	S	1	last .75" possible mat seal, low oxidation
	Asphalt 16"		4.00	I	3	low oxidation
			2.25	S	1	delaminated from upper lift, low oxidation
			7.75	B	2	lift 2 different aggregate, low oxidation
-Y1-	36+92 RTL (LT)	Yes	1.50	I	1	
	Asphalt 14.25"		2.00	S	1	
			4.25	I	2	lift 1 delaminated from 2
			6.50	B	1-2	lifts indistinguishable, low oxidation
-Y1-	36+92 LT OSL	-	1.75	I	1	
	Asphalt 12.25"		1.75	S	1	
			3.25	I/B	1	
			3.00	S	3	
			1.75	I	1	low to moderate oxidation
			14.00	C	2	
-Y1-	36+92 LT ISL	-	1.00	S	2	
	Asphalt 14.75		1.25	I/B	1	
			2.00	S	1	
			3.00	I	1	delaminated from lower lift
			3.00	S	2	
			2.00	I	1	delaminated from lower lift
			6.25	C	1	delaminated
			1.75	S	1	delaminated, moderate oxidation
			7.00	C	1	delaminated

PAVEMENT CORE EVALUATION

46891.1.1 (U-5956) Cabarrus County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y1-	36+92 LTL (LT)	15.00	2.00	S/I	1	
	Asphalt 11"		3.25	I	3	low oxidation
			12.75	S	2	low oxidation, delaminated
-Y1-	39+65 LTL (RT)	16.00	2.00	S/I	1	
	Asphalt 8"		3.25	I/B	1	
			12.75	S	3	low to moderate oxidation
-Y1-	39+65 RT ISL	13.00	3.25	S	2	low oxidation
	13" Asphalt		3.25	I	1	low oxidation and stripping, few small voids
			2.00	S	2	Moderate oxidation, low stripping, 2nd lift FLA, some small voids
			3.25	I	2	low oxidation
			1.25	B	1	moderate oxidation, low stripping, numerous small voids, FLA
-Y1-	39+65 RT OSL	13.00	2.75	S	2	
	13.00" Asphalt		3.75	I	2	low oxidation
			2.00	S	2	moderate oxidation, low stripping, 2nd lift FLA, some small voids
			3.25	I	2	1st lift moderate oxidation, low stripping, 2nd lift low oxidation and stripping
			1.25	B	1	moderate oxidation, low stripping, FLA
-Y1-	39+65 RT PS	12.50	3.50	S	2	
	13" Asphalt		3.00	I	1	low stripping, few small voids
			2+	S	1	high oxidation, moderate stripping, loss of asphalt matrix, FLA, delaminated top and bottom
						remainder of the core in multiple pieces, high stripping 5" bottom up crack
-Y1-	42+42 RTL (LT)	3.00	1.75	S	1	
	13" Asphalt		4.00	I	2	
			2.25	S	2	low oxidation, 2nd lift small FLA
			5.00	I	2	low oxidation, FLA, bottom 1" moderate oxidation and stripping with some material missing
-Y1-	42+44 LTL (LT)	12.25	2.25	S	1	
	10.75" Asphalt		4.75	I	2	
			3.75	S	3	
-Y1-	46+45 RTL (RT)	-	2.25	S	1	
	11.25" Asphalt		3.50	I	1	
			5.50	B	1	moderate oxidation, low stripping
-Y1-	49+29 LTL (RT)	16.00	1.25	S	1	
	4" Asphalt		1.5+	I	1	Low oxidation, missing 0.5", full depth crack
-Y1-	49+29 RT OSL	13.00	1.50	S	1	low oxidation
	8.5" Asphalt		1.75	I	1	low oxidation, delaminated from bottom
			2.75	S	2	2nd lift low oxidation and stripping, small FLA
			1.25	I	1	low oxidation
			1.25	B	1	moderate oxidation, low stripping, FLA

PAVEMENT CORE EVALUATION

46891.1.1 (U-5956) Cabarrus County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y1-	49+29 RT PS	Yes	1.50	S	1	
	8.75" Asphalt		2.00	I	1	low oxidation and stripping, delaminated bottom
			5.25	S	3	low oxidation and stripping, 1st lift small FLA, 2nd-3rd lift low-moderate stripping loss of some matrix
-Y1-	51+16 LTL (LT)	17.00	1.50	S	1	
	8" Asphalt		3.00	I	1	low oxidation, delaminated at bottom, milled surface
			3.50	S	2	low oxidation, moderate stripping
-L-	15+81 Concrete Lot	9.25	8.75	C	1	good condition, some small air voids
-L-	17+33	11.50	1.25	S	1	
	Asphalt Lot		2.25	I	1	
-L-	51+25 RT LN	-	6.00	S	4	Low oxidation and stripping
	11" Asphalt		5.00	B	1	low oxidation
-L	51+25 RT PS	-	5.00	S	3	low oxidation and stripping 2nd and 3rd lifts delaminated
	10.75" Asphalt		5.75	B	1	low oxidation and stripping, few large voids
-Y2-	23+62 RT LN	9.75	2.00	S	1	
	7.25 Asphalt		2.75	B	1	
			2.50	S	1	multiple pieces high stripped, possible old saw cut 2.5+ inches
-Y3-	12+84 LT LN	11.75	5.25	S	3	low oxidation and stripping, 2nd and 3rd lift delaminated
	9.25" Asphalt		6.50	B	1	low oxidation and stripping, few large voids