REFERENCE: U-5797

PROJECT: 44367

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *ROBESON*

PROJECT DESCRIPTION *SR 1997 (FAYETTEVILLE ROAD) FROM FARRINGDOM STREET TO EAST 22ND STREET*

PAVEMENT AND SUBGRADE INVESTIGATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5797	1	13

CAUTION NOTICE

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PERSONNEL

ROSS, S. I.

TRIGON EXP.

INVESTIGATED BY *FALCON ENG.*

DRAWN BY *HUNSBERGER, W. S.*

CHECKED BY *CROCKETT, S. C.*

SUBMITTED BY *FALCON ENG.*

DATE *OCTOBER 2024*

NORTH CAROLINA PROFESSIONAL SEAL 36283 ENGINEER W. SCOTT HUNSBERGER

Signed by:
W. Scott Hunsberger 12/20/2024
5A469AC8... SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5797	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 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- 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
- [X] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

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

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

ELEVATION: FEET

NOTES:

DATE: 8-15-14

TIP PROJECT: U-5797

CONTRACT: 44367

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

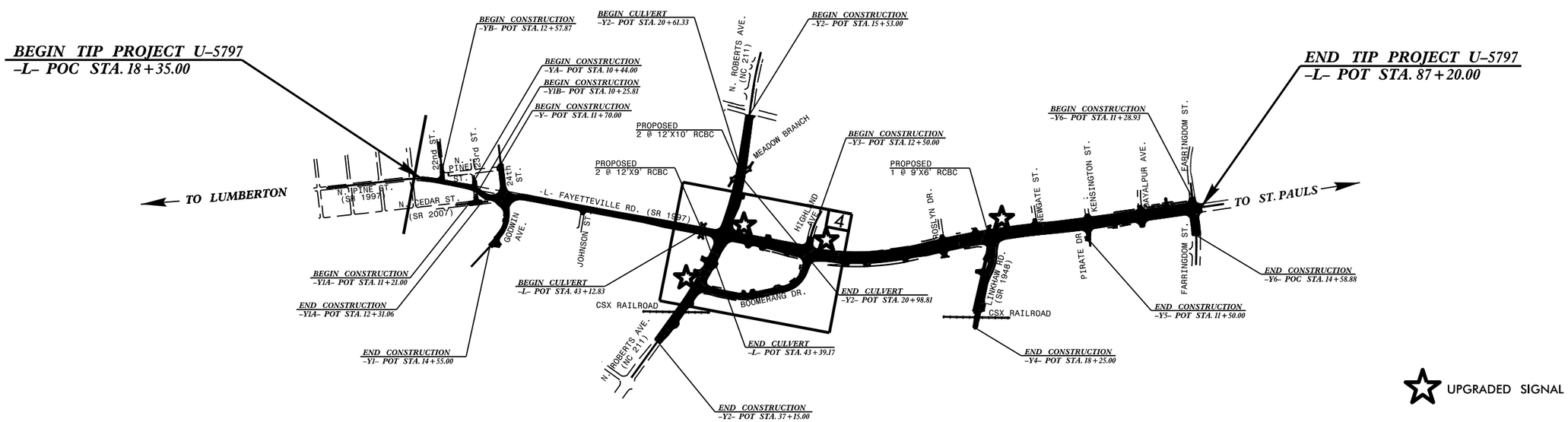
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5797	3	13

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44367.1.1	N/A	PE
44367.2.2	N/A	R.O.W. & UTIL
44367.3.1	N/A	CONSTRUCTION

LOCATION: SR 1997 (FAYETTEVILLE ROAD) FROM FARRINGDOM STREET TO EAST 22ND STREET.

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

NAD 83/NA 2011



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2025 = 34,600
ADT 2045 = 41,600
K = 55 %
D = 9 %
T = 4 % *
V = 50 MPH
* TTST =1% DUAL =3%
FUNC CLASS =
URBAN ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-5797 = 1.299 MILES
LENGTH OF STRUCTURE TIP PROJECT U-5797 = 0.005 MILES
TOTAL LENGTH OF TIP PROJECT U-5797 = 1.304 MILES

NCDOT CONTACT: CRAIG A. FREEMAN JR., PE
NCDOT DIVISION 6
P.O. Box 1150
558 Gillespie Street (Delivery)
Fayetteville, NC 28302
910-364-0603 Office
910-364-0841 Direct
cafreeman2@ncdot.gov

PLANS PREPARED FOR THE NCDOT BY:

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: July 22,2022

LETTING DATE: May 21,2025

PATRICK A. LIVINGSTON, PE
PROJECT ENGINEER

WESTON D. MURPHY, PE
PROJECT DESIGNER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

