STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6187	1	

REFERENCE: U-6187

PROJECT: 48647

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL AND ROCK)
3	ROADWAY TITLE SHEET
4-12	PLAN SHEETS
13-16	PAVEMENT DATA SHEETS
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33-42	PAVEMENT CORE PHOTOS

APPENDIX A

TITLE	SHEETS
SOIL TEST RESULTS	43-54

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *DAVIE*

PROJECT DESCRIPTION *CONSTRUCT 2-LANE EXTENSION OF SR 1630 (BALTIMORE ROAD) ON NEW LOCATION FROM SOUTH OF US 158 TO I-40*

PAVEMENT & SUBGRADE INVESTIGATION

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 PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

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

PERSONNEL

Q. HILL

CG2 EXPLORATION

R. MAFFIA

INVESTIGATED BY *J. CRENSHAW*

DRAWN BY *Q. HILL*

CHECKED BY *J. CRENSHAW*

SUBMITTED BY *SCHNABEL ENG.*

DATE *APRIL 2024*

Schnabel ENGINEERING

NORTH CAROLINA LICENSED SEAL 2504 GEOLOGIST JARED K. CRENSHAW

DocuSigned by:
Jared Crenshaw 06/19/2024
F325B40D4C25123...
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-6187	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 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
- [ ] CME-55
- [X] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] MOBILE B-29
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [X] 10cm CONE PENETROMETER
- [X] 4" THIN-WALL CORE BARREL

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

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

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [X] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [X] K-100 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:

FIAD - FILLED IMMEDIATELY AFTER DRILLING

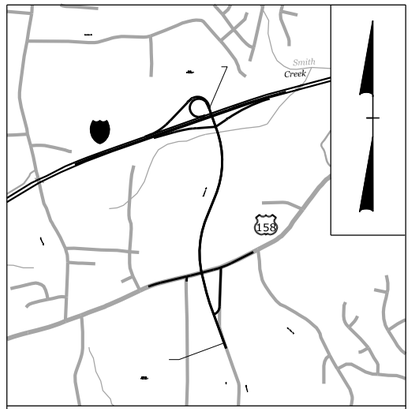
DATE: 8-15-14

09/08/99

TIP PROJECT: U-6187

CONTRACT: TBD

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Plan Sheet Symbols



VICINITY MAP (NTS)

DESIGN RECOMMENDATION PLANS

(PLANS DEVELOPED USING OPENROADS DESIGNER)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

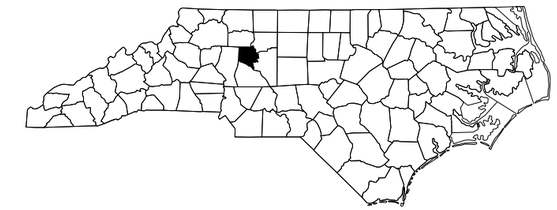
DAVIE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6187	3	

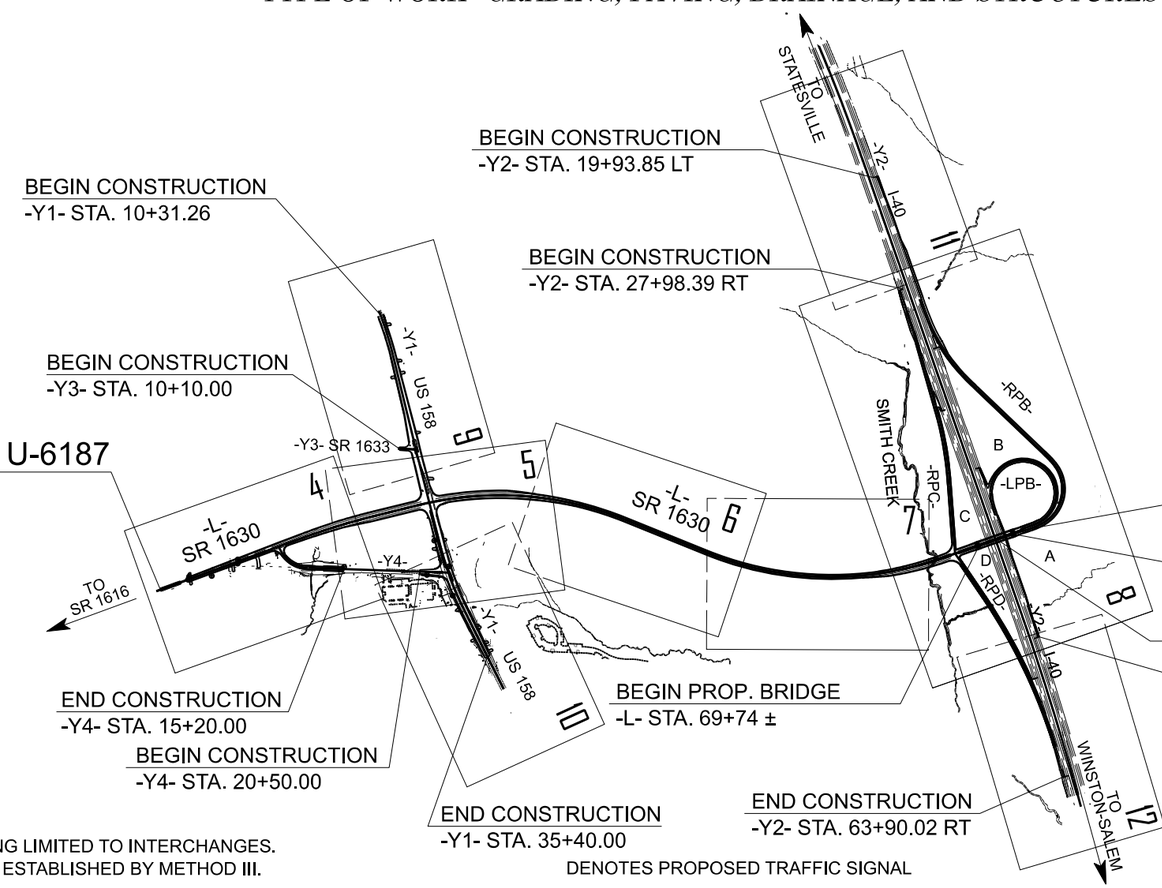
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
48647.1.1		PE

LOCATION: *REALIGNMENT AND EXTENSION OF SR 1630 (BALTIMORE ROAD) FROM SOUTH OF US 158 TO A NEW INTERCHANGE AT I-40*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, AND STRUCTURES*



NAD 83/ 2011



DENOTES PROPOSED TRAFFIC SIGNAL

THIS PROJECT IS NOT WITHIN A MUNICIPAL BOUNDARY.
THIS IS A CONTROL OF ACCESS PROJECT WITH ACCESS TO I-40 BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 8,100
ADT 2045 = 21,200
K = 10 %
D = 55 %
T = 8 % *
V = 60 MPH
* TTST =6% DUAL 2%
FUNC CLASS =
MAJOR COLLECTOR
STATE WIDE TIER

PROJECT LENGTH

PROJECT LENGTHS FOR TIP PROJECT U-6187:

LENGTH ROADWAY TIP PROJECT U-6187 = 1.139 MILES

LENGTH STRUCTURES TIP PROJECT U-6187 = 0.045 MILES

TOTAL LENGTH TIP PROJECT U-6187 = 1.184 MILES

NCDOT Contact: RYAN C. NEWCOMB, PE
Prepared in the Office of: vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 30, 2024

LETTING DATE:
JUNE 17, 2025

JONATHAN P. SOIKA, P.E.
PROJECT ENGINEER

JERRY B. JAVELLANA, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

5/26/20

L_PC_1300_WB_LN		L_PC_1300_EB_LN	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	8.5"	ASPHALT	10.0"
ABC	10.0"	ABC	12.0"

Y4_PC_1370_EB LN	
PAVEMENT STRUCTURE	
ASPHALT	6.25"
ABC	14.75"

2RD1	04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

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5/26/20

FOR -L- PROFILE SEE SHEETS 13 & 14

FOR -Y1- PROFILE SEE SHEET 16

FOR -Y4- PROFILE SEE SHEET 19

2RD1	05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

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5/26/20

U-6187

2RD1	06

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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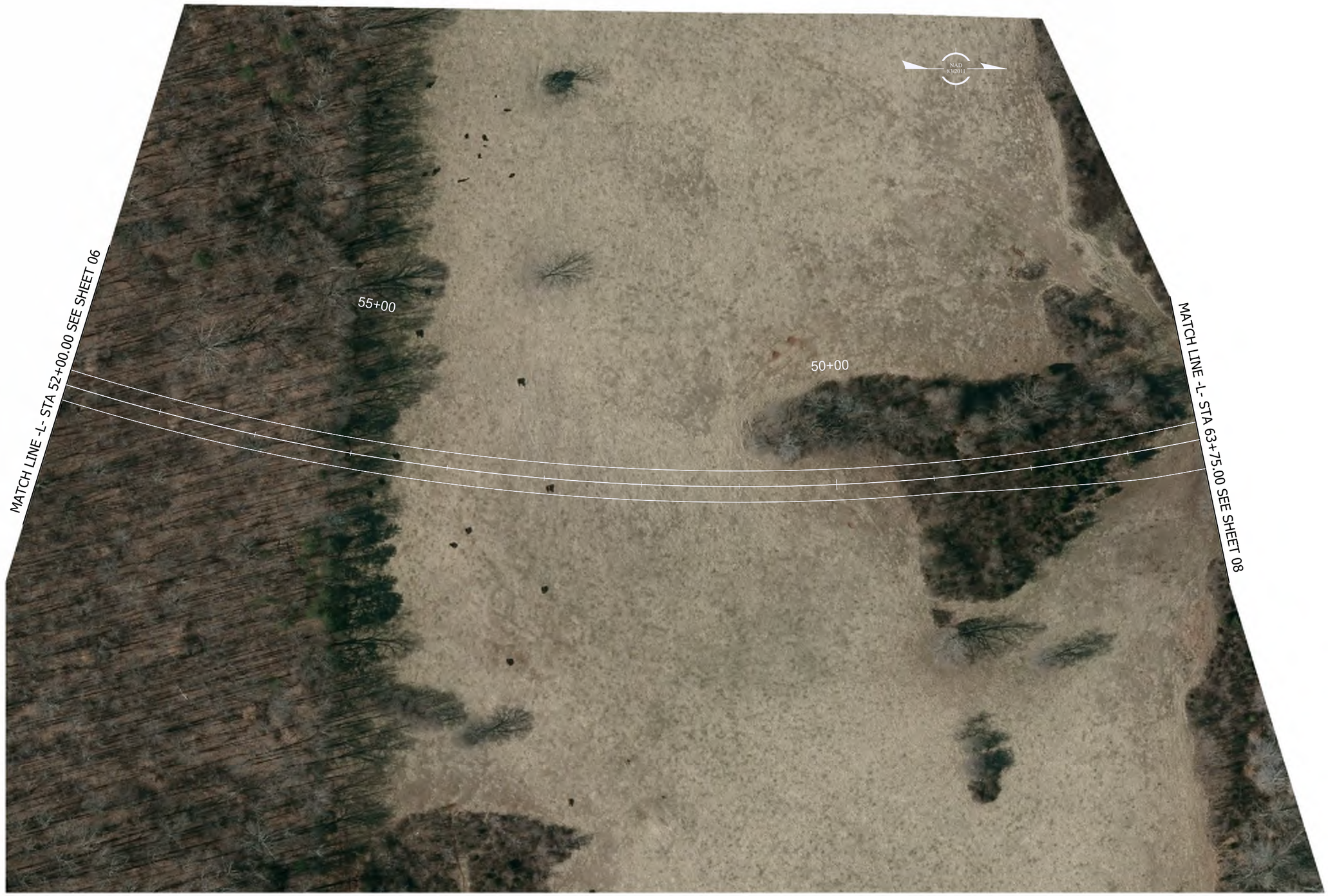
5/26/20



FOR -L- PROFILE SEE SHEETS 14 & 15

U-6187

2RD1	07

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

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5/26/20

Y1_PC_1100_WB LN WDNG	
PAVEMENT STRUCTURE	
ASPHALT	15.5"
CONCRETE	8.0"

Y1_PC_1900_WB LN		Y1_PC_1900_EB LN	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	9.5"	ASPHALT	8.0"
CONCRETE	8.0"	CONCRETE	8.0"

Y1_PC_1900_EB PS	
PAVEMENT STRUCTURE	
ASPHALT	12.0"
ABC	5.0"

2RD1	09

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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5/26/28

Y2_PC_3000_WB OSS		Y2_PC_3000_WB ISS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	17.0"	ASPHALT	18.0"

Y2_PC_4500_WB OSS		Y2_PC_4500_WB ISL		Y2_PC_4500_WB ISS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	13.25"	ASPHALT	6.5"	ASPHALT	17.25"
		CONCRETE	7.75"		
		ABC	6.75"		

Y2_PC_5000_WB OSS		Y2_PC_5000_WB ISS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	18.0"	ASPHALT	17.75"

Y2_PC_3000_EB ISS		Y2_PC_3000_EB OSL		Y2_PC_3000_EB OSS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	18.0"	ASPHALT	6.0"	ASPHALT	18.0"
		CONCRETE	8.0"		
		ABC	5.0"		

Y2_PC_3500_EB ISS		Y2_PC_3500_EB OSS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	17.0"	ASPHALT	17.5"
ABC	3.5"		

Y2_AP_4000_EB ISS	
PAVEMENT STRUCTURE	
ASPHALT	15.0"
ABC	3.0"

Y2_AP_5000_EB ISS	
PAVEMENT STRUCTURE	
ASPHALT	18.0"
ABC	6.0"

U-6187

2R01	08

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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5/26/20

Y1_PC_3350_WB WDNG		Y1_PC_3350_CENTER LTL		Y1_PC_3350_EB LN WDNG	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	14.0"	ASPHALT	9.0"	ASPHALT	14.0"
		CONCRETE	7.5"		

2RD1	10

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

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5/26/20

Y2_PC_2000_WB OSS		Y2_PC_2000_WB ISS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	19.5"	ASPHALT	18.0"

Y2_PC_2500_WB OSS		Y2_PC_2500_WB OSL		Y2_PC_2500_WB ISS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	18.0"	ASPHALT	6.0"	ASPHALT	17.25"
		CONCRETE	8.0"		
		ABC	7.0"		

2RD1	11

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

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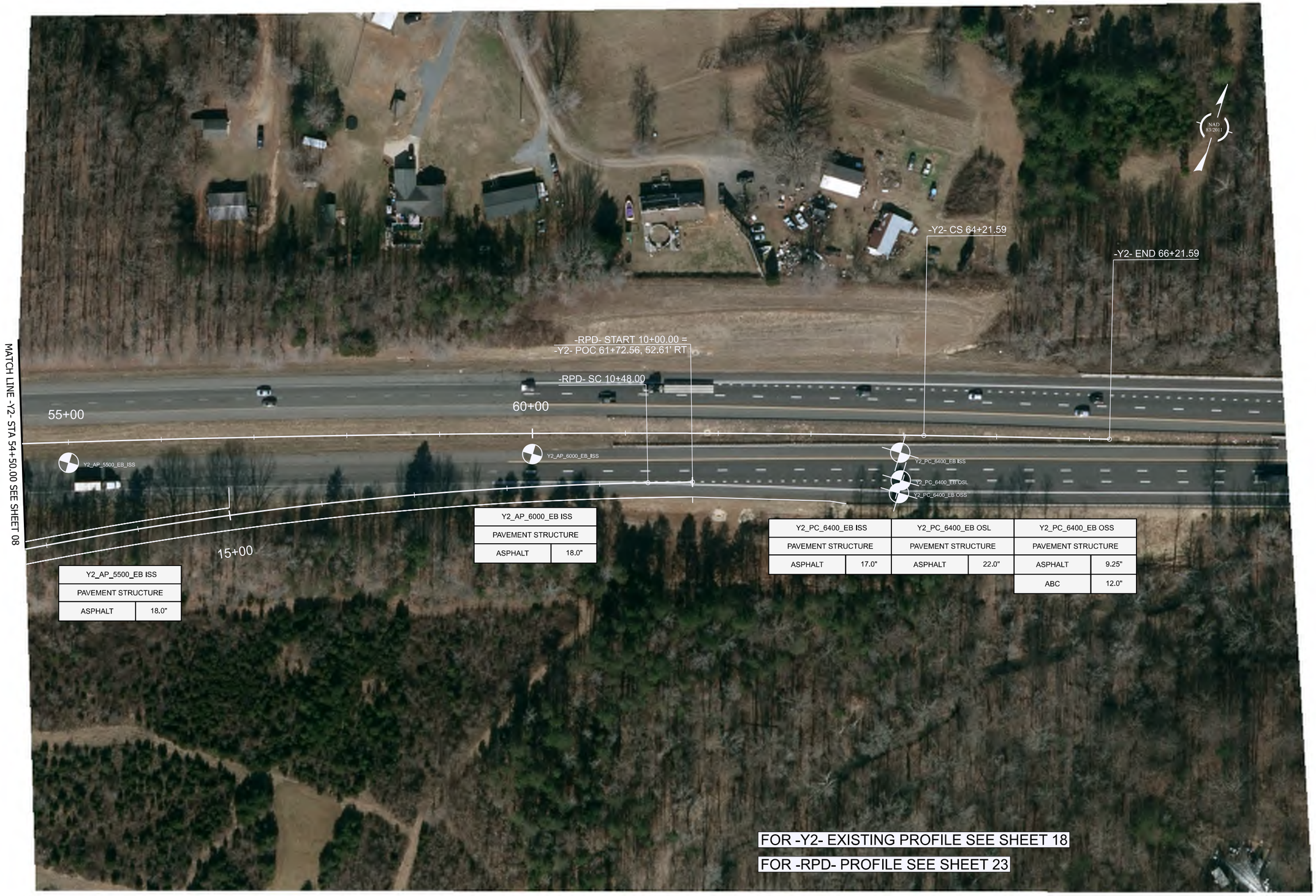
5/26/20



Y2_AP_5500_EB ISS	
PAVEMENT STRUCTURE	
ASPHALT	18.0"

Y2_AP_6000_EB ISS	
PAVEMENT STRUCTURE	
ASPHALT	18.0"

Y2_PC_6400_EB ISS		Y2_PC_6400_EB OSL		Y2_PC_6400_EB OSS	
PAVEMENT STRUCTURE		PAVEMENT STRUCTURE		PAVEMENT STRUCTURE	
ASPHALT	17.0"	ASPHALT	22.0"	ASPHALT	9.25"
				ABC	12.0"

2RD1	12

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

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PAVEMENT INVESTIGATION DATA SHEET

Project:	48647.1.1	Route:	SR 1630 (Baltimore Road)	Date:	02/23/24
TIP:	U-6187	County:	Davie	Notes By:	Q. Hill

		Width		Thickness								Subgrade							State Plane Coordinates	
Position (Sta.,Lane,Shldr.)	Cut/Fill (Est. of Amount)	Lane(s)	Shoulder(s)	Offset Distance (See Notes)	Crown "C" or Super "S"	Gross to Top of Soil	Asphalt	Concrete	ABC	Stablized Subgrade Soil	Pavement Layering	Description	Sample Number	AASHTO Classification	Soil Moisture	Probe Depth	Asphalt Notes	Northing	Easting
-L- STA 13+00																			
L_PC_1300_EB LN	FILL ± 0.5'	EB LN 11'	EB OSS 0.75'	4.5' FW	C	22.0"	10"	-	12.0"	-	Asphalt Concrete ABC	RE: Tan, brown, sandy SILT (1.3' - 1.9') RES: Reddish-brown, silty CLAY (1.9' - 5.0')	S-29	A-4 (1) A-6	9% M	5.0'	Moderate alligator cracking in vicinity	817,129	1,567,872
L_PC_1300_WB LN	AT GRADE ± 0.0'	WB LN 11'	WB OSS 1.5'	4.5' FW	C	18.5"	8.5"	-	10.0"	-	Asphalt ABC	RES: Brown, orange, CLAY, micaceous (1.5' - 5.0')	-	A-7	M	5.0'	Moderate alligator cracking in vicinity	817,127	1,567,862
-Y1- STA 11+00																			
Y1_PC_1100_WB LN WDNG	AT GRADE ± 0.0'	EBL 11'	WB OSS 2.5'	2.0' FW	S	23.5"	15.5"	8.0"	-	-	Asphalt Concrete	RES: Orange, silty CLAY (2.0' - 5.0')	S-27	A-7-5 (27)	32%	5.0'	No pavement distress observed	818,453	1,566,099
-Y1- STA 19+00																			
Y1_PC_1900_EB PS	CUT ± 2.0'	EBL 11'	EB OSS 1.5'	0.5' FW	C	17.0"	12.0"	-	5.0"	-	Asphalt ABC	RES: Orange, silty CLAY (1.4' - 5.0')	S-25	A-7-6 (19)	30%	5.0'	No pavement distress observed	818,628	1,566,871
Y1_PC_1900_EB LN	CUT ± 2.0'	EBL 11'	EB OSS 1.5'	5.5' FW	C	16.0"	8.0"	8.0"	-	-	Asphalt Concrete	RES: Brown, orange, sandy CLAY (1.4' - 5.0')	S-24	A-7-6 (13)	27%	5.0'	No pavement distress observed	818,635	1,566,871
Y1_PC_1900_WB LN	FILL ±1.0'	WBL 11'	WB OSS 1.5'	4.0' FW	C	17.5"	9.5"	8.0"	-	-	Asphalt Concrete	RES: Orange, silty CLAY (1.3' - 5.0')	-	A-7-6	M	5.0'	No pavement distress observed	818,649	1,566,868
-Y1- STA 28+50																			
Y12850HA	FILL ± 1.0'	-	-	20.0' LT	S	-	-	-	-	-	-	TOPSOIL (0.0' - 0.2') R.E.: Orange, brown, silty CLAY little fine to medium sand, little gravel (0.2' - 6.0')	BS-13	- A-7-6	26%	6.0'	No pavement distress observed	818,893	1,567,795

