STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

October 12, 2021

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

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

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

DocuSigned by:
John Pilipchuk
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STATE PROJECT: 38332.1.FS1 (B-3186, B-5898)

COUNTY: Haywood

DESCRIPTION: US 23/US 74/US 19 (Great Smoky Mountain Hwy) from west of NC 209 (Crabtree Rd.) to east of Russ Ave.

SUBJECT: Pavement and Subgrade Investigation Report

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

The proposed work consists of widening the inside and outside of the existing four-lane divided roadway to construct a six-lane roadway with full-depth paved shoulders.

The subgrade beneath the existing roadway consists of residual and roadway embankment soils. Predominant soil types are micaceous, sandy silt (A-4) and silty clays (A-7-5, A-7-6).

Anticipated borrow will likely consist of sandy silt (A-4) and silty clay (A-7).

The length of this project is 1.2579 miles.

The existing pavement is in good condition with low to moderate severity transverse and longitudinal cracking present.

The project mainline is approximately 25 percent embankment.

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ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

AREAS OF SPECIAL GEOTECHNICAL INTEREST

A. Highly Plastic Clays:
Cohesive soils with a PI of 26 or greater were not encountered on this project.

B. Ground Water or Trapped Water within the Pavement:
Neither ground water nor trapped water were encountered during this investigation.

C. Soils with a High Moisture Content:
Locations of soils that were classified as wet to saturated.

LINE	STATION AND OFFSET	MOISTURE CONTENT
-L-	35+34 EB OSS	25.4%

D. Auger Refusal
Locations of Auger refusal within 6 feet of proposed subgrade.

LINE	STATION AND OFFSET
-L-	20+09 WB OSS
-L-	76+90 EB OSS, EB OSL
-Y1LT-	13+66 WB OSL

JLP/JBB/LMH

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Jeffrey Brian Barfield

DocuSigned by:
Jeffrey Brian Barfield 10/13/2021
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REFERENCE: B-3186/B-5898

PROJECT: 38332

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3186/B-5898	1	42

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *HAYWOOD*

PROJECT DESCRIPTION *US 23-74 BRIDGE 155 & 158 OVER RICHLAND CREEK ON US 23-74 NORTHBOUND LANE (COMBINE WITH B-5898)*

PAVEMENT AND SUBGRADE INVESTIGATION

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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

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

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

PERSONNEL

M. BREWER

D. UNDERWOOD

R. KRAL

INVESTIGATED BY *CG2*

DRAWN BY *M. BREWER, P.E.*

CHECKED BY *R. KRAL, P.E.*

SUBMITTED BY *CG2*

DATE *SEPTEMBER 2021*

Prepared in the Office of:

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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	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
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] MOBILE B29
- [ ] _____

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

HAMMER TYPE:
- [ ] AUTOMATIC [ ] MANUAL

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

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: N/A

ELEVATION: FEET

NOTES:

ROADWAY DESIGN FILES DATED 7/29/2021 PROVIDED BY NCDOT

- PAVEMENT CORE WITH DCP
- BULK SAMPLE

DATE: 8-15-14

Tip No. B-3186/B-5898 | WBS No. 38332.1.FS1| Haywood County

ABBREVIATIONS

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

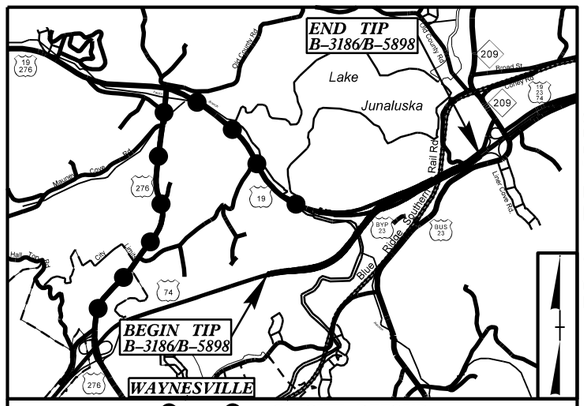
C = Cut
F = Fill
DCP = Dynamic Cone Penetrometer
M = Moist
W = Wet
N/A = Not Observed
NSR = No Sample Recovered
Ref- = Soil Reference Sample
S- = Soil Grab Sample
SS- = Split Spoon Sample
RE = Roadway Embankment
F. = Fine
Cse. = Coarse
ABC = Aggregate Base Course
STBC = Soil Type Base Course

09/08/09

TIP PROJECT: B-3186 /B-5898

CONTRACT:

See Sheet 1-A For Conventional Symbols



VICINITY MAP

75% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3186 /B-5898	3	42

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38332.1.FS.1	BRNHP-0023(32)	P.E.
48030.1.FS.1	BRSTP-0019(49)	P.E.
38332.2.1	N/A	RW/UTILITY
48030.2.1	N/A	RW/UTILITY

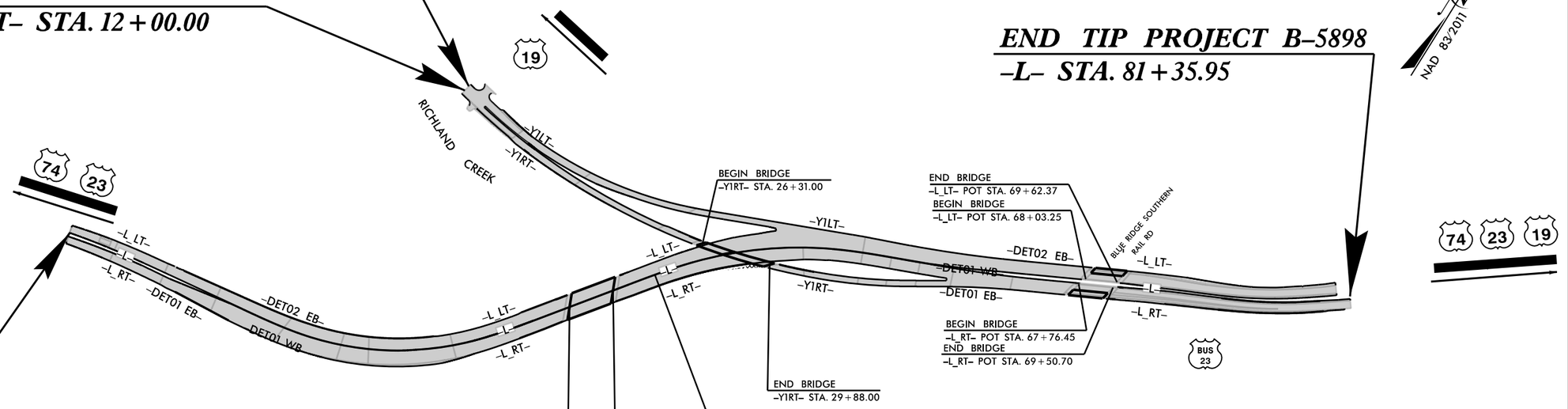
LOCATION: US 23/US 74/US 19 (GREAT SMOKY MOUNTAIN HWY) FROM WEST OF NC 209(CRABTREE RD.) TO EAST OF RUSS AVE.

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND UTILITIES.

BEGIN CONSTRUCTION
–YILT– STA. 11+99.83

BEGIN CONSTRUCTION
–YIRT– STA. 12+00.00

END TIP PROJECT B–5898
–L– STA. 81+35.95



BEGIN TIP PROJECT B–3186
–L– STA. 15+00.00

END TIP PROJECT B–3186
BEGIN TIP PROJECT B–5898
–L– STA. 46+11.55

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2022 = 47,300
ADT 2042 = 59,400
K = 8 %
D = 55 %
T = 5 % *
V = 65 MPH
* TTST = 2% DUAL 3%

FUNC CLASS = FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–3186 /B–5898 = 1.181 miles
TOTAL STRUCTURES TIP PROJECT B–3186 /B–5898 = 0.076 miles
TOTAL LENGTH TIP PROJECT B–3186 /B–5898 = 1.2579 miles
(LENGTHS BASED ON L_RT ALIGNMENT)

Prepared In the Office of:
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 8, 2021

LETTING DATE:
JANUARY 18, 2022

PHILLIP E. ROGERS, PE
PROJECT ENGINEER

HENRY W. BARE
PROJECT DESIGN ENGINEER

GARRETT HIGDON
NCDOT CONTACT

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

PLOT DRIVER: $PLTDRV$ PENTABLE: $PENTBL$
USER: $USER$ DATE: $DATE$ TIME: $TIME$
FILE: $PWVARVAULTPATHDESC$

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	4

0 50 100
FEET

NC GRID
NAD 83 NA 2011

C-25 -L- 15+13 WB OSS 5.5 FT RT FW	
PAVEMENT SECTION	
ASPHALT	5.25 in
STBC	16.75 in

C-26 -L- 20+09 WB OSS 1.2 FT RT FW	
PAVEMENT SECTION	
ASPHALT	5.50 in
STBC	17.50 in
C-28 -L- 20+09 WB ISS 2.4 FT LT FY	
PAVEMENT SECTION	
ASPHALT	5.75 in
STBC	16.25 in

C-1 -L- 15+32 EB OSS 5.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	5.25 in
STBC	18.75 in

C-25 WB OSS
C-26 WB OSS
C-28 WB ISS
C-1 EB OSS
BULK-1
15+00
-L-
20+00
-L- CS Sta. 17+47.64

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	5

0 50 100
FEET

NC GRID
NAD 83 NA 2011

-L- SC Sta. 27+88.34

C-29 -L- 25+50 WB OSS 5.7 FT RT FW	
PAVEMENT SECTION	
ASPHALT	4.75 in
STBC	17.25 in
C-30 -L- 25+50 WB ISS 1.8 FT LT FY	
PAVEMENT SECTION	
ASPHALT	6.25 in
STBC	16.75 in

C-32 -L- 30+33 WB ISL 5.5 FT RT FY	
PAVEMENT SECTION	
ASPHALT	8.75 in
STBC	12.25 in
C-33 -L- 30+33 WB ISS 2.0 FT LT FY	
PAVEMENT SECTION	
ASPHALT	7.00 in
STBC	13.00 in

C-29 WB OSS
C-30 WB OSS
C-32 WB ISL
C-33 WB ISS
25+00
30+00
-L-
C-5 EB ISS
C-6 EB OSS
C-7 EB ISS
C-8 EB ISL

C-5 -L- 25+35 EB ISS 1.4 FT LT FY	
PAVEMENT SECTION	
ASPHALT	4.00 in
STBC	18.00 in
C-6 -L- 25+35 EB OSS 5.4 FT RT FW	
PAVEMENT SECTION	
ASPHALT	5.00 in
STBC	19.00 in

C-7 -L- 29+86 EB ISS 1.3 FT LT FY	
PAVEMENT SECTION	
ASPHALT	5.50 in
STBC	14.50 in
C-8 -L- 29+86 EB ISL 8.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	9.75 in
STBC	12.75 in

-L- TS Sta. 24+52.34

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	6

0 50 100
FEET

NC GRID
NAD 83 NA 2011

-L- CS Sta. 36+26.50

-L- ST Sta. 39+62.50

C-34 -L- 35+34 WB OSS 6.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	5.00 in
STBC	17.00 in
C-35 -L- 35+35 WB ISS 2.3 FT LT FY	
PAVEMENT SECTION	
ASPHALT	8.75 in
STBC	14.25 in

BULK-2

C-34 WB OSS

35+00

C-35 WB ISS

C-10 EB ISS

C-11 EB OSS

C-10 -L- 35+32 EB ISS 2.0 FT LT FY	
PAVEMENT SECTION	
ASPHALT	5.25 in
STBC	16.25 in
C-11 -L- 35+34 EB OSS 5.5 FT RT FW	
PAVEMENT SECTION	
ASPHALT	4.50 in
STBC	15.50 in

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	7

0 50 100
FEET

NAD 83 NC GRID NA 2011

-YILT- POT Sta. 33+16.69 =
-L_LT- POS Sta. 56+11.71 36' LT

-L- TS Sta. 58+97.47

-L- SC Sta. 60+97.47

C-36 -L- 56+85 WB OSS 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	6.50 in
STBC	15.50 in

C-37 -L- 56+85 WB OSL 2.3 FT LT FW	
PAVEMENT SECTION	
ASPHALT	8.00 in
STBC	15.00 in

C-38 -L- 56+85 WB ISL 2.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	8.50 in
STBC	15.00 in

C-12 -L- 61+63 EB ISS 0.7 FT LT FY	
PAVEMENT SECTION	
ASPHALT	3.25 in
CONCRETE	6.00 in
STBC	11.75 in

C-13 -L- 61+63 EB ISL 5.3 FT RT FY	
PAVEMENT SECTION	
ASPHALT	8.75 in
STBC	15.25 in

C-14 -L- 61+64 EB OSL 2.2 FT LT FW	
PAVEMENT SECTION	
ASPHALT	9.00 in
STBC	13.50 in

C-15 -L- 61+64 EB OSS 1.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	9.75 in
STBC	14.25 in

C-37 WB OSL
C-36 WB OSS
C-38 WB ISL
-L-

60+00
-L-

-L- ST Sta. 57+40.47
35+00
-YIRT-

C-12 EB ISS
C-13 EB ISL
C-14 EB OSL
C-15 EB OSS

-YIRT-
40+00

5+30.36

-YIRT- CS Sta. 36+12.49
-L_RT- SRS Sta. 58+66.36

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	8

0 50 100
FEET

NAD 83 NC GRID NA 2011

C-39 -L- 65+56 WB OSS 2.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	5.25 in
STBC	16.75 in

C-41 -L- 70+40 WB OSS 4.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	14.25 in
STBC	5.75 in

-L- POT Sta. 68+72.05 =
-RR- POC Sta. 311+02.79

-RR- PT Sta. 1307+89.92

-RR- PC Sta. 1308+35.40

C Sta. 1307+03.14

-RR-

S 8° 06' 12.4" W

C-39 WB OSS

65+00

BULK-3

-YIRT- ST Sta. 43+10.85

-YIRT- POT Sta. 44+31.29 =
-L_RT- ST Sta. 66+75.52
36' RT

1310+00

-RR-

70+00

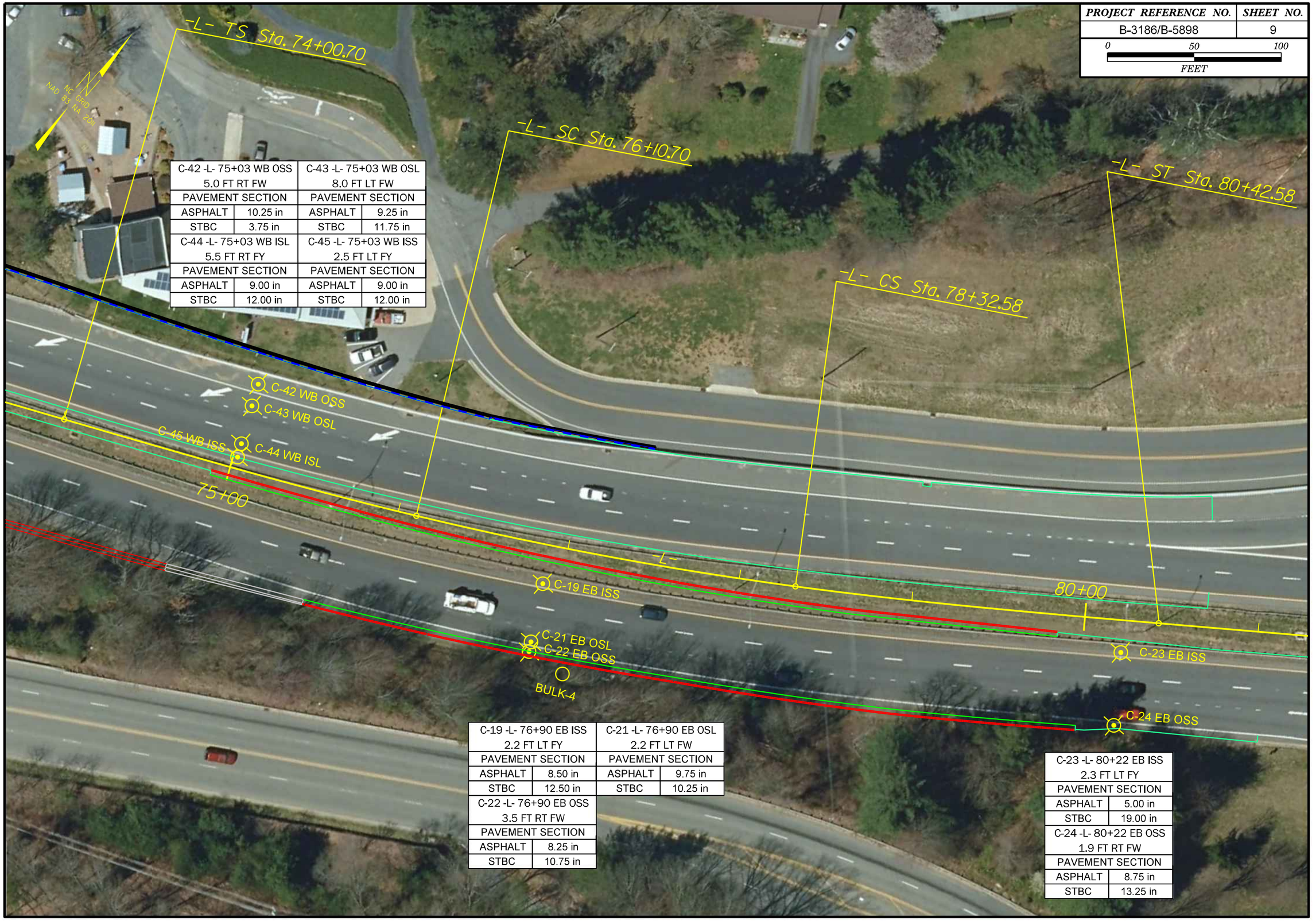
C-41 WB OSS

-L-

-L- PC Sta. 69+98.45

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	9

0 50 100
FEET



C-42 -L- 75+03 WB OSS 5.0 FT RT FW	
PAVEMENT SECTION	
ASPHALT	10.25 in
STBC	3.75 in

C-43 -L- 75+03 WB OSL 8.0 FT LT FW	
PAVEMENT SECTION	
ASPHALT	9.25 in
STBC	11.75 in

C-44 -L- 75+03 WB ISL 5.5 FT RT FY	
PAVEMENT SECTION	
ASPHALT	9.00 in
STBC	12.00 in

C-45 -L- 75+03 WB ISS 2.5 FT LT FY	
PAVEMENT SECTION	
ASPHALT	9.00 in
STBC	12.00 in

C-19 -L- 76+90 EB ISS 2.2 FT LT FY	
PAVEMENT SECTION	
ASPHALT	8.50 in
STBC	12.50 in

C-21 -L- 76+90 EB OSL 2.2 FT LT FW	
PAVEMENT SECTION	
ASPHALT	9.75 in
STBC	10.25 in

C-22 -L- 76+90 EB OSS 3.5 FT RT FW	
PAVEMENT SECTION	
ASPHALT	8.25 in
STBC	10.75 in

C-23 -L- 80+22 EB ISS 2.3 FT LT FY	
PAVEMENT SECTION	
ASPHALT	5.00 in
STBC	19.00 in

C-24 -L- 80+22 EB OSS 1.9 FT RT FW	
PAVEMENT SECTION	
ASPHALT	8.75 in
STBC	13.25 in

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	10

0 50 100
FEET

NC GRID
NAD 83 NA 2011

-YILT- POT Sta. 10+00.00

-YILT- TS Sta. 12+06.91

-YILT- SC Sta. 14+06.91

C-47 -Y1LT- 13+66 US 19 WB RTL, 6.0 FT RT C&G	
PAVEMENT SECTION	
ASPHALT	7.25 in
STBC	-

C-48 -Y1LT- 13+66 US 19 WB OSL, 15.5 FT LT C&G	
PAVEMENT SECTION	
ASPHALT	8.50 in
STBC	13.50 in

C-49 -Y1LT- 13+67 US 19 WB ISL, 2.8 FT RT C&G FACE	
PAVEMENT SECTION	
ASPHALT	11.50 in
STBC	10.50 in

10+00

10+00

C-47 US 19 WB RTL

C-48 US 19 WB OSL

C-49 US 19 WB ISL

C-50 US 19 EB ISL

-YILT-

15+00

15+00

-YIRT-

C-51 US 19 EB OSL

C-52 US 19 EB OSS

-YIRT- TS Sta. 11+12.00

-YIRT- POT Sta. 10+00.00

-YIRT- SC Sta. 13+12.00

C-50 -Y1RT- 13+67 US 19 EB ISL, 1.0 FT RT FY	
PAVEMENT SECTION	
ASPHALT	12.50 in
STBC	-

C-51 -Y1RT- 14+30 US 19 EB OSL, 1.5 FT LT FW	
PAVEMENT SECTION	
ASPHALT	7.00 in
STBC	14.00 in

C-52 -Y1RT- 14+30 US 19 EB OSS, 1.8 FT RT FW	
PAVEMENT SECTION	
ASPHALT	4.00 in
STBC	19.00 in

PAVEMENT INVESTIGATION DATA SHEET

Project:	38332.1.FS1
TIP:	B-3186/B-5898

Route:	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
County:	Haywood County

Date Performed:	8/4 to 8/6/2021 (2 nights)
Field Personnel:	M. Brewer, D. Underwood, R. Kral