8/17/99

REVISIONS

CURVE DATA -L-		
PI Sta 45+86.41	PI Sta 49+61.67	PI Sta 57+72.80
Δ = 2° 58' 40.7" (RT)	Δ = 2° 58' 40.7" (LT)	Δ = 24° 51' 58.7" (LT)
D = 0° 47' 36.9"	D = 0° 47' 36.9"	D = 2° 30' 07.2"
L = 375.26'	L = 375.26'	L = 993.86'
T = 187.67'	T = 187.67'	T = 504.88'
R = 7,220.00'	R = 7,220.00'	R = 2,290.00'
e = NC	e = NC	e = 3%
Ro = 125'	Ro = 125'	Ro = 150'

CURVE DATA -Y3-			
PI Sta 11+72.76	PI Sta 16+71.76	PI Sta 21+48.18	PI Sta 24+35.07
Δ = 18° 22' 11.1" (LT)	Δ = 68° 23' 59.4" (RT)	Δ = 22° 47' 46.3" (RT)	Δ = 15° 06' 27.2" (F...
D = 12° 43' 56.6"	D = 22° 55' 05.9"	D = 22° 22' 52.2"	D = 8° 24' 48.5"
L = 144.28'	L = 298.45'	L = 101.85'	L = 179.56'
T = 72.76'	T = 169.90'	T = 51.61'	T = 90.31'
R = 450.00'	R = 250.00'	R = 256.00'	R = 681.00'
e = 3%	e = 4%	e = 4%	e = 3%
Ro = 84'	Ro = 112'	Ro = 112'	Ro = 84'

CURVE DATA -Y2-
PI Sta 26+21.60
Δ = 28° 29' 08.5" (RT)
D = 2° 02' 46.6"
L = 1,392.07'
T = 710.74'
R = 2,800.00'
e = 3%
Ro = 150'

-L- POC STA.45+15.98 =
-Y2- POC STA.26+24.89

-L- PT Sta.51+49.26
N 18° 42' 43.8" E BRG AH

-L- PC Sta.52+67.93

-L- POC STA.52+69.24 =
-Y3- POT STA.13+90.22

-L- PRC Sta.47+74.00

-Y2- PC STA.31+07.62 =
-Y3- POT STA.25+65.36
S 34° 03' 29.1" W BRG BK

-Y3- PT Sta.25+24.53

-Y3- PC Sta.23+44.47

-Y3- PT Sta.21+98.43

-Y3- PC Sta.20+96.57

-Y3- PT Sta.18+00.31

POT Sta.10+00.00

S 53° 52' 32.7" E

PC Sta.11+00.00

PT Sta.12+44.28

S 22° 44' 43.8" E BGH AH

S 3° 50' 44.4" E

S 8° 57' 01.9" W

S 43° 18' 25.5" W BRG BK

Y3_16+01_17' RT

Y3_19+00_20' RT

Y3_19+00_9' LT

Y3_22+98_14' RT

NAD 83/2011

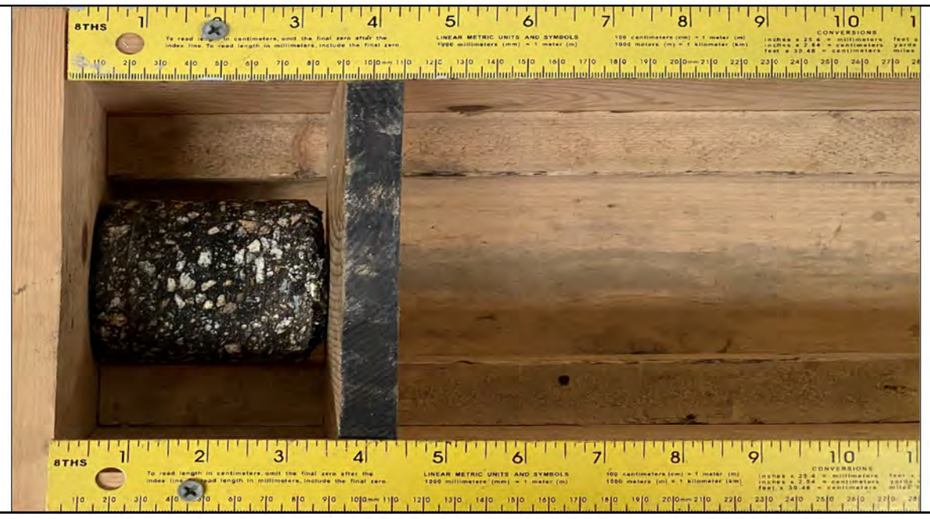
UPGRADED SIGNAL

PROJECT REFERENCE NO.	SHEET NO.
U-5797	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
1600 Perimeter Park Dr.
Suite 225
Morrisville, NC 27560
NC License Number F-0991