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound
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

PAVEMENT INVESTIGATION DATA SHEET

Project:	48647.1.1	Route:	SR 1630 (Baltimore Road)	Date:	02/23/24
TIP:	U-6187	County:	Davie	Notes By:	Q. Hill

		Width		Thickness								Subgrade						State Plane Coordinates	
Position (Sta.,Lane,Shldr.)	Cut/Fill (Est. of Amount)	Lane(s)	Shoulder(s)	Offset Distance (See Notes)	Crown "C" 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
-Y1- STA 33+50																			
Y1_PC_3350_EB LN WDNG	FILL ± 1.0'	EBL 12.5'	EB OSS 1.5'	2.5' FW	C	14.0"	14.0"	-	-	-	Asphalt	R.E.: Brown, sandy CLAY, some silt (1.2' - 2.0') RES: Brown, sandy SILT (2.0' - 5.0')	- S-23	A-6 A-4 (2)	M 18%	5.0'	No pavement distress observed	819,073	1,568,275
Y1_PC_3350_CENTER LTL	AT GRADE ± 0.0'	LTL 11.5'	-	6.5' FW	C	16.5"	9.0"	7.5"	-	-	Asphalt Concrete	R.E.: Brown, sandy CLAY, some silt (1.4' - 2.5') RES: Orange, brown, sandy CLAY (2.5' - 5.0')	S-22 -	A-6 (4) A-6	15% M	5.0'	No pavement distress observed	819,085	1,568,265
Y1_PC_3350_WB WDNG	FILL ± 1.0'	WBL 12.0'	WB OSS 1.5'	2.5' FW	C	14.0"	14.0"	-	-	-	Asphalt	R.E.: Brown, sandy CLAY (1.2' - 1.9') RES: Orange, brown, sandy SILT (1.9' - 5.0')	- S-21	A-6 A-4 (2)	M 20%	5.0'	No pavement distress observed	819,100	1,568,257
-Y2- STA 30+00																			
Y2_PC_3000_EB ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.0'	5.5' FY	S	18.0"	18.0"	-	-	-	Asphalt	RES: Orange, brown, silty CLAY, micaceous (1.5' - 5.0')	-	A-6	M	5.0'	No pavement distress observed	822,146	1,566,054
Y2_PC_3000_EB OSL	AT GRADE ± 0.0'	OSL 13.0'	OSS 10.0'	5.5' FW	S	19.0"	6.0"	8.0"	5.0"	-	Asphalt Concrete ABC	RES: Orange, brown, clayey SILT, micaceous (1.6' - 5.0')	-	A-5	M	5.0'	No pavement distress observed	822,124	1,566,066
Y2_PC_3000_EB OSS	CUT ± 2.0'	OSL 13.0'	OSS 10.0'	6.0' FW	S	18.0"	18.0"	-	-	-	Asphalt	RES: Orange, brown, clayey SILT, micaceous (1.5' - 5.0')	-	A-5	M	5.0'	No pavement distress observed	822,112	1,566,070
-Y2- STA 35+00																			
Y2_PC_3500_EB ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.0'	5.5' FY	S	20.5"	17.0"	-	3.5"	-	Asphalt ABC	R.E.: Orange, brown, silty CLAY, micaceous (1.4' - 5.0')	-	A-6	M	5.0'	No pavement distress observed	822,311	1,566,531
Y2_PC_3500_EB OSS	AT GRADE ± 0.0'	OSL 12.5'	OSS 10.0'	6.0' FW	S	17.5"	17.5"	-	-	-	Asphalt	R.E.: Orange, silty CLAY, micaceous (1.5' - 5.0')	S-15	A-7-5 (15)	30%	5.0'	No pavement distress observed	822,279	1,566,540
-Y2- STA 40+00																			
Y2_AP_4000_EB GM	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.5'	13.0' FY	S	-	-	-	-	-	-	TOPSOIL (0.0' - 0.25') RES: Orange, brown, CLAY (0.25' - 8.5') RES: Orange, clayey SILT, micaceous (8.5' - 10.0')	- SS-1015 -	- A-7-5 (25) A-5	M 26% M	10.0'	No pavement distress observed	822,485	1,566,986
Y2_AP_4000_EB ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.5'	6.5' FY	S	18.0"	15.0"	-	3"	-	Asphalt ABC	RES: Reddish-brown, silty CLAY, micaceous (1.5' - 8.5") RES: Orange, SILT, micaceous, contains manganese oxide (8.5' - 10.0')	SS-523 -	A-7-6 (16) A-5	16% M	10.0'	No pavement distress observed	822,477	1,566,989
-Y2- STA 45+00																			
Y2_AP_4500_EB OGS	AT GRADE ± 0.0'	OSS 12.5'	OSS 10.0'	14.0' FW	S	-	-	-	-	-	Topsoil	TOPSOIL (0.0' - 0.8') R.E.: Orange, silty and sandy CLAY, micaceous (0.8' - 10.0')	SS-1010 SS-1011	- A-7-6 (20)(4)	M 32% 21%	10.0'	No pavement distress observed	822,590	1,567,479
-Y2- STA 50+00																			
Y2_AP_5000_EB GM	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.5'	12.0' FY	S	-	-	-	-	-	Topsoil	TOPSOIL (0.0' - 0.3') RES: Orange, brown, clayey SILT (0.3' - 3.0') RES: Reddish brown, silty CLAY(3.0' - 10.0')	-	- A-5 A-7	M	10.0'	No pavement distress observed	822,816	1,567,929
Y2_AP_5000_EB ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.5'	6.5' FY	S	24.0"	18.0"	-	6.0"	-	Asphalt ABC	RES: Orange, brown, silty CLAY, trace sand, micaceous (2.0' - 10.0')	SS-519	A-7-5 (13)	21%	10.0'	No pavement distress observed	822,807	1,567,933

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound
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

PAVEMENT INVESTIGATION DATA SHEET

Project:	48647.1.1	Route:	SR 1630 (Baltimore Road)	Date:	02/23/24
TIP:	U-6187	County:	Davie	Notes By:	Q. Hill

		Width		Thickness								Subgrade						State Plane Coordinates	
Position (Sta.,Lane,Shldr.)	Cut/Fill (Est. of Amount)	Lane(s)	Shoulder(s)	Offset Distance (See Notes)	Crown "C" 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
-Y2- STA 55+00																			
Y2_AP_5500_EB_ISS	AT GRADE ± 0.0'	ISL 11.5'	ISS 10.5'	6.0' FY	S	18.0"	18.0"	-	-	-	Asphalt	RES: Orange and tan, silty CLAY, micaceous, contains manganese oxide (1.5' - 10.0')	BS-07 SS-1022	A-7-5 (25) (13)	37% 29%	10.0'	No pavement distress observed	822,970	1,568,405
-Y2- STA 60+00																			
Y2_AP_6000_EB_ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 10.5'	5.5' FY	S	18.0"	18.0"	-	-	-	Asphalt	RES: Orange, tan, and black, clayey SILT, micaceous, contains manganese oxide (1.5' - 10.0')	-	A-5	M	10.0'	No pavement distress observed	823,121	1,568,881
-Y2- STA 64+00																			
Y2_PC_6400_EB ISS	AT GRADE ± 0.0'	ISL 11.5'	ISS 14'	6.0' FY	S	17.0"	17.0"	-	-	-	Asphalt	RES: Orange, brown, clayey SILT, micaceous (1.4' - 5.0')	-	A-5	M	5.0'	No pavement distress observed	823,238	1,569,261
Y2_PC_6400_EB OSL	AT GRADE ± 0.0'	OSL 11.25'	OSS 15.5'	4.5' FW	S	22.0"	22.0"	-	-	-	Asphalt	RES: Orange, silty CLAY, little fine to medium sand (1.8' - 5.0')	-	A-7-6	M	5.0'	No pavement distress observed	823,199	1,569,272
Y2_PC_6400_EB OSS	AT GRADE ± 0.0'	OSL 11.25'	OSS 15.5'	7.0' FW	S	21.25"	9.25"	-	12.0"	-	Asphalt ABC	RES: Orange, silty CLAY (1.8' - 5.0')	S-17	A-7-6 (19)	27%	5.0'	No pavement distress observed	823,186	1,569,274
-Y2- STA 20+00																			
Y2_PC_2000_WB ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 11.0'	5.5' FY	S	18.0"	18.0"	-	-	-	Asphalt	RES: Brown, orange, CLAY, some fine to medium sand (1.5' - 5.0')	S-12	A-7-6 (10)	25%	5.0'	No pavement distress observed	821,855	1,565,079
Y2_PC_2000_WB OSS	AT GRADE ± 0.0'	OSL 12.0'	OSS 11.0'	6.0' FW	S	19.5"	19.5"	-	-	-	Asphalt	RES: Brown, orange, silty CLAY (1.6' - 5.0')	S-06	A-7-5 (48)	54%	5.0'	No pavement distress observed	821,899	1,565,076
-Y2- STA 25+00																			
Y2_AP_2500_WB_GM	AT GRADE ± 0.0'	ISL 11.5'	ISS 11.0'	14.0' FY	S	-	-	-	-	-	-	TOPSOIL (0.0 - 0.25) RES: Brown, orange, SILT, micaceous (0.25' - 6.0') RES: Brown, tan, orange, clayey SILT, contains manganese oxide (6.0' - 10.0')	BS-03	- A-4 A-5	29%	10.0'	No pavement distress observed	822,009	1,565,563
Y2_PC_2500_WB ISS	AT GRADE ± 0.0'	ISL 11.5'	ISS 11.0'	6.5' FY	S	17.25"	17.25"	-	-	-	Asphalt	RES: Reddish brown, clayey SILT (1.4' - 5.0')	-	A-5	M	5.0'	No pavement distress observed	822,025	1,565,560
Y2_PC_2500_WB OSL	FILL ± 0.5'	ISL 11.5'	OSS 11.0'	3.0' FW	S	21.0"	6.0"	8.0"	7.0"	-	Asphalt Concrete ABC	RES: Brown, orange, silty CLAY, micaceous (1.8' - 5.0')	S-04	A-7-5 (28)	31%	5.0'	No pavement distress observed	822,045	1,565,553
Y2_PC_2500_WB OSS	FILL ± 1.0'	OSL 12.0'	OSS 11.0'	6.0' FW	S	18.0"	18.0"	-	-	-	Asphalt	RES: Brown, orange, silty CLAY, micaceous (1.5' - 5.0')	-	A-7-5	M	5.0'	No pavement distress observed	822,063	1,565,548
-Y2- STA 30+00																			
Y2_AP_3000_WB_GM	AT GRADE ± 0.0'	ISL 12.0'	ISS 11.0'	13.5' FY	S	-	-	-	-	-	-	TOPSOIL (0.0' - 0.3') R.E.: Brown, orange, silty CLAY, micaceous (0.3' - 10.0')	SS-9006	- A-7-5 (15)	M 33%	10.0'	No pavement distress observed	822,170	1,566,037
Y2_PC_3000_WB ISS	AT GRADE ± 0.0'	ISL 12.0'	ISS 11.0'	5.5' FY	S	18.0"	18.0"	-	-	-	Asphalt	R.E.: Brown, orange, silty CLAY (1.5' - 5.0')	S-10	A-7-5 (19)	31%	5.0'	No pavement distress observed	822,186	1,566,036
Y2_PC_3000_WB OSS	AT GRADE ± 0.0'	OSL 12.0'	OSS 11.0'	5.5' FW	S	17.0"	17.0"	-	-	-	Asphalt	R.E.: Brown, orange, clayey SILT, micaceous (1.4' - 5.0')	-	A-5	M	5.0'	No pavement distress observed	822,228	1,566,030
-Y2- STA 35+00																			
Y2_AP_3500_WB OGS	AT GRADE ± 0.0'	OSL 11.5'	OSS 11.5'	12.0' FW	S	-	-	-	-	-	-	TOPSOIL (0.0' - 0.3') R.E.: Brown, orange, silty CLAY (0.3' - 5.0') R.E.: Brown, orange, red, silty SAND, with clay lenses, trace rock fragments and managnese oxide (5.0' - 10.0')	BS-01	A-7-5 (4) A-2-4	27%	10.0'	No pavement distress observed	822,392	1,566,489

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound
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

PAVEMENT INVESTIGATION DATA SHEET

Project:	48647.1.1	Route:	SR 1630 (Baltimore Road)	Date:	02/23/24
TIP:	U-6187	County:	Davie	Notes By:	Q. Hill

		Width		Thickness								Subgrade						State Plane Coordinates	
Position (Sta.,Lane,Shldr.)	Cu/Fill (Est. of Amount)	Lane(s)	Shoulder(s)	Offset Distance (See Notes)	Crown "C" 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
-Y2- STA 45+00																			
Y2_PC_4500_WB ISS	AT GRADE ± 0.0'	ISL 11.5'	ISS 11.0'	5.5' FY	S	17.25"	17.25"	-	-	-	Asphalt	RES: Brown, orange, silty CLAY, micaceous (1.4' - 5.0')	-	A-7-5	M	5.0'	No pavement distress observed	822,685	1,567,462
Y2_PC_4500_WB ISL	AT GRADE ± 0.0'	ISL 11.5'	ISS 11.0'	3.5' FY	S	21.0"	6.5"	7.75"	6.75"	-	Asphalt Concrete ABC	RES: Brown, orange, silty CLAY (1.8' - 5.0')	S-08	A-7-5 (13)	31%	5.0'	No pavement distress observed	822,699	1,567,462
Y2_PC_4500_WB OSS	AT GRADE ± 0.0'	OSL 11.5'	OSS 12.0'	7.0' FW	S	13.25"	13.25"	-	-	-	Asphalt	RES: Brown, silty CLAY (1.5' - 5.0')	S-02	A-7-5 (17)	40%	5.0'	Previous pavement core patches observed, asphalt otherwise observed to be in good condition	822,723	1,567,452
-Y2- STA 50+00																			
Y2_PC_5000_WB ISS	AT GRADE ± 0.0'	ISL 11.5'	ISS 11.0'	6.0 FY	S	17.75"	17.75"	-	-	-	Asphalt	RES: Reddish-brown, CLAY (1.5' - 5.0')	S-07	A-7-6 (23)	24%	5.0'	No pavement distress observed	822,856	1,567,937
Y2_PC_5000_WB OSS	FILL ± 1.0'	OSL 11.0'	OSS 11.5'	6.5' FW	S	18.0"	18.0"	-	-	-	Asphalt	RES: Reddish-brown, silty CLAY (1.5' - 5.0')	-	A-7-6	M	5.0'	Previous pavement core patches observed, asphalt otherwise observed to be in good condition	822,887	1,567,924
-Y4- STA 13+70																			
Y4_PC_1370_EB LN	FILL ± 1.0'	EB LN 11.0'	OSS 1.25'	4.5' FW	C	21.0"	6.25"	-	14.75"	-	Asphalt ABC	R.E.: Brown, orange, CLAY (1.7' - 5.0')	S-31	A-7-6 (21)	30%	5.0'	Moderate alligator and vertical cracking in vicinity	818,008	1,567,814

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound
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

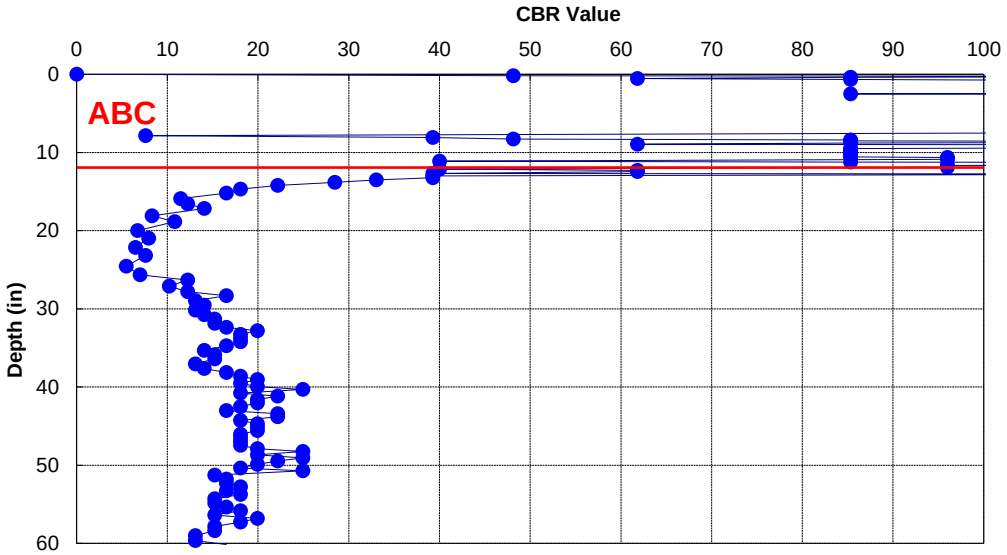
CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

L_PC_1300_EB LN 1

Datum = Top of subgrade 12/01/2023

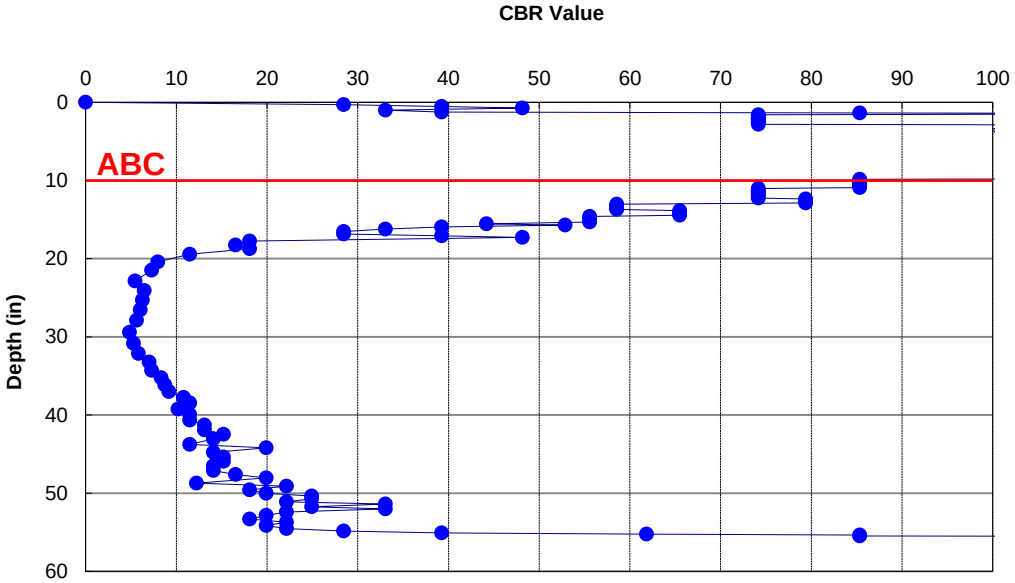


Interval	
0.0 to	13.0
# of Values	199
Avg CBR	100+
Wghtd Avg.	-
Max CBR	100+
Min CBR	7.6

Interval	
13.0 to	60.2
# of Values	85
Avg CBR	16.8
Wghtd Avg.	-
Max CBR	33.0
Min CBR	5.4

L_PC_1300_WB LN 2

Datum = Top of subgrade 12/01/2023



Interval	
0.0 to	10.0
# of Values	135
Avg CBR	100+
Wghtd Avg.	-
Max CBR	100+
Min CBR	28.4

Interval	
10.0 to	55.6
# of Values	104
Avg CBR	40.0
Wghtd Avg.	-
Max CBR	100+
Min CBR	4.8

CONE PENETROMETER RESULTS

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ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

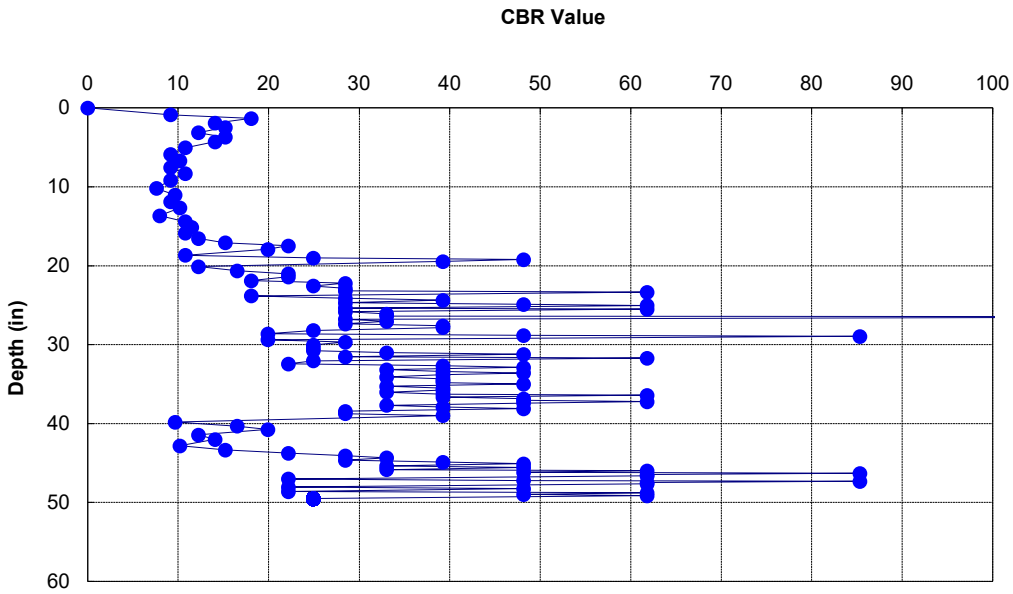
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y1_PC_1100_WB LN WDNG 3