		Width (ft)		(ft)	(in)	Thickness (in)						Subgrade						GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount) (ft)	Lane	Shoulder	Offset Distance (See Notes)	Crown "Cr" or Super "S"	Gross to Top of Soil	Asphalt	STBC	Stabilized Subgrade	Concrete	Pavement Layering	Description (Depth - ft)	Soil Sample Number	AASHTO Classification	Soil Moisture	Boring Depth (ft)	Asphalt Notes	Northing	Easting
C-1 -L- 15+32 EB OSS	7.0 Fill	11.0	9.5 PS Asphalt Curb	5.0 RT FW	Cr	24.00	5.25	18.75	-	-	Asphalt STBC Soil Subgrade	2.0-5.0: RE - Brown, Silty Fine to Coarse SAND	S-1	A-2-4	M	5	Low to Moderate Severity Transverse Cracking, No Observable Distress in OSL	665,229	816,598
C-5 -L- 25+35 EB ISS	10.0 Fill	11.5	3.0 PS	1.4 LT FY	Cr	22.00	4.00	18.00	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: RE - Brown-Red, Fine to Coarse Sandy SILT	S-5	A-4	M	5	No Observable Distress	665,399	817,583
C-6 -L- 25+35 EB OSS	15.0 Fill	11.0	9.5 PS	5.4 RT FW	Cr	24.00	5.00	19.00	-	-	Asphalt STBC Soil Subgrade	2.0-5.0: RE - Brown-Red, Silty CLAY, Slighlty Plastic *STBC - Silty, Fine to Coarse Sandy GRAVEL (A-1-a)	S-6 STBC-1	A-7-5 A-1-a	M M	5	No Observable Distress	665,368	817,587
C-7 -L- 29+86 EB ISS	20.0 Cut	11.5	2.5 PS	1.3 LT FY	S	20.00	5.50	14.50	-	-	Asphalt STBC Soil Subgrade	1.7-5.0: Residual - Brown-Tan, Fine Sandy Micaceous SILT	Ref-8	A-4	M	5	No Observable Distress **3-inch Bottom Up Crack in Core**	665,502	818,025
C-8 -L- 29+86 EB ISL	20.0 Cut	11.5	2.5 PS	8.0 RT FY	S	22.50	9.75	12.75	-	-	Asphalt STBC Soil Subgrade	1.9-5.0: Residual - Brown-Tan, Fine to Coarse Sandy Micaceous SILT	S-8	A-4	M	5	Low Severity Transverse Cracking and Lognitudinal Cracking (OSWP & ISWP)	665,493	818,029
C-10 -L- 35+32 EB ISS	4.0 Cut	11.0	4.0 PS	2.0 LT FY	S	21.50	5.25	16.25	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-Orange, Fine Sandy Micaceous SILT	Ref-11A	A-4	M	5	Low Severity Transverse Cracking and Lognitudinal Cracking (OSWP & ISWP) **Full Depth Bottom Up Crack in Core**	665,793	818,493
C-11 -L- 35+34 EB OSS	3.5 Fill	11.0	9.5 PS	5.5 RT FW	S	20.00	4.50	15.50	-	-	Asphalt STBC Soil Subgrade	1.7-3.5: RE - Red, Silty CLAY, Moderately Plastic 3.5-5.0: Residual - Brown-Red, Fine to Coarse Sandy Micaceous SILT	S-11 S-11A	A-7-6 A-4	M M	5	Low to Moderate Severity Transverse Cracking **Full Depth Bottom Up Crack in Core**	665,771	818,515
C-12 -L- 61+63 EB ISS	1.9 Fill	11.5	1.5 PS	0.7 LT FY	Cr	21.00	3.25	11.75	-	6.00	Asphalt Concrete STBC / SG	1.8-5.0: Residual - Red-Tan, Silty Fine to Coarse SAND Possibly 2-3 inches of contaminated drainage sand beneath concrete	S-12	A-2-4	M	5	Low Severity Transverse Cracking **Full Depth Bottom Up Crack in Asphalt Core**	667,474	820,429
C-13 -L- 61+63 EB ISL	2.0 Fill	11.5	1.5 PS	5.3 RT FY	Cr	24.00	8.75	15.25	-	-	Asphalt STBC Soil Subgrade	2.0-5.0: Residual - Brown, Fine to Coarse Sandy Micaceous SILT	S-13	A-4	M	5	Low Severity Transverse Cracking **7-inch Top Down Crack in Core**	667,469	820,431
C-14 -L- 61+64 EB OSL	4.0 Fill	11.0	4.5 PS	2.2 LT FW	Cr	22.50	9.00	13.50	-	-	Asphalt STBC Soil Subgrade	1.9-4.0: RE - Red-Brown, Fine Sandy SILT 4.0-5.0: Residual - Brown, Fine to Coarse Sandy Micaceous SILT	Ref-15 Ref-11A	A-4 A-4	M M	5	No Observable Distress	667,444	820,444
C-15 -L- 61+64 EB OSS	4.0 Fill	11.0	4.5 PS	1.0 RT FW	Cr	24.00	9.75	14.25	-	-	Asphalt STBC Soil Subgrade	2.0-4.0: RE - Brown, Fine to Coarse Sandy Micaceous SILT 4.0-5.0: Residual - Brown, Fine to Coarse Sandy Micaceous SILT	S-15 Ref-11A	A-4 A-4	M M	5	No Observable Distress	667,441	820,445
C-19 -L- 76+90 EB ISS	20.0 Cut	11.0	4.0 PS	2.2 LT FY	S	21.00	8.50	12.50	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-Tan, Silty, Gravelly Fine to Coarse SAND	S-19	A-1-b	M	5	No Observable Distress	668,133	821,809
C-21 -L- 76+90 EB OSL	20.0 Cut	10.0	6.0 PS	2.2 LT FW	S	20.00	9.75	10.25	-	-	Asphalt STBC Soil Subgrade	1.7-2.1: Residual - Brown, Fine Sandy Micaceous SILT 2.0-3.0: Weathered Rock - GNEISS Auger Refusal at 3.0 ft	Ref-22	A-4 WR	M	3 A/R	No Observable Distress	668,103	821,825
C-22 -L- 76+90 EB OSS	20.0 Cut	10.0	6.0 PS	3.5 RT FW	S	19.00	8.25	10.75	-	-	Asphalt STBC Soil Subgrade	1.6-2.3: Residual - Brown, Fine to Coarse Sandy Micaceous SILT 2.3-3.9: Weathered Rock - GNEISS Auger Refusal at 3.9 ft	S-22	A-4 WR	M	3.9 A/R	No Observable Distress	668,098	821,828
C-23 -L- 80+22 EB ISS	2.0 Fill	11.5	4.0 PS	2.3 LT FY	S	24.00	5.00	19.00	-	-	Asphalt STBC Soil Subgrade	2.0-5.0: Residual - Brown, Fine Sandy Micaceous SILT	Ref-22	A-4	M	5	No Observable Distress	668,322	822,085

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

Prepared by: DMB
Reviewed by: REK

PAVEMENT INVESTIGATION DATA SHEET

Project:	38332.1.FS1
TIP:	B-3186/B-5898

Route:	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
County:	Haywood County

Date Performed:	8/4 to 8/6/2021 (2 nights)
Field Personnel:	M. Brewer, D. Underwood, R. Kral

		Width (ft)		(ft)	(in)	Thickness (in)						Subgrade						GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount) (ft)	Lane	Shoulder	Offset Distance (See Notes)	Crown "Cr" or Super "S"	Gross to Top of Soil	Asphalt	STBC	Stabilized Subgrade	Concrete	Pavement Layering	Description (Depth - ft)	Soil Sample Number	AASHTO Classification	Soil Moisture	Boring Depth (ft)	Asphalt Notes	Northing	Easting
C-24 -L- 80+22 EB OSS	8.0 Cut	12.0	5.0 PS	1.9 RT FW	Cr	22.00	8.75	13.25	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown, Micaceous, Silty Fine to Coarse SAND	S-24	A-2-4	M	5	No Observable Distress	668,288	822,109
C-25 -L- 15+13 WB OSS	20.0 Fill	12.0	11.0 PS Asphalt Curb	5.5 RT FW	Cr	22.00	5.25	16.75	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: RE - Brown-Red, Silty CLAY, Slightly Plastic	S-25	A-7-5	M	5	Low Severity Transverse Cracking, Polished Aggregate	665,309	816,560
C-26 -L- 20+09 WB OSS	20.0 Cut	12.0	11.0 PS	1.2 RT FW	Cr	23.00	5.50	17.50	-	-	Asphalt STBC Soil Subgrade	1.9-2.5: Residual - Brown-Tan, Fine Sandy Micaceous SILT Auger Refusal at 2.5 ft	Ref-28	A-4	M	2.5 A/R	Low Severity Transverse Cracking	665,394	817,054
C-28 -L- 20+09 WB ISS	20.0 Cut	11.5	3.5 PS	2.4 LT FY	Cr	22.00	5.75	16.25	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-Orange, Fine to Coarse Sandy Micaceous SIL	S-28	A-4	M	5	Low Severity Tranverse Cracking	665,367	817,057
C-29 -L- 25+50 WB OSS	25.0 Cut	12.0	10.5 PS	5.7 RT FW	Cr	22.00	4.75	17.25	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Red-Orange-Brown, Silty CLAY, Slightly Plastic	S-29	A-7-5	M	5	Low to Moderate Seveirty Transverse Cracking, Polished Aggregate **Full Depth Bottom Up Crack in Core**	665,467	817,589
C-30 -L- 25+50 WB ISS	10.0 Cut	12.0	3.5 PS	1.8 LT FY	Cr	23.00	6.25	16.75	-	-	Asphalt STBC Soil Subgrade	1.9-5.0: Residual - Brown-Orange, Silty CLAY, Slightly Plastic	S-30	A-7-5	M	5	Low to Moderate Severity Transverse Cracking **Full Depth Bottom Up Crack in Core**	665,436	817,593
C-32 -L- 30+33 WB ISL	25.0 Cut	11.5	4.0 PS	5.5 RT FY	S	21.00	8.75	12.25	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Tan-Brown, Fine to Coarse Sandy Micaceous SILT	S-32	A-4	M	5	Low Severity Longitudinal Cracking (ISWP)	665,559	818,053
C-33 -L- 30+33 WB ISS	25.0 Cut	11.5	4.0 PS	2.0 LT FY	S	20.00	7.00	13.00	-	-	Asphalt STBC Soil Subgrade	1.7-5.0: Residual - Tan-Brown, Fine Sandy Micaceous SILT	Ref-32	A-4	M	5	Low Severity Longitudinal Cracking (ISWP)	665,552	818,056
C-34 -L- 35+34 WB OSS	10.0 Cut	11.5	10.5 PS	6.0 RT FW	S	22.00	5.00	17.00	-	-	Asphalt STBC Soil Subgrade	1.8-3.0: RE - Red, Fine to Coarse Sandy SILT 3.0-5.0: Residual - Brown-Red, Fine Sandy Micaceous SILT	S-34 Ref-32	A-4 A-4	M M	5	Low Severity Longitudinal (OSWP & ISWP) and Transverse Cracking at Shoulder / OSL	665,844	818,449
C-35 -L- 35+35 WB ISS	20.0 Cut	11.5	4.0 PS	2.3 LT FY	S	23.00	8.75	14.25	-	-	Asphalt STBC Soil Subgrade	1.9-3.5: RE - Red, Fine to Coarse Sandy SILT	S-35	A-4	M	5	No Observable Distress	665,821	818,471
C-36 -L- 56+85 WB OSS	20.0 Cut	12.0	4.0 PS	1.0 RT FW	Cr	22.00	6.50	15.50	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown, Micaceous, Fine to Coarse Sandy, Clayey SIL	Ref-37	A-5	M	5	Low Severity Transverse Cracking **2-inch Top Down Crack in Core**	667,345	819,966
C-37 -L- 56+85 WB OSL	20.0 Cut	12.0	4.0 PS	2.3 LT FW	Cr	23.00	8.00	15.00	-	-	Asphalt STBC Soil Subgrade	1.9-5.0: Residual - Brown, Micaceous, Fine to Coarse Sandy, Clayey SIL	S-37	A-5	M	5	Low Severity Transverse Cracking	667,342	819,967
C-38 -L- 56+85 WB ISL	20.0 Cut	11.5	2.0 PS Asphalt over C&G	2.0 RT FY	Cr	23.50	8.50	15.00	-	-	Asphalt STBC Soil Subgrade	1.9-3.5: RE - Red, Silty CLAY, Slightly Plastic 3.5-5.0: Residual - Brown, Fine to Coarse Sandy, Clayey SILT	S-38 Ref-37	A-7-5 A-5	M M	5	Low Severity Transverse Cracking **Full Depth Bottom Up Crack in Core**	667,311	819,978
C-39 -L- 65+56 WB OSS	15.0 Cut	11.5	4.5 PS	2.0 RT FW	Cr	22.00	5.25	16.75	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-White, Fine Sandy Micaceous SILT	Ref-41	A-4	M	5	No Observable Distress	667,688	820,762
C-41 -L- 70+40 WB OSS	15.0 Fill	11.5	7.0 PS Concrete Exp Gutter	4.0 RT FW	Cr	20.00	14.25	5.75	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: RE - Brown-Red, Fine to Coarse Sandy Micaceous SILT	S-41	A-4	M	5	Low Severity Longitudinal Cracking (OSWP) and Transverse Cracking	667,906	821,194

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

Prepared by: DMB
Reviewed by: REK

PAVEMENT INVESTIGATION DATA SHEET

Project:	38332.1.FS1
TIP:	B-3186/B-5898

Route:	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
County:	Haywood County

Date Performed:	8/4 to 8/6/2021 (2 nights)
Field Personnel:	M. Brewer, D. Underwood, R. Kral

		Width (ft)		(ft)	(in)	Thickness (in)						Subgrade						GPS Coordinates	
Test Location	Cut/Fill (Est. of Amount) (ft)	Lane	Shoulder	Offset Distance (See Notes)	Crown "Cr" or Super "S"	Gross to Top of Soil	Asphalt	STBC	Stabilized Subgrade	Concrete	Pavement Layering	Description (Depth - ft)	Soil Sample Number	AASHTO Classification	Soil Moisture	Boring Depth (ft)	Asphalt Notes	Northing	Easting
C-42 -L- 75+03 WB OSS	4.0 Cut	12.0	11.5 PS	5.0 RT FW	S	14.00	10.25	3.75	-	-	Asphalt STBC Soil Subgrade	1.2-5.0: Residual - Brown-Tan, Fine Sandy Micaceous SILT	Ref-43	A-4	M	5	Low Severity Longitudinal Cracking (OSWP) and Transverse Cracking	668,111	821,610
C-43 -L- 75+03 WB OSL	4.0 Cut	12.0	11.5 PS	8.0 LT FW	S	21.00	9.25	11.75	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-Tan, Fine to Coarse Sandy Micaceous SILT	S-43	A-4	M	5	Low Severity Longitudinal Cracking (OSWP) and Transverse Cracking **Full Depth Bottom Up Crack in Core**	668,099	821,615
C-44 -L- 75+03 WB ISL	8.0 Cut	11.0	5.0 PS	5.5 RT FY	S	21.00	9.00	12.00	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-Tan, Fine Sandy Micaceous SILT	S-44	A-4	M	5	Low Severity Transverse Cracking	668,079	821,625
C-45 -L- 75+03 WB ISS	8.0 Cut	11.0	5.0 PS	2.5 LT FY	S	21.00	9.00	12.00	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Brown-Tan-Gray, Fine to Coarse Sandy Micaceous Sl	S-45	A-4	M	5	Low Severity Transverse Cracking **Full Depth Bottom Up Crack in Core**	668,072	821,628
C-47 -Y1LT- 13+66 US 19 WB RTL	6.0 Cut	11.5	Concrete C&G	6.0 RT C&G	S	7.25	7.25	0.00	-	-	Asphalt Soil Subgrade	0.6-4.0: Residual - Brown-Tan, Fine Sandy SILT Auger Refusal at 4.0 ft	Ref-48	A-4	M	4 A/R	Low Severity Longitudinal Cracking (OSWP & ISWP) and Transverse Cracking, Polished Aggregate	666,937	818,029
C-48 -Y1LT- 13+66 US 19 WB OSL	6.0 Cut	11.0	N/A	15.5 LT C&G (RT)	S	22.00	8.50	13.50	-	-	Asphalt STBC Soil Subgrade	1.8-5.0: Residual - Tan-Red, Fine to Coarse Sandy SILT	S-48	A-4	M	5	Polished Aggregate	666,928	818,027
C-49 -Y1LT- 13+67 US 19 WB ISL	3.5 Fill	12.0	Asphalt over C&G	2.8 RT C&G Face	S	22.00	11.50	10.50	-	-	Asphalt STBC Soil Subgrade	1.8-3.5: RE - Gray-Tan, Silty CLAY, Moderately Plastic 3.5-5.0: Residual - Tan-Brown, Fine Sandy SILT	S-49 Ref-48	A-7-6 A-4	M M	5	1/2-inch Rutting (ISWP), Low Severity Longitudinal Cracking (ISWP), Low to Moderate Severity Transverse Cracking, Polished Aggregate	666,910	818,024
C-50 -Y1RT- 13+67 US 19 EB ISL	4.0 Fill	12.0	Asphalt over C&G	1.0 RT FY	S	12.50	12.50	0.00	-	-	Asphalt Soil Subgrade	1.0-4.0: RE - Red, Silty CLAY, Slightly Plastic 4.0-5.0: Residual - Tan-Brown, Fine Sandy SILT	S-50 Ref-48	A-7-6 A-4	M M	5	Low to Moderate Severity Longitudinal Cracking (OSWP) and Transverse Cracking, Ravelling Polished Aggregate	666,896	818,021
C-51 -Y1RT- 14+30 US 19 EB OSL	10.0 Fill	11.0	4.0 PS	1.5 LT FW	S	21.00	7.00	14.00	-	-	Asphalt STBC Soil Subgrade	1.8-4.0: RE - Brown, Fine Sandy Micaceous SILT 4.0-5.0: RE - Brown-Red, Silty CLAY, Slightly Plastic	Ref-52 Ref-50	A-4 A-7-5	M M	5	Low to Moderate Severity Longitudinal Cracking (OSWP) and Transverse Cracking, Ravelling Polished Aggregate	666,865	818,080
C-52 -Y1RT- 14+30 US 19 EB OSS	10.0 Fill	11.0	4.0 PS	1.8 RT FW	Cr	23.00	4.00	19.00	-	-	Asphalt STBC Soil Subgrade	1.9-5.0: RE - Brown, Fine to Coarse Sandy Micaceous SILT	S-52	A-4	M	5	Low to Moderate Severity Longitudinal Cracking (OSWP) and Transverse Cracking, Ravelling Polished Aggregate	666,862	818,079

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

Prepared by: DMB
Reviewed by: REK

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.		PROJECT TIP I.D.				ROUTE			
								38332.1.FS		B-3186/B-5898				US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane			
								COUNTY		FIELD PROFESSIONAL				FIELD CREW			
								Haywood		M. Brewer				R. Kral/D. Underwood			
Test Location								Date Run		Test Location							Date Run
C-1 -L- 15+32 EB OSS 5.0 FT RT FW								8/4 to 8/6/2021		C-5 -L- 25+35 EB ISS 1.4 FT LT FY							8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill		Type	Test Interval				Datum		Cut/Fill
DCP	Cumulative cm per blow				STBC			7.0 ft Fill		DCP	Cumulative cm per blow				STBC		10.0 ft Fill
2.50	21.00	34.62								1.00	23.00	58.00					
3.40	21.16	34.66								1.50	23.20	59.40					
4.20	21.33	34.70								2.00	23.60	60.60					
4.60	21.49	35.20								2.50	23.80	62.00					
5.00	21.65	35.60								3.00	24.10	63.60					
5.50	21.82	36.00								3.30	24.30	65.50					
5.90	21.98	36.40								3.70	24.50	67.50					
6.20	22.15	36.80								4.10	24.80	69.60					
6.50	22.31	37.40								4.60	25.00	71.90					
6.70	22.47	38.20								5.20	25.30	74.30					
7.20	22.64	39.00								5.50	25.70	77.00					
7.70	22.80	39.80								6.00	26.10	79.20					
8.20	22.94	40.60								6.30	26.80	82.10					
8.50	23.08	41.60								6.60	27.00	85.00					
9.00	23.22	43.30								6.80	27.30	87.20					
9.50	23.36	45.00								7.20	27.60	89.40					
9.80	23.50	46.00								7.50	28.00	91.40					
10.30	23.70	47.20								7.80	28.30	92.30					
10.60	23.90	48.20								8.20	28.60	94.70					
11.20	24.10	50.50								8.30	29.10	96.20					
11.50	24.30	51.60								8.80	29.20	98.00					
11.70	24.50	52.30								9.20	29.70	99.20					
12.20	24.70	54.60								9.60	30.00	100.50					
12.40	24.90	56.20								10.20	30.30	101.50					
12.70	25.10	57.10								10.50	30.60	102.50					
13.00	25.30	59.00								10.90	30.80	103.50					
13.30	25.50	60.60								11.40	31.40	104.40					
13.50	25.70	62.70								11.70	31.70	105.40					
13.70	25.90	64.50								12.00	32.20	106.20					
13.90	26.10	66.20								12.20	32.50	107.20					
14.20	26.30	67.70								12.50	32.90	108.00					
14.30	26.50	69.50								13.00	33.40	109.00					
14.50	26.70	71.60								13.10	33.50	110.00					
14.70	26.90	74.20								13.30	33.70	111.00					
15.10	27.10	77.10								13.60	34.00	112.00					
15.20	27.30	80.40								14.50	34.40	113.20					
15.30	27.50	83.30								14.70	34.80	114.20					
15.40	27.72	85.60								14.90	35.00	115.20					
15.80	27.94	87.70								15.10	35.50	116.50					
16.10	28.16	89.20								15.30	35.70	118.00					
16.30	28.38	90.90								15.50	36.10	119.20					
16.50	28.60	92.10								15.70	36.30	120.30					
16.90	28.88	93.90								16.00	36.80	121.30					
17.00	29.16	94.50								16.30	37.20	122.40					
17.10	29.44	95.50								16.80	37.60	123.20					
17.22	29.72	96.70								17.20	38.00	124.60					
17.34	30.00	98.10								17.30	38.60	125.70					
17.46	30.50	99.50								17.50	39.00	126.80					
17.58	30.66	100.60								18.00	39.50	128.00					
17.70	30.82	102.50								18.30	40.10	128.80					
17.82	30.98	103.20								18.90	40.60	130.00					
17.94	31.14	104.60								19.10	41.10	131.20					
18.06	31.30	105.60								19.50	41.70	132.10					
18.18	31.56	107.00								19.90	42.50	133.20					
18.30	31.82	108.30								20.00	43.10	134.10					
18.52	32.08	109.50								20.10	44.00	135.20					
18.74	32.34	110.70								20.20	46.10	136.20					
18.97	32.60	112.20								20.60	47.20	137.40					
19.19	32.98	113.30								20.80	48.10	138.40					
19.41	33.36	114.90								21.20	49.00	139.60					
19.63	33.74	116.50								21.40	50.00	140.50					
19.86	34.12	117.60								21.70	51.40	141.60					
20.08	34.50	119.10								22.10	52.80	142.60					
20.30	34.54									22.50	54.50	143.50					
20.50	34.58									22.80	56.50	144.40					