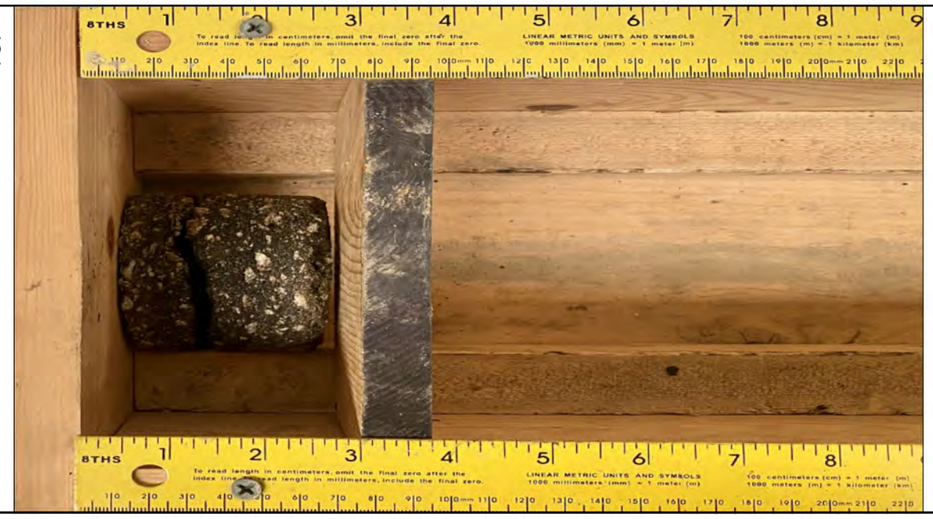
TOP



BOTTOM

PAVEMENT CORE - Y3_16+01_17' RT - RIGHT LANE

TOP



BOTTOM

PAVEMENT CORE -Y3_19+00_20' RT - SOUTHBOUND LANE

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800

PAVEMENT CORE PHOTOGRAPHS

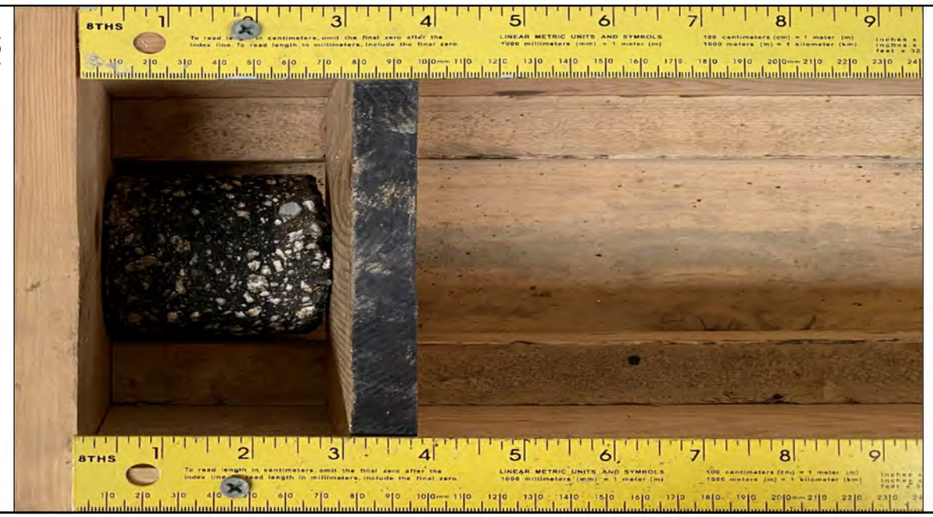
SR 1997 (FAYETTEVILLE ROAD) FROM
FARRINGDOM STREET TO EAST 22ND STREET
WBS NO.:44367.1.1 | TIP NO.: U-5797
FALCON PROJECT NO.: G24042.00

TOP

BOTTOM

PAVEMENT CORE - Y3_19+00_9' LT - NORTHBOUND LANE

TOP



BOTTOM

PAVEMENT CORE - Y3_22+98_14' RT - RIGHT LANE

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800

PAVEMENT CORE PHOTOGRAPHS

SR 1997 (FAYETTEVILLE ROAD) FROM
FARRINGDOM STREET TO EAST 22ND STREET
WBS NO.:44367.1.1 | TIP NO.: U-5797
FALCON PROJECT NO.: G24042.00

PAVEMENT CORE EVALUATION
44367.1.1, U-5797, Robeson County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	Lifts	LAYERS	REMARKS
-Y3-	Y3_1601_17'RT	-	3.50	2	Surface	Low oxidation
	3.5" Asphalt					
-Y3-	Y3_1900_9' LT	5.0	2.50	1	Surface	Core broken at 1.0" in Asphalt
	2.5" Asphalt					Low oxidation
-Y3-	Y3_1900_20' RT	-	3.50	2	Surface	Low oxidation
	3.5" Asphalt					
-Y3-	Y3_22+98_14' RT	4.0	3.00	1	Surface	Low oxidation
	3.0" Asphalt					

PAVEMENT INVESTIGATION DATA SHEET

Project:	44367.1.1
TIP:	U-5797

Route:	Fayetteville Rd (SR 1997) from Farringdom Street to east of 22nd Street
County:	Robeson

Date:	08/07/24
Notes By:	Ross, S. I.