Datum = Top of subgrade 12/01/2023

Interval 0.0 to 20.0	
# of Values	30
Avg CBR	14.7
Wghtd Avg.	-
Max CBR	48.1
Min CBR	7.6

Interval 20.0 to 49.5	
# of Values	102
Avg CBR	38.6
Wghtd Avg.	-
Max CBR	100+
Min CBR	9.6

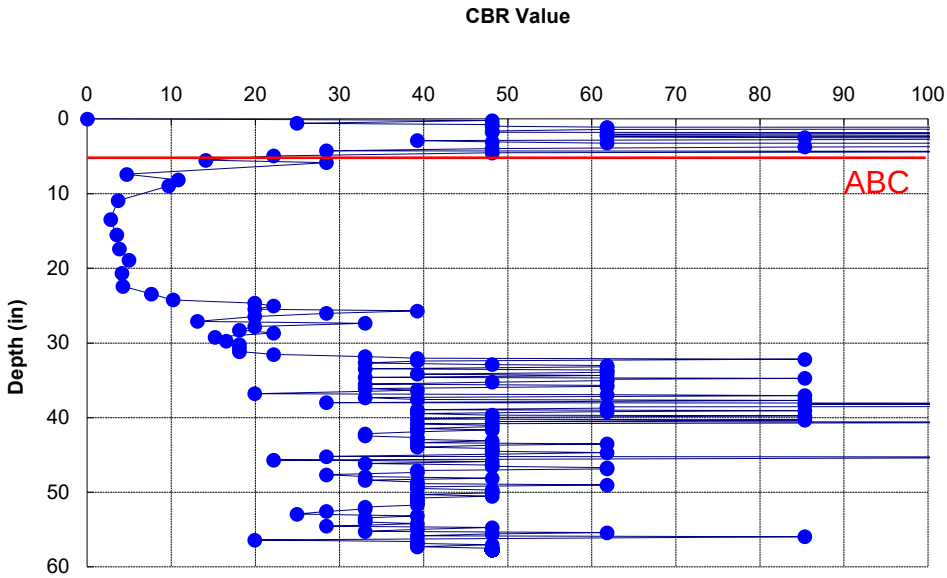


Y1_PC_1900_EB PS 4

Datum = Top of subgrade 11/30/2023

Interval 0.0 to 5.0	
# of Values	35
Avg CBR	100+
Wghtd Avg	-
Max CBR	100+
Min CBR	14.1

Interval 5.0 to 57.7	
# of Values	153
Avg CBR	45.0
Wghtd Avg	-
Max CBR	100+
Min CBR	2.8



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

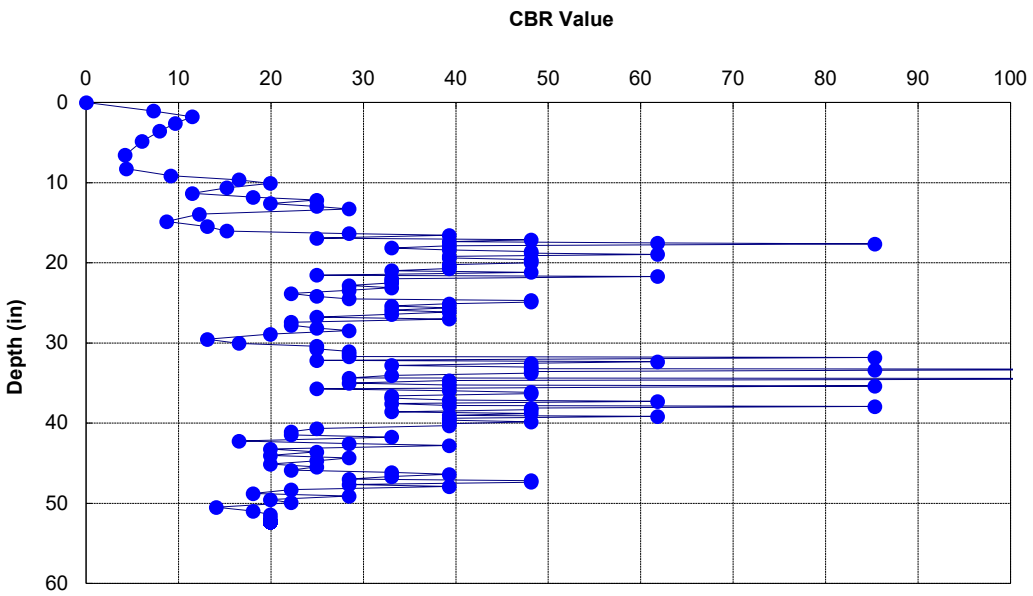
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y1_PC_1900_EB LN 5

Datum = Top of subgrade 11/30/2023

Interval 0.0 to 15.0	
# of Values	20
Avg CBR	13.7
Wghtd Avg.	-
Max CBR	28.4
Min CBR	4.2

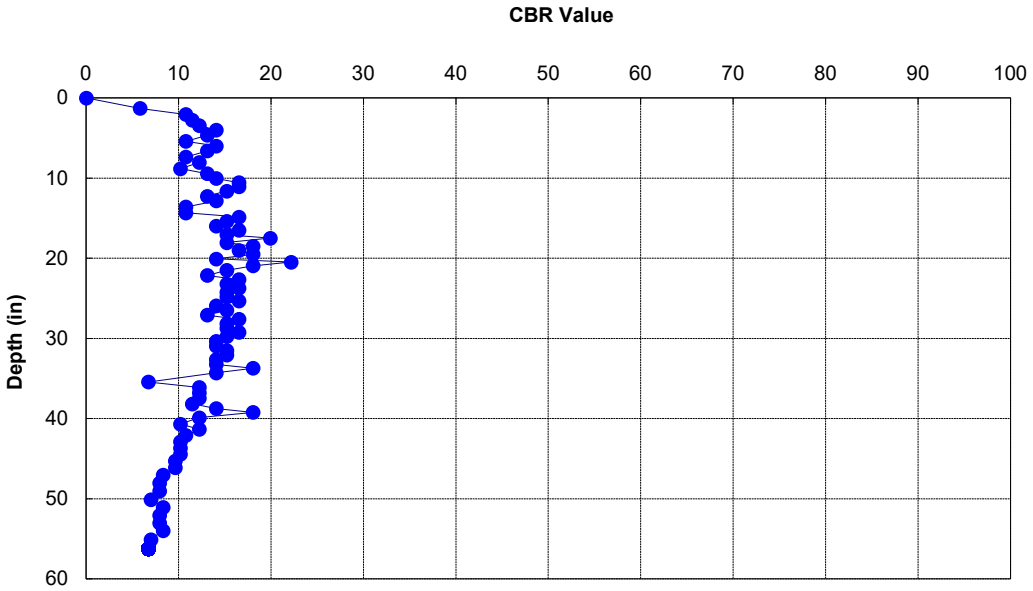
Interval 15.0 to 52.3	
# of Values	130
Avg CBR	38.0
Wghtd Avg.	-
Max CBR	100+
Min CBR	13.1



Y1_PC_1900_WB LN 6

Datum = Top of subgrade 12/01/2023

Interval 0.0 to 56.2	
# of Values	84
Avg CBR	13.2
Wghtd Avg.	-
Max CBR	22.2
Min CBR	5.8



CONE PENETROMETER RESULTS

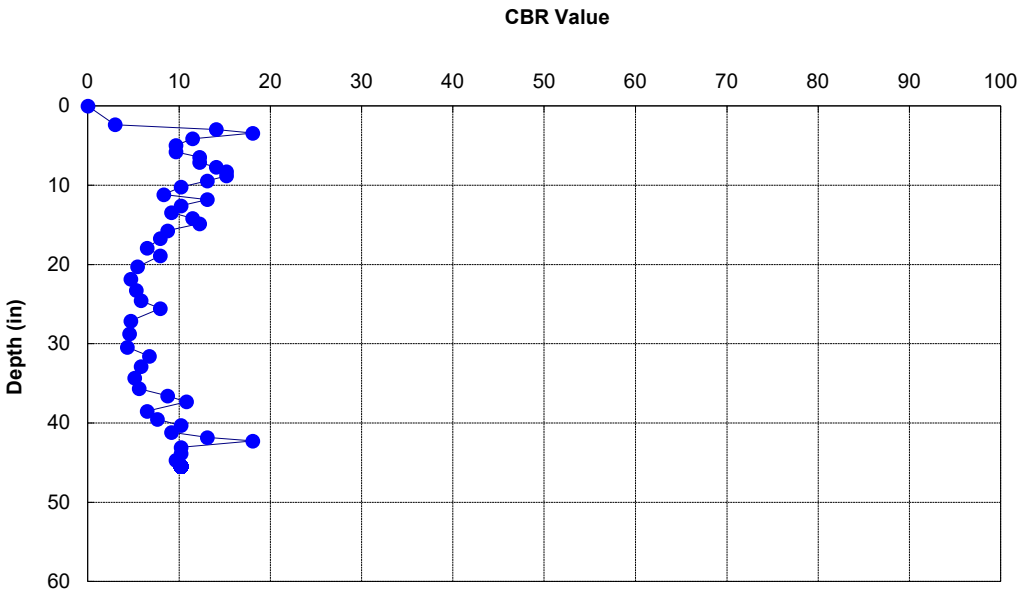
PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y12850HA 7

Datum = Exstg Grd Lvl 01/04/2024

Interval	
0.0 to	45.5
# of Values	47
Avg CBR	9.4
Wghtd Avg.	-
Max CBR	18.1
Min CBR	3.0

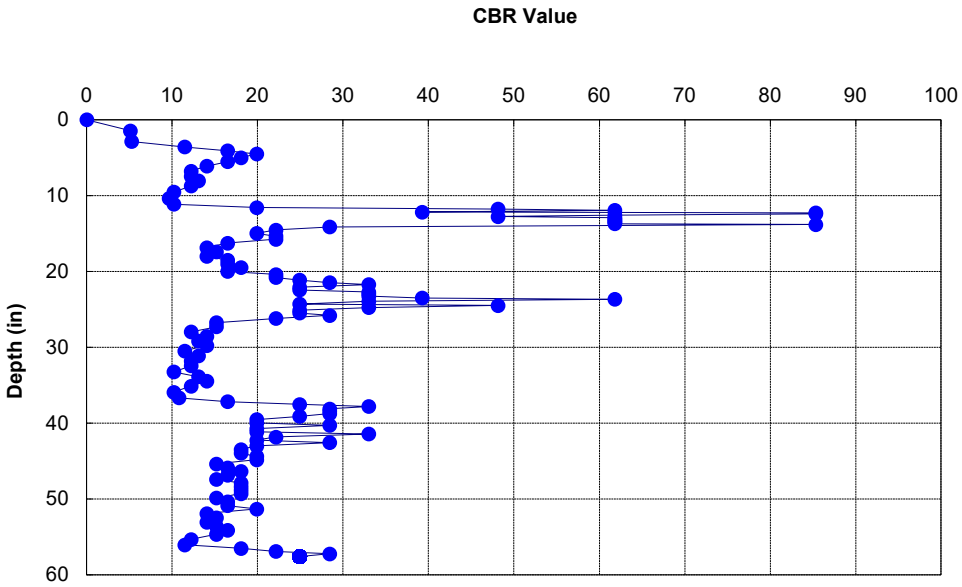


Y1_PC_3350_EB LN WDNG 8

Datum = Top of subgrade 11/30/2023

Interval	
0.0 to	10.0
# of Values	14
Avg CBR	12.6
Wghtd Avg.	-
Max CBR	19.9
Min CBR	5.1

Interval	
10.0 to	57.6
# of Values	111
Avg CBR	26.2
Wghtd Avg.	-
Max CBR	85.3
Min CBR	10.2



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

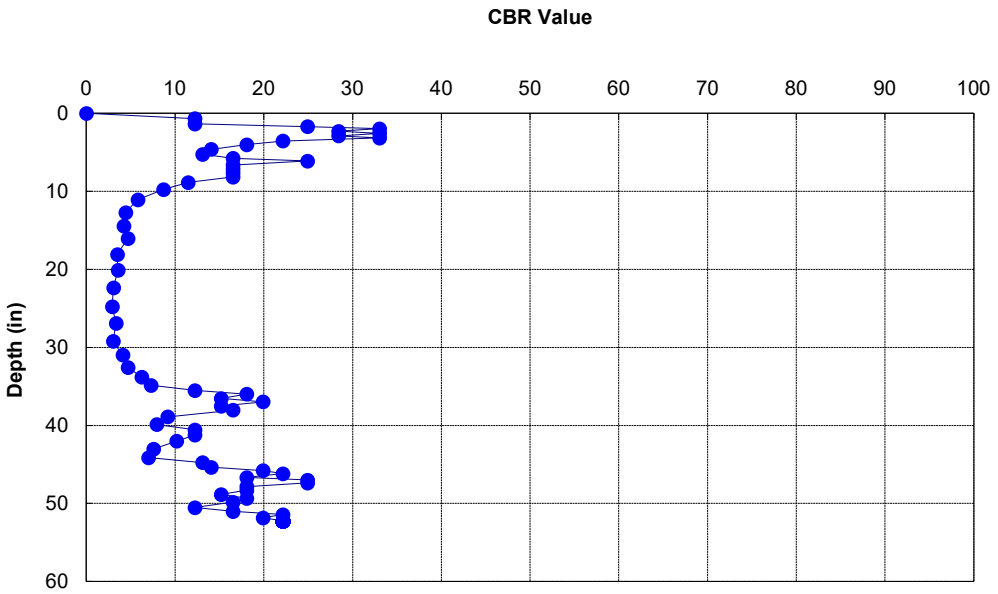
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y1_PC_3350_CENTER LTL 9

Datum = Top of subgrade 11/30/2023

Interval 0.0 to 13.0	
# of Values	23
Avg CBR	18.0
Wghtd Avg.	-
Max CBR	33.0
Min CBR	4.2

Interval 13.0 to 52.2	
# of Values	41
Avg CBR	12.8
Wghtd Avg.	-
Max CBR	24.9
Min CBR	2.9

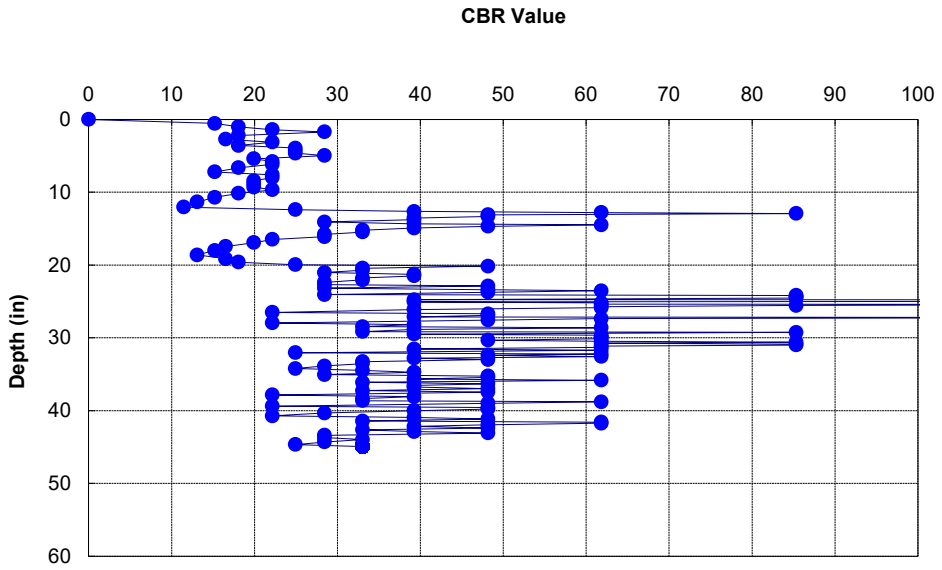


Y1_PC_3350_WB WDNG 10

Datum = Top of subgrade 11/30/2023

Interval 0.0 to 9.0	
# of Values	22
Avg CBR	21.1
Wghtd Avg.	-
Max CBR	28.4
Min CBR	15.2

Interval 9.0 to 44.9	
# of Values	142
Avg CBR	46.1
Wghtd Avg.	-
Max CBR	100+
Min CBR	11.5



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

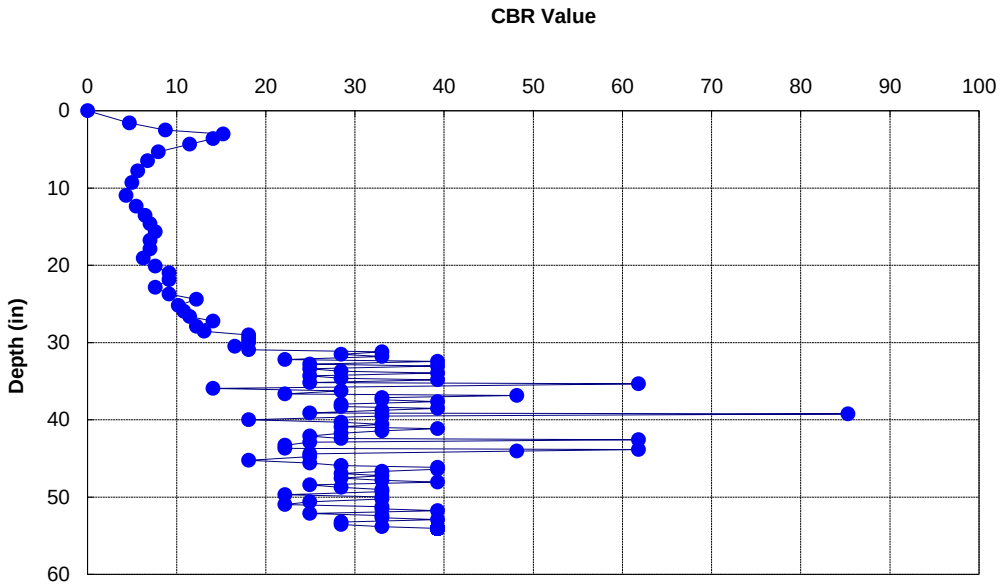
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_3000_EB ISS 11

Datum = Top of subgrade 11/29/2023

Interval 0.0 to 28.0	
# of Values	29
Avg CBR	8.9
Wghtd Avg.	-
Max CBR	15.2
Min CBR	4.3

Interval 28.0 to 54.1	
# of Values	82
Avg CBR	31.6
Wghtd Avg.	-
Max CBR	85.3
Min CBR	14.1

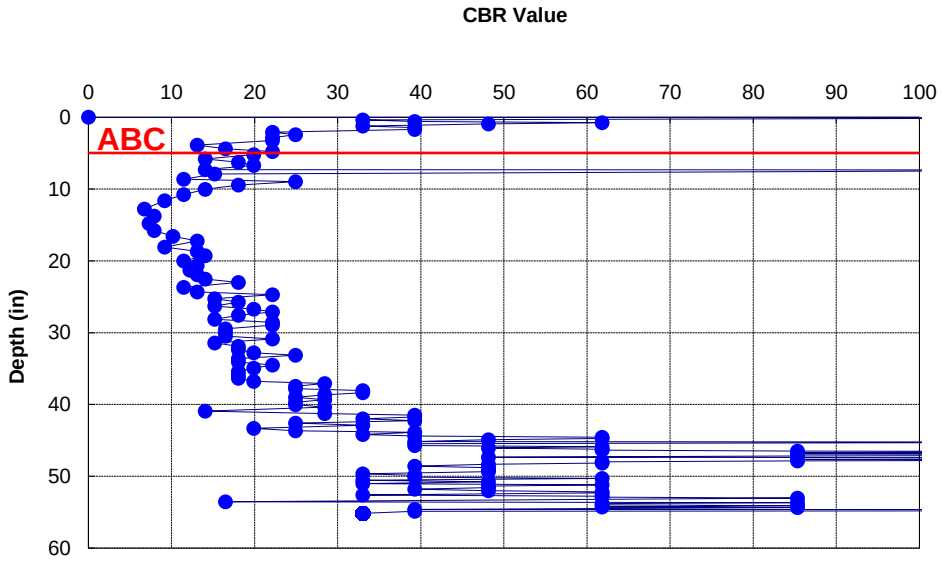


Y2_PC_3000_EB OSL 12

Datum = Top of subgrade 11/28/2023

Interval 0.0 to 10.0	
# of Values	26
Avg CBR	33.7
Wghtd Avg.	-
Max CBR	100+
Min CBR	11.5

Interval 10.0 to 55.2	
# of Values	132
Avg CBR	43.6
Wghtd Avg.	-
Max CBR	100+
Min CBR	6.7