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.		PROJECT TIP I.D.				ROUTE			
								38332.1.FS		B-3186/B-5898				US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane			
								COUNTY		FIELD PROFESSIONAL				FIELD CREW			
								Haywood		M. Brewer				R. Kral/D. Underwood			
Test Location								Date Run		Test Location							Date Run
C-6 -L- 25+35 EB OSS 5.4 FT RT FW								8/4 to 8/6/2021		C-7 -L- 29+86 EB ISS 1.3 FT LT FY							8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill		Type	Test Interval				Datum		Cut/Fill
DCP	Cumulative cm per blow				STBC			15.0 ft Fill		DCP	Cumulative cm per blow				STBC		20.0 ft Cut
1.40	27.70	95.00								2.80	35.70	111.50					
2.20	28.30	95.90								3.80	36.90	112.90					
2.80	28.60	97.00								4.40	37.50	114.10					
3.60	29.30	97.80								5.00	38.50	115.40					
4.50	29.80	99.00								5.50	39.50	116.70					
5.00	30.50	99.60								6.10	40.50	117.70					
5.50	31.70	100.50								6.50	41.40	118.90					
5.80	32.00	101.50								7.00	42.30	120.20					
6.00	32.30	102.50								7.50	43.20	121.70					
6.50	32.80	103.60								8.10	44.00	123.30					
7.10	33.30	104.60								8.60	44.80	124.90					
7.50	34.20	105.80								8.90	45.70	126.70					
7.90	35.00	107.00								9.40	46.50	128.10					
8.30	36.00	108.00								9.70	47.50	129.90					
8.60	36.30	109.20								10.10	48.30	131.50					
9.00	37.20	110.50								10.50	49.20	133.10					
9.20	38.00	111.60								10.70	50.00	134.30					
9.70	38.20	112.60								11.00	50.90	135.70					
9.90	39.50	113.80								11.40	51.60	137.40					
10.30	40.10	115.00								11.90	52.30	139.10					
10.70	41.00	116.00								12.30	53.10	140.60					
11.00	41.80	117.30								12.50	54.10	142.20					
11.40	42.60	118.30								13.00	54.70	143.80					
11.70	43.90	119.50								13.40	55.40	145.30					
12.00	45.10	120.70								13.60	56.00						
12.40	47.10	121.00								13.80	56.80						
12.70	49.30	121.90								14.00	57.50						
13.00	51.00	123.30								14.20	58.40						
13.40	52.80	124.50								14.70	59.40						
13.70	54.50	125.60								15.20	60.60						
14.10	56.00	127.00								15.40	62.10						
14.40	58.00	128.10								15.90	63.10						
14.70	59.30	129.10								16.10	64.30						
15.10	61.20	130.20								16.30	65.50						
15.40	62.50	131.20								16.50	66.80						
15.80	63.50	132.10								17.00	68.20						
16.10	64.60	133.00								17.30	69.80						
16.20	65.60	133.80								17.60	71.40						
16.60	66.40	134.60								17.90	72.90						
17.10	67.50	135.50								18.80	74.10						
17.50	68.20	136.50								19.00	75.30						
17.80	69.20	137.30								19.40	76.80						
18.20	70.20	138.30								19.70	78.20						
18.50	71.30	139.20								20.20	79.50						
18.80	72.50	140.00								20.50	80.90						
19.10	73.80	140.80								21.40	82.50						
19.50	75.20	141.60								21.70	84.30						
19.80	76.60	142.30								22.00	85.50						
20.20	78.30	143.00								22.50	86.90						
20.50	80.30									23.20	88.30						
21.30	81.60									23.40	89.60						
21.60	83.10									23.70	90.70						
22.10	84.50									24.20	92.10						
22.50	86.00									24.50	93.60						
23.00	87.00									25.10	95.30						
23.30	88.00									25.40	97.20						
23.50	89.00									25.60	99.00						
23.80	89.50									26.30	100.70						
24.20	90.20									26.80	102.30						
24.60	90.70									27.40	103.70						
25.10	91.10									28.30	104.80						
25.60	91.80									29.50	105.80						
26.10	92.50									31.00	107.40						
26.50	93.20									32.60	108.60						
27.30	94.00									34.20	110.10						

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.	ROUTE
								38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
								COUNTY	FIELD PROFESSIONAL	FIELD CREW
								Haywood	M. Brewer	R. Kral/D. Underwood
Test Location								Date Run	Test Location	Date Run
C-8 -L- 29+86 EB ISL 8.0 FT RT FY								8/4 to 8/6/2021	C-10 -L- 35+32 EB ISS 2.0 FT LT FY	8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill
DCP	Cumulative cm per blow				STBC			20.0 ft Cut	DCP	Cumulative cm per blow				STBC		4.0 ft Cut
0.80	10.68	33.00	79.00						0.50	17.30	30.50	100.00				
1.20	10.80	34.00	79.80						1.00	17.40	30.80	103.30				
1.80	10.85	34.70	80.60						1.50	17.60	31.00	106.00				
2.30	10.90	35.40	81.50						1.70	17.80	31.30	108.10				
2.60	10.95	36.00	82.10						2.00	18.00	31.80	110.00				
3.10	11.00	36.70	83.10						2.50	18.10	32.10	112.40				
3.23	11.05	37.30	84.20						2.90	18.30	32.70	114.00				
3.35	11.10	38.00	85.20						3.20	18.50	33.20	116.50				
3.48	11.15	38.70	86.40						3.40	18.70	33.60	118.60				
3.61	11.20	39.30	87.50						3.50	18.90	34.00	120.20				
3.74	11.25	39.90	88.70						3.70	19.50	35.00	121.80				
3.86	11.30	40.60	89.80						4.00	19.60	35.40	123.40				
3.99	AUGER	41.30	90.90						4.30	19.70	36.00	125.20				
4.12	13.0 CM	41.90	92.00						4.50	19.90	36.50	126.60				
4.25	1.00	42.60	93.10						4.70	20.10	37.30	128.00				
4.37	1.50	43.30	94.30						5.10	20.30	38.00	129.60				
4.50	2.00	43.90	95.40						5.40	20.50	39.00	131.20				
4.65	2.30	44.60	96.50						5.60	20.51	39.50	132.60				
4.80	2.60	45.20	97.60						6.00	20.52	40.40	134.30				
4.95	3.20	45.90	98.50						6.50	20.53	41.00	135.60				
5.10	3.50	46.60	99.30						6.70	20.54	41.60	136.90				
5.25	4.00	47.20	100.30						7.20	20.55	42.40	138.10				
5.40	4.40	47.90	101.00						7.40	20.55	43.00	139.70				
5.55	4.70	48.50	101.80						7.50	20.56	43.70	140.00				
5.70	5.20	49.20	102.50						7.70	20.57	44.50	141.30				
5.85	5.60	50.00	103.50						8.10	20.58	45.50	143.30				
6.00	5.80	50.50	104.50						8.30	20.59	46.50	145.50				
6.18	6.20	51.20	105.00						8.50	20.60	47.50	148.00				
6.36	6.80	51.50	105.80						8.70	20.85	48.80	150.20				
6.54	7.10	53.00	106.50						8.90	21.10	49.70	152.70				
6.72	7.50	53.60							9.10	21.35	50.60					
6.90	7.80	54.50							9.30	21.60	51.70					
7.08	8.50	55.00							9.50	21.85	52.90					
7.26	9.50	55.70							9.70	22.10	54.00					
7.44	10.00	56.50							10.00	22.35	55.00					
7.62	10.50	57.20							10.30	22.60	56.00					
7.80	11.30	58.00							10.60	22.85	57.00					
7.90	12.10	58.70							10.90	23.10	58.00					
8.00	12.50	59.30							11.20	23.33	59.00					
8.10	13.00	60.00							11.50	23.56	60.00					
8.20	13.80	60.70							11.60	23.79	60.90					
8.30	14.50	61.30							11.70	24.02	62.00					
8.40	15.50	62.10							11.90	24.25	62.10					
8.50	16.60	62.80							12.10	24.48	62.70					
8.60	17.20	63.40							12.40	24.71	64.50					
8.70	19.00	64.00							12.60	24.94	65.40					
8.80	20.40	64.50							12.80	25.17	66.50					
8.88	21.50	65.20							13.10	25.40	67.50					
8.96	22.20	65.90							13.30	25.70	68.80					
9.04	22.80	66.60							13.70	26.00	70.00					
9.12	23.50	67.40							14.00	26.30	71.40					
9.20	24.00	68.10							14.40	26.50	72.80					
9.28	24.80	68.70							14.60	26.80	74.10					
9.36	25.50	69.50							15.00	27.00	75.70					
9.44	26.10	70.30							15.20	27.20	77.30					
9.52	26.80	71.10							15.40	27.60	79.10					
9.60	27.40	71.80							15.60	28.00	80.90					
9.72	28.10	72.70							15.80	28.40	82.30					
9.84	28.80	73.40							16.00	28.70	84.50					
9.96	29.40	74.10							16.20	29.00	86.00					
10.08	30.00	75.00							16.40	29.20	88.00					
10.20	30.70	75.80							16.60	29.50	90.00					
10.32	31.40	76.60							16.80	29.80	92.20					
10.44	32.00	77.30							17.10	30.00	94.50					
10.56	32.70	78.10							17.20	30.30	97.00					

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.	ROUTE
								38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
								COUNTY	FIELD PROFESSIONAL	FIELD CREW
								Haywood	M. Brewer	R. Kral/D. Underwood
Test Location								Date Run	Test Location	Date Run
C-11 -L- 35+34 EB OSS 5.5 FT RT FW								8/4 to 8/6/2021	C-12 -L- 61+63 EB ISS 0.7 FT LT FY	8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill
DCP	Cumulative cm per blow				STBC			3.5 ft Fill	DCP	Cumulative cm per blow				STBC		1.9 ft Fill
1.30	46.20	115.80							1.30	23.40	123.00					
2.10	47.60	116.50							2.10	23.70	124.10					
2.80	49.60	117.30							3.00	24.00	126.10					
3.40	51.40	117.70							3.80	24.30	127.60					
4.00	52.60	118.60							4.50	24.70	129.20					
4.70	54.80	119.20							5.10	25.30	130.70					
5.40	56.80	120.10							5.60	25.60	132.20					
5.90	58.70	120.60							6.00	26.00	133.70					
6.50	60.20	121.80							6.60	26.50	135.20					
7.10	61.70	122.80							7.20	26.80	136.70					
7.50	62.00	123.50							7.60	27.40	138.10					
8.20	64.50	124.00							8.00	28.00	139.40					
8.80	65.80	124.50							8.60	28.30	140.80					
9.40	67.20	124.80							8.80	28.80						
9.90	68.40	125.50							9.20	29.30						
10.60	70.00	126.00							9.60	30.00						
11.10	71.10	127.20							9.90	30.70						
11.50	72.50	128.00							10.20	31.60						
12.40	73.80	128.80							10.60	32.60						
12.80	75.00	129.90							11.00	33.60						
13.30	76.50	130.30							11.20	35.10						
13.70	77.60	130.50							11.60	37.20						
14.30	79.20	132.10							12.00	40.10						
14.60	80.50	133.00							12.20	43.40						
15.10	81.70	134.00							12.40	46.10						
15.70	83.10	134.90							12.70	49.10						
16.30	84.60	135.60							13.10	51.20						
17.00	85.20	136.40							13.50	53.20						
17.80	86.50	137.10							13.80	55.20						
18.50	87.50	138.00							14.00	57.00						
19.20	88.50	139.00							14.20	58.70						
20.00	89.50	139.80							14.40	61.30						
21.00	90.10	141.00							14.60	62.20						
21.40	90.60	141.90							14.80	65.40						
22.10	92.00	142.80							15.10	67.30						
23.00	92.90	143.60							15.30	69.60						
23.60	93.70	144.50							15.50	72.20						
24.40	94.50	145.00							15.80	74.80						
25.00	95.40	145.50							16.10	77.60						
25.70	96.30	146.30							16.40	79.60						
26.60	97.00	147.00							16.50	81.20						
27.30	97.50	147.30							16.70	82.50						
28.00	98.00	147.70							17.10	84.00						
28.60	99.30	148.10							17.30	85.20						
29.00	100.30	148.70							17.60	86.80						
29.50	101.30	149.40							17.90	88.20						
29.90	102.00	150.00							18.10	89.60						
30.50	102.60	150.60							18.40	91.20						
30.90	103.50	151.50							18.60	92.90						
31.30	104.00	152.00							18.80	94.80						
31.80	104.70	153.00							19.00	96.70						
32.20	105.20	153.70							19.20	98.60						
32.70	105.70	154.50							19.60	100.60						
33.10	106.50	155.30							19.80	102.50						
33.80	107.20	156.00							20.30	104.50						
34.50	107.60	156.70							20.50	106.50						
35.50	108.40	157.20							20.70	108.20						
35.90	109.30	158.10							21.10	110.00						
37.10	110.20								21.40	111.70						
38.10	110.80								21.80	113.50						
39.30	111.90								22.00	115.20						
40.30	113.00								22.20	116.90						
41.20	114.20								22.40	118.90						
42.60	114.80								23.00	119.90						
44.20	115.50								23.20	121.50						

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET							WBS NO.	PROJECT TIP I.D.	ROUTE
							38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
							COUNTY	FIELD PROFESSIONAL	FIELD CREW
							Haywood	M. Brewer	R. Kral/D. Underwood
Test Location							Date Run		
C-13 -L- 61+63 EB ISL 5.3 FT RT FY							8/4 to 8/6/2021		
Type	Test Interval			Datum			Cut/Fill		
DCP	Cumulative cm per blow			STBC			2.0 ft Fill		
1.20	13.35	22.96	45.10	141.80					
1.90	13.47	23.10	46.70						
2.40	13.58	23.30	48.80						
2.70	13.70	23.50	51.90						
3.10	13.92	23.70	54.30						
3.30	14.14	23.90	57.50						
3.60	14.36	24.10	60.00						
4.00	14.58	24.28	62.00						
4.20	14.80	24.46	64.30						
4.40	14.86	24.64	66.50						
4.60	14.92	24.82	68.50						
4.80	14.98	25.00	70.60						
5.10	15.04	25.38	72.70						
5.30	15.10	25.76	74.70						
5.50	15.18	26.14	76.80						
5.70	15.26	26.52	78.80						
5.90	15.34	26.90	80.90						
6.06	15.42	27.10	82.50						
6.22	15.50	27.30	84.20						
6.37	15.67	27.50	85.60						
6.53	15.83	27.70	87.50						
6.69	16.00	27.90	89.60						
6.85	16.17	28.08	91.50						
7.00	16.33	28.26	93.60						
7.16	16.50	28.44	94.90						
7.32	16.68	28.62	97.00						
7.48	16.87	28.80	98.10						
7.63	17.05	29.00	100.10						
7.79	17.23	29.20	101.60						
7.95	17.42	29.40	102.00						
8.11	17.60	29.60	102.50						
8.27	17.80	29.80	103.60						
8.42	18.00	30.00	104.70						
8.58	18.20	30.20	105.70						
8.74	18.40	30.40	106.80						
8.90	18.60	30.60	107.90						
9.05	18.78	30.80	109.10						
9.21	18.96	30.98	110.50						
9.37	19.14	31.16	111.70						
9.53	19.32	31.34	112.00						
9.68	19.50	31.52	114.20						
9.84	19.60	31.70	116.00						
10.00	19.70	31.96	117.10						
10.22	19.80	32.22	119.00						
10.44	19.90	32.48	120.20						
10.66	20.00	32.74	121.30						
10.88	20.14	33.00	122.50						
11.10	20.28	33.20	123.50						
11.22	20.42	33.60	124.60						
11.34	20.56	33.80	125.70						
11.46	20.70	34.10	126.70						
11.58	20.86	34.40	127.60						
11.70	21.02	34.90	128.80						
11.82	21.18	35.40	129.70						
11.94	21.34	35.90	131.20						
12.06	21.50	36.50	132.00						
12.18	21.65	37.10	133.10						
12.30	21.80	38.00	133.90						
12.44	21.95	38.40	135.10						
12.58	22.10	39.00	135.90						
12.72	22.25	39.70	136.90						
12.86	22.40	40.60	138.00						
13.00	22.54	41.60	139.10						
13.12	22.68	42.50	140.00						
13.23	22.82	43.70	140.60						

Test Location												Date Run
C-14 -L- 61+64 EB OSL 2.2 FT LT FW												8/4 to 8/6/2021
Type	Test Interval			Datum				Cut/Fill				
DCP	Cumulative cm per blow			STBC				4.0 ft Fill				
0.70	9.50	16.08	25.10	58.30	111.20							
1.30	9.56	16.20	25.30	58.70	111.80							
1.50	9.62	16.31	25.50	59.00	112.00							
1.90	9.68	16.42	25.70	59.20	112.30							
2.10	9.74	16.53	25.90	59.50	112.80							
2.40	9.80	16.64	26.10	60.00	113.40							
2.60	9.86	16.75	26.30	60.20	113.60							
2.80	9.92	16.86	26.50	60.50	114.00							
3.10	9.98	16.97	26.80	61.10	115.00							
3.30	10.04	17.08	27.10	61.60	115.50							
3.60	10.10	17.19	27.40	62.20	115.90							
4.10	10.19	17.30	27.70	62.70	116.20							
4.30	10.28	17.40	28.00	63.50	116.50							
4.50	10.37	17.50	28.23	64.20	116.70							
4.70	10.46	17.60	28.47	65.00	117.00							
4.90	10.55	17.70	28.70	66.20	117.60							
5.20	10.64	17.80	28.93	67.30	118.00							
5.40	10.73	17.90	29.17	68.40	118.40							
5.56	10.82	18.00	29.40	69.20	118.80							
5.71	10.91	18.10	29.82	69.60	119.10							
5.87	11.00	18.20	30.24	70.60	119.50							
6.02	11.12	18.30	30.66	71.40	120.00							
6.18	11.24	18.43	31.08	72.30	120.50							
6.33	11.36	18.56	31.50	72.80	121.00							
6.49	11.48	18.69	31.80	73.80	121.60							
6.64	11.60	18.82	32.10	75.30	122.20							
6.80	11.71	18.95	32.40	76.00	122.80							
6.88	11.82	19.08	32.70	76.60	123.30							
6.96	11.93	19.21	33.00	77.80	124.10							
7.03	12.04	19.34	33.50	78.30	124.60							
7.11	12.15	19.47	33.70	79.10	125.20							
7.19	12.26	19.60	34.10	80.00	126.00							
7.27	12.37	19.79	34.40	81.00	127.00							
7.34	12.48	19.98	34.90	81.20	127.50							
7.42	12.59	20.17	35.30	83.00	128.20							
7.50	12.70	20.36	35.60	84.10	129.00							
7.57	12.79	20.55	36.50	85.40	129.50							
7.64	12.88	20.74	37.00	86.70	130.20							
7.71	12.97	20.93	37.50	88.00	131.20							
7.78	13.06	21.12	38.20	89.20	132.10							
7.85	13.15	21.31	38.60	90.40	133.00							
7.92	13.24	21.50	39.20	91.50	133.60							
7.99	13.33	21.59	39.80	92.60	134.50							
8.06	13.42	21.68	40.30	93.50	135.20							
8.13	13.51	21.77	41.20	94.70	136.10							
8.20	13.60	21.86	42.30	95.60	137.00							
8.26	13.73	21.95	43.30	96.70	137.80							
8.32	13.85	22.05	44.30	97.70	138.60							
8.38	13.98	22.14	45.60	98.30	139.50							
8.44	14.11	22.23	47.30	99.20	140.00							
8.50	14.24	22.32	49.50	99.80	141.00							
8.56	14.36	22.41	50.00	100.10	142.20							
8.62	14.49	22.50	52.20	101.00	143.20							
8.68	14.62	22.70	53.10	101.60	144.40							
8.74	14.75	22.90	53.90	102.50	145.40							
8.80	14.87	23.10	54.70	103.60	146.60							
8.87	15.00	23.30	55.20	104.50	147.60							
8.94	15.12	23.50	55.70	105.50	148.80							
9.01	15.24	23.70	56.00	106.60	149.90							
9.08	15.36	23.90	56.20	108.00	151.00							
9.15	15.48	24.10	56.50	109.00								
9.22	15.60	24.30	56.70	109.70								
9.29	15.72	24.50	57.10	110.20								
9.36	15.84	24.70	57.60	110.50								
9.43	15.96	24.90	58.10	110.80								