		Width				Thickness						Subgrade							GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount)	Lane(s)	Shoulder(s)	Offset Distance (See Notes)	Crown "C in" or Super "S"	Gross to Top of Soil	Asphalt	Concrete	ABC	Stabilized Subgrade Soil	Pavement Layering	Description	Sample Number	AASHTO Classification	Soil Moisture	Probe Depth	Asphalt Notes	Northing	Easting
Y3_16+01_17' RT	2.5' Fill	12.2	N/A	6.3 FY	S	3.5	3.5"	N/A	N/A	N/A	Asphalt Soil Subgrade	Asphalt 0.3'-2.5' Roadway Embankment: Gray, Silty SAND 2.5'- 4' UCP: Dark Brown-Gray, Clayey SILT 4'-5' UCP: Tan-Gray, Sandy CLAY	S-01 N/A N/A	A-2-4 A-5 A-6	10% D M	5 ft	Moderate transverse cracking. Moderate longitudinal cracking. Moderate raveling and polishing. No rutting. Large patches in good condition.	324,194	2,000,082
Y3_19+00_9'LT	3' Fill	11	N/A	7 FY	S	7.5	2.5"	N/A	5"	N/A	Asphalt ABC Soil Subgrade	Asphalt ABC 0.8'-3' Roadway Embankment: Tan, Sandy SILT 3'-5' UCP: Tan, Sandy CLAY	S-02 N/A	A-4 A-6	11% M	5 ft	Moderate transverse cracking. Moderate longitudinal cracking. Moderate raveling and polishing. No rutting.	323,934	2,000,196
Y3_19+00_20' RT	3' Fill	12.7	N/A	7.7 FY	S	3.5	3.5"	N/A	N/A	N/A	Asphalt Soil Subgrade	Asphalt 0.6'-3' Roadway Embankment: Tan, Silty SAND 3'-5' UCP: Tan, Silty SAND	S-03 N/A	A-2-4 A-2-4	10% D	5 ft	Moderate transverse cracking. Moderate longitudinal cracking. Moderate raveling and polishing. No rutting.	323,933	2,000,167
Y3_22+98_14' RT	1.5' Fill	13	N/A	4.7 FY	S	7	3"	N/A	4"	N/A	Asphalt ABC Soil Subgrade	Asphalt ABC 0.8'-1.5' Roadway Embankment: Tan, Silty SAND 1.5'-5'UCP: Gray, Silty CLAY	N/A S-04	A-2-4 A-7-6	D 18%	5 ft	Moderate transverse cracking. Moderate longitudinal cracking. Moderate raveling and polishing. Rutting up to 1/4" deep.	323,548	2,000,141

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound	EOP = Edge of Pavement
ISL = Inside Lane	RTL = Right Turn Lane	ISS = Inside Shoulder	RT LN = Right Lane	LT = Left	SB = Southbound	
CL = Center Lane	DECEL = Deceleration Lane	GM = Grass Median	LT LN = Left Lane	(I) = Inside	FW = From White	
LTL = Left Turn Lane	ACCEL = Acceleration Lane	OGS = Outside Grass Shoulder	COL = Collector Lane	(O) = Outside	FY = From Yellow	

CONE PENETROMETER DATA CODE SHEET

PROJECT NUMBER	PROJECT I.D.	ROUTE
U-5797	44367.1.1	(-Y3-) BOOMERANG DRIVE
COUNTY	**GEOLOGIST**	**TECHNICIANS**
Robeson	Ross, S. I.	

Station (location) information	Date run	Station (location) information	Date run
Y3_16+01_17' RT	6/20/2024	**Y3_19+00_20' RT**	6/20/2024

Datum	cut or fill	Remarks	Datum	cut or fill	Remarks
Soil Subgrade	Fill		Soil Subgrae	Fill	

Cumulative Penetration in Centimeters			Cumulative Penetration in Centimeters	
0.3	24.4	89.2	0.4	21.3
2.0	25.0	90.9	1.5	22.4
2.5	25.5	92.5	2.6	23.4
3.0	26.0	93.9	3.8	24.4
3.5	26.5		4.1	25.4
4.0	27.0		4.4	26.4
4.7	27.9		4.7	27.5
5.0	28.9		5.0	28.6
5.3	30.0		5.4	29.7
5.6	31.5		5.6	30.2
5.9	33.1		5.8	30.7
6.3	35.3		6.0	31.2
6.5	37.2		6.2	31.7
6.7	39.0		6.4	32.3
6.9	40.4		6.6	32.9
7.1	41.6		6.8	33.5
7.6	42.9		7.4	34.1
7.9	44.2		7.6	34.7
8.2	45.7		7.8	35.3
8.5	47.2		8.0	36.0
8.8	49.0		8.2	36.7
9.3	51.0		8.4	37.4
9.6	52.0		8.6	38.2
9.9	53.1		8.8	39.0
10.2	53.7		9.0	39.8
10.5	54.3		9.2	40.6
11.1	54.9		9.9	41.5
11.5	55.5		10.1	42.7
11.9	56.2		10.3	44.0
12.3	56.8		10.5	44.8
12.7	57.4		10.7	46.7
13.1	58.0		10.9	48.0
13.5	58.6		11.1	49.4
14.3	59.5		11.3	51.0
14.8	60.4		11.5	52.6
15.3	61.3		11.7	55.1
15.8	62.2		12.7	57.6
16.6	63.1		13.0	60.2
17.0	64.3		13.3	63.1
17.4	65.7		13.6	67.0
17.8	67.2		13.9	71.2
18.2	68.5		14.2	75.7
19.0	69.9		14.5	84.9
19.4	71.5		15.4	
19.8	73.2		15.8	
20.2	75.1		16.2	
20.6	77.1		16.6	
21.0	78.9		17.0	
21.4	80.8		17.7	
22.0	82.6		18.3	
22.6	84.4		18.9	
23.2	86.0		19.5	
23.8	87.6		20.4	