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

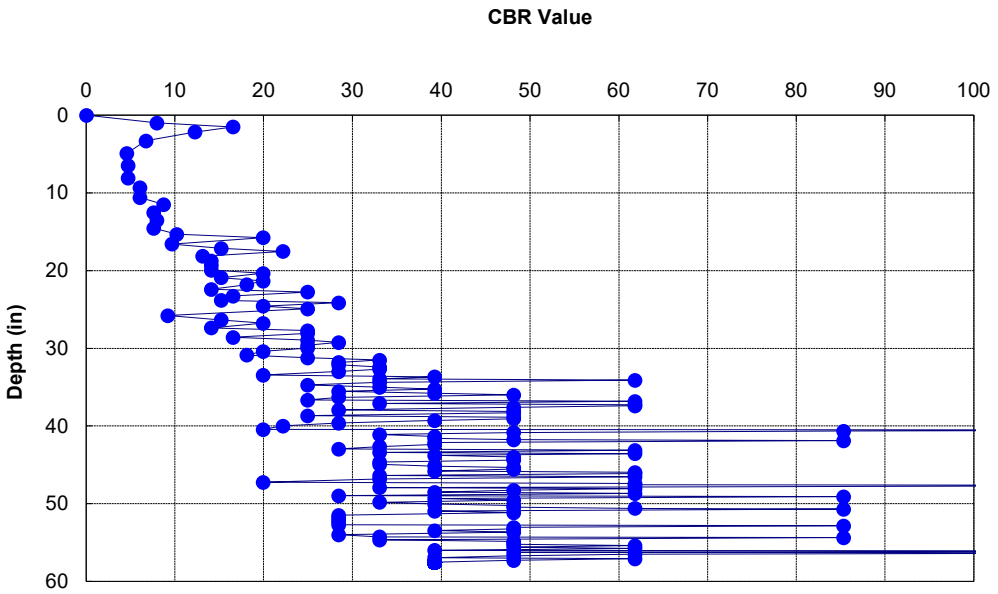
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_3000_EB OSS 13

Datum = Top of subgrade 11/28/2023

Interval	
0.0 to	15.0
# of Values	14
Avg CBR	8.0
Wghtd Avg.	-
Max CBR	16.5
Min CBR	4.6

Interval	
15.0 to	57.5
# of Values	148
Avg CBR	41.0
Wghtd Avg.	-
Max CBR	100+
Min CBR	9.2

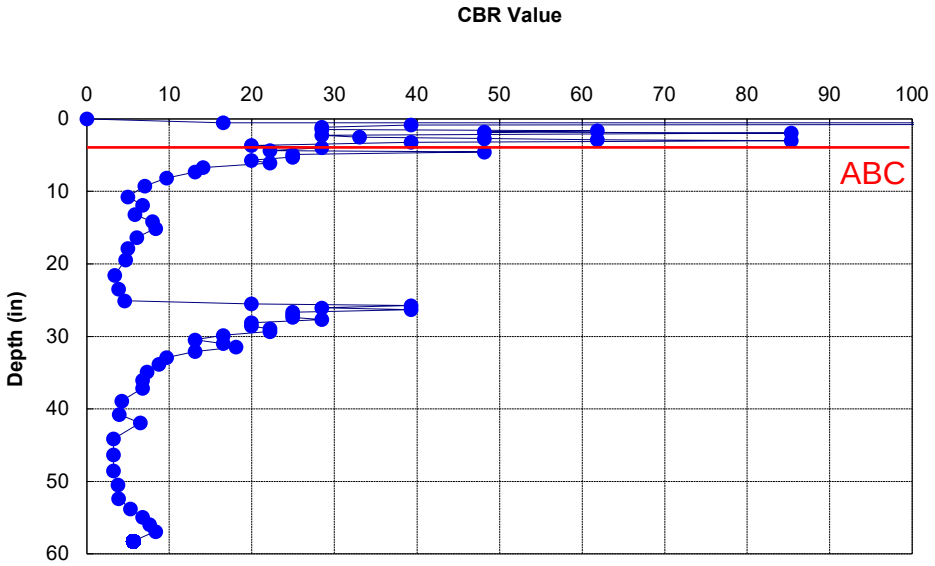


Y2_PC_3500_EB ISS 14

Datum = Top of subgrade 11/29/2023

Interval	
0.0 to	25.0
# of Values	38
Avg CBR	39.6
Wghtd Avg.	-
Max CBR	100+
Min CBR	3.4

Interval	
25.0 to	58.2
# of Values	35
Avg CBR	14.2
Wghtd Avg.	-
Max CBR	39.3
Min CBR	3.2



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

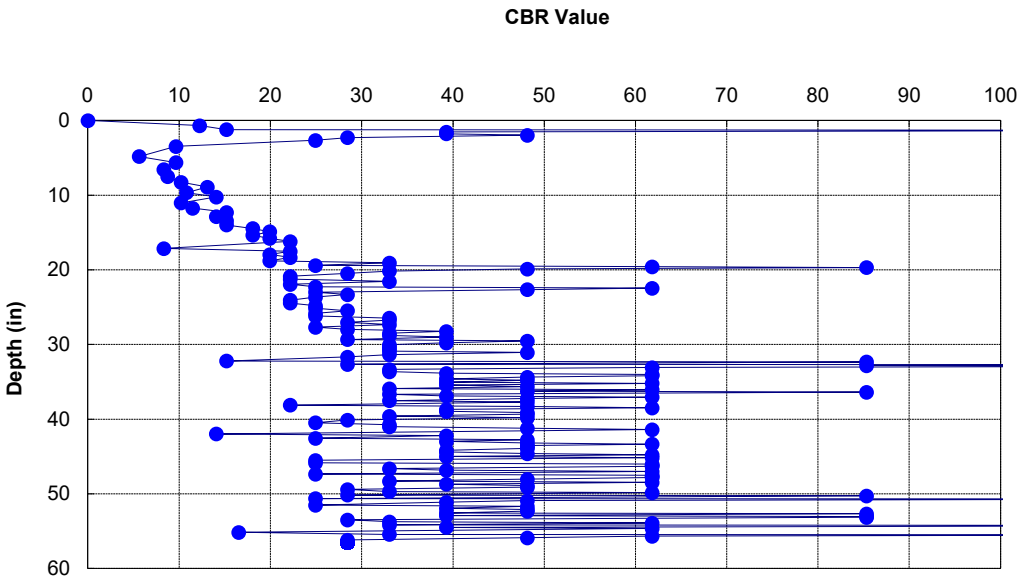
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_3500_EB OSS 15

Datum = Top of subgrade 11/28/2023

Interval	
0.0 to	19.0
# of Values	34
Avg CBR	21.7
Wghtd Avg.	-
Max CBR	100+
Min CBR	5.6

Interval	
19.0 to	56.5
# of Values	154
Avg CBR	45.4
Wghtd Avg.	-
Max CBR	100+
Min CBR	14.1

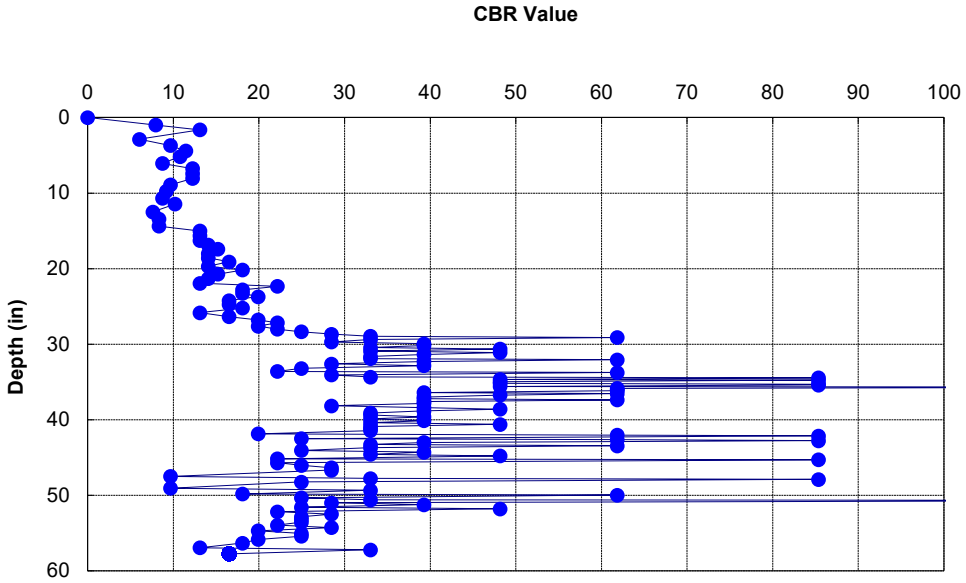


Y2_PC_6400_EB ISS 16

Datum = Top of subgrade 11/29/2023

Interval	
0.0 to	26.0
# of Values	39
Avg CBR	13.1
Wghtd Avg.	-
Max CBR	22.2
Min CBR	6.0

Interval	
26.0 to	57.7
# of Values	112
Avg CBR	40.5
Wghtd Avg.	-
Max CBR	100+
Min CBR	9.6



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

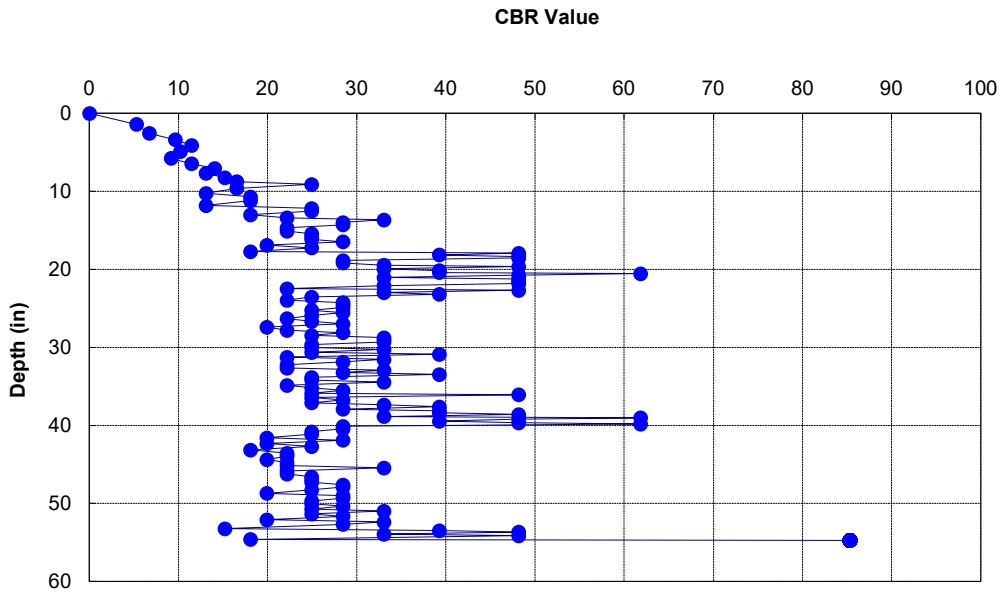
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_6400_EB OSL 17

Datum = Top of subgrade 11/29/2023

Interval	
0.0 to	17.0
# of Values	32
Avg CBR	18.7
Wghtd Avg.	-
Max CBR	33.0
Min CBR	5.3

Interval	
17.0 to	54.7
# of Values	121
Avg CBR	31.8
Wghtd Avg.	-
Max CBR	85.3
Min CBR	15.2

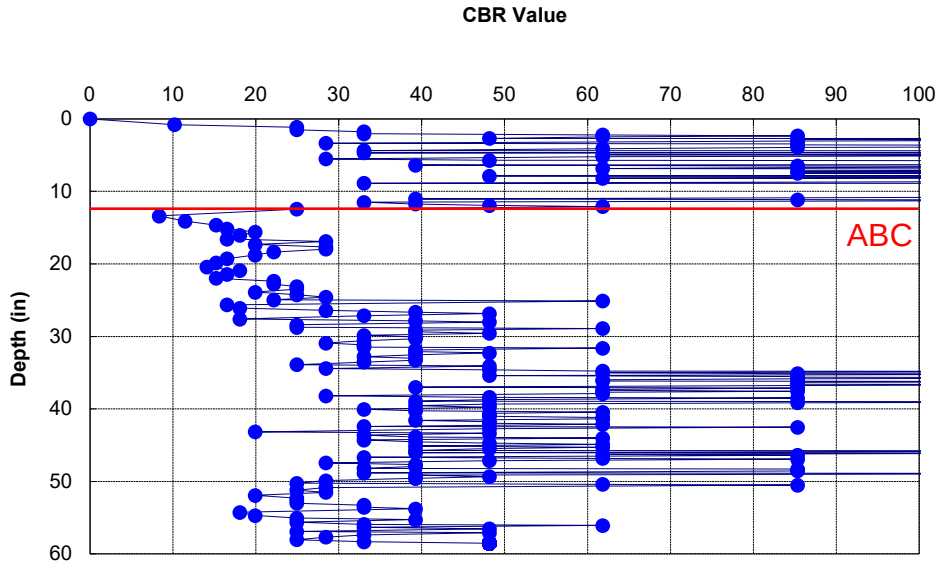


Y2_PC_6400_EB OSS 18

Datum = Top of subgrade 11/29/2023

Interval	
0.0 to	12.0
# of Values	102
Avg CBR	100+
Wghtd Avg.	-
Max CBR	100+
Min CBR	10.2

Interval	
12.0 to	58.5
# of Values	178
Avg CBR	47.0
Wghtd Avg.	-
Max CBR	100+
Min CBR	8.3



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

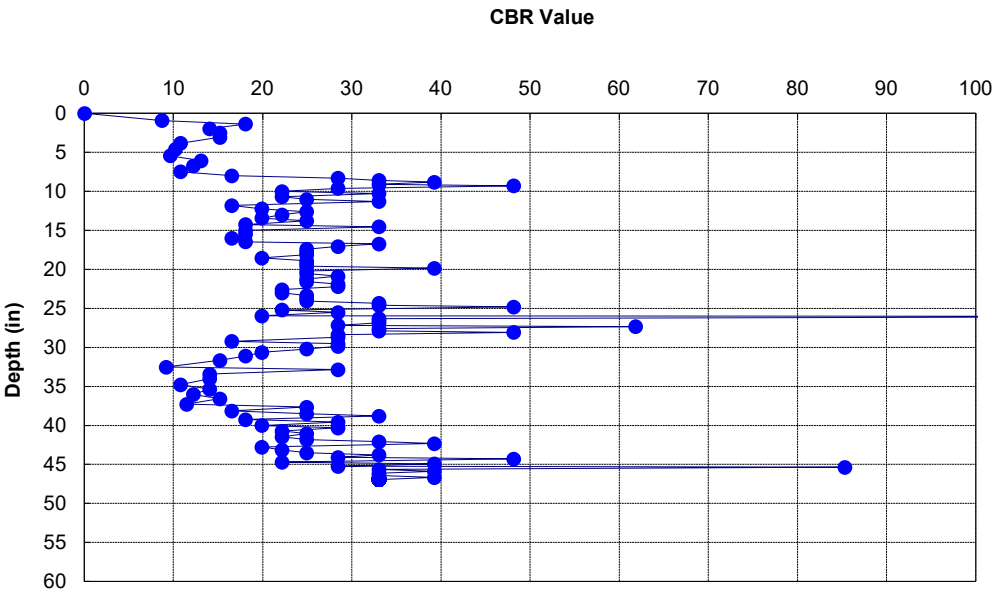
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_2000_WB ISS 19

Datum = Top of subgrade 11/28/2023

Interval	
0.0 to	25.0
# of Values	61
Avg CBR	23.9
Wghtd Avg.	-
Max CBR	48.1
Min CBR	8.7

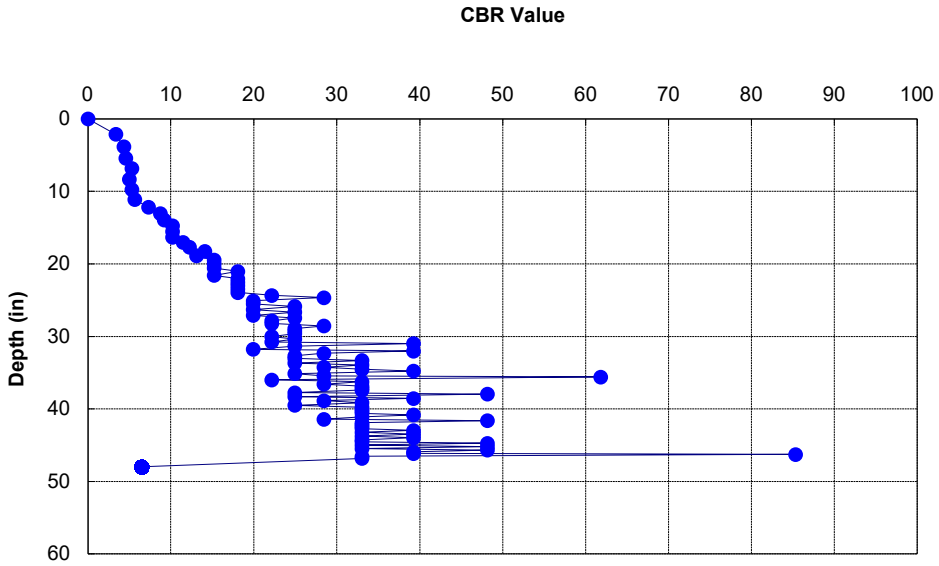
Interval	
25.0 to	46.9
# of Values	59
Avg CBR	29.6
Wghtd Avg.	-
Max CBR	100+
Min CBR	9.2



Y2_PC_2000_WB OSS 20

Datum = Top of subgrade 11/27/2024

Interval	
0.0 to	48.0
# of Values	104
Avg CBR	26.5
Wghtd Avg.	-
Max CBR	85.3
Min CBR	3.4



CONE PENETROMETER RESULTS

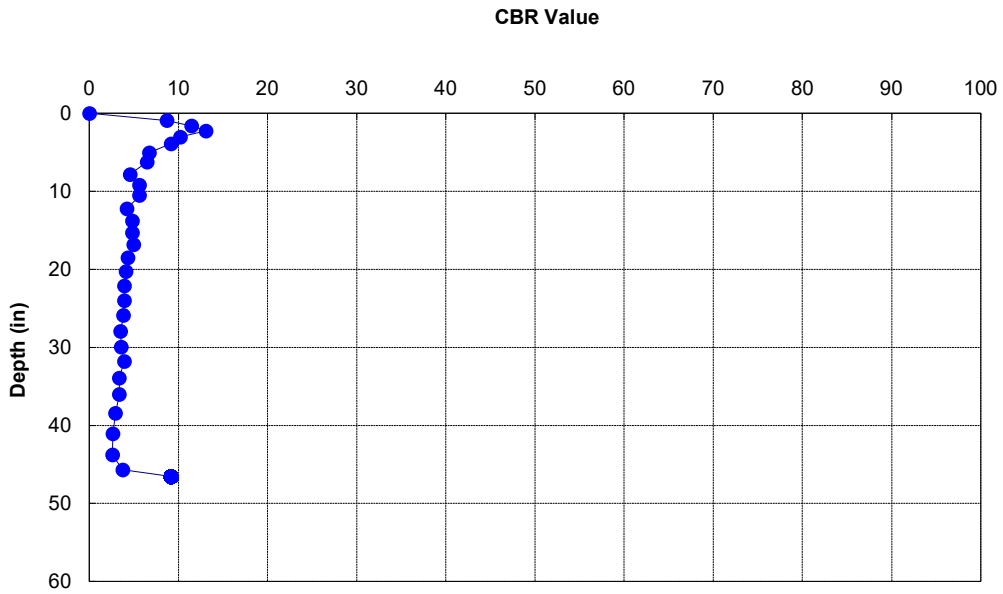
PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_2500_WB ISS 21

Datum = Top of subgrade 11/28/2023

Interval	
0.0 to	46.5
# of Values	29
Avg CBR	5.5
Wghtd Avg.	-
Max CBR	13.1
Min CBR	2.6

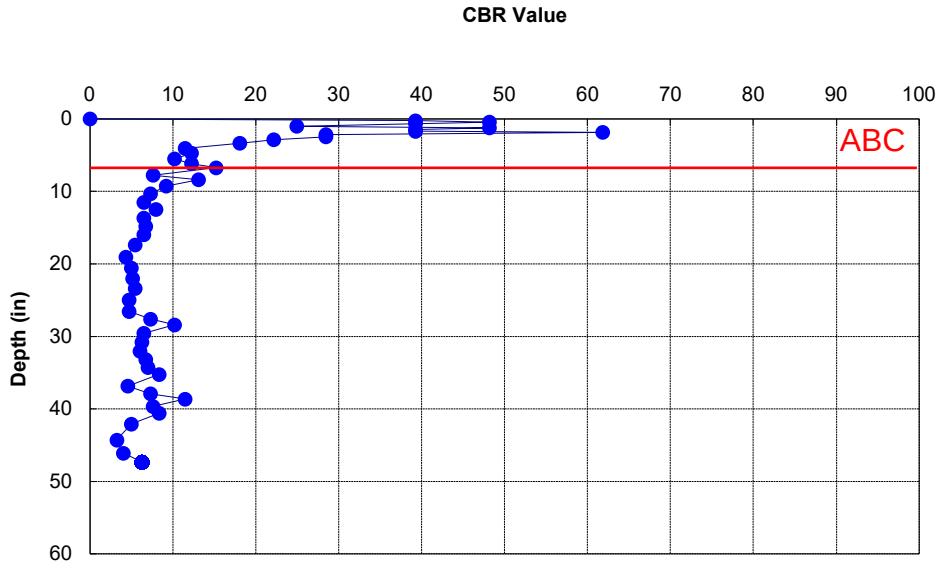


Y2_PC_2500_WB OSL 22

Datum = Top of subgrade 11/28/2023

Interval	
0.0 to	6.0
# of Values	16
Avg CBR	30.2
Wghtd Avg.	-
Max CBR	61.8
Min CBR	10.2

Interval	
6.0 to	47.3
# of Values	34
Avg CBR	7.0
Wghtd Avg.	-
Max CBR	15.2
Min CBR	3.2