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET							WBS NO.	PROJECT TIP I.D.	ROUTE
							38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
							COUNTY	FIELD PROFESSIONAL	FIELD CREW
							Haywood	M. Brewer	R. Kral/D. Underwood
Test Location							Date Run		
C-15 -L- 61+64 EB OSS 1.0 FT RT FW							8/4 to 8/6/2021		
Type	Test Interval			Datum			Cut/Fill		
DCP	Cumulative cm per blow			STBC			4.0 ft Fill		
1.90	17.10	45.00	120.20						
2.40	17.30	45.50	122.10						
2.80	17.50	46.00	123.70						
3.10	17.70	46.70	125.40						
3.50	17.90	47.50	127.20						
4.00	18.10	48.40	129.00						
4.30	18.30	49.10	130.50						
4.70	18.50	49.60	132.20						
5.20	18.70	50.20	133.40						
5.38	18.88	51.20	134.20						
5.56	19.06	52.10	136.00						
5.74	19.24	53.00							
5.92	19.42	54.30							
6.10	19.60	55.10							
6.32	19.92	56.00							
6.54	20.24	56.50							
6.76	20.56	57.70							
6.98	20.88	58.80							
7.20	21.20	59.70							
7.48	21.46	60.70							
7.76	21.72	61.60							
8.04	21.98	62.60							
8.32	22.24	63.60							
8.60	22.50	64.30							
8.88	22.74	65.30							
9.16	22.98	66.50							
9.44	23.22	67.60							
9.72	23.46	68.60							
10.00	23.70	69.60							
10.14	24.06	70.60							
10.28	24.42	71.50							
10.42	24.78	72.50							
10.56	25.14	73.20							
10.70	25.50	74.20							
10.88	25.70	75.20							
11.06	26.00	76.00							
11.24	26.40	77.10							
11.42	26.80	78.10							
11.60	27.40	79.30							
11.78	27.80	80.50							
11.96	28.20	81.70							
12.14	28.50	83.10							
12.32	28.80	84.30							
12.50	29.10	85.60							
12.72	29.50	87.10							
12.94	30.10	88.50							
13.16	30.50	90.30							
13.38	30.80	91.70							
13.60	31.10	93.50							
13.86	31.70	95.20							
14.12	32.00	97.00							
14.38	32.50	98.80							
14.64	33.10	100.40							
14.90	33.60	102.00							
15.10	34.30	103.80							
15.30	35.10	105.60							
15.50	35.70	107.00							
15.70	36.80	108.50							
15.90	38.50	110.20							
16.06	39.60	111.80							
16.22	40.60	113.50							
16.38	41.90	115.00							
16.54	42.80	116.80							
16.70	43.50	118.50							
16.90	44.20	120.20							

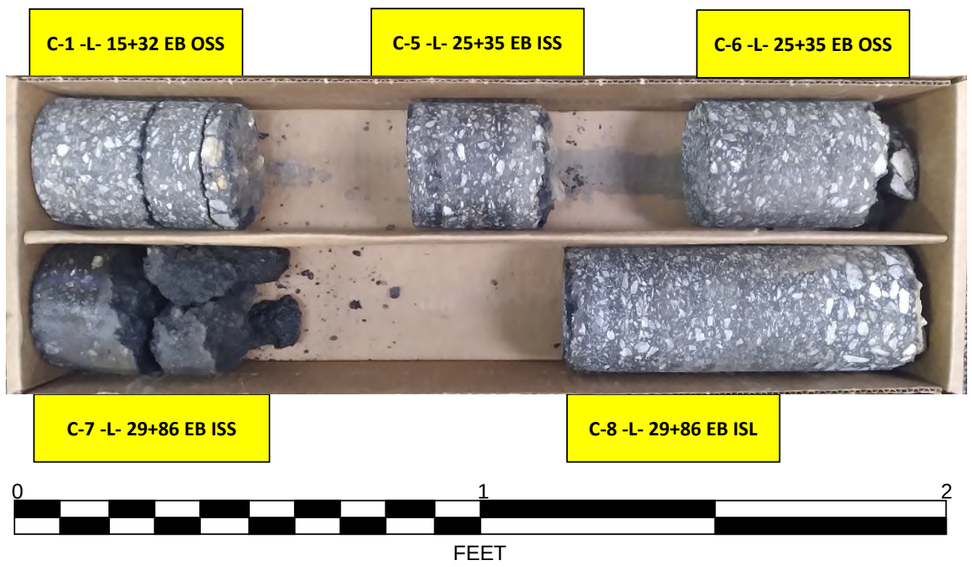
Test Location												Date Run
C-19 -L- 76+90 EB ISS 2.2 FT LT FY												8/4 to 8/6/2021
Type	Test Interval			Datum				Cut/Fill				
DCP	Cumulative cm per blow			STBC				20.0 ft Cut				
2.50	37.10	59.50	83.60	92.77								
3.60	37.60	60.20	84.00	92.80								
4.10	38.30	61.00	84.30	92.83								
4.50	38.80	61.80	84.60	92.86								
4.80	39.50	62.50	85.00	92.89								
5.20	39.90	63.00	85.30	92.92								
5.80	40.20	63.60	85.60	92.95								
6.20	40.40	64.50	86.00	92.98								
6.40	40.52	65.50	86.50	93.01								
6.50	40.64	66.50	86.80	93.04								
6.70	40.76	67.60	87.20	93.07								
7.00	40.88	68.30	87.70	93.10								
7.30	41.00	68.80	88.00	DCP								
7.60	41.12	69.80	88.50	REF								
7.90	41.24	70.60	89.20									
8.20	41.36	71.40	89.60									
8.60	41.48	72.10	89.80									
8.80	41.60	72.70	90.00									
9.00	41.67	73.50	90.40									
9.30	41.74	74.20	90.60									
9.50	41.81	75.00	90.70									
9.70	41.88	75.60	90.80									
10.20	41.95	76.10	91.00									
10.50	42.02	76.50	91.20									
10.70	42.09	76.80	91.40									
11.00	42.16	77.00	91.50									
11.20	42.23	77.40	91.60									
11.40	42.30	77.51	91.63									
11.80	42.42	77.63	91.66									
12.10	42.54	77.74	91.69									
12.30	42.66	77.86	91.72									
12.60	42.78	77.97	91.75									
12.80	42.90	78.09	91.78									
14.20	43.02	78.20	91.81									
15.20	43.14	78.31	91.84									
16.70	43.26	78.43	91.87									
17.60	43.38	78.54	91.90									
18.60	43.50	78.66	91.93									
19.40	43.77	78.77	91.96									
20.30	44.04	78.89	91.99									
21.20	44.31	79.00	92.02									
22.30	44.58	79.11	92.05									
24.60	44.85	79.23	92.08									
27.50	45.12	79.34	92.11									
27.80	45.39	79.46	92.14									
28.20	45.66	79.57	92.17									
28.50	45.93	79.69	92.20									
28.80	46.20	79.80	92.23									
29.10	46.70	79.91	92.26									
29.50	47.00	80.03	92.29									
29.90	47.40	80.14	92.32									
30.20	48.00	80.26	92.35									
30.50	48.20	80.37	92.38									
30.90	49.40	80.49	92.41									
31.20	50.00	80.60	92.44									
31.50	50.70	80.90	92.47									
31.90	51.60	81.10	92.50									
32.20	52.50	81.40	92.53									
33.00	53.50	81.60	92.56									
33.30	54.30	81.90	92.59									
34.00	55.40	82.10	92.62									
35.00	56.50	82.40	92.65									
35.40	57.40	82.70	92.68									
36.00	58.30	82.90	92.71									
36.50	58.80	83.20	92.74									

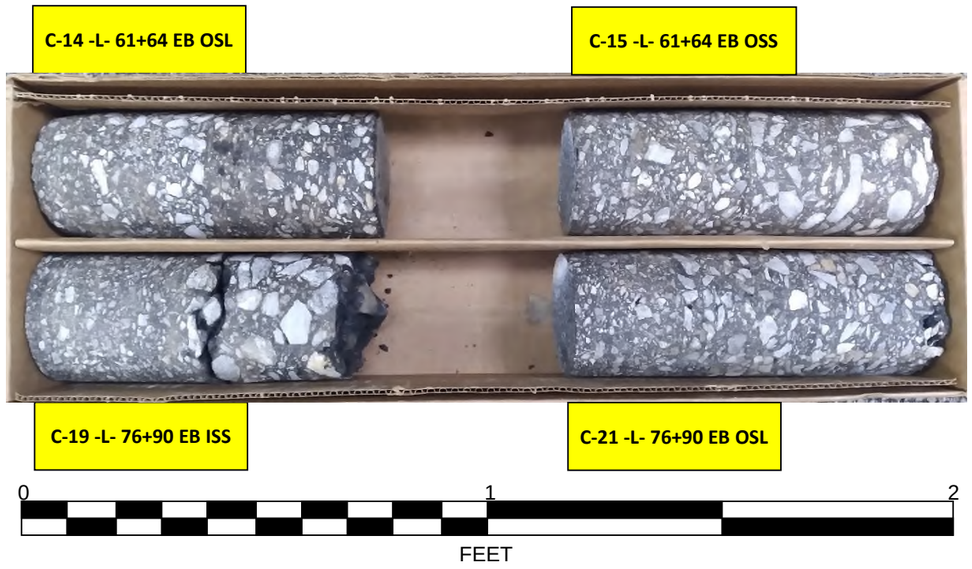
CAROLINAS GEOTECHNICAL GROUP

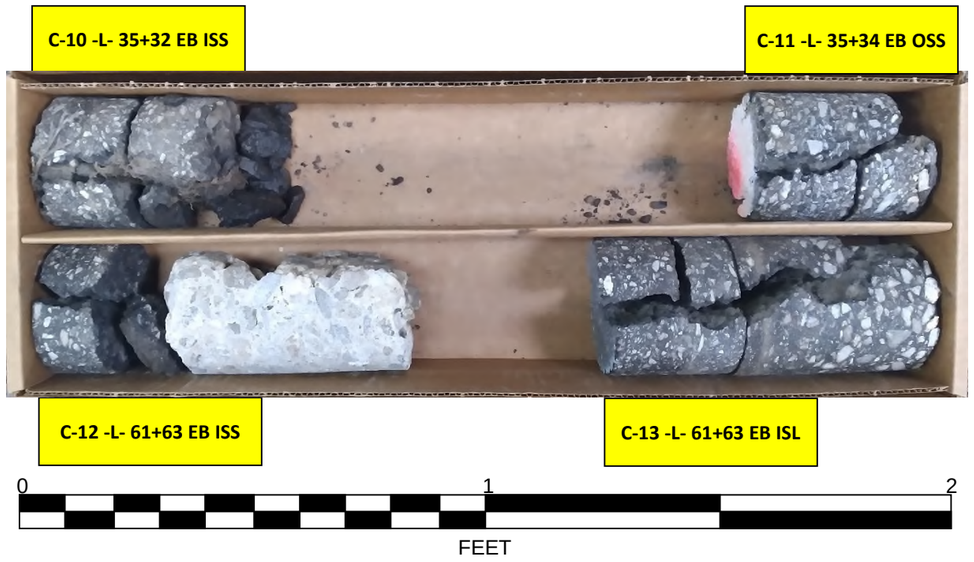
DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.							ROUTE			
								38332.1.FS	B-3186/B-5898							US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane			
								COUNTY	FIELD PROFESSIONAL							FIELD CREW			
								Haywood	M. Brewer							R. Kral/D. Underwood			
Test Location								Date Run	Test Location							Date Run			
C-21 -L- 76+90 EB OSL 2.2 FT LT FW								8/4 to 8/6/2021	C-22 -L- 76+90 EB OSS 3.5 FT RT FW							8/4 to 8/6/2021			
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill			
DCP	Cumulative cm per blow				STBC			20.0 ft Cut	DCP	Cumulative cm per blow				STBC		20.0 ft Cut			
2.40	49.70								2.50	63.10									
3.50	50.10								3.70	63.70									
4.10	50.60								4.10	64.10									
4.40	50.90								4.80	64.40									
5.20	51.90								5.40	64.70									
5.50	52.30								6.00	65.10									
5.80	52.60								6.60	65.50									
6.30	52.90								7.20	66.00									
6.60	53.30								7.50	66.30									
6.80	53.60								7.70	66.70									
7.60	53.90								8.30	67.20									
8.00	54.20								8.80	67.40									
8.30	54.50								9.10	67.70									
8.50	54.80								9.50	68.10									
9.00	55.20								9.60	68.40									
9.20	55.50								10.10	69.20									
9.50	55.80								10.40	**50/0 CM**									
10.00	56.10								10.90	**DCP**									
10.40	56.50								11.50	**REF**									
10.70	56.70								11.70										
11.00	57.10								12.20										
11.60	57.40								12.50										
11.80	57.80								13.10										
12.10	58.00								13.50										
12.50	58.30								14.00										
12.80	58.60								14.50										
13.20	58.90								15.00										
13.60	59.30								15.50										
14.00	59.60								16.00										
14.50	59.90								16.80										
14.80	60.20								17.50										
15.50	60.50								18.20										
16.00	60.90								18.80										
16.30	61.20								19.50										
16.60	61.50								20.30										
17.10	61.80								21.20										
17.50	62.10								22.00										
18.00	62.40								23.10										
18.30	62.80								24.40										
18.60	63.10								26.00										
19.30	63.40								27.60										
19.50	63.70								29.20										
19.90	64.00								30.70										
20.50	64.30								32.20										
21.00	64.70								33.00										
21.60	65.00								34.10										
22.30	65.30								36.00										
22.80	65.60								37.20										
23.70	**50/0 CM**								39.00										
24.50	**DCP**								40.10										
25.10	**REF**								43.00										
25.30									45.60										
26.50									48.80										
28.20									51.50										
30.00									54.40										
31.80									56.50										
33.30									57.60										
35.10									58.30										
37.20									58.70										
39.60									59.20										
41.80									59.90										
43.80									60.80										
45.60									61.20										
47.20									62.00										
48.60									62.80										

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.							ROUTE			
								38332.1.FS	B-3186/B-5898							US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane			
								COUNTY	FIELD PROFESSIONAL							FIELD CREW			
								Haywood	M. Brewer							R. Kral/D. Underwood			
Test Location								Date Run	Test Location							Date Run			
C-23 -L- 80+22 EB ISS 2.3 FT LT FY								8/4 to 8/6/2021	C-24 -L- 80+22 EB OSS 1.9 FT RT FW							8/4 to 8/6/2021			
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill			
DCP	Cumulative cm per blow				STBC			2.0 ft Fill	DCP	Cumulative cm per blow				STBC		8.0 ft Cut			
1.00	19.50	33.00	94.80						4.00	24.00	107.50								
1.40	19.66	33.40	95.50						4.80	24.50	109.10								
2.10	19.82	34.10	96.10						5.40	25.00	110.80								
2.70	19.98	34.50	97.00						5.80	25.10	112.40								
3.00	20.14	35.60	97.70						6.50	26.00	114.20								
3.30	20.30	36.00	98.80						6.70	27.00	115.30								
4.00	20.48	36.60	99.70						7.30	27.60	117.80								
4.40	20.66	37.50	101.00						7.60	28.30	119.00								
5.00	20.84	38.60	102.10						8.00	28.90	120.30								
5.30	21.02	39.50	103.50						8.20	29.40	121.80								
5.80	21.20	40.20	104.50						8.40	29.70	123.10								
6.30	21.40	41.20	105.60						8.70	30.10	124.30								
6.50	21.60	42.60	107.00						8.90	30.70	125.70								
7.10	21.80	44.20	108.50						9.50	31.30	127.00								
7.70	22.00	45.70	109.00						9.80	32.10	128.40								
8.00	22.20	47.50	111.50						10.30	33.20	129.60								
8.30	22.30	49.40	112.40						10.50	34.00	131.00								
8.50	22.40	51.10	115.00						10.70	35.20	132.10								
8.80	22.50	53.00	116.30						11.00	36.30	133.50								
9.10	22.60	54.80	117.90						11.30	37.60	134.70								
9.60	22.70	56.70	119.50						11.50	38.30	136.00								
10.20	22.80	58.50	122.00						11.80	40.20	137.00								
10.50	22.90	60.00	124.10						12.00	41.50	138.50								
11.00	23.00	62.00	126.00						12.20	43.00	139.50								
11.50	23.10	63.50	128.00						12.40	44.40	140.70								
12.20	23.20	65.20	130.00						12.80	46.00	141.70								
12.38	23.42	67.00	130.50						13.00	47.50	142.80								
12.56	23.64	68.60	131.30						13.20	49.50									
12.74	23.86	70.20	132.60						13.40	51.50									
12.92	24.08	71.80	134.00						13.60	52.80									
13.10	24.30	73.80	135.50						13.80	54.00									
13.28	24.48	74.20	137.00						14.10	55.70									
13.46	24.66	75.20	138.20						14.40	57.90									
13.64	24.84	76.20	139.20						14.50	58.10									
13.82	25.02	76.80	141.20						14.80	59.90									
14.00	25.20	77.70	142.50						15.00	61.40									
14.18	25.30	78.20	143.80						15.20	62.70									
14.36	25.40	79.00	145.30						15.40	63.20									
14.54	25.50	79.30	146.80						16.00	65.50									
14.72	25.60	79.80	148.50						16.20	66.80									
14.90	25.70	80.10	150.20						16.60	68.20									
15.04	25.96	80.50	151.60						16.80	69.20									
15.18	26.22	81.00	153.00						17.00	71.20									
15.32	26.48	81.30							17.30	72.50									
15.46	26.74	81.70							17.60	73.60									
15.60	27.00	82.00							17.90	75.10									
15.84	27.18	82.40							18.10	76.50									
16.08	27.36	82.80							18.50	78.10									
16.32	27.54	83.20							18.60	79.80									
16.56	27.72	83.70							18.70	81.60									
16.80	27.90	84.20							19.10	83.50									
16.98	28.12	84.50							19.30	85.70									
17.16	28.34	85.60							19.60	87.70									
17.34	28.56	86.00							20.00	89.60									
17.52	28.78	86.80							20.20	91.30									
17.70	29.00	87.40							20.50	92.70									
17.88	29.40	88.00							20.80	94.50									
18.06	29.80	88.90							21.50	96.00									
18.24	30.20	89.60							22.00	97.30									
18.42	30.60	90.50							22.10	98.80									
18.60	31.00	91.10							22.50	100.30									
18.78	31.40	91.80							22.60	101.50									
18.96	31.80	92.40							23.10	103.20									
19.14	32.20	92.50							23.40	104.80									
19.32	32.60	93.90							23.80	106.20									

B-3186/B-5898 - US 23-74 Bridge 155 & 158 over Richland Creek on US 23-74 Northbound Lane
(Combine with B-5898)
Pavement Core Photographs







CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET

WBS NO.	PROJECT TIP I.D.	ROUTE
38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
COUNTY	**FIELD PROFESSIONAL**	**FIELD CREW**
Haywood	M. Brewer	R. Kral/D. Underwood

Test Location: C-25 -L- 15+13 WB OSS 5.5 FT RT FW — **Date Run:** 8/4 to 8/6/2021

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC		20.0 ft Fill	
1.40	24.50	84.60	139.00					
1.70	24.70	86.30	139.30					
2.60	25.00	87.50	139.60					
3.10	25.20	89.30	139.90					
3.60	25.40	91.30	140.20					
4.10	25.60	93.30	140.70					
4.50	25.80	95.10	141.00					
5.00	26.00	97.00	141.30					
5.30	26.20	98.70	141.70					
5.80	26.40	100.50	142.00					
6.30	26.50	102.30	142.30					
6.40	26.70	104.20	142.70					
6.70	27.10	105.70	143.00					
7.10	27.30	107.50	143.60					
7.30	27.60	109.00	144.20					
7.60	27.80	110.50	144.80					
7.80	28.20	112.20	145.30					
8.00	28.50	113.70	145.90					
8.30	28.80	115.50	146.50					
8.60	29.00	116.50	147.30					
8.90	29.50	117.50	148.10					
9.20	29.70	118.40	148.60					
9.60	30.00	119.30	149.00					
10.20	30.60	120.30	149.60					
10.50	31.00	121.50	150.20					
10.70	31.20	122.60	150.80					
11.00	31.50	124.00	151.30					
11.30	32.00	125.30	151.90					
11.60	32.20	126.60	152.50					
12.10	32.60	128.00	153.10					
12.50	33.00	129.10	153.70					
12.80	33.50	130.10	154.30					
13.10	33.70	131.00	154.90					
13.70	34.50	132.00	155.50					
14.10	35.00	132.60	156.10					
14.60	35.60	132.75	156.70					
15.10	36.20	132.89	157.30					
15.50	36.80	133.04	157.90					
15.80	37.60	133.18	158.50					
16.00	38.30	133.33						
16.40	39.20	133.47						
16.80	40.20	133.62						
17.30	41.10	133.76						
17.50	42.20	133.91						
18.00	43.50	134.05						
18.30	45.20	134.20						
18.60	46.90	134.35						
19.20	49.00	134.50						
19.50	51.20	134.65						
19.80	53.30	134.80						
20.10	55.60	134.95						
20.50	57.60	135.10						
20.70	58.70	135.25						
21.00	60.00	135.40						
21.20	62.00	135.55						
21.40	64.00	135.70						
21.60	65.70	136.03						
21.80	67.80	136.36						
22.00	70.20	136.69						
22.20	72.20	137.02						
22.70	74.40	137.35						
23.20	76.50	137.68						
23.50	79.00	138.01						
23.70	81.00	138.34						
24.00	83.10	138.67						

Test Location: C-26 -L- 20+09 WB OSS 1.2 FT RT FW — **Date Run:** 8/4 to 8/6/2021