SG = Subgrade
SS = Stabilized Soil
ABC = Aggregate Base Course

CONE PENETROMETER DATA CODE SHEET

PROJECT NUMBER	PROJECT I.D.	ROUTE
U-5797	44367.1.1	(-Y3-) BOOMERANG DRIVE
COUNTY	**GEOLOGIST**	**TECHNICIANS**
Robeson	Ross, S. I.	

Station (location) information	Date run	Station (location) information	Date run
Y3_19+00_9' LT	6/20/2024	**Y3_22+98_14' RT**	6/20/2024

Datum	cut or fill	Remarks	Datum	cut or fill	Remarks
ABC	Fill		ABC	Fill	

Cumulative Penetration in Centimeters		Cumulative Penetration in Centimeters	
0.4	45.8	0.2	81.1
2.7	46.6	2.0	83.7
3.8	47.5	2.8	85.6
4.9	48.2	3.6	87.4
6.1	48.9	4.4	89.1
6.9	49.8	5.5	90.7
7.7	50.7	6.5	92.2
8.5	51.6	7.5	93.7
9.4	52.6	8.7	
10.3	53.7	10.3	
11.4	54.8	11.9	
12.2	56.2	13.0	
13.0	57.7	14.2	
14.0	59.5	15.2	
15.1	63.8	16.2	
16.2	66.7	17.3	
17.4	69.4	18.5	
18.6	70.4	20.1	
19.9	71.4	22.0	
21.2	72.4	23.9	
22.6	73.5	25.0	
23.7	74.6	26.2	
24.9	75.7	27.1	
25.5	76.8	28.0	
26.1	77.9	28.9	
26.8	79.0	29.6	
27.4	79.7	30.3	
28.0	80.4	31.0	
28.6	81.1	32.0	
29.1	81.8	33.0	
29.6	82.5	34.2	
30.1	83.1	36.0	
30.6	83.7	37.8	
31.3	84.5	38.8	
31.7	85.3	39.8	
32.1	86.1	41.0	
32.5	87.0	42.2	
32.9	87.8	43.4	
33.5	88.6	44.9	
34.0	89.5	46.5	
34.5	90.2	48.7	
35.0	91.0	51.9	
35.5	91.9	55.9	
36.4	92.6	58.7	
37.2	93.4	61.3	
38.0		63.6	
39.0		65.9	
40.0		68.2	
41.0		70.7	
42.1		72.8	
43.0		74.6	
43.9		76.5	
45.0		78.7	

SG = Subgrade
SS = Stabilized Soil
ABC = Aggregate Base Course

DCP TEST DATA

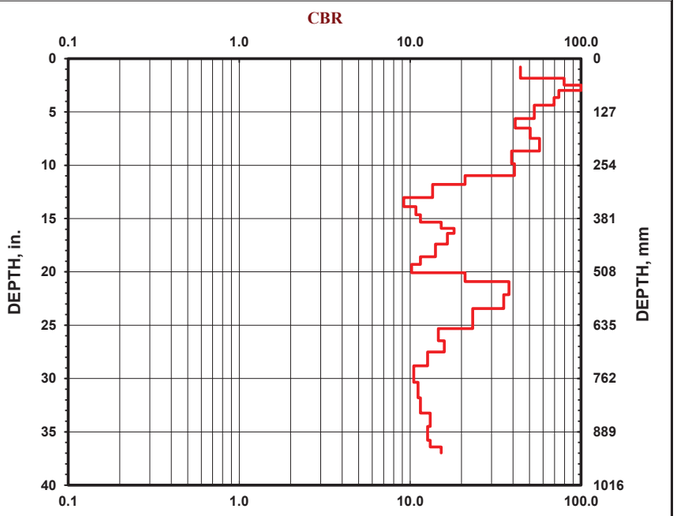
File Name:

Project: *U-5797*
Location: Y3_1601_17' RT
Date: 11-Jul-24
Soil Type(s): A-2-4

Hammer: (○) 10.1 lbs. (●) 17.6 lbs. (○) Both hammers used

Soil Type: (○) CH (○) CL (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
1	20	1
5	47	1
5	63	1
5	76	1
5	93	1
5	111	1
7	143	1
4	166	1
5	190	1
7	220	1
5	250	1
5	279	1
2	300	1
2	331	1
1	353	1
1	372	1
1	390	1
1	404	1
1	416	1
2	442	1
2	472	1
1	490	1
1	510	1
2	531	1
5	562	1
5	595	1
5	643	1
2	672	1
2	699	1
2	732	1
2	771	1
2	808	1
2	844	1
2	876	1
2	909	1
1	925	1
1	939	1
		1
		1
		1
		1
		1
		1