CONE PENETROMETER RESULTS

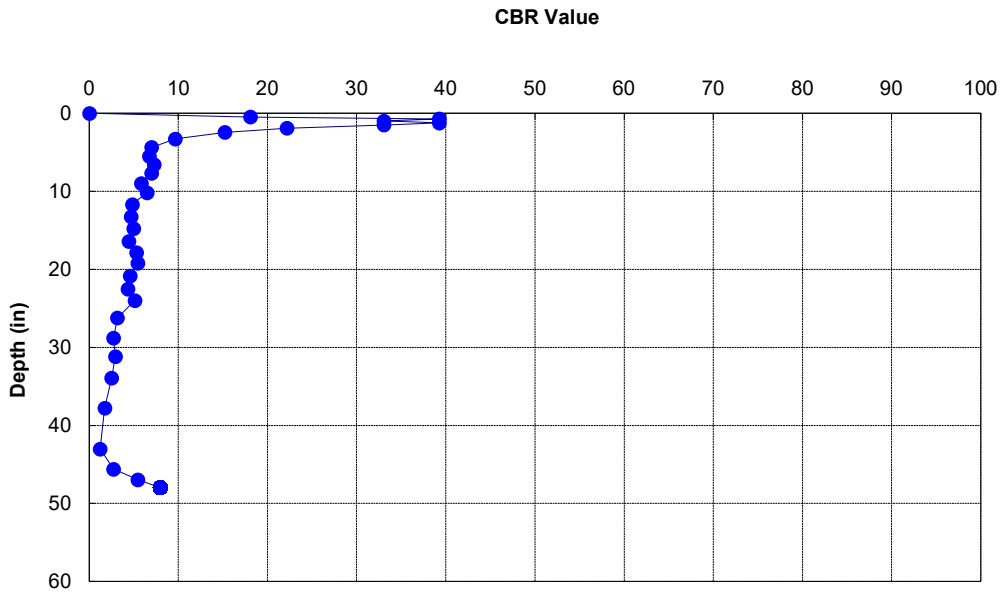
PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_2500_WB OSS 23

Datum = Top of subgrade 11/28/2023

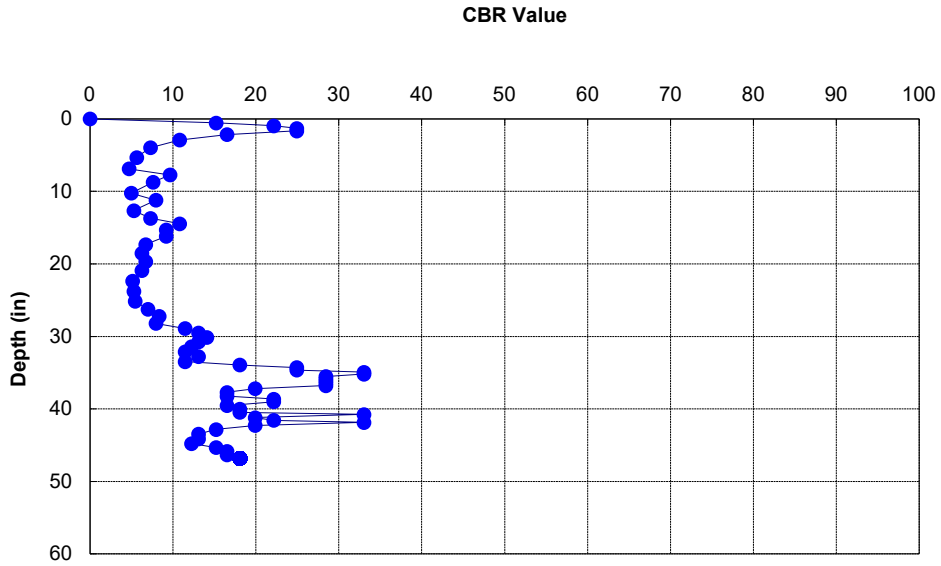
Interval	
0.0 to	48.0
# of Values	32
Avg CBR	10.1
Wghtd Avg.	-
Max CBR	39.3
Min CBR	1.2



Y2_PC_3000_WB ISS 24

Datum = Top of subgrade 11/28/2023

Interval	
0.0 to	46.8
# of Values	67
Avg CBR	15.6
Wghtd Avg.	-
Max CBR	33.0
Min CBR	4.7



CONE PENETROMETER RESULTS

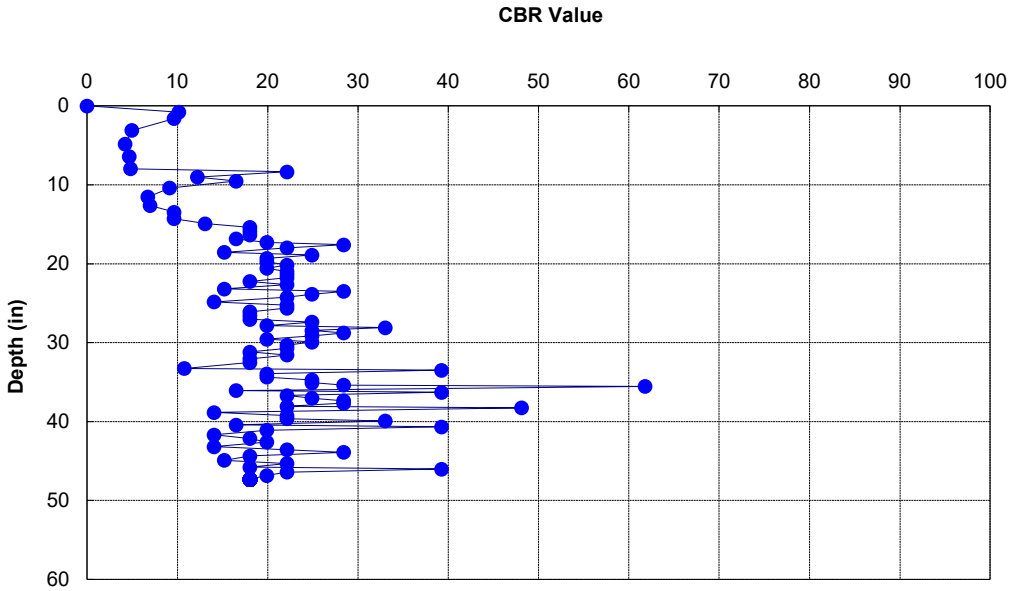
PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_3000_WB OSS 25

Datum = Top of subgrade 11/27/2023

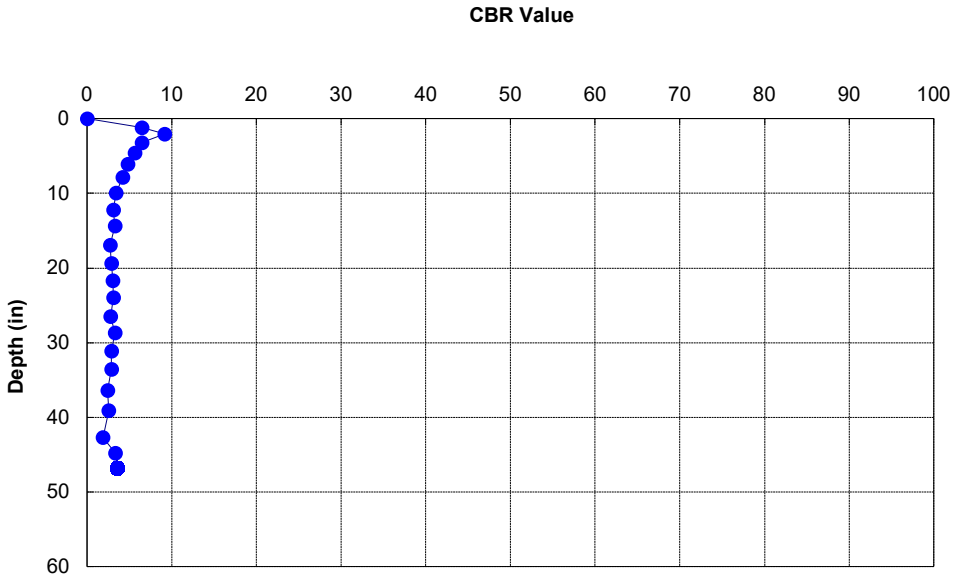
Interval	
0.0 to	47.3
# of Values	94
Avg CBR	20.8
Wghtd Avg.	-
Max CBR	61.8
Min CBR	4.2



Y2_PC_4500_WB ISS 26

Datum = Top of subgrade 11/27/2023

Interval	
0.0 to	46.8
# of Values	22
Avg CBR	3.8
Wghtd Avg.	-
Max CBR	9.2
Min CBR	1.9



CONE PENETROMETER RESULTS

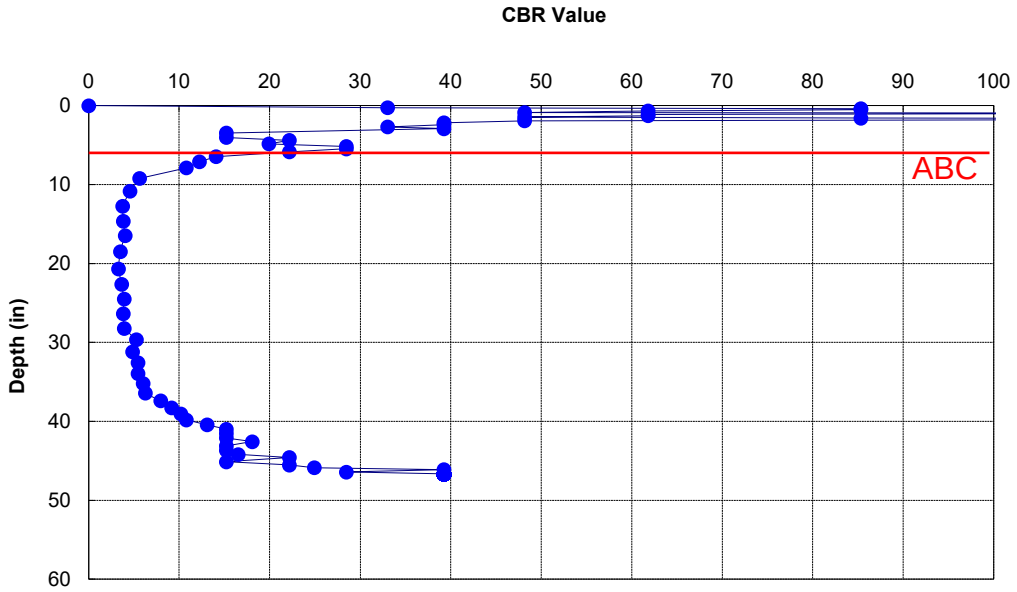
PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_4500_WB ISL 27

Datum = Top of subgrade 11/27/2024

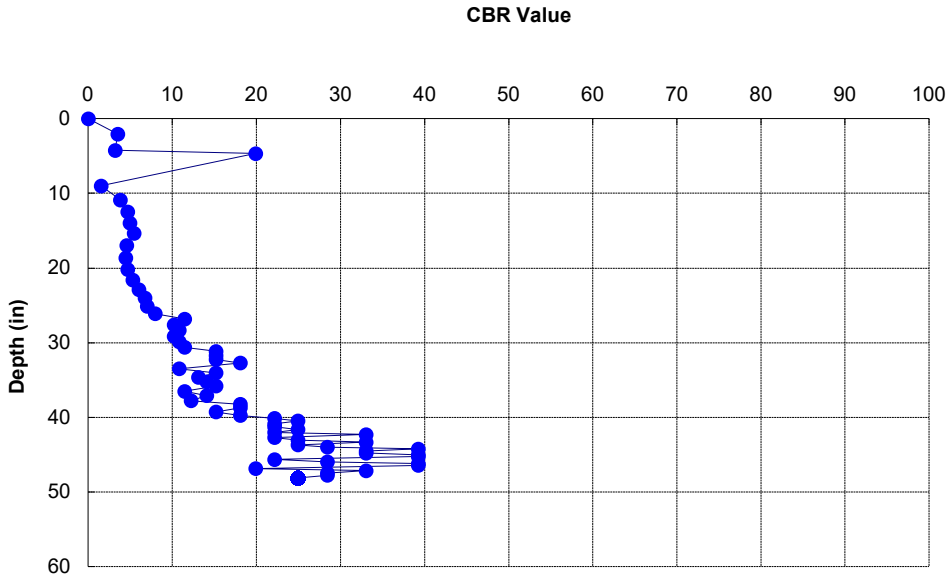
Interval	
0.0 to	46.7
# of Values	63
Avg CBR	28.4
Wghtd Avg.	-
Max CBR	100+
Min CBR	3.3



Y2_PC_4500_WB OSS 28

Datum = Top of subgrade 11/27/2023

Interval	
0.0 to	48.1
# of Values	64
Avg CBR	18.0
Wghtd Avg	-
Max CBR	39.3
Min CBR	1.5



CONE PENETROMETER RESULTS

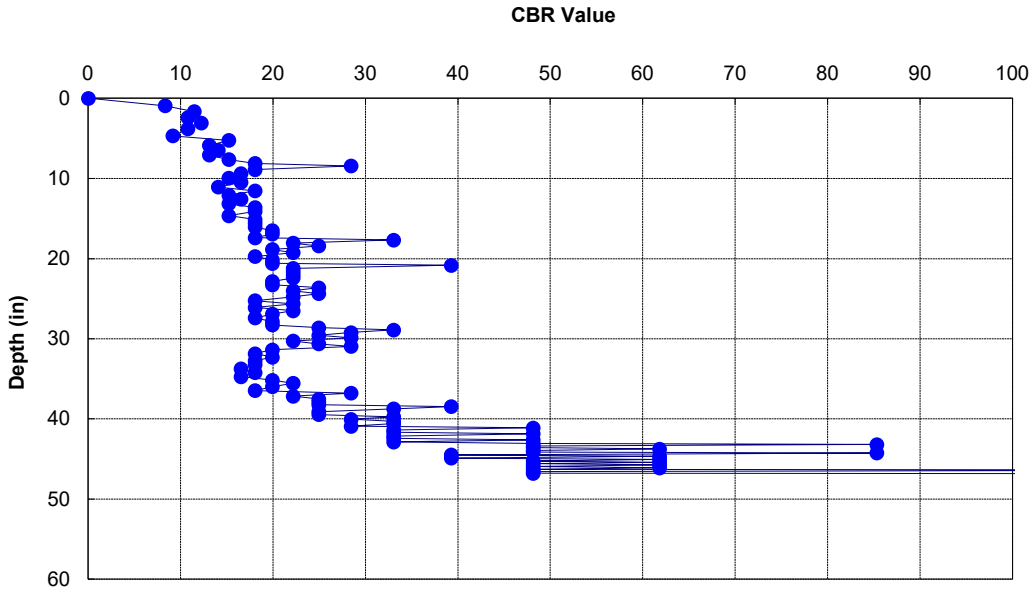
PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y2_PC_5000_WB ISS 29

Datum = Top of subgrade 11/27/2024

Interval	
0.0 to	46.9
# of Values	123
Avg CBR	29.8
Wghtd Avg.	-
Max CBR	100+
Min CBR	8.3

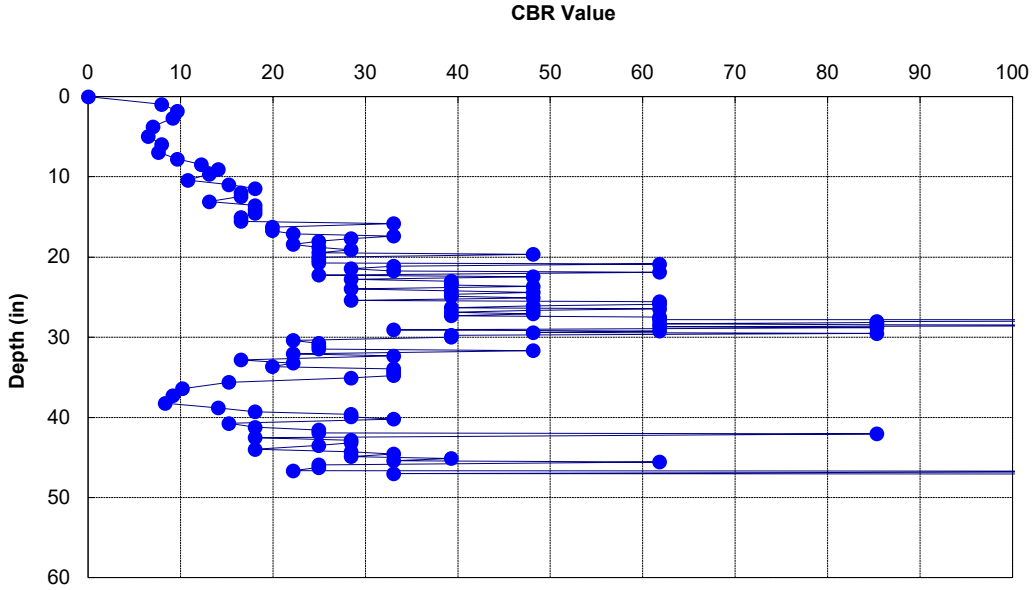


Y2_PC_5000_WB OSS 30

Datum = Top of subgrade 11/27/2023

Interval	
0.0 to	20.0
# of Values	36
Avg CBR	18.4
Wghtd Avg.	-
Max CBR	48.1
Min CBR	6.5

Interval	
20.0 to	47.1
# of Values	94
Avg CBR	45.5
Wghtd Avg.	-
Max CBR	100+
Min CBR	8.3



CONE PENETROMETER RESULTS

PROJECT NO.	U-6187
PROJECT NAME	2-Lane Extension of SR 1630
ROUTE	I 40, US 158, and SR 1630
COUNTY	Davie

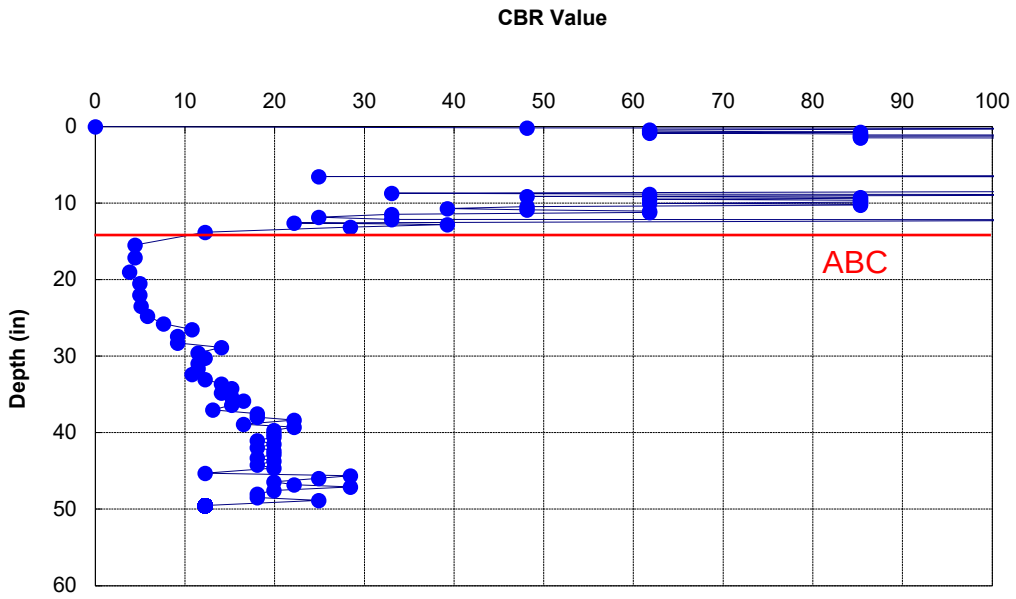
GEOLOGIST	Quinton Hill
GEOTECH(S)	J. Rose
	J. Crenshaw
	M. Brewer

Y4_PC_1370_EB LN 42

Datum = Top of subgrade 12/01/2023

Interval 0.0 to 15.0	
# of Values	161
Avg CBR	100+
Wghtd Avg.	-
Max CBR	100+
Min CBR	4.4

Interval 15.0 to 49.5	
# of Values	52
Avg CBR	15.6
Wghtd Avg.	-
Max CBR	28.4
Min CBR	3.8



PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

L_PC_1300_EB LN

TOP **BOTTOM**

L_PC_1300_WB LN

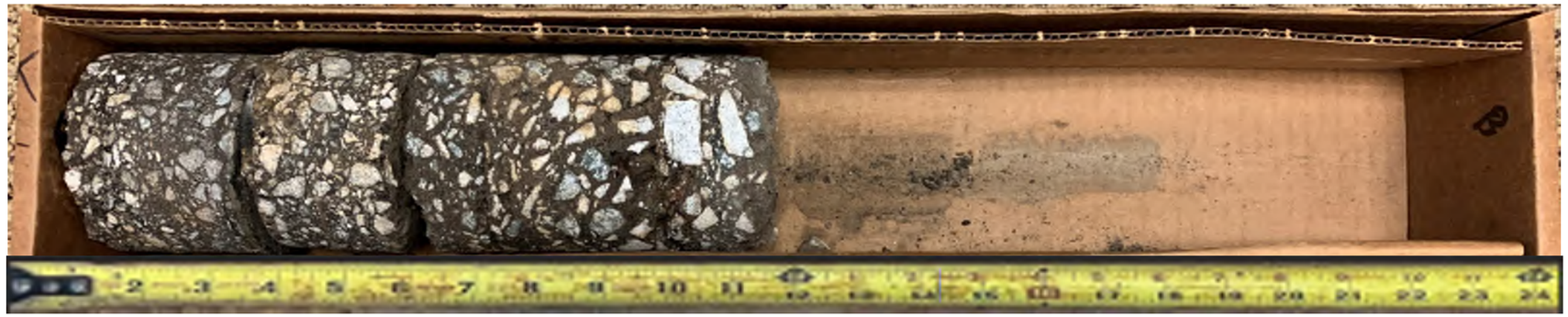
TOP **BOTTOM**

Y1_PC_1100_WB LN WDNG

TOP **BOTTOM**

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y1_PC_1900_EB PS



TOP **BOTTOM**

Y1_PC_1900 EB LN

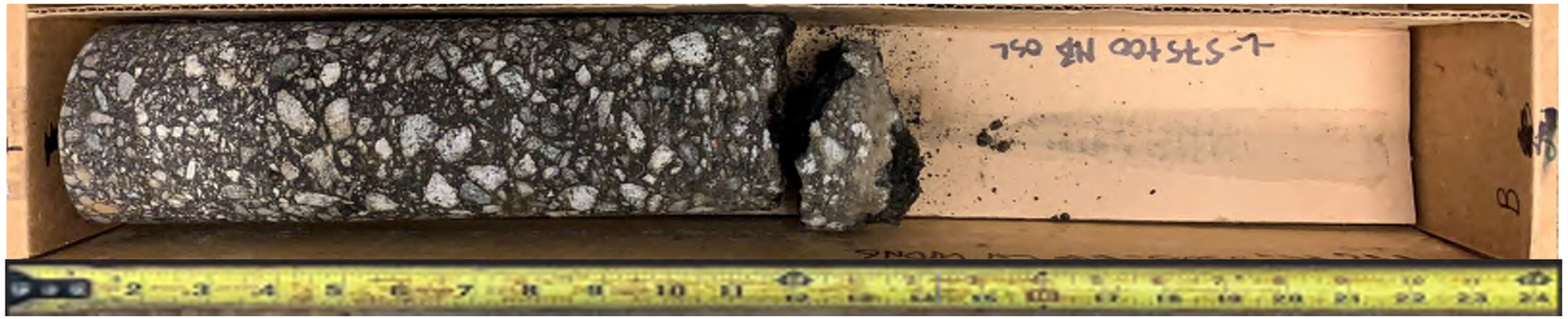
TOP **BOTTOM**

Y1_PC_1900 WB LN

TOP **BOTTOM**

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y1_PC_3350_EB LN WDNG

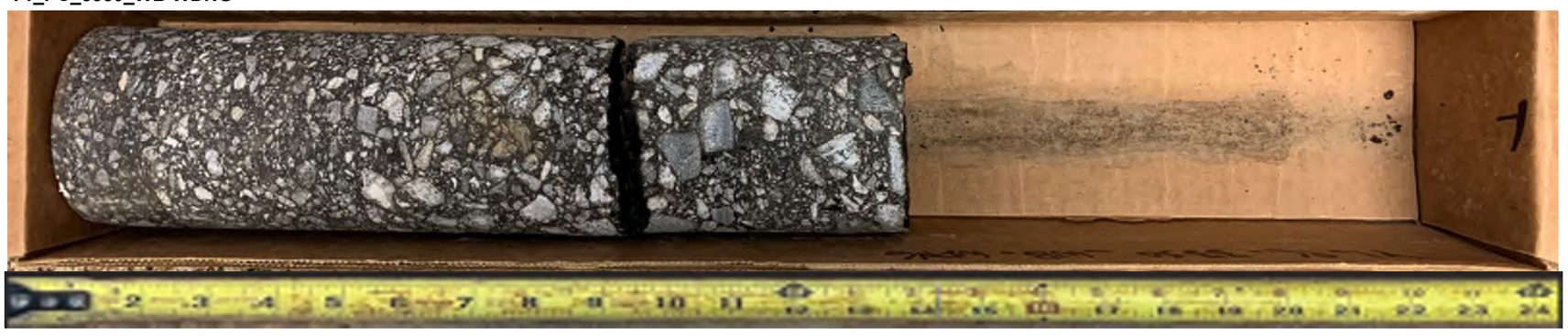


TOP BOTTOM

Y1_PC_3350_CENTER LTL

TOP BOTTOM

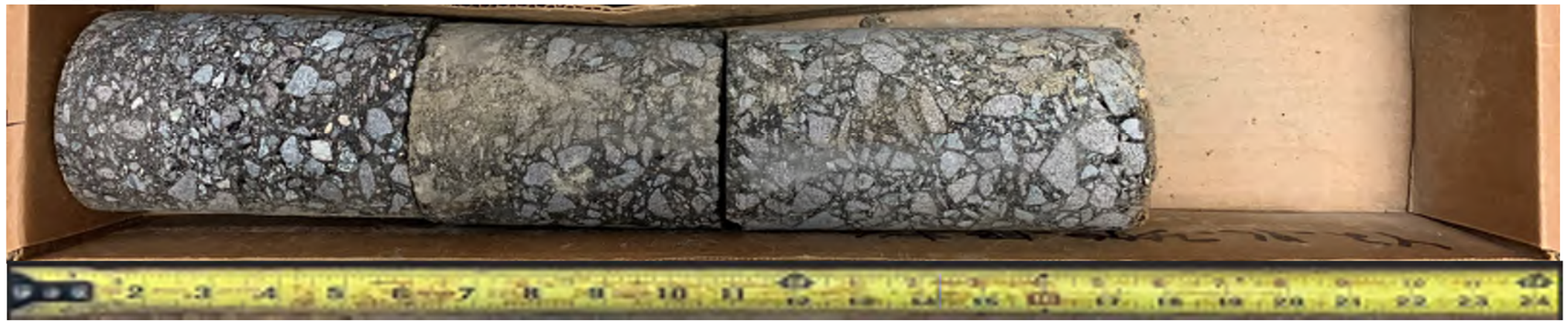
Y1_PC_3350_WB WDNG



TOP BOTTOM

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_3000_EB ISS

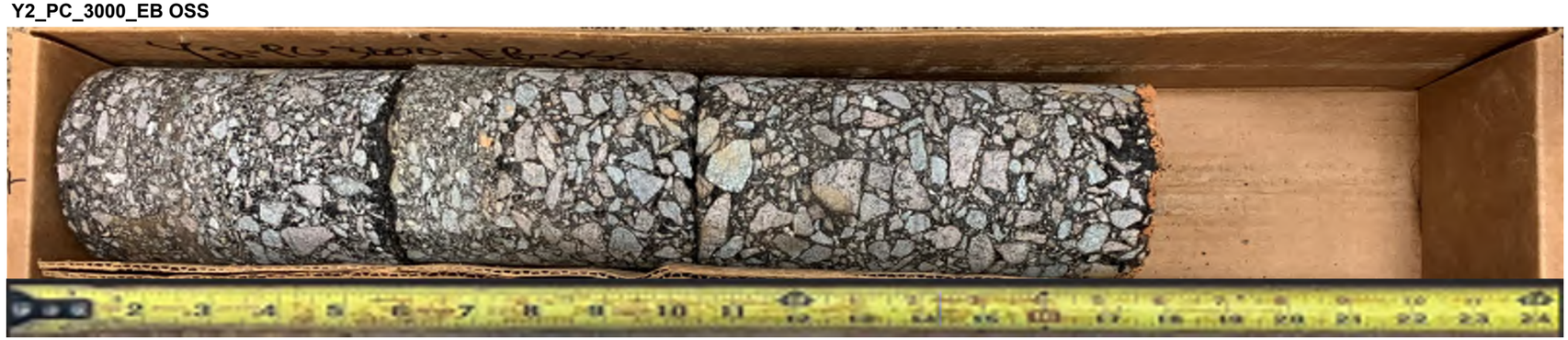


TOP **BOTTOM**

Y2_PC_3000_EB OSL

TOP **BOTTOM**

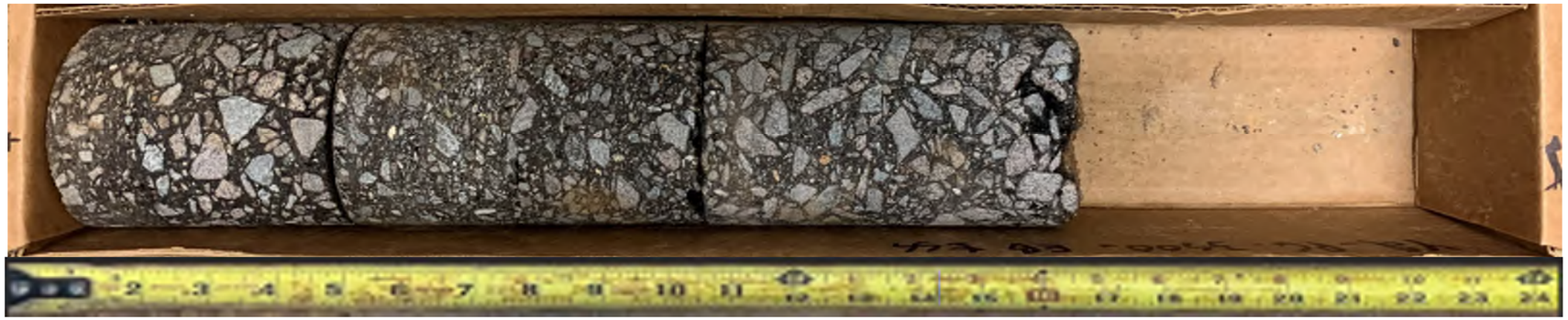
Y2_PC_3000_EB OSS



TOP **BOTTOM**

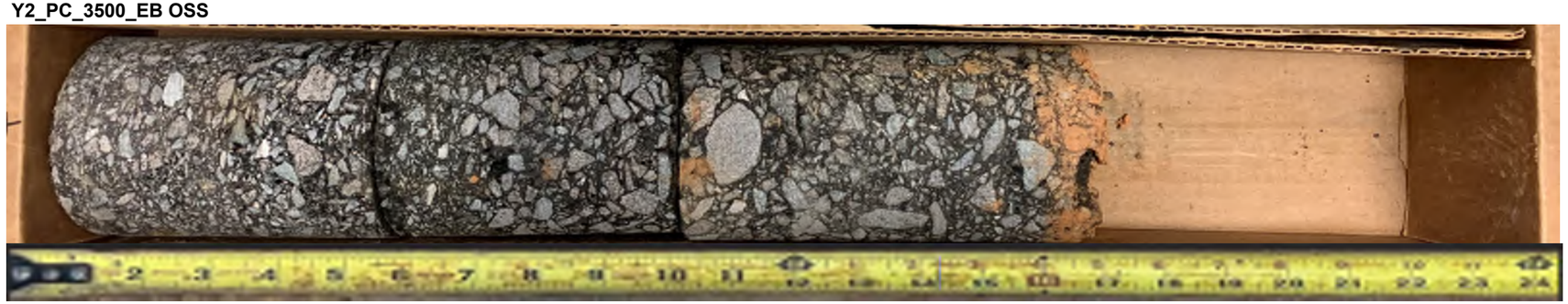
PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_3500_EB ISS



TOP **BOTTOM**

Y2_PC_3500_EB OSS



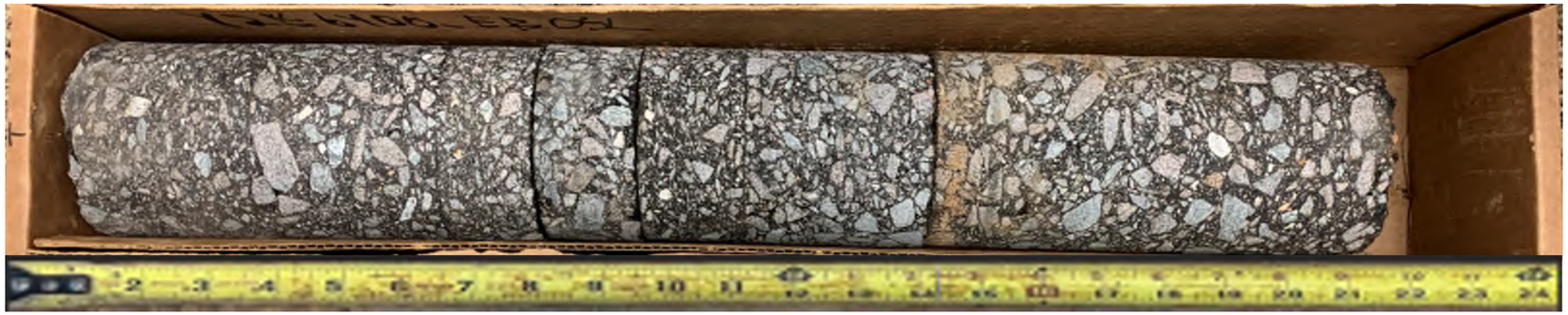
TOP **BOTTOM**

Y2_PC_6400_EB ISS

TOP **BOTTOM**

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_6400_EB OSL



TOP **BOTTOM**

Y2_PC_6400_EB OSS

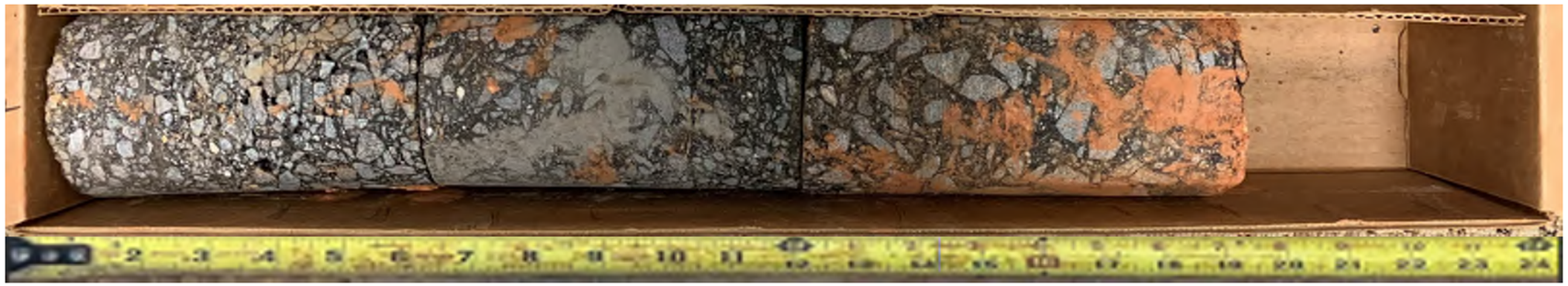
TOP **BOTTOM**

Y2_PC_2000_WB ISS

TOP **BOTTOM**

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_2000_WB OSS



TOP **BOTTOM**

Y2_PC_2500_WB ISS

TOP **BOTTOM**

Y2_PC_2500_WB OSL

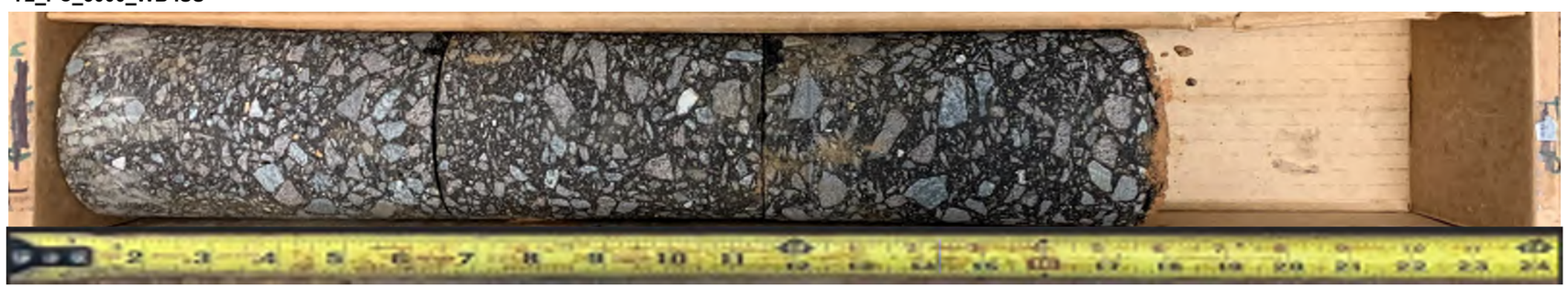
TOP **BOTTOM**

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_2500_WB_OSS

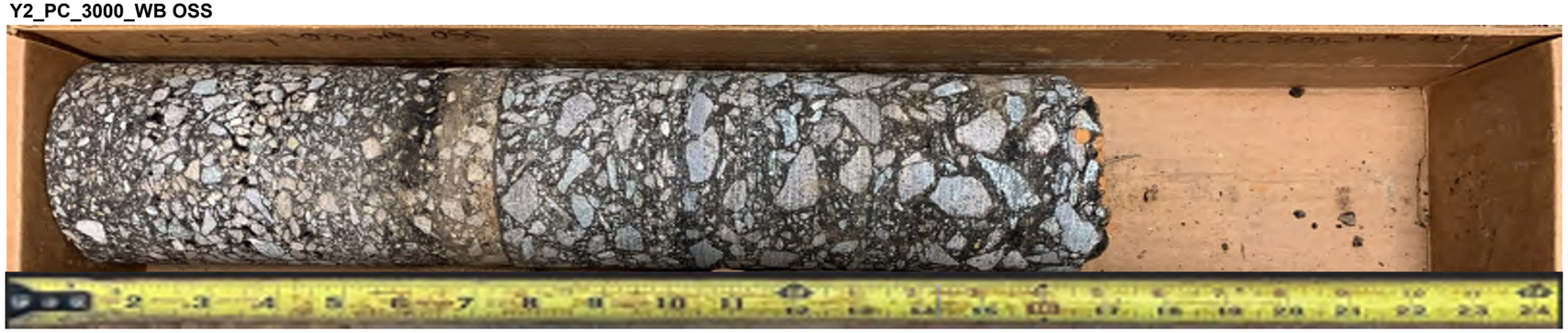
TOP **BOTTOM**

Y2_PC_3000_WB ISS



TOP **BOTTOM**

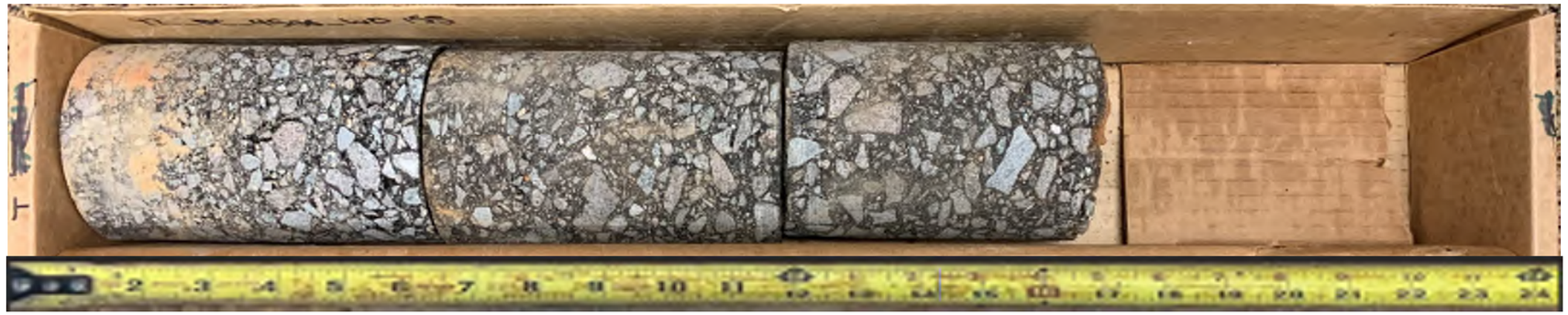
Y2_PC_3000_WB OSS



TOP **BOTTOM**

PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_4500_WB ISS

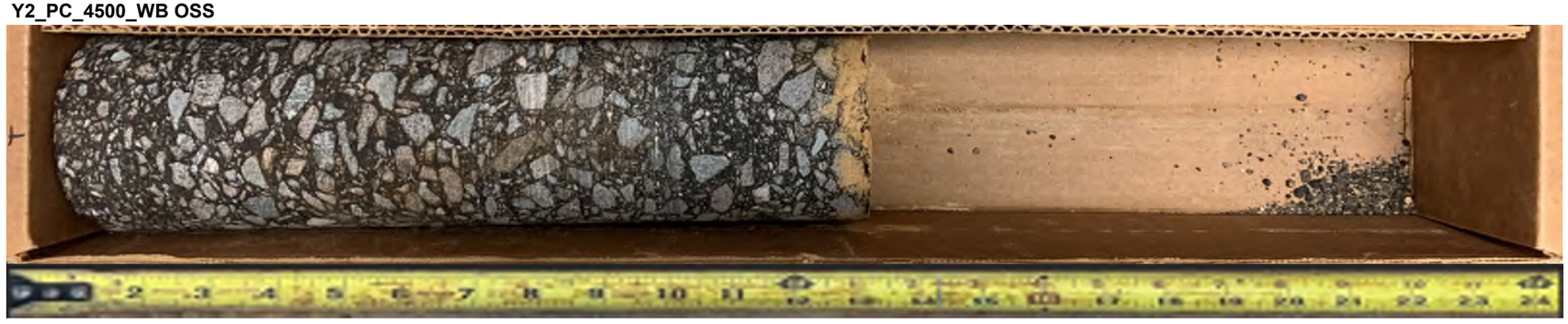


TOP **BOTTOM**

Y2_PC_4500_WB ISL

TOP **BOTTOM**

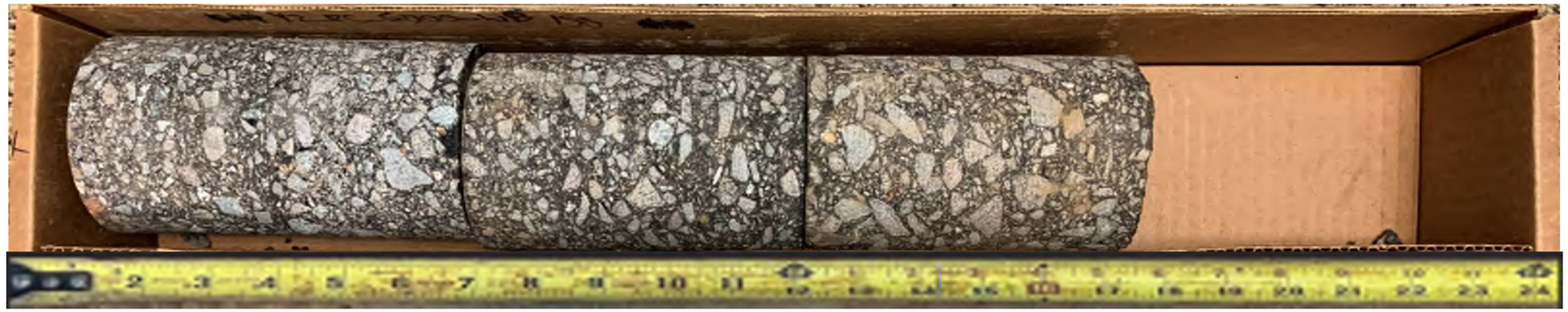
Y2_PC_4500_WB OSS



TOP **BOTTOM**

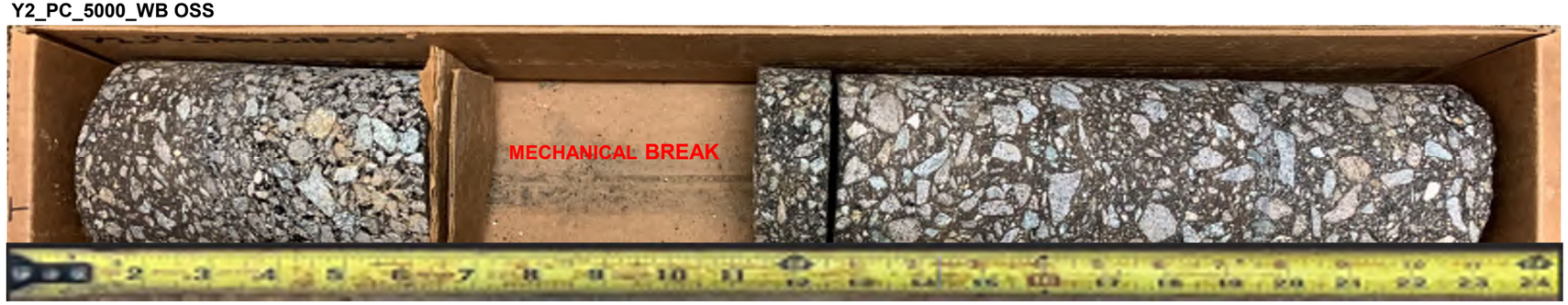
PAVEMENT CORE PHOTOGRAPHS
TIP No. U-6187|Davie County, NC