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC		20.0 ft Cut	
0.30	16.50	27.15	49.40					
0.50	16.70	27.30	49.50					
0.80	16.90	27.45	49.60					
1.00	17.20	27.60	49.70					
1.30	17.50	27.75	49.80					
1.50	17.70	27.90	49.90					
1.80	18.00	28.05	50.00					
2.00	18.20	28.20	50.10					
2.30	18.50	28.35	50.20					
2.50	18.70	28.50	50.28					
2.80	18.90	29.00	50.36					
3.00	19.20	29.40	50.44					
3.30	19.45	29.90	50.52					
3.50	19.70	30.40	50.60					
3.80	19.86	30.90	50.68					
4.00	20.02	31.30	50.76					
4.30	20.18	31.50	50.84					
4.50	20.34	31.90	50.92					
4.80	20.50	32.20	51.00					
5.00	20.70	32.60	51.07					
5.30	20.90	33.00	51.14					
5.50	21.10	33.40	51.21					
5.80	21.30	34.10	51.28					
6.00	21.50	34.50	51.35					
6.30	21.62	35.00	51.42					
6.50	21.74	35.60	51.49					
6.80	21.86	36.00	51.56					
7.00	21.98	36.60	51.63					
7.30	22.10	37.20	51.70					
7.50	22.24	38.20	**DCP**					
7.80	22.38	39.00	**REF**					
8.00	22.52	40.00						
8.30	22.66	40.60						
8.50	22.80	41.80						
8.80	22.96	42.80						
9.00	23.12	43.80						
9.30	23.28	44.40						
9.50	23.44	44.80						
9.80	23.60	45.20						
10.00	23.78	45.70						
10.30	23.96	45.80						
10.50	24.14	46.20						
10.70	24.32	46.50						
11.00	24.50	47.20						
11.20	24.60	47.33						
11.50	24.70	47.46						
11.70	24.80	47.59						
12.00	24.90	47.72						
12.20	25.00	47.85						
12.50	25.15	47.98						
12.80	25.30	48.11						
12.90	25.45	48.24						
13.20	25.60	48.37						
13.40	25.75	48.50						
13.70	25.90	48.57						
14.00	26.02	48.64						
14.20	26.14	48.71						
14.50	26.26	48.78						
14.70	26.38	48.85						
14.90	26.50	48.92						
15.20	26.60	48.99						
15.40	26.70	49.06						
15.70	26.80	49.13						
15.90	26.90	49.20						
16.20	27.00	49.30						

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET

WBS NO.	PROJECT TIP I.D.	ROUTE
38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
COUNTY	**FIELD PROFESSIONAL**	**FIELD CREW**
Haywood	M. Brewer	R. Kral/D. Underwood

Test Location: C-28 -L- 20+09 WB ISS 2.4 FT LT FY — **Date Run:** 8/4 to 8/6/2021

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC		20.0 ft Cut	
1.30	25.30	90.00						
2.10	25.70	91.20						
2.40	26.10	92.50						
2.80	26.50	93.90						
3.10	27.00	95.20						
3.60	27.60	96.30						
4.00	28.00	97.60						
4.60	28.80	98.20						
5.10	29.20	100.00						
5.50	29.50	100.30						
6.00	30.00	102.00						
6.30	30.50	102.80						
6.60	30.80	104.00						
6.90	31.50	105.10						
7.40	32.00	106.60						
7.60	32.50	108.00						
7.90	33.20	109.40						
8.30	33.80	111.00						
8.50	34.30	112.50						
8.80	34.80	113.90						
9.30	35.50	115.10						
9.60	36.50	116.40						
9.90	36.80	118.00						
10.20	37.80	119.30						
10.50	38.60	120.60						
10.80	39.80	121.40						
11.30	41.70	122.60						
11.50	43.20	124.20						
11.80	44.20	125.50						
12.30	45.40	126.50						
12.50	46.20	127.60						
12.70	48.40	129.10						
13.00	49.90	130.50						
13.30	52.20	131.70						
13.60	54.90	133.20						
14.00	56.70	134.50						
14.30	58.30	135.50						
14.60	58.80	136.70						
14.90	60.00	138.00						
15.20	61.10	139.20						
15.50	62.50	140.20						
16.00	63.60	141.80						
16.40	64.80	143.20						
16.60	66.10	144.80						
17.00	67.30	146.30						
17.50	68.30	147.80						
17.80	69.20	149.30						
18.10	70.20	150.50						
18.50	71.20	151.90						
19.00	72.50	153.10						
19.30	73.50	154.30						
19.70	74.40							
20.10	75.40							
20.50	76.50							
20.80	77.50							
21.40	78.50							
21.70	79.70							
22.10	80.70							
22.60	82.00							
23.00	83.50							
23.30	84.50							
23.90	85.70							
24.30	86.70							
24.60	87.80							
24.90	88.90							

Test Location: C-29 -L- 25+50 WB OSS 5.7 FT RT FW — **Date Run:** 8/4 to 8/6/2021

Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC		25.0 ft Cut	
1.50	30.60	144.50						
1.80	30.90	146.80						
2.40	31.80	149.00						
2.90	32.20	151.00						
3.40	32.70	152.40						
3.80	33.20							
4.50	33.70							
5.60	34.10							
6.50	34.70							
6.70	35.20							
7.00	35.90							
7.30	36.40							
7.60	36.80							
8.10	37.30							
8.50	38.40							
8.90	38.80							
9.30	39.60							
9.60	40.10							
10.00	40.90							
10.40	42.00							
10.80	43.50							
11.30	44.60							
12.00	47.00							
12.40	49.00							
12.70	51.20							
13.20	53.50							
13.50	55.70							
13.80	57.90							
14.10	60.00							
14.40	62.30							
14.60	64.30							
15.00	67.00							
15.30	69.30							
15.90	70.20							
16.50	73.20							
16.80	75.30							
17.50	77.50							
18.00	80.00							
18.30	82.50							
18.80	85.10							
19.20	87.00							
19.50	89.50							
20.10	91.50							
20.50	93.70							
21.00	95.70							
21.50	98.20							
21.70	100.50							
22.10	103.20							
22.50	106.00							
23.00	109.00							
23.40	111.50							
24.00	113.50							
24.20	115.50							
25.20	117.40							
25.70	119.50							
26.20	122.00							
26.80	125.20							
27.10	128.50							
27.40	131.00							
27.70	132.80							
28.20	134.50							
28.70	136.10							
29.20	137.90							
29.80	140.00							
30.20	142.40							

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.					ROUTE	
								38332.1.FS	B-3186/B-5898					US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane	
								COUNTY	FIELD PROFESSIONAL					FIELD CREW	
								Haywood	M. Brewer					R. Kral/D. Underwood	
Test Location								Date Run	Test Location						Date Run
C-30 -L- 25+50 WB ISS 1.8 FT RT FY								8/4 to 8/6/2021	C-32 -L- 30+33 WB ISL 5.5 FT RT FY						8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC			10.0 ft Cut	DCP	Cumulative cm per blow				STBC		25.0 ft Cut	
1.80	22.10	101.50							0.80	15.30	40.20	40.20	78.50	92.50		
2.60	22.60	104.30							1.40	15.40	40.40	40.40	79.00	93.00		
3.20	23.60	107.50							2.00	15.50	40.60	40.60	79.50	93.30		
3.70	24.50	110.40							2.30	15.60	40.80	40.80	79.80	93.60		
4.50	25.10	113.40							2.50	15.72	41.10	41.10	80.20	94.10		
5.00	25.70	116.50							2.70	15.84	41.50	41.50	80.50	94.30		
5.50	26.50	119.30							3.00	15.96	41.80	41.80	80.80	94.60		
6.00	27.00	121.50							3.40	16.08	42.00	42.00	81.60	94.90		
6.30	27.50	124.20							3.60	16.20	42.24	42.24	81.70	95.40		
6.60	28.00	127.20							3.80	16.26	42.48	42.48	81.80	95.60		
7.00	28.50	129.60							4.10	16.32	42.72	42.72	82.20	96.00		
7.20	28.70	132.10							4.50	16.38	42.96	42.96	82.50	96.30		
7.50	29.00	134.50							4.67	16.44	43.20	43.20	82.60	96.70		
7.70	29.20	137.10							4.83	16.50	44.20	44.20	83.20	97.20		
8.00	29.50	139.60							5.00	16.64	45.70	45.70	83.50	97.50		
8.80	30.00	141.80							5.17	16.78	46.10	46.10	83.80	97.70		
9.00	30.30	144.00							5.33	16.92	47.40	47.40	84.20	98.20		
9.20	30.60	146.30							5.50	17.06	47.90	47.90	84.50	98.50		
9.40	31.00	148.40							5.67	17.20	48.30	48.30	84.60	98.80		
9.60	31.30								5.83	17.30	48.90	48.90	84.80	99.10		
10.00	31.70								6.00	17.40	49.50	49.50	85.00	99.50		
10.20	32.10								6.17	17.50	50.00	50.00	85.10	100.10		
10.50	32.50								6.33	17.60	50.70	50.70	85.30	100.50		
10.70	32.80								6.50	17.70	51.40	51.40	85.40	100.70		
11.00	33.10								6.74	17.74	52.00	52.00	85.60	101.20		
11.20	33.50								6.98	17.78	52.70	52.70	85.70	101.50		
11.50	34.00								7.22	17.82	53.10	53.10	85.90	102.00		
11.70	34.30								7.46	17.86	53.80	53.80	86.00	102.40		
12.00	34.60								7.70	17.90	54.20	54.20	86.20	102.80		
12.20	35.20								7.92	**AUGER**	54.90	54.90	86.30	103.40		
12.50	35.70								8.14	**13.1 CM**	55.80	55.80	86.50	103.70		
12.70	36.10								8.36	2.60	56.70	56.70	86.70	104.50		
12.90	36.70								8.58	4.20	57.60	57.60	86.80	105.00		
13.20	37.50								8.80	5.50	58.60	58.60	86.90	105.50		
13.50	38.00								9.00	6.60	59.20	59.20	87.10	106.10		
13.70	38.60								9.20	8.10	60.00	60.00	87.20	106.60		
13.90	39.70								9.40	9.30	61.00	61.00	87.30	107.20		
14.20	40.60								9.60	10.50	61.20	61.20	87.50	108.00		
14.40	41.70								9.80	12.30	62.40	62.40	87.70	108.50		
14.70	43.70								10.00	13.80	62.50	62.50	87.80	108.80		
14.90	46.10								10.20	15.20	63.70	63.70	87.90	109.30		
15.20	48.10								10.40	17.00	64.20	64.20	88.10	109.80		
15.40	50.00								10.60	18.80	64.70	64.70	88.30	112.00		
15.70	51.70								10.80	20.20	65.70	65.70	88.40	112.70		
15.90	53.40								10.98	21.90	66.60	66.60	88.60	113.50		
16.20	55.00								11.16	23.30	67.00	67.00	88.70	114.20		
16.40	57.20								11.34	24.60	68.50	68.50	88.80	114.70		
16.60	59.10								11.52	26.30	69.10	69.10	89.00	115.60		
16.90	61.00								11.70	28.10	69.60	69.60	89.20	116.50		
17.10	62.60								11.90	29.90	70.00	70.00	89.30	117.20		
17.40	64.50								12.10	32.00	70.60	70.60	89.50	118.10		
17.60	66.40								12.30	33.50	71.10	71.10	89.60	119.10		
17.80	69.20								12.50	34.60	71.60	71.60	89.80			
18.10	71.50								12.70	35.50	72.20	72.20	89.90			
18.40	74.50								12.96	36.30	72.70	72.70	90.10			
18.60	76.90								13.22	36.80	73.20	73.20	90.20			
18.80	79.30								13.48	37.40	73.70	73.70	90.40			
19.10	81.60								13.74	37.70	74.30	74.30	90.50			
19.40	84.00								14.00	38.20	74.80	74.80	90.70			
19.60	86.60								14.22	38.40	75.30	75.30	90.80			
19.90	89.00								14.44	38.60	75.80	75.80	91.00			
20.10	91.80								14.66	38.80	76.40	76.40	91.40			
20.40	94.50								14.88	39.00	76.90	76.90	91.60			
20.60	97.00								15.10	39.20	77.40	77.40	92.00			
21.40	99.30								15.20	39.40	77.90	77.90	92.30			

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.					ROUTE	
								38332.1.FS	B-3186/B-5898					US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane	
								COUNTY	FIELD PROFESSIONAL					FIELD CREW	
								Haywood	M. Brewer					R. Kral/D. Underwood	
Test Location								Date Run	Test Location						Date Run
C-33 -L- 30+33 WB ISS 2.0 FT LT FY								8/4 to 8/6/2021	C-34 -L- 35+34 WB OSS 6.0 FT RT FW						8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC			25.0 ft Cut	DCP	Cumulative cm per blow				STBC		10.0 ft Cut	
1.40	44.40	137.30							1.00	23.90	58.00	129.60					
2.10	46.00	138.40							2.00	24.10	60.00	130.50					
2.80	48.00	139.50							2.60	24.30	62.30	131.20					
3.40	50.00	140.60							3.20	24.50	64.00	132.20					
3.60	52.00	141.50							3.60	24.70	65.50	132.90					
4.10	54.00	142.50							4.10	24.90	67.00	133.80					
4.50	55.70	143.50							4.40	25.10	68.20	134.60					
4.70	58.00	144.50							4.80	25.30	69.70	135.50					
5.10	59.60	145.50							5.10	25.50	71.00	136.50					
5.40	61.50	147.50							5.40	25.70	72.40	137.10					
5.90	63.20	148.50							5.80	25.90	73.70	137.90					
6.30	65.20	149.80							6.10	26.10	75.20	138.80					
6.50	67.30	150.70							6.40	26.30	76.50	139.60					
6.80	69.50	151.70							6.80	26.50	78.00	140.40					
7.00	71.50								7.10	26.70	79.00	141.30					
7.40	73.60								7.40	26.90	80.40	142.10					
7.70	75.60								7.80	27.10	81.50	142.90					
8.00	77.70								8.10	27.30	82.60	143.70					
8.30	79.50								8.50	27.50	83.90	144.60					
8.90	81.40								8.80	27.70	85.00	145.40					
9.20	83.30								9.20	27.90	86.20	146.20					
9.50	84.90								9.50	28.10	87.50	147.10					
10.00	86.60								9.80	28.30	88.50	147.80					
10.50	88.50								10.10	28.50	89.70	148.70					
10.80	90.00								10.50	28.70	90.90	149.50					
11.00	91.70								10.80	28.90	92.10	150.40					
11.70	93.50								11.10	29.10	93.20	151.20					
12.00	95.10								11.50	29.30	94.50	152.00					
12.30	96.50								11.80	29.50	95.50	152.90					
13.00	98.20								12.20	29.70	96.50	153.60					
13.40	99.50								12.50	30.00	97.50	154.50					
13.80	101.00								12.80	30.40	98.70	155.30					
14.30	102.40								13.10	30.70	99.90	156.20					
14.80	103.60								13.50	31.10	101.00	156.70					
15.30	105.00								13.80	31.40	102.00	157.80					
15.70	106.00								14.10	31.70	103.20	158.60					
16.30	107.40								14.50	31.90	104.40	159.50					
16.80	108.10								14.80	32.10	105.50	160.30					
17.50	109.30								15.10	32.30	106.50						
18.00	110.30								15.50	32.50	107.70						
18.50	111.20								15.80	33.00	108.70						
18.90	112.10								16.10	33.30	109.70						
19.60	113.20								16.50	33.70	110.90						
20.20	114.40								16.80	34.20	111.70						
20.50	115.60								17.10	34.80	113.50						
21.10	116.50								17.40	35.20	114.50						
21.60	117.40								17.80	35.80	115.20						
22.20	118.50								18.10	36.30	116.00						
22.50	119.50								18.50	36.70	116.70						
23.00	120.70								18.80	37.50	117.40						
23.60	121.50								19.20	38.20	118.40						
24.20	122.60								19.50	38.80	119.00						
24.60	123.50								19.80	39.60	119.80						
25.30	124.60								20.20	40.50	120.50						
26.00	125.60								20.50	41.40	121.40						
27.00	126.60								20.80	42.10	122.30						
28.00	127.50								21.20	43.30	123.10						
29.00	128.50								21.50	44.60	124.00						
31.00	129.60								21.80	46.20	124.60						
33.00	130.70								22.20	47.50	125.30						
35.20	131.70								22.50	48.90	126.00						
37.40	132.70								22.80	50.50	127.00						
39.10	134.00								23.20	52.00	128.00						
41.00	134.70								23.50	54.00	128.50						
42.60	136.00								23.70	55.70	129.00						

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.	ROUTE
								38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
								COUNTY	FIELD PROFESSIONAL	FIELD CREW
								Haywood	M. Brewer	R. Kral/D. Underwood
Test Location								Date Run	Test Location	Date Run
C-35 -L- 35+35 WB ISS 2.3 FT LT FY								8/4 to 8/6/2021	C-36 -L- 56+85 WB OSS 1.0 FT RT FW	8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC			20.0 Cut	DCP	Cumulative cm per blow				STBC		20.0 ft Cut	
1.60	28.30	99.60							1.20	29.50	88.60						
2.30	28.70	100.40							2.00	30.20	89.80						
2.80	29.10	101.30							2.50	30.60	91.20						
3.30	29.40	102.00							3.00	31.10	92.10						
3.80	29.80	103.00							3.20	31.50	93.30						
4.30	30.20	104.00							3.80	32.40	94.40						
4.60	30.70	104.80							4.20	32.60	95.50						
5.00	30.90	105.50							4.50	32.80	96.50						
5.40	31.30	106.50							4.80	33.30	97.50						
5.80	31.70	107.60							5.30	33.80	98.50						
6.10	32.00	108.50							5.70	34.20	99.50						
6.40	32.40	109.50							6.00	34.70	100.70						
6.80	32.80	110.50							6.60	35.10	101.50						
7.10	33.10	111.50							7.00	35.60	102.20						
7.40	33.60	112.50							7.50	36.00	103.50						
7.70	34.50	113.60							8.00	36.50	104.50						
8.20	35.20	114.60							8.40	36.90	105.50						
8.50	36.00	115.50							8.90	37.50	106.30						
8.80	37.20	116.50							9.50	37.80	107.50						
9.00	38.40	117.50							10.10	39.40	109.80						
9.40	40.00	118.40							11.10	40.60	110.90						
9.60	42.20	119.30							12.20	42.10	113.20						
9.80	44.50	120.00							13.50	43.40	114.10						
10.00	46.50	121.00							15.10	44.50	115.10						
10.20	48.50	121.60							16.60	45.50	116.60						
10.50	51.00	122.60							17.60	46.40	117.60						
11.00	53.10	123.50							18.00	47.30	119.00						
11.20	54.70	124.20							18.30	48.00	120.20						
11.90	56.30	125.10							18.60	49.00	121.50						
12.20	57.50	125.50							18.80	50.00	122.70						
12.80	58.70	126.40							19.10	50.60	124.00						
13.20	60.00	127.00							19.40	51.80	125.20						
13.80	61.50	127.70							19.70	52.60	126.70						
14.20	62.60	128.50							19.90	53.70	127.50						
14.60	64.00	129.00							20.00	54.60	128.40						
15.20	65.30	129.70							20.20	55.20	129.50						
15.50	66.60	130.30							20.40	56.20	130.60						
16.00	67.30	131.10							20.50	57.20	131.50						
16.80	68.90	131.70							20.70	58.00	132.80						
17.50	70.20	132.60							20.80	59.30	134.20						
17.70	71.60	133.30							21.00	60.10	135.50						
18.10	73.30	134.00							21.50	61.30	136.60						
18.80	74.50	134.70							21.80	62.30	137.70						
19.10	75.80	135.00							22.00	63.50	139.00						
19.50	77.20	136.00							22.70	64.60	140.20						
19.70	78.50	136.50							24.00	66.00	141.30						
20.20	79.90	137.00							24.30	67.00	142.40						
21.30	81.00	137.90							24.60	67.90							
21.60	82.20	138.30							24.80	68.30							
22.30	83.50	138.80							25.10	69.70							
22.60	84.80	139.00							25.40	71.00							
22.90	86.10	139.50							25.70	72.00							
23.40	87.20	140.50							25.90	73.50							
23.76	88.50								26.20	75.00							
24.12	89.70								26.50	76.00							
24.48	91.00								26.80	77.20							
24.84	92.00								27.00	78.40							
25.20	93.00								27.30	79.50							
25.56	93.80								27.60	80.60							
25.92	94.60								27.90	82.00							
26.28	95.20								28.10	83.00							
26.64	96.00								28.40	84.20							
27.00	96.80								28.70	85.20							
27.50	97.60								29.00	86.50							
27.90	98.50								29.20	87.60							