DCP TEST DATA

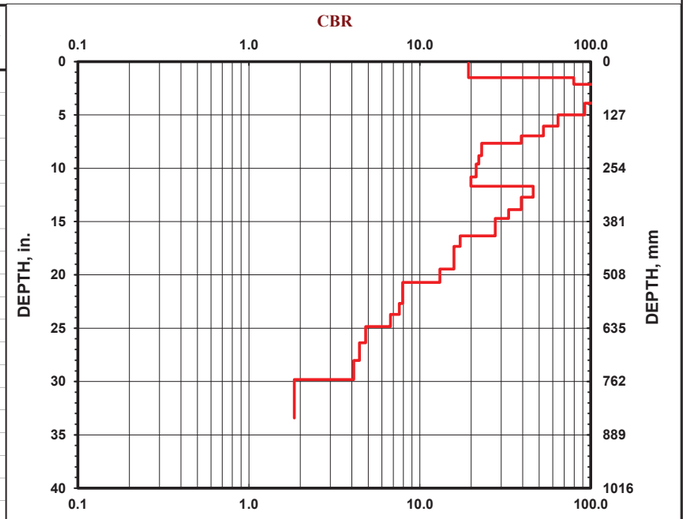
File Name:

Project: *U-5797*
Location: Y3_19+00_20' RT
Date: 27-Jun-24
Soil Type(s): A-4

Hammer: (○) 10.1 lbs. (●) 17.6 lbs. (○) Both hammers used

Soil Type: (○) CH (○) CL (●) All other soils

No. of Blows	Accumulative Penetration	Type of Hammer
Start	4	1
3	38	1
5	54	1
8	74	1
10	99	1
10	127	1
7	154	1
5	177	1
3	195	1
3	224	1
2	244	1
3	275	1
2	297	1
5	323	1
5	353	1
3	374	1
5	415	1
2	440	1
2	467	1
2	494	1
2	526	1
2	576	1
1	602	1
1	631	1
1	670	1
1	712	1
1	757	1
1	849	1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1



DCP TEST DATA

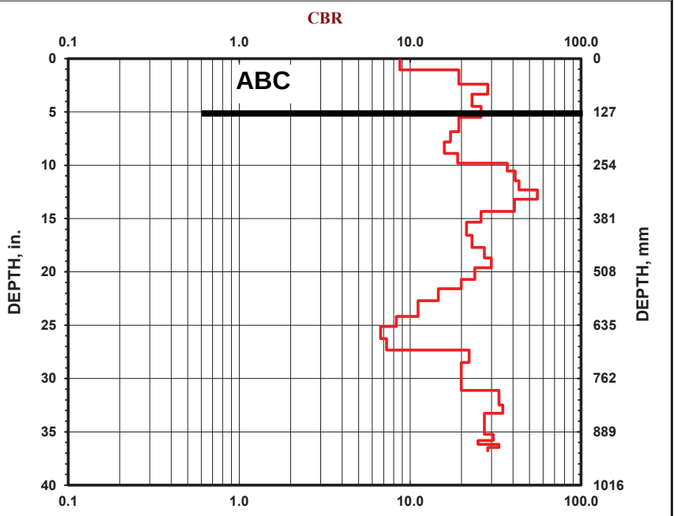
File Name:

Project: *U-5797*
Location: Y3_19+00_9' LT
Date: 11-Jul-24
Soil Type(s): A-2-4

Hammer: (○) 10.1 lbs. (●) 17.6 lbs. (○) Both hammers used

Soil Type: (○) CH (○) CL (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
1	4	1
1	27	1
3	61	1
3	85	1
3	114	1
3	140	1
3	174	1
2	199	1
2	226	1
2	249	1
3	268	1
4	291	1
4	313	1
5	335	1
5	364	1
3	390	1
3	421	1
3	450	1
3	475	1
3	498	1
3	526	1
2	548	1
2	577	1
2	614	1
1	638	1
1	667	1
1	694	1
3	724	1
3	757	1
3	790	1
5	825	1
3	845	1
3	870	1
3	895	1
2	910	1
1	919	1
1	926	1
1	934	1