Y2_PC_5000_WB ISS



TOP **BOTTOM**

Y2_PC_5000_WB OSS



TOP **BOTTOM**

Y4_PC_1370_EB LN

TOP **BOTTOM**

223294 CATLIN Engineers and Scientists	PROJECT REFERENCE	SHEET
	U-6187	

LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS															
Proj. Sample Number	**SS-37**	**SS-25**	**SS-15**	**SS-6**	**SS-1**	**SS-49**	**SS-55**	**SS-57**	**SS-62**	**SS-71**	**SS-82**	**SS-86**	**SS-100**	**SS-109**	**SS-112**
Lab Sample Number	SS-37	SS-25	SS-15	SS-6	SS-1	SS-49	SS-55	SS-57	SS-62	SS-71	SS-82	SS-86	SS-100	SS-109	SS-112
Retained #4 Sieve %	0.1	0.1	0	0	3.0	0.1	0	0.5	0.8	0	0	0	0	0	0.1
Passing #10 Sieve %	99.5	99.7	100	99.9	94.8	99.9	100	98.8	98.6	99.9	100	100	100	100	99.8
Passing #40 Sieve %	92	91	98	98	84	99	89	92	92	96	96	98	90	94	94
Passing #200 Sieve %	66	36	85	78	50	91	53	65	73	85	61	83	48	56	67
MINUS NUMBER 10 FRACTION															
SOIL MORTAR - 100%															
Coarse Sand Ret.-#60 %	15.5	22.6	5.0	4.4	17.2	1.9	20.9	12.5	12.7	7.0	10.9	4.9	19.6	12.1	13.4
Fine Sand Ret.-#270 %	23.3	49.0	12.9	22.1	35.4	9.5	32.5	25.7	15.9	10.5	37.3	16.6	39.6	42.4	26.2
Silt 0.05 - 0.005mm %	18.9	16.6	16.1	23.5	25.1	17.1	18.2	18.6	19.7	10.7	20.3	23.2	22.1	28.3	26.4
Clay <0.005mm %	42.3	11.8	65.9	50.0	22.3	71.5	28.4	43.2	51.7	71.8	31.5	55.3	18.7	17.2	34.0
Liquid Limit (LL)	54	43	73	71	36	87	50	43	52	66	50	68	42	51	50
Plasticity Index (PI)	20	4	43	21	10	47	11	19	23	22	8	29	6	4	13
AASHTO Classification /Group Index	**A-7-5(13)**	**A-5(0)**	**A-7-5(41)**	**A-7-5(23)**	**A-4(3)**	**A-7-5(52)**	**A-7-5(5)**	**A-7-6(11)**	**A-7-6(18)**	**A-7-5(25)**	**A-5(6)**	**A-7-5(29)**	**A-5(2)**	**A-5(3)**	**A-7-5(10)**
Organic Content %	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**8.6**	N/A	N/A	N/A	N/A	N/A	N/A
Station	18+00	20+50	22+50	26+50	28+50	33+00	35+00	37+00	39+00	43+00	47+00	49+00	51+00	53+00	55+00
Offset	0ft CL	0ft CL	0ft CL	0ft CL	0ft CL	0ft CL	0ft CL	0ft CL	0ft CL	0ft CL	30ft RT	30ft LT	30ft RT	30ft LT	30ft RT
Alignment															
Boring Identification	**L-1800**	**L-2050**	**L-2250**	**L-2650**	**L-2850**	**L-3300**	**L-3500**	**L-3700**	**L-3900**	**L-4300**	**L-4700**	**L-4900**	**L-5100**	**L-5300**	**L-5500**
Depth (FT)	3.7	13.5	3.5	3.4	0.0	3.5	6.5	0.0	0.0	3.5	8.5	3.5	8.5	18.5	3.5
to	5.2	15.0	5.0	4.9	1.5	5.0	8.0	1.5	1.5	5.0	10.0	5.0	10.0	20.0	5.0
Field Moist. Content %	13	40	29	37	18	42	35	19	29	24	22	27	30	24	22
Tested By	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON
Submitted By	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL
Date Submitted	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23

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Michael D. Mason
Laboratory Manager

Report Date: 12/18/2023

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223294 CATLIN Engineers and Scientists	PROJECT REFERENCE	SHEET
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LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS															
Proj. Sample Number	SS-116	SS-125	SS-197	SS-130	SS-203	SS-205	SS-133	SS-145	SS-149	SS-151	SS-163	SS-207	SS-208	SS-211	SS-232
Lab Sample Number	SS-116	SS-125	SS-197	SS-130	SS-203	SS-205	SS-133	SS-145	SS-149	SS-151	SS-163	SS-207	SS-208	SS-211	SS-232
Retained #4 Sieve %	0	1.9	0.6	0	0.4	0.3	0.6	2.6	0	1.1	0.1	8.3	0	0	5.3
Passing #10 Sieve %	100	98.1	90.6	100	95.4	95.0	97.6	90.3	99.9	94.9	99.0	86.3	100	97.7	84.2
Passing #40 Sieve %	83	84	57	98	82	69	88	78	99	80	87	72	99	79	56
Passing #200 Sieve %	45	38	34	60	47	48	69	60	91	50	39	47	67	26	34
MINUS NUMBER 10 FRACTION															
SOIL MORTAR - 100%															
Coarse Sand Ret.-#60 %	27.7	29.1	46.5	6.4	22.4	35.1	14.9	19.1	2.3	23.8	29.7	25.9	4.9	37.9	44.0
Fine Sand Ret.-#270 %	34.4	39.6	20.9	44.1	37.1	20.3	17.5	18.1	9.3	30.4	38.6	22.9	37.6	41.4	18.6
Silt 0.05 - 0.005mm %	27.0	22.5	19.0	30.6	24.2	30.8	23.5	19.9	48.1	31.5	22.7	24.1	32.5	12.4	13.0
Clay <0.005mm %	10.9	8.8	13.6	19.0	16.3	13.8	44.2	42.9	40.3	14.4	9.1	27.1	25.0	8.3	24.4
Liquid Limit (LL)	36	NP	32	56	55	38	49	53	56	NP	31	NEM	58	NP	49
Plasticity Index (PI)	3	NP	3	11	9	4	19	26	18	NP	3	-	9	NP	23
AASHTO Classification /Group Index	A-4(0)	A-4(0)	A-4(0)	A-7-5(8)	A-5(4)	A-4(1)	A-7-5(14)	A-7-6(16)	A-7-5(22)	A-4(0)	A-4(0)	()	A-5(9)	A-2-4(0)	A-7-6(4)
Organic Content %	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**10.2**	N/A	N/A	N/A
Station	55+00	57+00	58+50	59+00	59+50	59+50	61+00	63+00	63+00	63+00	65+00	67+00	67+00	67+00	69+00
Offset	30ft RT	30ft LT	0ft CL	0ft CL	0ft CL	0ft CL	40ft LT	30ft RT	30ft RT	30ft RT	10ft LT	80ft RT	80ft RT	80ft RT	70ft LT
Alignment															
Boring Identification	**L-5500**	**L-5700**	**L-5850**	**L-5900**	**L-5950**	**L-5950**	**L-6100**	**L-6300**	**L-6300**	**L-6300**	**L-6500**	**L-6700**	**L-6700**	**L-6700**	**L-6900**
Depth (FT)	18.5	18.5	13.5	6.5	8.5	18.5	0.0	0.0	13.5	23.5	43.5	0.0	3.5	13.5	8.5
to	20.0	20.0	15.0	8.0	10.0	20.0	1.5	1.5	15.0	25.0	45.0	1.5	5.0	15.0	10.0
Field Moist. Content %	21	29		40	26	57	25	24	40	37	23		56	55	22
Tested By	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON
Submitted By	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL
Date Submitted	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23

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Michael D. Mason
Laboratory Manager

Report Date: 12/18/2023

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223294 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
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LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS															
Proj. Sample Number	SS-165	SS-167	SS-172	SS-241	SS-246	SS-249									
Lab Sample Number	SS-165	SS-167	SS-172	SS-241	SS-246	SS-249									
Retained #4 Sieve %	0.2	0	0	1.0	0	7.8									
Passing #10 Sieve %	97.6	99.6	100	97.2	100	84.1									
Passing #40 Sieve %	87	82	98	87	92	56									
Passing #200 Sieve %	59	38	44	56	48	13									
MINUS NUMBER 10 FRACTION															
SOIL MORTAR - 100%															
Coarse Sand Ret.-#60 %	18.1	32.0	14.5	18.5	20.7	56.6									
Fine Sand Ret.-#270 %	25.4	37.2	49.1	29.3	40.9	31.7									
Silt 0.05 - 0.005mm %	23.9	21.8	23.0	21.8	29.4	9.4									
Clay <0.005mm %	32.6	8.9	13.4	30.4	9.0	2.4									
Liquid Limit (LL)	45	49	44	38	33	NP									
Plasticity Index (PI)	17	4	9	14	5	NP									
AASHTO Classification /Group Index	A-7-6(9)	A-5(0)	A-5(2)	A-6(6)	A-4(0)	A-2-4(0)									
Organic Content %	**5.0**	N/A	N/A	N/A	N/A	N/A									
Station	66+00	66+00	66+00	66+00	66+00	66+00									
Offset	120ft LT	120ft LT	120ft LT	120ft RT	120ft RT	120ft RT									
Alignment															
Boring Identification	LCULV1_LT	LCULV1_LT	LCULV1_LT	LCULV1_RT	LCULV1_RT	LCULV1_RT									
Depth (FT)	0.0	6.5	28.5	0.0	18.5	33.5									
to	1.5	8.0	30.0	1.5	20.0	33.9									
Field Moist. Content %	59	49	41	53	31	12									
Tested By	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON									
Submitted By	QHILL	QHILL	QHILL	QHILL	QHILL	QHILL									
Date Submitted	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23	11/22/23									

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Laboratory Manager

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PROJECT REFERENCE	SHEET
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LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS

Proj. Sample Number	SS-394	S-29	SS-1067	SS-360	SS-358	SS-405	SS-265	SS-106	S-27	S-24	S-25	S-22	S-23	S-21	SS-9006
Lab Sample Number	SS-394	S-29	SS-1067	SS-360	SS-358	SS-405	SS-265	SS-106	S-27	S-24	S-25	S-22	S-23	S-21	SS-9006
Retained #4 Sieve %	0	0.9	0	7.5	0.6	0	0	0	0.3	0.1	0	2.5	1.9	3.4	0.2
Passing #10 Sieve %	100	95.2	100	89.5	98.5	100	100	99.8	99.7	99.9	99.5	90.2	93.1	96.1	99.4
Passing #40 Sieve %	96	78	96	77	88	99	99	97	97	98	95	70	75	89	94
Passing #200 Sieve %	46	46	61	54	66	87	89	84	78	67	70	43	43	53	77
MINUS NUMBER 10 FRACTION															
SOIL MORTAR - 100%															
Coarse Sand Ret.-#60 %	16.2	28.2	12.8	21.2	15.1	2.5	2.8	5.9	7.5	6.6	8.7	28.9	27.6	17.2	10.1
Fine Sand Ret.-#270 %	46.2	29.0	34.0	21.7	22.3	16.8	10.6	22.3	18.9	58.1	26.0	28.4	32.2	34.4	15.5
Silt 0.05 - 0.005mm %	26.1	23.7	42.9	29.4	35.7	43.5	48.9	12.6	26.3	0.5	20.6	20.1	22.6	26.4	37.7
Clay <0.005mm %	11.5	19.2	10.3	27.7	26.8	37.2	37.8	59.2	47.3	34.8	44.8	22.6	17.6	22.0	36.7
Liquid Limit (LL)	54	23	53	47	66	63	72	73	61	43	55	31	26	27	50
Plasticity Index (PI)	5	8	8	20	26	16	33	35	31	21	27	17	10	7	16
AASHTO Classification /Group Index	A-5(1)	A-4(1)	A-5(6)	A-7-6(11)	A-7-5(19)	A-7-5(21)	A-7-5(36)	A-7-5(35)	A-7-5(27)	A-7-6(13)	A-7-6(19)	A-6(4)	A-4(2)	A-4(2)	A-7-5(15)
Organic Content %	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station	72+09	13+00	10+50	13+50	15+50	21+50	20+00	12+50	11+00	19+00	19+00	33+50	33+50	35+00	30+00
Offset	21ft LT	5ft RT	20ft RT	30ft LT	35ft RT	25ft RT	15ft LT	25ft RT	2ft RT	6ft RT	1ft RT	7ft RT	3ft RT	7ft LT	14ft RT
Alignment															
Boring Identification	EB2_A	L_PC_1300_EB LN	LPB_1050	RPB_1350	RPB_1550	RPB_2150	RPD_2000	Y1_1250	Y1_PC_1100 WB LN WDNG	Y1_PC_1900 EB LN	Y1_PC_1900 EB PS	Y1_PC_3350 CENTER LTL	Y1_PC_3350 EB LN WDNG	Y1_PC_3500 WB WDNG	Y2_AP_3000 WB IGM
Depth (FT)	34.4	1.2	18.5	0.0	13.5	8.5	8.5	3.5	2.0	2.5	2.5	2.5	3.0	2.0	3.5
to	35.9	2.0	20.0	1.5	15.0	10.0	10.0	5.0	2.5	3.0	3.0	3.0	3.5	2.3	5.0
Field Moist. Content %	66	9	58	40	62	50	70	31	32	27	30	15	18	20	33
Tested By	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON
Submitted By	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE
Date Submitted	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24

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Report Date: 1/30/2024

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223294 CATLIN Engineers and Scientists

PROJECT REFERENCE	SHEET
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LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS

Proj. Sample Number	SS-1015	SS-523	SS-1010	SS-1011	SS-519	SS-1022	S-12	S-06	S-04	S-10	S-15	S-08	S-02	S-07	S-17
Lab Sample Number	SS-1015	SS-523	SS-1010	SS-1011	SS-519	SS-1022	S-12	S-06	S-04	S-10	S-15	S-08	S-02	S-07	S-17
Retained #4 Sieve %	1.9	2.4	6.9	1.2	5.1	0	0	0	0.2	0.3	0.1	2.9	0	0.2	1.8
Passing #10 Sieve %	95.8	93.8	89.9	86.8	90.7	99.8	100	99.8	99.2	99.2	98.7	95.8	100	97.7	97.1
Passing #40 Sieve %	87	83	78	61	83	99	93	99	94	92	92	90	99	88	88
Passing #200 Sieve %	74	64	60	42	64	87	65	90	79	72	73	61	87	70	67
MINUS NUMBER 10 FRACTION															
SOIL MORTAR - 100%															
Coarse Sand Ret.-#60 %	12.7	17.3	20.4	38.1	13.5	2.6	15.1	2.7	9.1	11.7	10.8	12.2	3.2	15.2	15.5
Fine Sand Ret.-#270 %	12.8	19.1	15.4	17.7	21.7	15.9	25.7	10.2	15.8	21.0	20.6	30.7	15.4	16.1	19.7
Silt 0.05 - 0.005mm %	14.5	28.9	22.7	25.6	32.3	41.5	27.5	25.8	31.2	24.5	26.1	28.4	45.2	15.4	20.4
Clay <0.005mm %	59.9	34.8	41.5	18.7	32.5	40.0	31.7	61.3	43.9	42.8	42.5	28.7	36.2	53.3	44.4
Liquid Limit (LL)	67	52	59	42	51	62	42	87	65	58	55	60	54	58	52
Plasticity Index (PI)	28	24	30	13	18	22	18	41	31	24	18	19	14	31	28
AASHTO Classification /Group Index	A-7-5(25)	A-7-6(16)	A-7-6(20)	A-7-6(4)	A-7-5(13)	A-7-5(25)	A-7-6(10)	A-7-5(48)	A-7-5(28)	A-7-5(19)	A-7-5(15)	A-7-5(13)	A-7-5(17)	A-7-6(23)	A-7-6(19)
Organic Content %	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station	40+00	40+00	45+00	45+00	50+00	55+00	20+00	20+00	25+00	30+00	35+00	45+00	45+00	50+00	64+00
Offset	13ft RT	7ft RT	14ft RT	14ft RT	7ft RT	6ft RT	6ft RT	6ft RT	3ft RT	6ft RT	6ft RT	4ft RT	7ft RT	6ft RT	7ft RT
Alignment															
Boring Identification	Y2_AP_4000 EB IGM	Y2_AP_4000 EB ISS	Y2_AP_4500 EB OGM	Y2_AP_4500 EB OGM	Y2_AP_5000 EB ISS	Y2_AP_5500 EB ISS	Y2_PC_2000 WB ISS	Y2_PC_2000 WB OSS	Y2_PC_2500 WB OSL	Y2_PC_3000 WB ISS	Y2_PC_3500 EB OSS	Y2_PC_4500 WB ISL	Y2_PC_4500 WB OSS	Y2_PC_5000 WB ISS	Y2_PC_6400 EB OSS
Depth (FT)	3.5	1.3	0.0	3.5	2.0	1.5	2.0	3.0	2.0	3.0	2.5	2.3	2.0	2.0	2.5
to	5.0	1.8	1.5	5.0	3.5	3.0	2.5	4.0	2.5	3.5	3.0	2.8	2.5	2.5	5.0
Field Moist. Content %	26	16	32	21	21	37	25	54	31	31	30	31	40	24	27
Tested By	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON	MDMASON
Submitted By	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE	JROSE
Date Submitted	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24	01/09/24

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Laboratory Manager

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LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS															
Proj. Sample Number	SS-480	SS-487	SS-30	S-31											
Lab Sample Number	SS-480	SS-487	SS-30	S-31											
Retained #4 Sieve %	1.4	3.2	7.8	4.2											
Passing #10 Sieve %	97.0	93.4	86.9	92.4											
Passing #40 Sieve %	93	84	76	84											
Passing #200 Sieve %	52	59	56	67											
MINUS NUMBER 10 FRACTION															
SOIL MORTAR - 100%															
Coarse Sand Ret.-#60 %	10.0	16.7	19.8	14.5											
Fine Sand Ret.-#270 %	48.0	26.8	18.9	16.9											
Silt 0.05 - 0.005mm %	27.9	40.9	37.9	6.1											
Clay <0.005mm %	14.0	15.6	23.5	62.5											
Liquid Limit (LL)	33	39	55	55											
Plasticity Index (PI)	3	7	31	29											
AASHTO Classification /Group Index	A-4(0)	A-4(4)	A-7-6(19)	A-7-6(21)											
Organic Content %	N/A	N/A	N/A	N/A											
Station	29+55	32+05	11+50	13+70											
Offset	55ft RT	120ft RT	20ft LT	5ft RT											
Alignment															
Boring Identification	Y2CULV2_LT	Y2CULV2_RT	Y4_1150	Y4_PC_1370 EB LN											
Depth (FT)	6.0	18.5	0.0	1.8											
to	7.5	20.0	1.5	3.0											
Field Moist. Content %	42	41	22	30											
Tested By	MDMASON	MDMASON	MDMASON	MDMASON											
Submitted By	JROSE	JROSE	JROSE	JROSE											
Date Submitted	01/09/24	01/09/24	01/09/24	01/09/24											