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.	ROUTE
								38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
								COUNTY	FIELD PROFESSIONAL	FIELD CREW
								Haywood	M. Brewer	R. Kral/D. Underwood
Test Location								Date Run	Test Location	Date Run
C-37 -L- 56+85 WB OSL 2.3 FT LT FW								8/4 to 8/6/2021	C-38 -L- 56+85 WB ISL 2.0 FT RT FY	8/4 to 8/6/2021
Type	Test Interval				Datum			Cut/Fill	Type	Test Interval				Datum		Cut/Fill	
DCP	Cumulative cm per blow				STBC			20.0 ft Cut	DCP	Cumulative cm per blow				STBC		20.0 ft Cut	
1.20	13.66	23.60	63.70						1.60	15.48	13.60						
1.80	13.80	23.90	64.70						2.50	15.53	15.20						
2.20	13.92	24.20	65.20						3.00	15.57	16.80						
2.50	14.04	24.40	66.00						3.30	15.62	18.10						
2.90	14.16	24.70	66.90						3.70	15.66	19.10						
3.30	14.28	24.90	67.70						4.00	15.71	19.90						
3.50	14.40	25.30	68.70						4.30	15.75	20.40						
3.80	14.64	25.50	69.70						4.60	15.80	21.30						
4.00	14.88	25.80	70.30						5.00	15.91	23.10						
4.10	15.12	26.10	71.30						5.20	16.02	25.10						
4.30	15.36	26.30	72.30						5.40	16.13	26.50						
4.60	15.60	26.70	73.10						5.60	16.24	28.00						
5.00	15.70	26.90	74.00						5.80	16.35	29.40						
5.40	15.80	27.20	75.10						6.00	16.46	30.80						
5.80	15.90	27.50	76.80						6.20	16.57	32.00						
5.90	16.00	27.80	78.20						6.40	16.68	33.10						
6.00	16.10	28.10	79.50						6.60	16.79	34.50						
6.20	16.22	28.30	80.90						6.80	16.90	35.70						
6.50	16.34	28.60	82.00						7.00	17.00	36.50						
6.70	16.46	28.90	83.20						7.20	17.10	37.30						
6.90	16.58	29.20	84.70						7.40	17.20	38.10						
7.10	16.70	29.40	85.70						7.60	17.30	39.10						
7.30	16.84	29.70	87.10						7.80	17.40	40.00						
7.40	16.98	29.90	88.60						8.00	17.50	40.80						
7.60	17.12	30.30	90.30						8.20	17.60	42.00						
7.80	17.26	30.50	92.10						8.40	17.70	43.10						
8.00	17.40	30.80	94.00						8.60	17.80	44.60						
8.20	17.46	31.10	95.30						8.80	17.90	46.10						
8.40	17.52	31.40	96.80						9.00	18.10	48.00						
8.60	17.58	31.70	98.20						9.20	18.20	50.20						
8.80	17.64	31.90	99.90						9.50	18.50	52.40						
9.00	17.70	32.20	101.50						9.60	18.60	55.20						
9.20	17.76	32.50	103.20						9.70	18.80	58.00						
9.30	17.82	32.70	105.00						9.90	18.90	60.50						
9.50	17.88	33.10	106.60						10.20	19.20	63.30						
9.70	17.94	33.30	108.80						10.30	19.30	65.60						
9.90	18.00	33.60	111.00						10.50	19.50	68.00						
10.10	18.12	34.00	113.00						10.70	19.60	70.50						
10.22	18.24	34.70	114.90						10.90	19.80	72.60						
10.34	18.36	35.70	116.50						11.10	19.90	74.50						
10.46	18.48	36.70	118.40						11.30	20.00	76.70						
10.58	18.60	38.10	120.50						11.50	20.10	79.00						
10.70	18.78	39.40	123.10						11.70	20.20	81.10						
10.82	18.96	40.70	126.00						11.90	20.40	83.10						
10.94	19.14	42.20	129.00						12.00	20.50	85.20						
11.06	19.32	43.60	131.90						12.20	20.60	87.50						
11.18	19.50	44.90	134.90						12.40	20.70	89.60						
11.30	19.62	45.00	138.20						12.60	20.90	91.60						
11.40	19.74	47.20	141.90						12.80	21.00	93.70						
11.50	19.86	48.20							13.00	21.10	96.50						
11.60	19.98	49.50							13.20	21.20	99.00						
11.70	20.10	50.50							13.40	**AUGER**	101.80						
11.80	20.30	51.60							13.60	**7.6 CM**	103.50						
11.94	20.60	52.90							13.80	1.60	105.70						
12.08	20.80	53.90							14.00	2.60	108.00						
12.22	21.00	55.00							14.20	3.50	109.30						
12.36	21.30	55.90							14.30	4.40							
12.50	21.60	56.90							14.50	5.10							
12.65	21.80	57.60							14.70	6.00							
12.80	22.00	58.40							14.90	7.00							
12.95	22.30	59.70							15.10	8.30							
13.10	22.50	60.60							15.30	9.60							
13.24	22.80	61.60							15.35	10.70							
13.38	23.10	62.40							15.39	11.60							
13.52	23.30	63.10							15.44	12.30							

CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Haywood	M. Brewer	R. Kral/D. Underwood

Test Location							Date Run
C-39 -L- 65+56 WB OSS 2.0 FT RT FW							8/4 to 8/6/2021
Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow			STBC		15.0 ft Cut	
1.20	15.50	32.70	113.70				
1.40	15.70	33.10	115.40				
2.00	15.90	33.40	117.00				
2.20	16.10	33.70	118.70				
2.40	16.30	34.10	120.30				
2.60	16.50	34.40	122.20				
2.80	16.70	35.20	124.00				
3.10	16.90	35.50	125.70				
3.30	17.10	35.90	127.60				
3.50	17.30	36.40	129.20				
3.70	17.50	36.70	132.50				
3.90	17.70	37.60	134.30				
4.00	17.92	38.10	136.20				
4.30	18.14	38.60	138.00				
4.50	18.36	39.30	139.80				
4.70	18.58	40.00	141.70				
4.90	18.80	41.70	143.20				
5.10	19.04	42.70	145.10				
5.30	19.28	43.70	146.80				
5.60	19.52	44.60	148.80				
5.80	19.76	45.90	150.50				
6.00	20.00	46.80	152.20				
6.20	20.26	47.90					
6.40	20.52	49.00					
6.60	20.78	50.00					
6.80	21.04	51.10					
7.10	21.30	52.20					
7.40	21.50	53.00					
7.60	21.80	54.20					
7.80	22.00	55.20					
7.90	22.20	56.30					
8.10	22.50	57.50					
8.30	22.70	58.60					
8.40	22.90	59.60					
8.60	23.20	61.00					
8.80	23.40	62.40					
9.00	23.60	63.60					
9.20	23.90	65.20					
9.40	24.00	67.00					
9.50	24.30	68.50					
9.70	24.50	69.70					
9.90	24.70	70.20					
10.10	25.00	71.70					
10.20	25.20	74.50					
10.40	25.50	76.20					
10.60	25.70	77.80					
10.70	26.20	79.50					
10.90	26.50	81.60					
11.10	26.90	83.30					
11.30	27.30	85.10					
11.70	27.60	87.00					
11.90	27.90	88.80					
12.10	28.30	90.60					
12.30	28.60	92.40					
12.50	28.90	94.10					
12.70	29.30	96.00					
13.40	29.60	97.50					
13.70	29.90	99.50					
14.00	30.30	101.30					
14.20	30.50	103.00					
14.40	30.90	105.00					
14.60	31.30	107.00					
14.90	31.70	108.60					
15.00	32.00	110.50					
15.20	32.40	112.00					

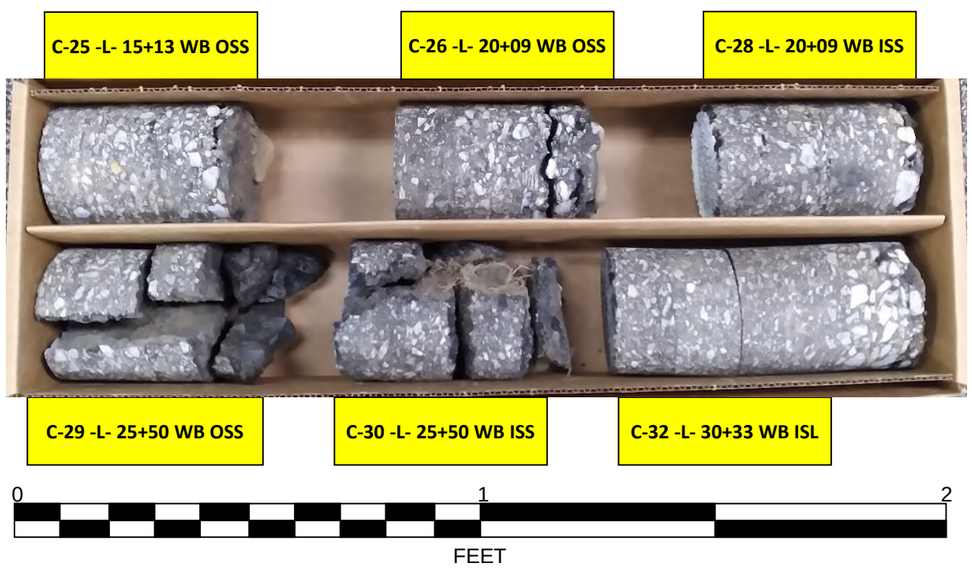
Test Location							Date Run
C-41 -L- 70+40 WB OSS 4.0 FT RT FW							8/4 to 8/6/2021
Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow			STBC		15.0 ft Fill	
1.10	103.00						
1.40	105.50						
2.00	108.00						
2.30	110.00						
2.80	111.70						
3.10	113.40						
3.40	115.30						
3.70	117.20						
4.00	119.00						
5.20	120.70						
6.00	123.00						
6.32	124.90						
6.64	127.10						
6.96	129.20						
7.28	131.40						
7.60	133.20						
7.92	135.20						
8.24	137.20						
8.56	139.00						
8.88							
9.20							
9.70							
10.00							
10.50							
11.00							
11.40							
12.00							
12.90							
14.00							
15.00							
17.00							
18.90							
21.50							
24.50							
28.40							
32.00							
35.40							
39.20							
44.00							
47.70							
50.70							
52.70							
54.30							
56.20							
57.70							
59.00							
60.00							
61.60							
63.60							
65.50							
67.60							
70.00							
72.50							
75.00							
77.50							
80.50							
83.70							
87.00							
89.40							
90.70							
92.00							
93.60							
95.50							
97.70							
100.50							

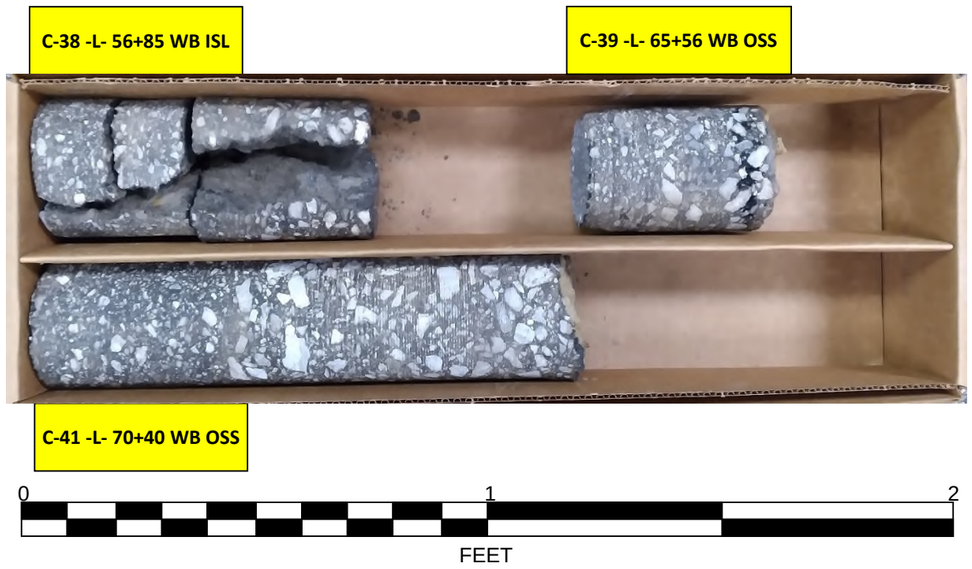
DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET	WBS NO.	PROJECT TIP I.D.	ROUTE
	38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
	COUNTY	FIELD PROFESSIONAL	FIELD CREW
	Haywood	M. Brewer	R. Kral/D. Underwood

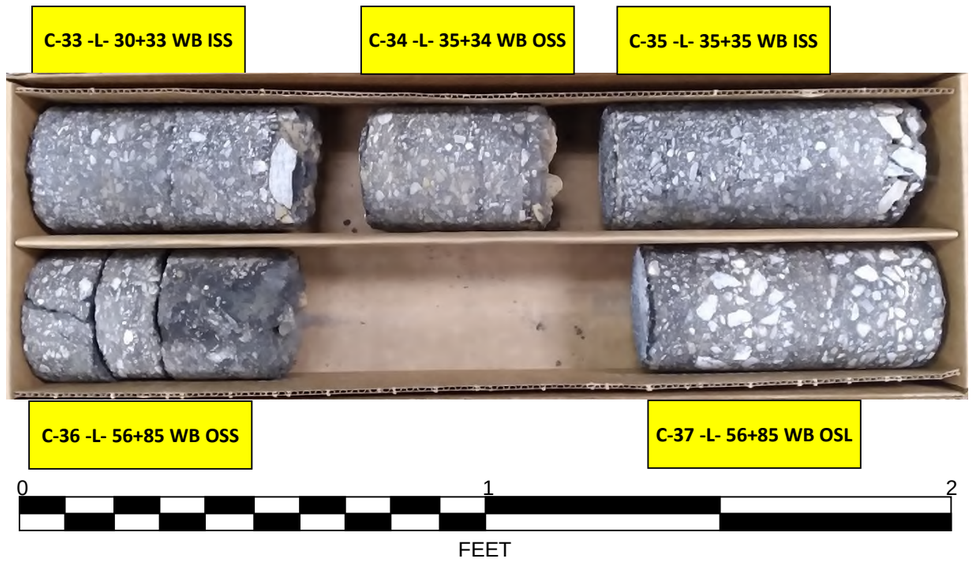
Test Location							Date Run
C-42 -L- 75+03 WB OSS 5.0 FT RT FW							8/4 to 8/6/2021
Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow			STBC		4.0 ft Cut	
1.50	68.20	131.40					
2.50	69.60	131.80					
4.30	71.10	132.40					
6.50	72.60	132.80					
8.00	73.90	133.00					
9.40	75.50	133.20					
10.50	76.70	134.00					
11.50	78.50	134.20					
12.40	80.50	135.00					
13.30	82.40						
14.20	83.90						
15.00	85.70						
15.80	86.40						
16.60	87.50						
17.40	88.40						
18.30	89.30						
19.10	90.30						
20.00	91.10						
21.00	92.00						
21.80	93.00						
22.60	94.00						
23.80	95.00						
24.60	95.80						
25.20	96.70						
26.70	97.60						
27.60	98.70						
28.70	99.60						
29.70	100.40						
30.60	101.50						
31.60	102.40						
32.50	103.40						
33.50	104.50						
34.60	105.50						
35.60	106.20						
36.50	107.50						
37.50	108.30						
38.60	109.40						
39.60	110.30						
40.40	111.30						
41.40	112.10						
42.30	112.90						
43.50	113.80						
44.00	114.60						
44.80	115.50						
45.40	116.30						
46.20	116.90						
47.00	117.60						
47.80	118.60						
48.60	119.40						
49.30	120.20						
50.00	121.10						
51.00	122.20						
52.20	122.90						
53.20	123.80						
54.00	124.40						
55.20	125.00						
56.50	125.70						
57.60	126.50						
58.60	127.10						
59.80	127.50						
61.00	128.30						
62.30	128.80						
63.60	129.40						
64.10	130.20						
66.70	131.20						

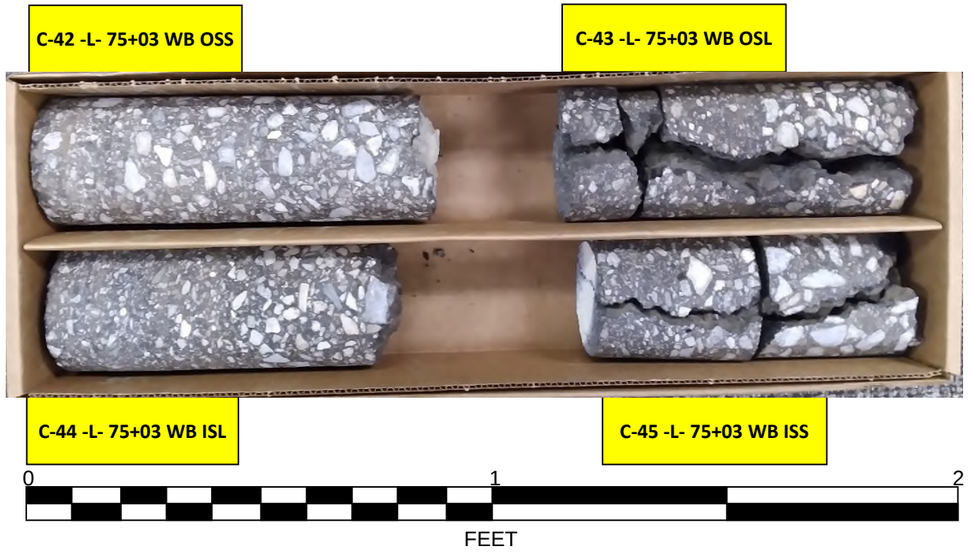
Test Location							Date Run
C-43 -L- 75+03 WB OSL 8.0 FT LT FW							8/4 to 8/6/2021
Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow			STBC		4.0 ft Cut	
1.50	28.50	95.40	134.50				
2.60	29.00	96.20					
3.00	29.90	97.10					
3.60	30.50	97.90					
4.60	30.80	98.80					
4.90	31.30	99.60					
5.20	32.60	100.00					
5.70	32.80	100.50					
5.90	33.70	101.30					
6.20	34.50	101.80					
6.50	35.00	102.50					
6.80	35.60	103.10					
7.10	36.10	103.60					
7.40	36.50	104.20					
7.80	37.20	104.80					
8.00	37.80	105.40					
8.40	38.50	106.00					
8.70	39.30	106.50					
8.90	39.90	107.10					
9.30	40.70	107.70					
9.80	41.30	108.30					
9.90	42.00	108.90					
10.20	42.70	109.50					
10.50	43.40	110.00					
10.90	44.10	110.60					
11.10	44.80	111.20					
11.50	45.50	111.80					
11.80	46.50	112.40					
12.10	47.10	113.00					
12.40	48.20	113.50					
12.70	49.20	114.10					
13.10	50.20	114.70					
13.40	51.10	115.30					
13.70	52.10	115.90					
13.90	53.10	116.40					
14.30	54.50	117.00					
14.60	55.60	117.60					
14.90	57.10	118.10					
15.20	58.50	118.80					
15.60	59.60	119.40					
15.80	61.50	119.90					
16.20	63.10	120.60					
16.50	64.60	121.10					
16.80	66.50	121.70					
17.10	68.50	122.30					
17.40	71.00	122.90					
17.50	73.00	123.40					
18.10	76.00	124.00					
18.40	79.00	124.60					
18.70	81.30	125.20					
19.00	82.50	125.80					
20.00	83.50	126.40					
20.40	84.30	126.90					
20.90	85.20	127.50					
21.40	86.10	128.10					
22.20	86.90	128.80					
23.00	87.70	129.30					
23.40	88.60	129.80					
24.10	89.40	130.40					
25.00	90.30	131.00					
25.50	91.10	131.60					
26.00	91.90	132.10					
26.60	92.90	132.80					
27.20	93.70	133.10					
27.70	94.50	133.90					

B-3186/B-5898 - US 23-74 Bridge 155 & 158 over Richland Creek on US 23-74 Northbound Lane
(Combine with B-5898)
Pavement Core Photographs









CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET						WBS NO.		PROJECT TIP I.D.				ROUTE	
						38332.1.FS		B-3186/B-5898				US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane	
						COUNTY		FIELD PROFESSIONAL				FIELD CREW	
						Haywood		M. Brewer				R. Kral/D. Underwood	
Test Location						Date Run		Test Location				Date Run	
C-44 -L- 75+03 WB ISL 5.5 FT RT FY						8/4 to 8/6/2021		C-45 -L- 75+03 WB ISS 2.5 FT LT FW				8/4 to 8/6/2021	
Type	Test Interval			Datum		Cut/Fill		Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow			STBC		8.0 ft Cut		DCP	Cumulative cm per blow			STBC	8.0 ft Cut
1.00	16.05	23.85	28.63	33.41	2.77			1.50	41.50	77.60	91.78		
2.00	16.20	23.93	28.70	33.48	2.80			2.10	42.00	77.90	91.80		
2.50	16.35	24.00	28.78	33.55	2.83			3.00	42.50	78.20	91.82		
3.00	16.50	24.07	28.85	33.63	2.85			3.60	43.50	78.60	91.84		
3.40	16.61	24.15	28.92	33.70	2.88			4.40	44.10	78.90	91.86		
3.70	16.72	24.22	29.00	33.76	2.91			5.00	45.00	79.20	91.88		
4.30	16.83	24.29	29.07	33.82	2.94			5.80	45.80	79.50	91.90		
4.60	16.94	24.37	29.14	33.88	2.96			6.40	46.80	79.70	91.95		
4.80	17.05	24.44	29.22	33.94	2.99			7.00	47.50	80.10	91.99		
5.20	17.16	24.51	29.29	34.00	3.02			7.60	48.50	80.30	92.04		
5.60	17.27	24.59	29.36	34.06	3.05			8.40	49.60	80.70	92.08		
6.00	17.38	24.66	29.44	34.12	3.07			9.00	50.00	81.00	92.13		
6.30	17.49	24.73	29.51	34.18	3.10			9.40	50.50	81.20	92.17		
6.60	17.60	24.81	29.58	34.24	3.23			9.80	51.50	81.50	92.22		
7.00	17.66	24.88	29.66	34.30	3.35			10.50	52.10	81.90	92.26		
7.30	17.72	24.95	29.73	34.34	3.48			10.70	52.60	82.20	92.31		
7.60	17.78	25.03	29.80	34.38	3.61			10.90	53.90	82.80	92.35		
7.80	17.84	25.10	29.88	34.42	3.74			11.10	54.50	83.20	92.40		
8.10	17.90	25.17	29.95	34.46	3.86			11.30	55.40	83.60	92.42		
8.60	17.96	25.25	30.03	34.50	3.99			11.80	56.30	84.20	92.44		
8.73	18.02	25.32	30.10	34.54	4.12			12.10	56.90	84.70	92.47		
8.87	18.08	25.40	30.17	34.58	4.25			12.50	57.50	85.30	92.49		
9.00	18.14	25.47	30.25	34.62	4.37			12.80	57.90	85.70	92.51		
9.30	18.20	25.54	30.32	34.66	4.50			13.20	58.50	86.10	92.53		
9.50	18.53	25.62	30.39	34.70	4.60			13.60	59.00	86.70	92.56		
9.80	18.86	25.69	30.47	34.75	4.70			14.30	59.50	87.30	92.58		
10.10	19.19	25.76	30.54	34.80	4.80			14.80	60.20	87.80	92.60		
10.30	19.52	25.84	30.61	34.85	4.90			15.20	60.60	88.20	DCP		
10.50	19.85	25.91	30.69	34.90	5.00			15.60	61.20	88.80	REF		
10.70	20.18	25.98	30.76	34.95	5.10			16.00	61.60	89.20			
10.80	20.51	26.06	30.83	35.00	5.20			16.40	62.70	89.70			
11.00	20.84	26.13	30.91	35.05	5.30			16.70	63.40	90.10			
11.40	21.17	26.20	30.98	35.10	5.40			17.20	63.90	90.19			
11.60	21.50	26.28	31.05	35.15	5.50			17.60	64.10	90.28			
11.80	21.57	26.35	31.13	35.20	5.55			18.10	64.80	90.37			
12.00	21.65	26.42	31.20	35.25	5.59			18.50	65.30	90.46			
12.20	21.72	26.50	31.27	35.31	5.64			18.90	66.00	90.55			
12.40	21.79	26.57	31.35	35.36	5.68			19.30	66.50	90.64			
12.80	21.87	26.64	31.42	35.42	5.73			19.70	67.00	90.73			
12.92	21.94	26.72	31.50	35.47	5.77			20.10	67.40	90.82			
13.04	22.01	26.79	31.57	35.53	5.82			20.50	68.00	90.91			
13.16	22.09	26.87	31.64	35.58	5.86			20.80	68.40	91.00			
13.28	22.16	26.94	31.72	35.64	5.91			21.30	68.70	91.05			
13.40	22.23	27.01	31.79	35.69	5.95			21.70	69.10	91.10			
13.52	22.31	27.09	31.86	35.75	6.00			22.10	69.30	91.15			
13.64	22.38	27.16	31.94	35.80	6.04			22.50	69.90	91.20			
13.76	22.46	27.23	32.01	AUGER	6.08			23.20	70.30	91.25			
13.88	22.53	27.31	32.08	5.4 CM	6.12			23.50	70.60	91.30			
14.00	22.60	27.38	32.16	0.30	6.16			23.90	70.80	91.35			
14.10	22.68	27.45	32.23	0.80	6.20			25.00	71.40	91.40			
14.20	22.75	27.53	32.30	1.00	6.24			25.80	71.70	91.45			
14.30	22.82	27.60	32.38	1.20	6.28			26.60	71.90	91.50			
14.40	22.90	27.67	32.45	1.40	6.32			27.50	72.20	91.52			
14.50	22.97	27.75	32.52	1.70	6.36			28.50	72.60	91.54			
14.60	23.04	27.82	32.60	2.00	6.40			29.90	73.30	91.56			
14.70	23.12	27.89	32.67	2.50	DCP			31.50	74.20	91.58			
14.80	23.19	27.97	32.74	2.53	REF			33.10	74.70	91.60			
14.90	23.26	28.04	32.82	2.55				34.50	75.00	91.62			
15.00	23.34	28.11	32.89	2.58				35.40	75.50	91.64			
15.15	23.41	28.19	32.97	2.61				36.10	75.80	91.66			
15.30	23.48	28.26	33.04	2.64				37.70	76.00	91.68			
15.45	23.56	28.33	33.11	2.66				38.60	76.40	91.70			
15.60	23.63	28.41	33.19	2.69				40.00	76.70	91.72			
15.75	23.70	28.48	33.26	2.72				40.50	77.00	91.74			
15.90	23.78	28.56	33.33	2.75				41.00	77.30	91.76			

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET						WBS NO.		PROJECT TIP I.D.				ROUTE	
						38332.1.FS		B-3186/B-5898				US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane	
						COUNTY		FIELD PROFESSIONAL				FIELD CREW	
						Haywood		M. Brewer				R. Kral/D. Underwood	
Test Location						Date Run		Test Location				Date Run	
Type	Test Interval			Datum		Cut/Fill		Type	Test Interval			Datum	Cut/Fill
DCP	Cumulative cm per blow							DCP	Cumulative cm per blow				

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.	ROUTE
								38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
								COUNTY	FIELD PROFESSIONAL	FIELD CREW
								Haywood	M. Brewer	R. Kral/D. Underwood
Test Location								Date Run	Test Location								Date Run
C-47 -Y1LT- 13+66 US 19 WB RTL 6.0 FT RT C&G								8/4 to 8/6/2021	C-48 -Y1LT- 13+66 US 19 WB OSL 15.5 FT LT C&G (RT)								8/4 to 8/6/2021
Type	Test Interval			Datum		Cut/Fill			Type	Test Interval			Datum		Cut/Fill		
DCP	Cumulative cm per blow			Subgrade		6.0 ft Cut			DCP	Cumulative cm per blow			STBC		6.0 ft Cut		
0.60	8.80	19.80	81.10	97.07					1.50	18.30	47.72	87.60	112.14				
1.40	8.90	20.40	81.50	97.28					1.80	18.50	48.24	87.90	112.26				
1.80	9.00	20.80	81.80	97.50					2.00	18.80	48.76	88.40	112.38				
2.20	AUGER	21.20	82.30	97.70					2.30	19.20	49.28	88.80	112.50				
2.40	18.1 CM	21.50	82.60	97.90					2.50	19.60	49.80	89.20	112.64				
2.50	1.00	22.10	82.80	98.10					2.70	19.70	50.04	89.60	112.78				
2.70	1.40	22.50	83.20	98.30					3.00	19.80	50.28	90.40	112.92				
3.30	1.80	23.00	83.50	98.50					3.30	20.20	50.52	90.70	113.06				
3.40	1.90	23.50	83.80	98.70					3.60	20.50	50.76	91.30	113.20				
3.50	2.10	24.00	84.10	98.96					4.00	20.90	51.00	91.70	113.34				
3.60	2.30	24.50	84.30	99.22					4.30	21.50	52.00	92.10	113.48				
3.80	2.60	25.20	84.50	99.48					4.60	21.70	53.40	92.50	113.62				
3.92	2.90	26.00	84.80	99.74					4.90	21.90	54.50	92.90	113.76				
4.04	3.10	26.20	85.20	100.00					5.20	22.30	56.00	93.40	113.90				
4.16	3.60	27.50	85.40	100.26					5.40	22.50	57.50	93.60	113.99				
4.28	4.10	28.00	85.70	100.52					5.50	22.70	58.70	94.00	114.08				
4.40	4.30	28.60	86.00	100.78					5.80	23.00	59.60	94.50	114.17				
4.52	4.50	29.20	86.10	101.04					6.00	23.20	60.40	94.70	114.26				
4.64	4.80	30.10	86.20	101.30					6.10	23.40	61.00	95.00	114.35				
4.76	5.10	31.00	86.30	101.50					6.30	23.60	61.70	95.60	114.44				
4.88	5.30	31.30	86.40	101.70					6.50	23.80	62.70	95.80	114.53				
5.00	5.40	31.50	86.50	101.90					6.70	24.00	63.50	96.20	114.62				
5.07	5.60	32.40	86.66	102.10					7.00	24.50	64.50	96.50	114.71				
5.13	5.80	33.00	86.82	102.30					7.20	24.80	65.30	97.00	114.80				
5.20	6.10	33.80	86.98	102.60					7.30	25.20	66.20	97.50	114.91				
5.27	6.30	34.20	87.14	102.90					7.60	25.80	67.00	98.20	115.02				
5.33	6.50	35.00	87.30	103.20					7.80	26.40	67.50	98.50	115.13				
5.40	6.80	35.70	87.54	103.50					8.10	26.80	68.00	98.80	115.24				
5.46	7.50	36.40	87.78	103.80					8.30	27.20	68.60	99.10	115.35				
5.52	7.70	37.30	88.02	104.10					8.40	27.50	69.30	99.60	115.45				
5.58	7.90	38.20	88.26	104.40					8.50	28.00	70.00	99.70	115.56				
5.64	8.10	39.00	88.50	104.70					8.80	28.90	70.50	100.00	115.67				
5.70	8.40	40.70	88.72	105.00					8.90	30.40	70.90	100.20	115.78				
5.74	9.20	41.40	88.94	105.30					9.20	31.90	71.30	100.60	115.89				
5.78	9.50	42.40	89.16	105.64					9.50	33.30	71.60	100.80	116.00				
5.82	9.80	43.40	89.38	105.98					9.70	34.60	71.80	101.00	116.03				
5.86	10.40	45.00	89.60	106.32					10.00	35.80	72.20	101.20	116.06				
5.90	10.70	46.50	89.82	106.66					10.50	37.00	72.80	101.40	116.09				
5.94	11.20	48.30	90.04	107.00					10.80	38.50	73.50	102.00	116.12				
5.98	11.50	50.40	90.26	107.20					11.00	39.70	74.00	102.40	116.15				
6.02	12.00	52.30	90.48	107.40					11.30	40.90	74.80	102.80	116.18				
6.06	12.30	57.00	90.70	107.60					11.50	41.50	75.60	103.10	116.21				
6.10	12.50	62.50	90.96	107.80					12.00	41.90	76.40	103.60	116.24				
6.28	13.00	65.00	91.22	108.00					12.20	42.30	77.60	104.30	116.27				
6.46	13.50	66.00	91.48	108.25					12.40	42.80	77.70	104.90	116.30				
6.64	13.70	67.50	91.74	108.50					12.70	43.10	78.30	105.40	DCP				
6.82	14.00	68.30	92.00	108.75					12.90	43.50	78.70	105.70	REF				
7.00	14.50	69.30	92.30	109.00					13.00	43.80	79.30	106.50					
7.10	14.80	70.00	92.60	109.25					13.30	44.00	80.30	107.20					
7.20	15.00	70.60	92.90	109.50					13.50	44.30	80.80	107.50					
7.30	15.20	71.30	93.20	109.70					13.70	44.60	81.60	108.50					
7.40	15.40	72.00	93.50	109.90					14.10	44.90	82.80	109.00					
7.50	15.60	72.50	93.66	110.10					14.50	45.20	83.20	109.50					
7.60	15.80	73.50	93.82	110.30					14.90	45.30	83.60	110.00					
7.70	16.00	74.00	93.98	110.50					15.40	45.40	84.00	110.40					
7.80	16.20	74.80	94.14						15.50	45.62	84.40	110.70					
7.90	16.40	75.60	94.30						15.90	45.84	84.80	110.90					
8.00	16.60	76.40	94.68						16.10	46.06	85.10	111.10					
8.10	17.20	77.70	95.06						16.70	46.28	85.50	111.30					
8.20	17.50	78.10	95.44						16.90	46.50	85.60	111.42					
8.30	17.80	78.80	95.82						17.10	46.64	85.90	111.54					
8.40	18.00	79.40	96.20						17.40	46.78	86.30	111.66					
8.50	18.50	79.80	96.42						17.60	46.92	86.70	111.78					
8.60	19.00	80.20	96.63						17.80	47.06	87.00	111.90					
8.70	19.20	80.70	96.85						18.00	47.20	87.20	112.02					

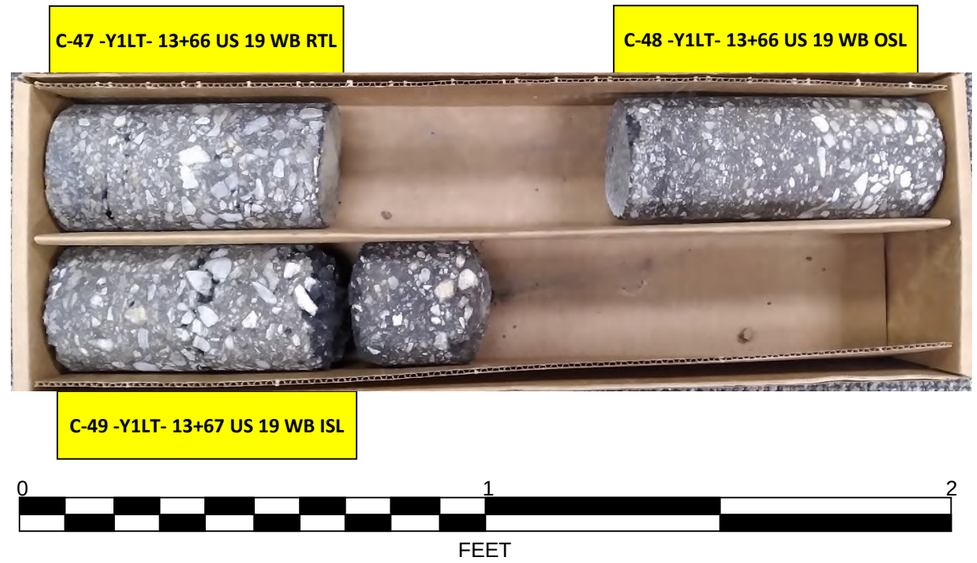
DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET								WBS NO.	PROJECT TIP I.D.	ROUTE
								38332.1.FS	B-3186/B-5898	US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane
								COUNTY	FIELD PROFESSIONAL	FIELD CREW
								Haywood	M. Brewer	R. Kral/D. Underwood
Test Location								Date Run	Test Location								Date Run
C-49 -Y1LT- 13+67 US 19 WB ISL 2.8 FT RT C&G (FACE)								8/4 to 8/6/2021	C-50 -Y1RT- 13+67 US 19 EB ISL 1.0 FT RT FY								8/4 to 8/6/2021
Type	Test Interval			Datum		Cut/Fill			Type	Test Interval			Datum		Cut/Fill		
DCP	Cumulative cm per blow			STBC		3.5 ft Fill			DCP	Cumulative cm per blow			Subgrade		4.0 ft Fill		
1.20	48.60	103.40							2.30	56.47	92.90	102.69					
1.50	50.10	103.60							3.00	56.94	93.10	102.80					
2.10	51.50	103.80							3.90	57.41	93.30	102.91					
2.70	52.90	104.00							4.90	57.88	93.60	103.02					
3.20	54.60	104.20							5.80	58.35	93.80	103.13					
3.60	56.50	104.50							6.20	58.82	94.10	103.24					
4.00	58.40	104.70							7.00	59.29	94.30	103.36					
4.50	60.00	104.90							7.80	59.76	94.70	103.47					
5.00	62.10	105.10							8.50	60.23	94.90	103.58					
5.30	63.60	105.30							9.60	60.70	95.20	103.69					
5.60	65.10	105.50							11.50	61.17	95.35	103.80					
6.00	66.40	105.66							14.50	61.64	95.49	103.88					
6.50	68.40	105.82							15.60	62.11	95.64	103.96					
6.80	69.20	105.98							17.90	62.58	95.78	104.03					
7.00	71.00	106.14							19.50	63.05	95.93	104.11					
7.30	72.00	106.30							20.60	63.52	96.07	104.19					
7.60	73.40	106.48							22.20	63.99	96.22	104.27					
7.80	74.60	106.66							23.30	64.46	96.36	104.34					
8.00	75.90	106.84							24.10	64.93	96.51	104.42					
8.40	77.00	107.02							25.70	65.40	96.65	104.50					
8.80	78.20	107.20							27.00	66.60	96.80	104.59					
9.10	79.30	107.40							28.40	67.00	96.94	104.68					
9.50	80.40	107.60							29.20	67.50	97.09	104.77					
10.00	81.30	107.80							29.60	68.00	97.23	104.86					
10.30	82.30	108.00							29.90	68.60	97.38	104.95					
10.60	83.40	108.20							30.10	69.30	97.52	105.04					
10.80	84.20	108.40							30.50	69.60	97.67	105.13					
11.10	85.00	108.60							31.00	70.00	97.81	105.22					
11.50	85.60	108.80							31.50	70.70	97.96	105.31					
12.30	86.60	109.00							31.80	71.40	98.10	105.40					
12.50	87.30	109.20							32.30	72.30	98.25	105.48					
12.80	88.00	109.42							33.00	72.70	98.39	105.56					
13.00	88.60	109.64							33.50	73.40	98.54	105.64					
13.50	89.30	109.86							34.00	74.10	98.68	105.72					
14.00	89.80	110.08							34.80	74.80	98.83	105.80					
14.20	90.50	110.30							35.60	75.40	98.97	105.88					
14.50	91.10	110.52							36.70	76.00	99.12	105.96					
15.00	91.70	110.74							37.60	76.80	99.26	106.04					
15.50	92.30	110.96							38.50	77.50	99.41	106.12					
16.00	92.90	111.18							40.10	78.10	99.55	106.20					
16.50	93.50	111.40							41.00	78.80	99.70	106.28					
17.20	94.10	111.62							41.60	79.50	99.84	106.36					
17.80	94.70	111.84							42.20	80.10	99.99	106.44					
18.70	95.30	112.06							43.00	80.80	100.13	106.52					
19.50	95.90	112.28							44.10	81.50	100.28	106.60					
20.20	96.60	112.50							45.00	82.10	100.42	106.68					
20.70	97.10	112.70							45.70	82.80	100.57	106.76					
21.00	97.80	112.90							47.30	83.50	100.71	106.84					
21.60	98.00	113.10							48.00	84.20	100.86	106.92					
22.20	98.40	113.30							48.50	84.90	101.00	107.00					
22.70	98.80	113.50							49.00	85.60	101.11	DCP					
23.20	99.00	113.70							49.50	86.30	101.21	REF					
23.70	99.40	113.90							50.20	86.90	101.32						
24.50	99.70	114.10							51.00	87.60	101.42						
25.60	100.00	114.30							51.30	88.30	101.53						
27.30	100.30	114.50							51.77	88.90	101.64						
29.00	100.60	114.62							52.24	89.70	101.74						
31.50	101.00	114.74							52.71	90.30	101.85						
34.00	101.30	114.86							53.18	91.00	101.95						
36.00	101.60	114.98							53.65	91.30	102.06						
38.20	101.90	115.10							54.12	91.50	102.16						
40.20	102.10								54.59	91.80	102.27						
42.20	102.40								55.06	92.10	102.38						
44.60	102.80								55.53	92.50	102.48						
46.80	103.20								56.00	92.70	102.59						