DCP TEST DATA

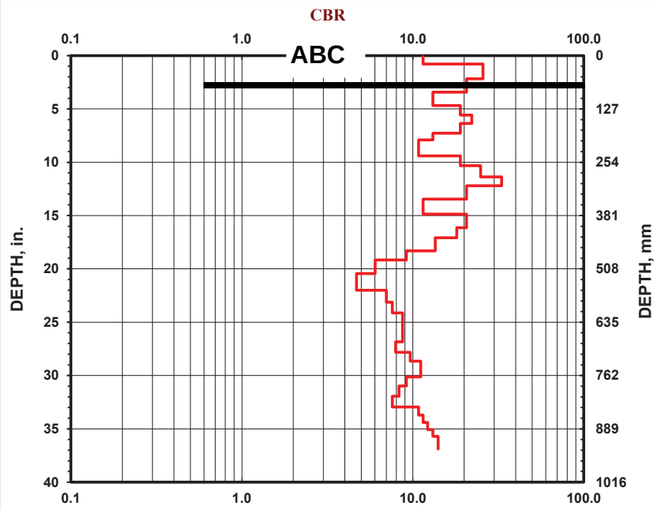
File Name:

Project: *U-5797*
Location: Y3_22+98_14' RT
Date: 27-Jun-24
Soil Type(s): A-2-4

Hammer: (○) 10.1 lbs. (●) 17.6 lbs. (○) Both hammers used

Soil Type: (○) CH (○) CL (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
1	2	1
1	20	1
4	55	1
3	87	1
2	119	1
2	142	1
2	162	1
2	185	1
1	201	1
2	239	1
2	262	1
3	289	1
3	310	1
3	342	1
2	378	1
3	410	1
2	434	1
2	465	1
1	487	1
1	519	1
1	559	1
1	587	1
1	613	1
1	636	1
1	659	1
1	682	1
1	707	1
1	728	1
2	765	1
1	787	1
1	811	1
1	837	1
1	856	1
1	874	1
1	891	1
1	907	1
1	922	1
1	937	1



LABORATORY TEST RESULTS

Fayetteville Road Proposed Widening from Farringdom Street to 22nd Street

Lumberton, NC

NCDOT Project: U-5797

Falcon Engineering Project No: G24042.00

SAMPLE		DEPTH	AASHTO	ATTERBERG LIMITS		PERCENT BY WEIGHT				PERCENT PASSING SIEVE			MOISTURE	SPECIFIC	ORGANICS
NO.	LOCATION	INTERVAL	CLASS.	LL	PI	C.SAND	F.SAND	SILT	CLAY	#10	#40	#200	(%)	GRAVITY	(%)
BS-01	Y3_19+00_20' RT & 9' LT	1.0-3.0	A-4(0)	19	5	24	45	12	19	100	86	37	10	2.604	N/A
S-01	Y3_16+01_17' RT	1.0-2.5	A-2-4(0)	17	3	37	38	7	18	100	77	29	10	N/A	N/A
S-02	Y3_19+00_9 ' RT	1.0-2.0	A-4(0)	18	3	23	45	12	20	100	86	37	11	N/A	N/A
S-03	Y3_19+00_20' RT	1.0-3.0	A-2-4(0)	19	5	31	40	11	18	100	81	33	10	N/A	N/A
S-04	Y3_22+98_14' RT	4.0-5.0	A-7-6(15)	48	30	4	44	14	38	100	98	61	18	N/A	N/A

Reviewed By

Certification: 105-0803

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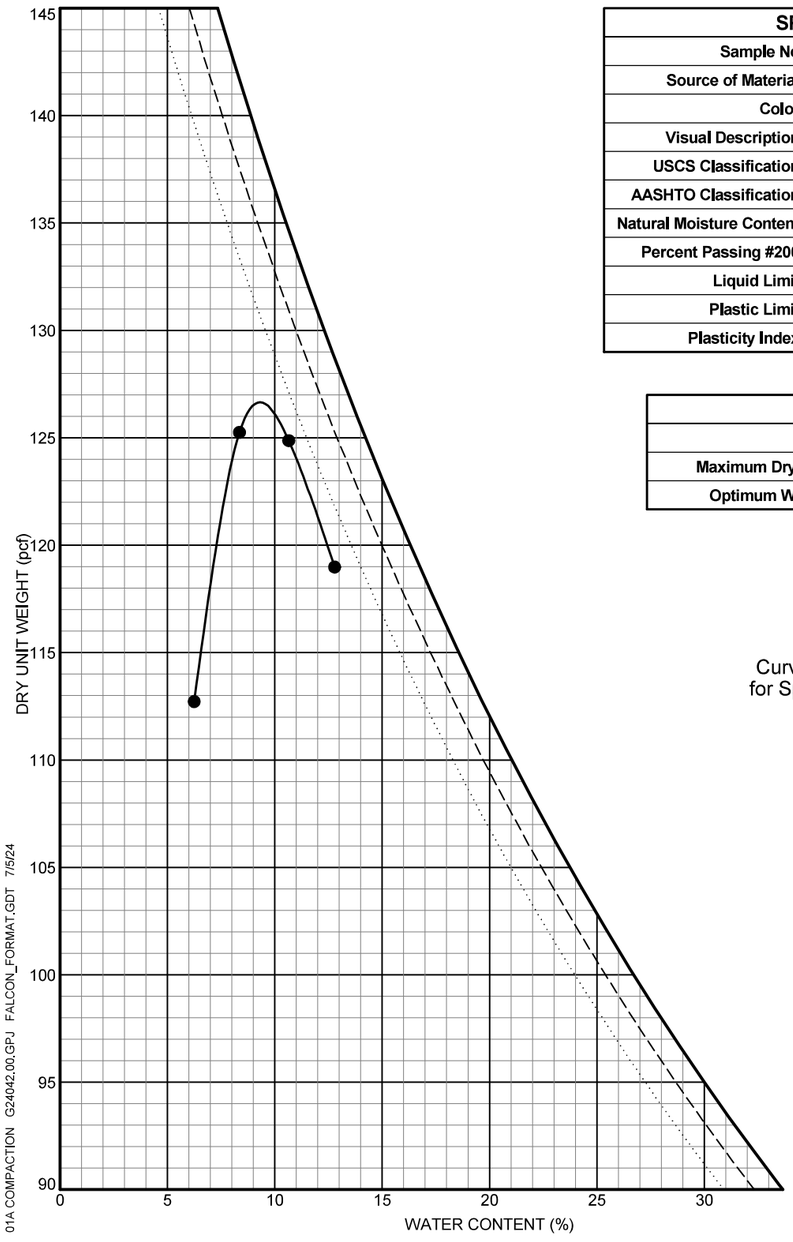
LABORATORY COMPACTION TEST RESULTS