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PROJECT REFERENCE NO.	SHEET NO.
U-6187	-

County: Davie
Description: U-6187 Baltimore Road Extension

SOIL TEST RESULTS

SAMPLE NO.	STATION	LOCATION	OFFSET	DEPTH INTERVAL (ft)	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
BS-01	-	Y2_AP_3500_WB OGS		0.0' - 5.0'	A-7-5 (4)	46	16	31.5	22.8	17.1	28.6	91.4	73.0	45.0	27.2	-
BS-03	-	Y2_AP_2500_WB GM	-	0.0' - 5.0'	A-7-5 (15)	56	17	11.4	14.8	21.7	52.1	96.2	89.5	73.4	29.2	-
BS-07	-	Y2_AP_5500_EB ISS	-	1.3' - 6.3'	A-7-5 (13)	55	19	15.1	17.7	27.6	39.6	95.2	85.6	68.0	29.1	-
BS-13	-	Y12850HA	-	0.0' - 5.0'	A-7-6 (9)	42	18	17.9	18.8	17.8	45.5	93.8	81.7	62.6	25.6	-

NP = Not Plastic
NT = Not Tested
ND = Not Determined

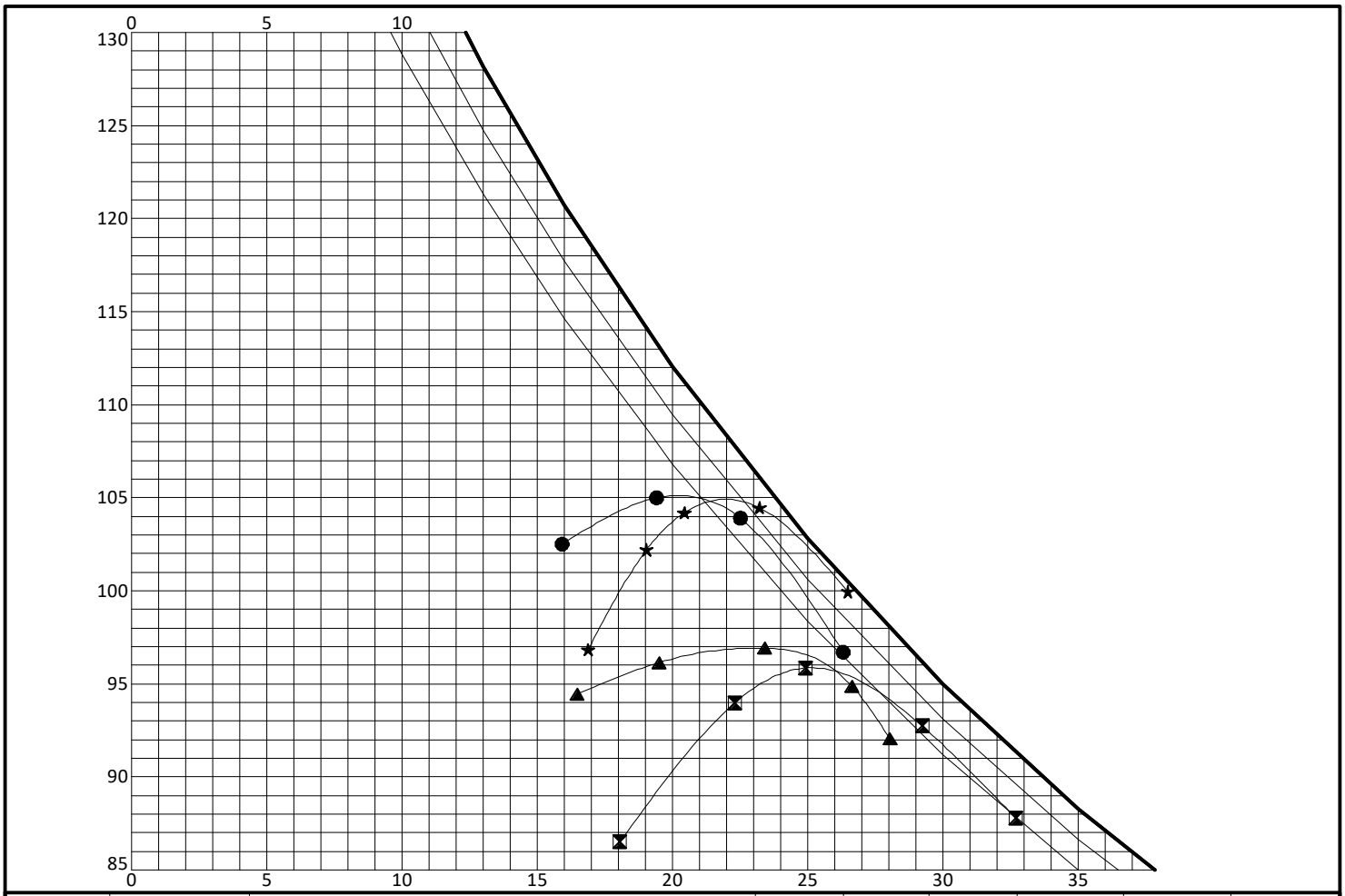
Henry Sanchez
Lab Manager, Certification No. 101-04-0603

W. Patrick Alton, P.E.
Soils Engineer

FROEHLING & ROBERTSON
Engineering Stability Since 1881

AASHTO MOISTURE-DENSITY RELATIONSHIP

Project No: 66C-0009
Client: Schnabel Engineering South, PC
Project: U-6187 Baltimore Road Extension
City/State: Winston-Salem, NC



Sample	Depth (ft)	Classification	LL	PL	PI	% GRAVEL (+ #10)	% SAND (#10 - #200)	% FINES (- #200)
● BS-01	0.0' - 5.0'	A-7-5 (4)	46	30	16	8.6	46.4	45.0
⊠ BS-03	0.0' - 5.0'	A-7-5 (13)	56	39	17	3.8	22.8	73.4
▲ BS-07	1.3' - 6.3'	A-7-5 (13)	55	36	19	4.8	27.2	68.0
★ BS-13	0.0' - 5.0'	A-7-6 (9)	42	24	18	6.2	31.2	62.6

Sample	Max Dry Density (pcf)	Optimum Moisture (%)	AASHTO	Sample Location	Natural Moisture (%)	Sample Notes
● BS-01	105.1	20.2	T-99 A	Y2_AP_3500_WB OGS	27.2	5.5 lb. Hammer, 12" Drop
⊠ BS-03	95.9	25.1	T-99 A	Y2_AP_2500_WB GM	23.1	5.5 lb. Hammer, 12" Drop
▲ BS-07	96.9	23.0	T-99 A	Y2_AP_5500_EB ISS	29.1	5.5 lb. Hammer, 12" Drop
★ BS-13	104.9	22.0	T-99 A	Y12850HA	25.6	5.5 lb. Hammer, 12" Drop

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AASHTO MOISTURE-DENSITY RELATIONSHIP

Project No: 66C-0009
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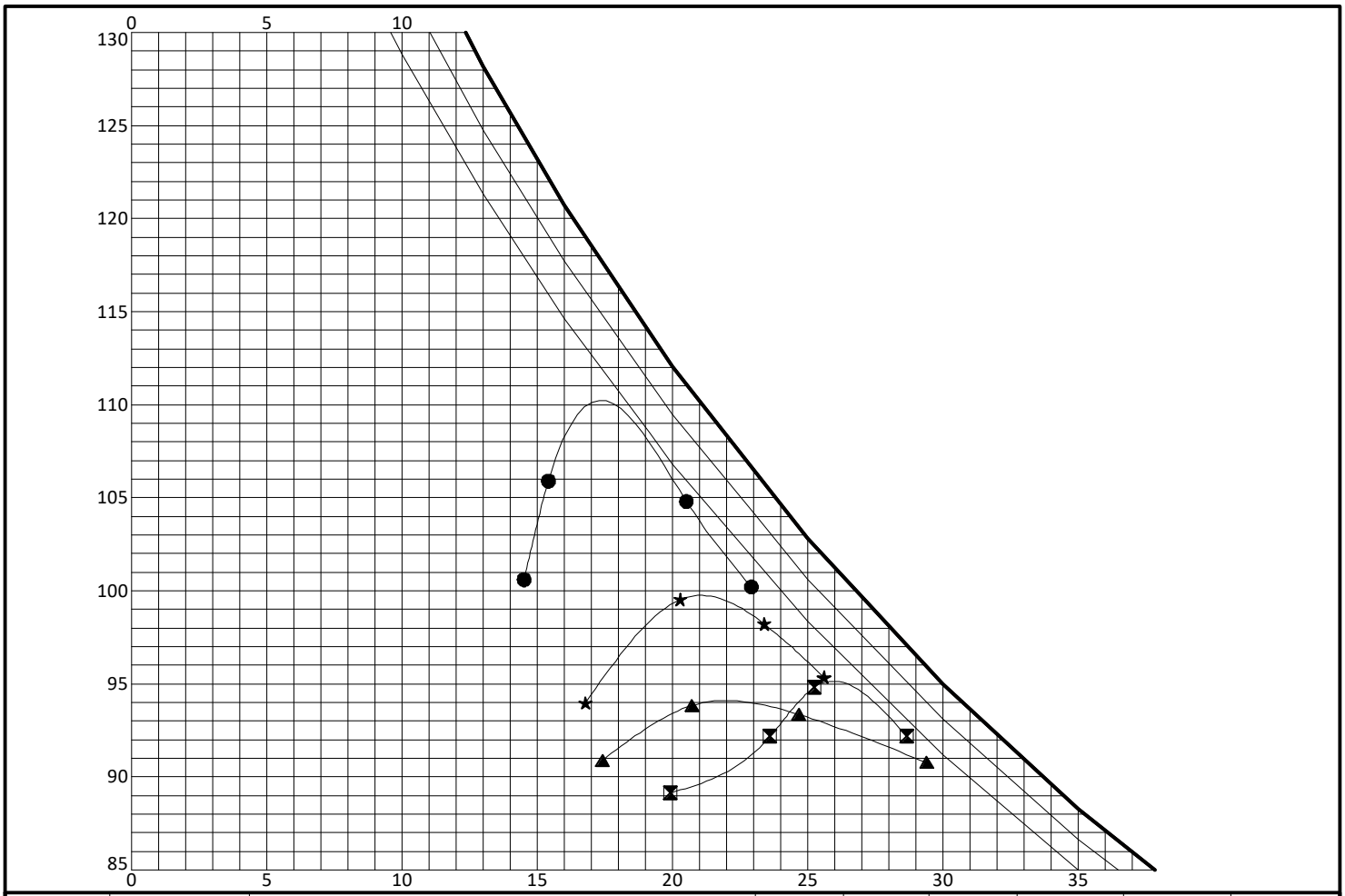

Sample	Depth (ft)	Classification	LL	PL	PI	% GRAVEL (+ #10)	% SAND (#10 - #200)	% FINES (- #200)
● BS-01	0.0' - 5.0'	A-7-5 (4)	46	30	16	8.6	46.4	45.0
⊠ BS-03	0.0' - 5.0'	A-7-5 (13)	56	39	17	3.8	22.8	73.4
▲ BS-07	1.3' - 6.3'	A-7-5 (13)	55	36	19	4.8	27.2	68.0
★ BS-13	0.0' - 5.0'	A-7-6 (9)	42	24	18	6.2	31.2	62.6

Sample	Max Dry Density (pcf)	Optimum Moisture (%)	AASHTO	Sample Location	Natural Moisture (%)	Sample Notes
● BS-01	110.2	17.3	T-134	Y2_AP_3500_WB OGS	27.2	10% Cement Added
⊠ BS-03	95.2	26.0	T-134	Y2_AP_2500_WB GM	23.1	4% Lime Added
▲ BS-07	94.1	22.0	T-134	Y2_AP_5500_EB ISS	29.1	4% Lime Added
★ BS-13	99.8	21.1	T-134	Y12850HA	25.6	4% Lime Added

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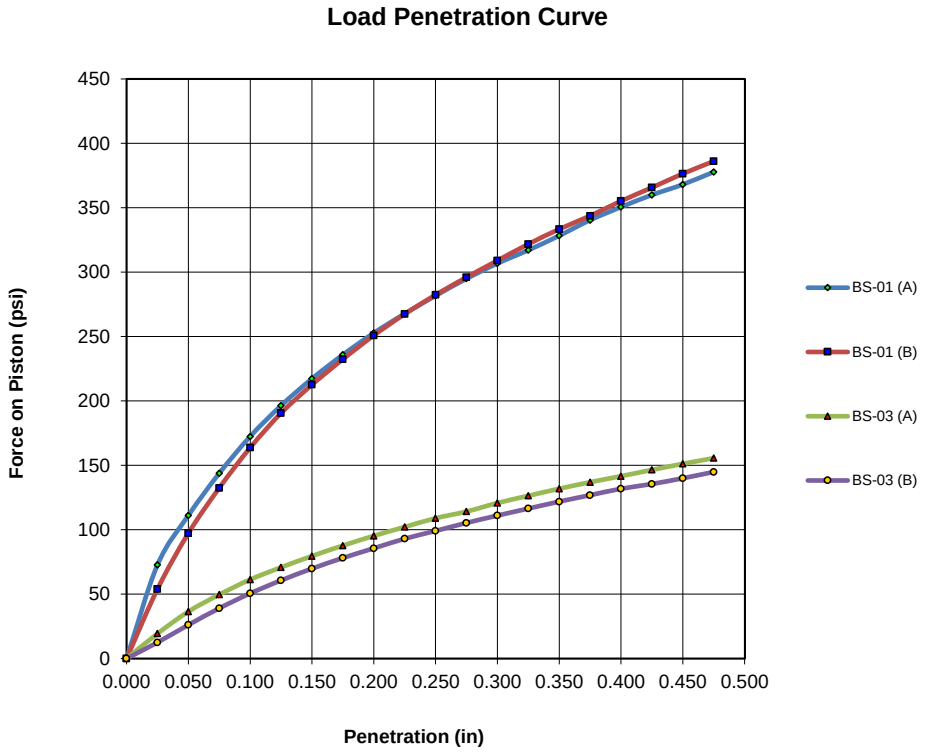
California Bearing Ratio Test Report - AASHTO T193



SOAKED CBR TEST RESULTS

Results	BS-01 (A)	BS-01 (B)	BS-03 (A)	BS-03 (B)	
0.1" Penetration	17.2	16.4	6.1	5.1	
0.2" Penetration	16.9	16.7	6.4	5.7	
Moisture Before Soaking (%)	20.1	20.1	27.0	27.0	
Dry Density Before Soaking (pcf)	104.7	104.4	95.5	95.6	
Moisture - Top 1" After Soaking (%)	22.6	22.5	29.3	30.2	
Surcharge Weight (lbs.)	10.0	10.0	10.0	10.0	

Project Information		Natural Moisture (%)		
Project Name:	Baltimore Road Extension (U-6187)	BS-01	27.2	
Client Name:	Schnabel Engineering South, PC	BS-03	23.1	
Project Number:	66C-0009	Percent Swell	A	B
Date Received:	1/12/2024	BS-01	0.070	0.120
Project Location:	Winston-Salem, NC	BS-03	0.420	0.200

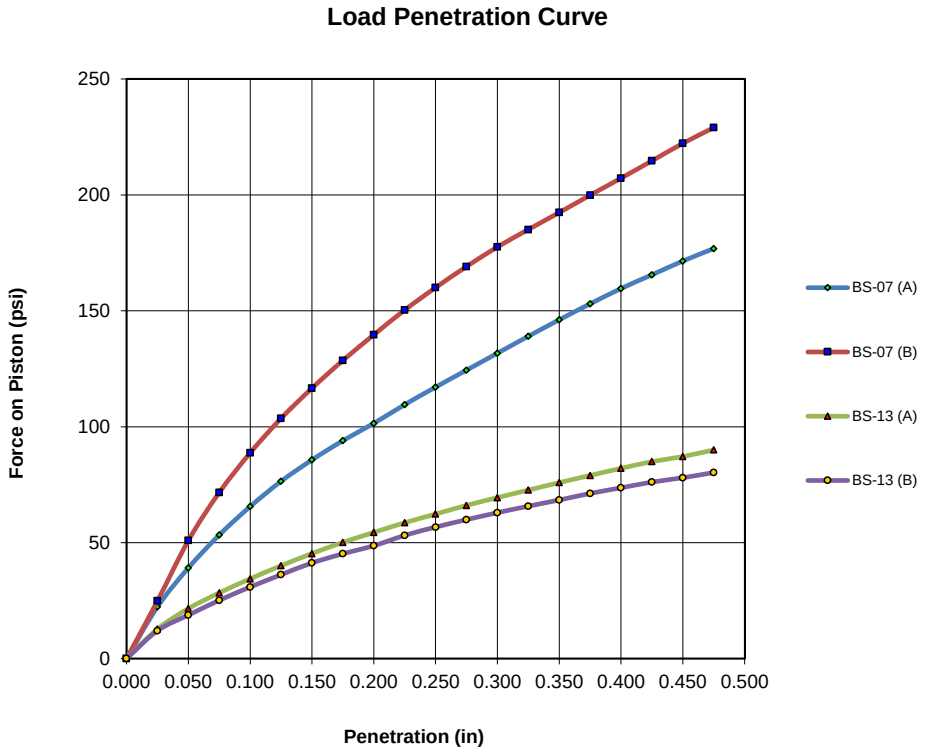
Sample Information		*Proctor Test Method (AASHTO T99)*		
Sample Number	Description	Max. Dry Density (pcf)	Optimum Moisture %	
BS-01	A-7-5 (4)	105.1	20.2	
BS-03	A-7-5 (13)	95.9	25.1	
Sample Number	Sample Location	AASHTO *(M145)*	% - #200	% +19mm
BS-01	Y2_AP_3500_WB OGS	A-7-5	45.0	2.0
BS-03	Y2_AP_2500_WB GM	A-7-5	73.4	0.9

Specific Gravity		Remarks	
BS-01	2.753	BS-01	Specific Gravity Measured
BS-03	2.746	BS-03	Specific Gravity Measured

Performed By: Henry Sanchez Date: 2/20/2024

FROEHLING & ROBERTSON
Engineering Stability Since 1881

California Bearing Ratio Test Report - AASHTO T193



SOAKED CBR TEST RESULTS					
Results	**BS-07 (A)**	**BS-07 (B)**	**BS-13 (A)**	**BS-13 (B)**	
0.1" Penetration	6.6	8.9	3.4	3.1	
0.2" Penetration	6.8	9.3	3.6	3.2	
Moisture Before Soaking (%)	22.8	22.8	24.5	24.5	
Dry Density Before Soaking (pcf)	98.0	99.3	100.8	99.8	
Moisture - Top 1" After Soaking (%)	32.5	30.0	24.5	25.3	
Surcharge Weight (lbs.)	10.0	10.0	10.0	10.0	

Project Information		**Natural Moisture (%)**		
Project Name:	Baltimore Road Extension (U-6187)	BS-07	29.1	
Client Name:	Schnabel Engineering South, PC	BS-13	25.6	
Project Number:	66C-0009	**Percent Swell**	**A**	**B**
Date Received:	2/20/2024	BS-07	1.280	1.080
Project Location:	Winston-Salem, NC	BS-13	0.050	0.360

Sample Information		***Proctor Test Method (AASHTO T99)***		
Sample Number	**Description**	**Max. Dry Density (pcf)**	**Optimum Moisture %**	
BS-07	A-7-5 (13)	96.9	23.0	
BS-13	A-7-6 (9)	104.9	22.0	
Sample Number	**Sample Location**	**AASHTO *(M145)***	**% - #200**	**% +19mm**
BS-07	Y2_AP_5500_EB ISS	A-7-5	68.0	0.2
BS-13	Y12850HA	A-7-6	62.6	2.0

Specific Gravity		**Remarks**	
BS-07	2.677	BS-07	Specific Gravity Measured
BS-13	2.776	BS-13	Specific Gravity Measured

Performed By: Henry Sanchez Date: 2/20/2024

Summary of Soil-Lime and Soil-Cement Unconfined Compression Testing

Baltimore Road Extension U-6187

F&R Project No. 66C-0009

Sample	Location	Classification	Max Dry Density (pcf)	Optimum Moisture (%)	Additive (%)	Specimen	Unit Wt. (pcf)	Moisture (%)	Compaction (%)	Strength (psi)	Avg Strength (psi)
BS-01	Y2_AP_3500_WB OGS	A-7-5	110.2	17.3	Cement 8%	A	104.8	17.4	95.1	150	135
						B	104.0		94.4	120	
					Cement 10%	A	105.1	17.6	95.4	200	215
						B	107.7		97.7	230	
BS-03	Y2_AP_2500_WB GM	A-7-5	95.2	26.0	Lime 3%	A	94.0	25.3	98.7	30	35
						B	94.0		98.7	40	
					Lime 5%	A	92.3	26.9	97.0	40	40
						B	90.9		95.5	40	
BS-07	Y2_AP_5500_EB ISS	A-7-5	94.1	22.0	Lime 3%	A	95.4	24.4	101.4	50	50
						B	95.1		101.1	50	
					Lime 5%	A	93.3	26.9	99.1	50	45
						B	92.0		97.8	40	
BS-13	Y12850HA	A-7-6	99.8	21.1	Lime 3%	A	101.2	20.6	101.4	40	40
						B	99.8		100.0	40	
					Lime 5%	A	99.4	22.0	99.6	40	40
						B	98.9		99.1	40	