Project No.: G24042.00
Project Name: U-5797
Project Location: Lumberton, NC



SPECIMEN DATA	
Sample No:	BS-01
Source of Material:	Y3_19+00_20' RT AND Y3_19+00_9' LT
Color:	Gray
Visual Description:	
USCS Classification:	SILTY, CLAYEY SAND(SC-SM)
AASHTO Classification:	A-4
Natural Moisture Content:	10.4 %
Percent Passing #200:	36.9 %
Liquid Limit:	19
Plastic Limit:	14
Plasticity Index:	5

TEST RESULTS	
Test Method:	AASHTO T-99
Maximum Dry Unit Weight:	126.7 pcf
Optimum Water Content:	9.3 %

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CALIFORNIA BEARING RATIO TEST RESULTS

ASTM D1883 / AASHTO T193

Project No.: G24042.00 **Tested By:** J. Grabner **Test Date:** 2024-15-07
Project Name: U-5797
Boring ID: Y3_19+00_20' RT AND Y3_19+00_9' LT **Sample ID:** BS-01 **Sample Depth:** 1.0-3.0 ft

MOLDED SPECIMEN TEST DATA

			Before Molding	After Molding		
Wt. of Mold + Wet Soil:	21111 g	Moisture Content			Max. Dry Unit Weight:	126.7 pcf
Wt. of Mold:	16478 g	Tare Wt.:	201.30 g	184.80 g	Optimum Moisture Content:	9.3%
Wt. of Wet Soil:	4633 g	Wt. Tare + Wet Soil:	585.90 g	916.20 g	Percent Compaction:	98.1%
Mold Volume:	0.0752 cf	Wt. Tare + Dry Soil:	553.40 g	853.10 g	Compaction Method:	698C
Wet Unit Weight:	135.8 pcf	Moisture Content:	9.2%	9.4%	Conversion Factors	
Dry Unit Weight:	124.2 pcf	Average Moisture Content:	9.3%		1 lb = 453.6 gram	1 cu. foot = 1728 cu. inch

LOAD TEST DATA

Penetration (in)	Load (lb)	Stress (psi)
0.000	0	0.0
0.025	127	42.4
0.050	248	82.7
0.075	406	135.4
0.100	548	182.7
0.125	683	227.8
0.150	817	272.4
0.175	947	315.8
0.200	1072	357.5
0.225	1178	392.8
0.250	1268	422.8
0.275	1365	455.2
0.300	1455	485.2
0.400	1790	596.9
0.500	2082	694.3

Piston Calibration
Strain Rate: 0.05 inch/minute
Piston Diameter: 1.954 inch
Piston Area: 2.999 sq. inch

Swell Readings
Soak Time: 96 hours
Surcharge Weight: 10 lb
Surcharge Stress: 51 psf
Molded Sample Height: 4.594 inch
Initial Dial Reading: 0.050 inch
Final Dial Reading: 0.050 inch
Percent Swell: 0.00%

Readings After Soak	
Wt. Mold + Soaked Soil:	21150 g
Wt. Tare:	6 g
Wt. Wet Soil + Tare:	176 g
Wt. Tare + Dry Soil:	161 g
Moisture Content:	9.8%
Wet Unit Weight:	137.0 pcf
Dry Unit Weight:	124.8 pcf

BEARING RATIO

CBR at 0.1 inch: **18.3**

CBR at 0.2 inch: **23.8**

Additional Specimen Data

Liquid Limit:	19	Percent Passing #4:	%
Plastic Limit:	14	Percent Passing #10:	100%
Plasticity Index:	5	Percent Passing #40:	86%
		Percent Passing #200:	36.9%

Color:	Gray
Visual Description:	
USCS Classification:	SILTY, CLAYEY SAND (SC-SM)
AASHTO Classification:	A-4 (0)