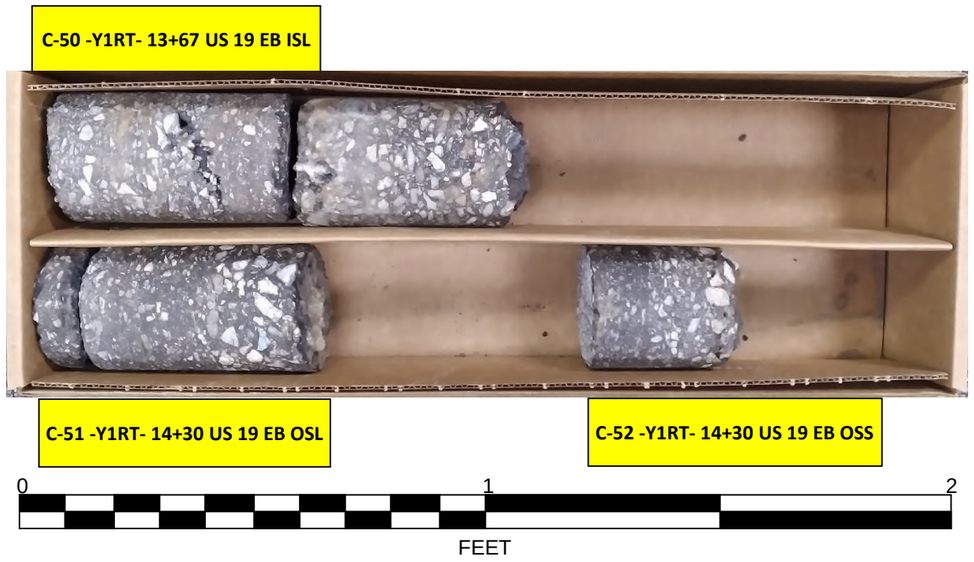
CAROLINAS GEOTECHNICAL GROUP

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET						WBS NO.		PROJECT TIP I.D.				ROUTE			
						38332.1.FS		B-3186/B-5898				US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane			
						COUNTY		FIELD PROFESSIONAL				FIELD CREW			
						Haywood		M. Brewer				R. Kral/D. Underwood			
Test Location						Date Run		Test Location						Date Run	
C-51 -Y1RT- 14+30 US 19 EB OSL 1.5 FT LT FW						8/4 to 8/6/2021		C-52 -Y1RT- 14+30 US 19 EB OSS 1.8 FT RT FW						8/4 to 8/6/2021	
Type	Test Interval			Datum		Cut/Fill		Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow			STBC		10.0 ft Fill		DCP	Cumulative cm per blow			STBC		10.0 ft Fill	
1.00	8.70	15.22	20.00	26.72	55.50	118.90		1.50	29.30	50.10	119.50				
1.50	8.80	15.30	20.06	26.94	56.30	119.40		2.30	29.60	50.50	120.50				
1.80	8.90	15.38	20.12	27.16	57.10	120.00		3.10	29.90	51.20	121.70				
2.20	9.00	15.46	20.18	27.38	57.80	121.00		4.00	30.10	52.00	123.00				
2.30	9.10	15.54	20.24	27.60	59.00	121.40		4.50	30.30	52.70	124.00				
2.50	9.20	15.62	20.30	27.82	59.50	122.00		5.00	30.60	53.20	125.30				
3.00	9.30	15.70	20.36	28.04	60.40	122.60		5.50	30.80	53.90	126.80				
3.30	9.36	15.80	20.42	28.26	61.30	123.00		5.70	31.10	54.40	128.20				
3.50	9.42	15.90	20.48	28.48	62.50	123.60		6.00	31.30	55.30	129.50				
3.80	9.48	16.00	20.54	28.70	63.60	124.00		6.60	31.50	55.70	130.30				
3.90	9.54	16.10	20.60	29.00	64.70	124.50		6.80	31.80	56.50	130.80				
4.10	9.60	16.20	20.68	29.30	66.00	124.90		7.50	32.00	56.70	131.40				
4.30	9.78	16.26	20.76	29.60	67.10	125.30		8.10	32.40	57.20	132.60				
4.50	9.96	16.32	20.84	29.90	68.30	125.60		8.40	32.50	57.70	133.40				
4.70	10.14	16.38	20.92	30.20	69.70	126.00		8.80	32.70	58.40	134.30				
4.80	10.32	16.44	21.00	30.42	70.70	126.30		9.50	32.90	59.30	135.60				
4.90	10.50	16.50	21.05	30.64	72.00	126.70		10.30	33.20	59.80	137.20				
5.10	10.60	16.56	21.10	30.86	73.50	127.00		12.10	33.40	60.70	138.50				
5.30	10.70	16.62	21.15	31.08	75.10	127.40		14.00	33.70	62.00	139.60				
5.50	10.80	16.68	21.20	31.30	76.30	127.80		16.30	33.90	62.10	140.60				
5.60	10.90	16.74	21.25	31.44	77.20	128.00		18.00	34.20	63.90	142.00				
5.70	11.00	16.80	21.30	31.58	78.20	128.20		18.50	34.30	64.30	143.00				
5.80	11.10	16.86	21.36	31.72	79.50	128.40		19.00	34.70	64.60	143.40				
5.90	11.20	16.92	21.42	31.86	80.50	128.60		19.20	34.90	65.00	144.40				
6.00	11.30	16.98	21.48	32.00	81.50	128.80		19.50	35.20	65.20	144.60				
6.10	11.40	17.04	21.54	32.30	82.50	129.00		19.70	35.40	66.10	145.50				
6.24	11.50	17.10	21.60	33.00	83.40	129.50		19.90	35.60	66.70	147.80				
6.38	11.60	17.16	21.68	33.40	84.50	129.80		20.20	35.90	67.40	149.30				
6.52	11.70	17.22	21.76	33.70	85.70	130.20		20.40	36.10	68.20	150.20				
6.66	11.80	17.28	21.84	34.10	87.00	130.70		20.70	36.30	69.50	151.20				
6.80	11.90	17.34	21.92	34.50	88.00	131.00		20.90	36.60	70.60	152.80				
6.84	12.00	17.40	22.00	35.00	89.00	131.60		21.20	36.90	71.60	153.80				
6.88	12.12	17.46	22.10	35.60	90.00	132.00		21.40	37.00	72.40	154.80				
6.92	12.24	17.52	22.20	36.00	91.00	132.50		21.70	37.30	73.20					
6.96	12.36	17.58	22.30	36.50	92.00	133.00		21.90	37.60	74.20					
7.00	12.48	17.64	22.40	37.10	92.80	133.40		22.20	37.80	75.00					
7.03	12.60	17.70	22.50	37.70	93.60	134.10		22.40	38.10	76.30					
7.07	12.72	17.76	22.60	38.10	94.50	134.70		22.60	38.30	77.80					
7.10	12.79	17.82	22.70	38.60	95.00	135.40		22.90	38.50	79.50					
7.13	12.86	17.88	22.80	39.10	96.00	136.10		23.10	38.70	81.00					
7.17	12.93	17.94	22.90	39.70	97.00	136.90		23.40	39.10	82.60					
7.20	13.00	18.00	23.00	40.50	97.70	137.70		23.60	39.30	84.40					
7.24	13.10	18.25	23.10	41.40	98.50	138.90		23.80	39.50	86.20					
7.28	13.20	18.50	23.20	42.00	99.20	139.60		24.10	40.00	88.70					
7.32	13.30	18.75	23.30	43.00	100.20	140.30		24.30	40.30	90.20					
7.36	13.40	19.00	23.40	43.60	101.30			24.50	41.00	92.10					
7.40	13.50	19.06	23.50	44.30	102.40			24.80	41.40	93.60					
7.48	13.60	19.12	23.62	45.50	103.30			25.00	41.70	96.30					
7.56	13.70	19.18	23.74	46.30	104.30			25.30	42.20	99.10					
7.64	13.80	19.24	23.86	47.10	105.10			25.50	42.60	101.00					
7.72	13.90	19.30	23.98	48.10	105.80			25.70	43.00	102.00					
7.80	14.00	19.34	24.10	48.30	106.80			26.00	43.50	102.80					
7.84	14.10	19.38	24.23	49.00	107.80			26.20	43.80	103.70					
7.88	14.20	19.42	24.35	49.50	109.00			26.50	44.30	104.90					
7.92	14.30	19.46	24.48	49.70	110.00			26.70	44.80	105.80					
7.96	14.40	19.50	24.60	50.00	111.00			27.00	45.20	107.30					
8.00	14.50	19.56	24.74	50.50	112.80			27.20	45.60	108.80					
8.06	14.58	19.62	24.88	50.70	113.40			27.40	46.20	110.20					
8.12	14.66	19.68	25.02	51.00	114.10			27.70	46.50	111.60					
8.18	14.74	19.74	25.16	51.40	115.00			27.90	47.00	113.10					
8.24	14.82	19.80	25.43	51.90	115.40			28.20	47.20	114.10					
8.30	14.90	19.84	25.70	52.60	116.00			28.40	47.60	116.00					
8.40	14.98	19.88	25.96	53.50	116.60			28.60	48.10	117.30					
8.50	15.06	19.92	26.23	54.20	117.50			28.80	49.10	118.00					
8.60	15.14	19.96	26.50	55.00	118.30			29.10	49.50	118.80					

DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET						WBS NO.		PROJECT TIP I.D.				ROUTE			
						38332.1.FS		B-3186/B-5898				US 23-74 Bridge 155 and 158 over Richland Creek on US 23-74 Northbound Lane			
						COUNTY		FIELD PROFESSIONAL				FIELD CREW			
						Haywood		M. Brewer				R. Kral/D. Underwood			
Test Location						Date Run		Test Location						Date Run	
Type	Test Interval			Datum		Cut/Fill		Type	Test Interval			Datum		Cut/Fill	
DCP	Cumulative cm per blow							DCP	Cumulative cm per blow						

B-3186/B-5898 - US 23-74 Bridge 155 & 158 over Richland Creek on US 23-74 Northbound Lane
(Combine with B-5898)
Pavement Core Photographs





PROJECT REFERENCE NO.	SHEET NO.
B–3186/B–5898	28

REFERENCE: B–3186/B–5898

PROJECT: 38332

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

LABORATORY TEST RESULTS

Prepared in the Office of:
F&ME CONSULTANTS, INC.
COLUMBIA, SOUTH CAROLINA
NCDOT LAB CERT. NO. 132–0212

SOIL TEST RESULTS

SAMPLE NO.	STATION	LOCATION	OFFSET*	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
S–1	–L– 15+32	EB OSS	5' RT FW	2.0 – 5.0'	A–2–4	34	NP	30.9	28.9	28.1	12.1	68.7	54.1	31.8	23.9	–
S–5	–L– 25+35	EB ISS	1.4' LT FY	1.8 – 5.0'	A–4(2)	38	5	19.5	25.5	30.8	24.2	87.7	75.9	54.0	23.5	–
S–6	–L– 25+35	EB OSS	5.4' RT FW	2.0 – 5.0'	A–7–5(9)	45	13	14.7	17.4	23.1	44.8	93.7	84.8	67.5	25.8	–
STBC–1	–L– 25+35	EB OSS	5.4' RT FW	0.4 – 2.0'	A–1–a	26	NP	43.5	30.3	20.1	6.0	41.9	28.4	13.3	5.2	–
S–8	–L– 29+86	EB ISL	8' RT FY	1.9 – 5.0'	A–4(0)	32	4	25.5	25.9	32.4	16.1	90.2	74.1	50.3	11.5	–
S–11	–L– 35+34	EB OSS	5.5' RT FW	1.7 – 3.5'	A–7–6(10)	47	22	20.9	17.7	19.0	42.4	86.4	73.9	56.3	25.4	–
S–11A	–L– 35+34	EB OSS	5.5' RT FW	3.5 – 5.0'	A–4(2)	37	7	24.1	25.6	24.1	26.2	95.7	80.2	53.8	19.8	–
S–12	–L– 61+63	EB ISS	0.7' LT FY	1.8 – 5.0'	A–2–4	35	NP	28.1	31.1	26.7	14.1	68.8	56.0	32.6	25.0	–
S–13	–L– 61+63	EB ISL	5.3' RT FY	2.0 – 5.0'	A–4(0)	30	NP	29.3	32.7	25.9	12.0	67.1	54.3	56.7	8.5	–
S–15	–L– 61+64	EB OSS	1' RT FW	2.0 – 4.0'	A–4(0)	31	4	22.3	29.1	28.5	20.1	82.2	69.6	46.3	15.7	–
S–19	–L– 76+90	EB ISS	2.2' LT FY	1.8 – 5.0'	A–1–b	23	NP	43.9	27.2	24.8	4.0	70.9	46.6	24.9	4.4	–
S–22	–L– 76+90	EB OSS	3.5' RT FW	1.6 – 2.3'	A–4(3)	40	10	17.5	30.2	32.1	20.2	80.4	71.9	47.8	16.9	–
S–24	–L– 80+22	EB OSS	1.9' RT FW	1.8 – 5.0'	A–2–4	39	NP	26.4	33.7	31.9	8.0	65.0	53.2	31.1	16.5	–
S–25	–L– 15+13	WB OSS	5.5' RT FW	1.8 – 5.0'	A–7–5(9)	50	15	17.7	25.5	38.7	18.1	94.9	84.2	60.4	30.4	–
S–28	–L– 20+09	WB ISS	2.4' LT FY	1.8 – 5.0'	A–4(5)	40	7	11.3	31.5	37.1	20.1	97.3	90.8	65.2	21.2	–
S–29	–L– 25+50	WB OSS	5.7' RT FW	1.8 – 5.0'	A–7–5(6)	50	12	17.0	32.0	32.9	18.1	94.5	84.4	56.1	28.5	–
S–30	–L– 25+50	WB ISS	1.8' LT FY	1.9 – 5.0'	A–7–5(15)	54	14	7.1	17.2	49.4	26.2	99.0	94.8	81.0	27.9	–
S–32	–L– 30+33	WB ISL	5.5' RT FY	1.8 – 5.0'	A–4(2)	37	8	20.6	30.7	32.6	16.1	90.9	78.2	52.4	7.4	–
S–34	–L– 35+34	WB OSS	6' RT FW	1.8 – 3.0'	A–4(3)	37	9	21.0	24.6	26.2	28.2	92.2	80.0	55.3	22.7	–
S–35	–L– 35+35	WB ISS	2.3' LT FY	1.9 – 3.5'	A–4(0)	39	NP	25.0	24.2	26.7	24.1	83.9	69.2	47.4	17.8	–
S–37	–L– 56+85	WB OSL	2.3' LT FW	1.9 – 5.0'	A–5(0)	43	NP	19.4	35.3	29.2	16.1	95.2	85.4	50.7	16.7	–
S–38	–L– 56+85	WB ISL	2' RT FY	1.9 – 3.5'	A–7–5(2)	46	13	29.1	28.6	24.2	18.1	82.7	66.7	39.9	16.9	–
S–41	–L– 70+40	WB OSS	4' RT FW	1.8 – 5.0'	A–4(2)	39	8	17.8	29.8	34.3	18.1	86.0	76.9	51.4	26.1	–
S–43	–L– 75+03	WB OSL	8' LT FW	1.8 – 5.0'	A–4(1)	35	9	31.4	30.7	25.9	12.1	93.9	73.8	41.6	17.0	–
S–44	–L– 75+03	WB ISL	5.5' RT FY	1.8 – 5.0'	A–4(0)	23	NP	27.6	41.5	24.9	6.0	99.3	85.4	37.9	8.2	–
S–45	–L– 75+03	WB ISS	2.5' LT FY	1.8 – 5.0'	A–4(5)	39	10	15.1	30.6	40.2	14.1	99.1	91.0	63.1	13.1	–
S–48	–Y1LT– 13+66	WB OSL	15.5' LT C&G (RT)	1.8 – 5.0'	A–4(1)	34	9	28.3	28.0	23.5	20.1	87.6	70.5	43.3	18.0	–
S–49	–Y1LT– 13+67	WB ISL	2.8' RT C&G FACE	1.8 – 3.5'	A–7–6(8)	44	17	18.7	23.6	23.4	34.3	93.6	81.7	59.3	25.1	–
S–50	–Y1RT– 13+67	EB ISL	1' RT FY	1.0 – 4.0'	A–7–6(7)	43	14	18.1	23.4	20.3	38.2	95.4	84.8	60.5	21.5	–
S–52	–Y1RT– 14+30	EB OSS	1.8' RT FW	1.9 – 5.0'	A–4(0)	40	5	26.7	26.7	26.4	20.1	81.5	66.6	42.5	22.5	–

*FROM WHITE LINE (FW)

*FROM YELLOW LINE (FY)

PROJECT REFERENCE NO.	SHEET NO.
B–3186/B–5898	30

SOIL TEST RESULTS

SAMPLE NO.	STATION	LOCATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
BULK–1	–L– 20+26	CUT SLOPE	68' RT	1.0 – 3.0'	A–4(0)	39	NP	36.3	23.6	31.9	8.1	96.7	69.6	43.4	12.9	–
BULK–2	–L– 35+27	CUT SLOPE	60' LT	1.0 – 3.0'	A–4(1)	37	NP	12.7	16.7	46.3	24.3	90.5	82.9	68.0	21.7	–
BULK–3	–L– 65+31	AT GRADE	2' LT	1.0 – 2.0'	A–2–4	30	4	32.3	27.5	20.7	19.6	77.2	61.7	64.3	11.4	–
BULK–4	–L– 77+10	CUT SLOPE	71' RT	1.0 – 3.0'	A–4(1)	33	7	22.0	28.7	31.7	17.6	83.2	72.1	45.7	8.9	–

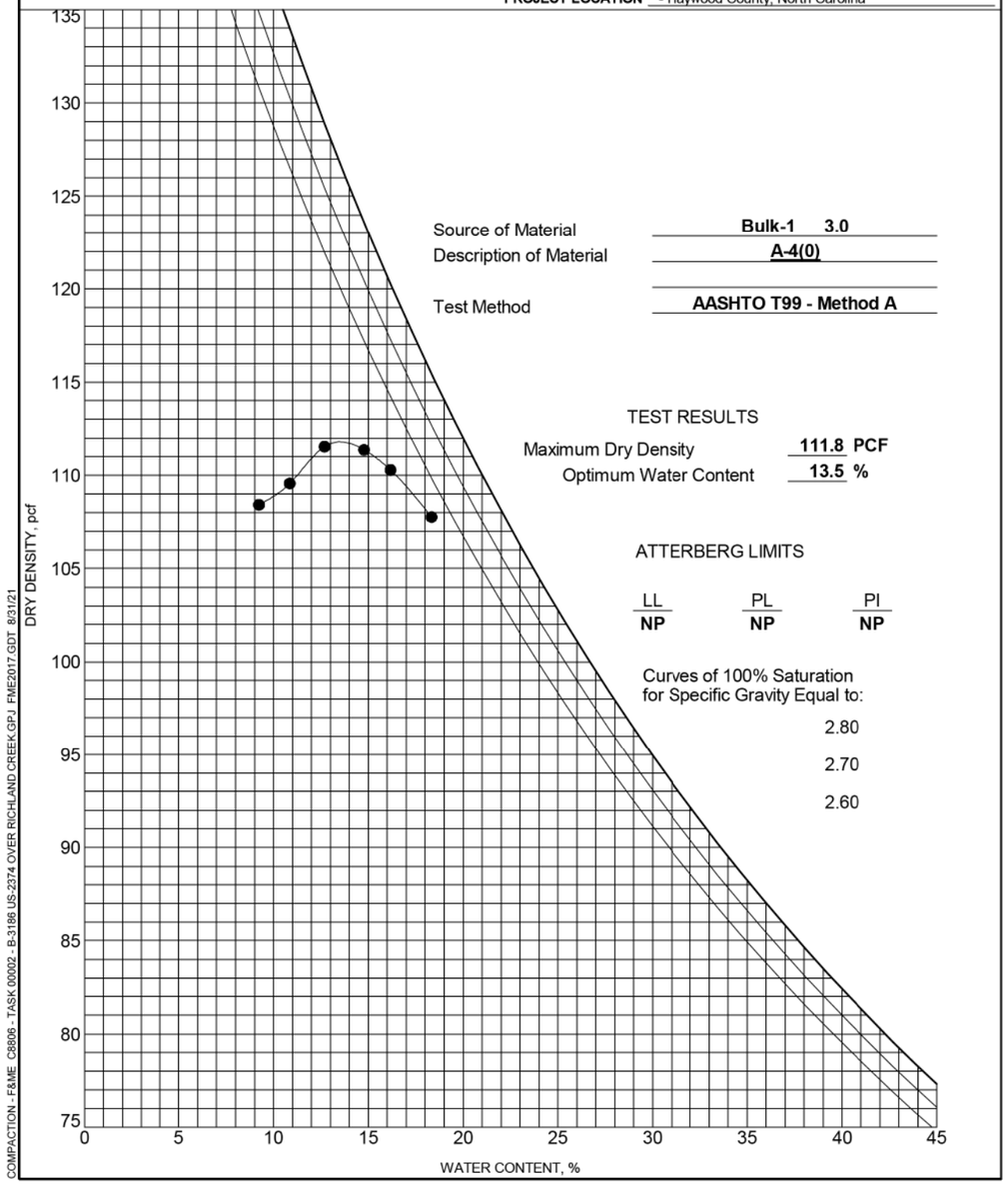
*NP = NON–PLASTIC

MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



Source of Material: **Bulk-1 3.0**

Description of Material: **A-4(0)**

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

TEST RESULTS

Maximum Dry Density: **111.8** PCF

Optimum Water Content: **13.5** %

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ FME2017.GDT 8/31/21

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

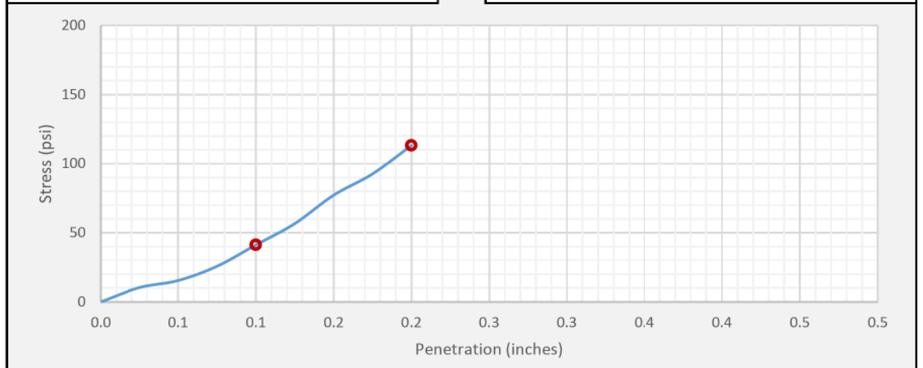
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-1			FME Lab ID	21-1758
Soil Description	A-4(0)			Depth/Elev.	1.0' - 3.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	111.8	Optimum Moisture Content (%)	13.5
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
4.1	**7.5**



Before Soaking	
Initial Dry Density (lb/ft^3)	112.2
Moisture Content	13.3%
Percent Compaction	100.4%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	105.1
Moisture Content (Top 1")	23.0%
Percent Compaction	94.0%
Percent Shrink/Swell	2.4%

ADDITIONAL COMMENTS

LL=39, PL=NP, PI=NP, %Passing #200 Sieve = 43.4
20+26 - 68' RT

F&ME CONSULTANTS

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

Reviewed By

130-04-0212
NCDOT Certification No.

8/18/2021
Date

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

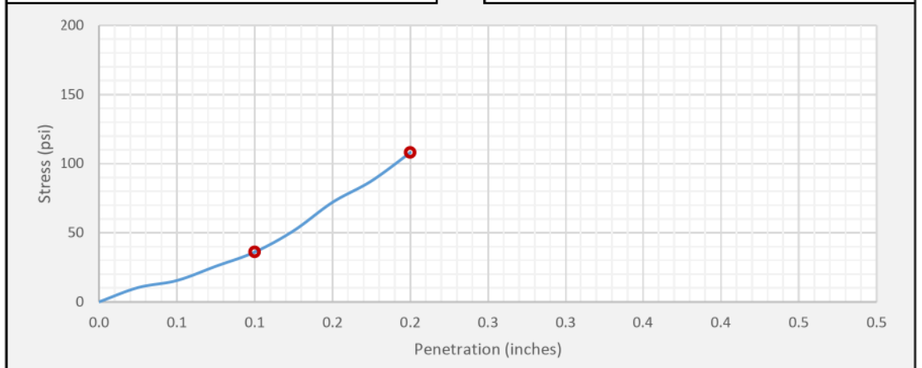
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-1			FME Lab ID	21-1758
Soil Description	A-4(0)			Depth/Elev.	1.0' - 3.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	111.8	Optimum Moisture Content (%)	13.5
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
3.6	**7.2**



Before Soaking	
Initial Dry Density (lb/ft^3)	112.1
Moisture Content	13.3%
Percent Compaction	100.3%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	104.9
Moisture Content (Top 1")	22.6%
Percent Compaction	93.9%
Percent Shrink/Swell	2.5%

ADDITIONAL COMMENTS

LL=39, PL=NP, PI=NP, %Passing #200 Sieve = 43.4
20+26 - 68' RT

F&ME CONSULTANTS

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

Reviewed By

130-04-0212
NCDOT Certification No.

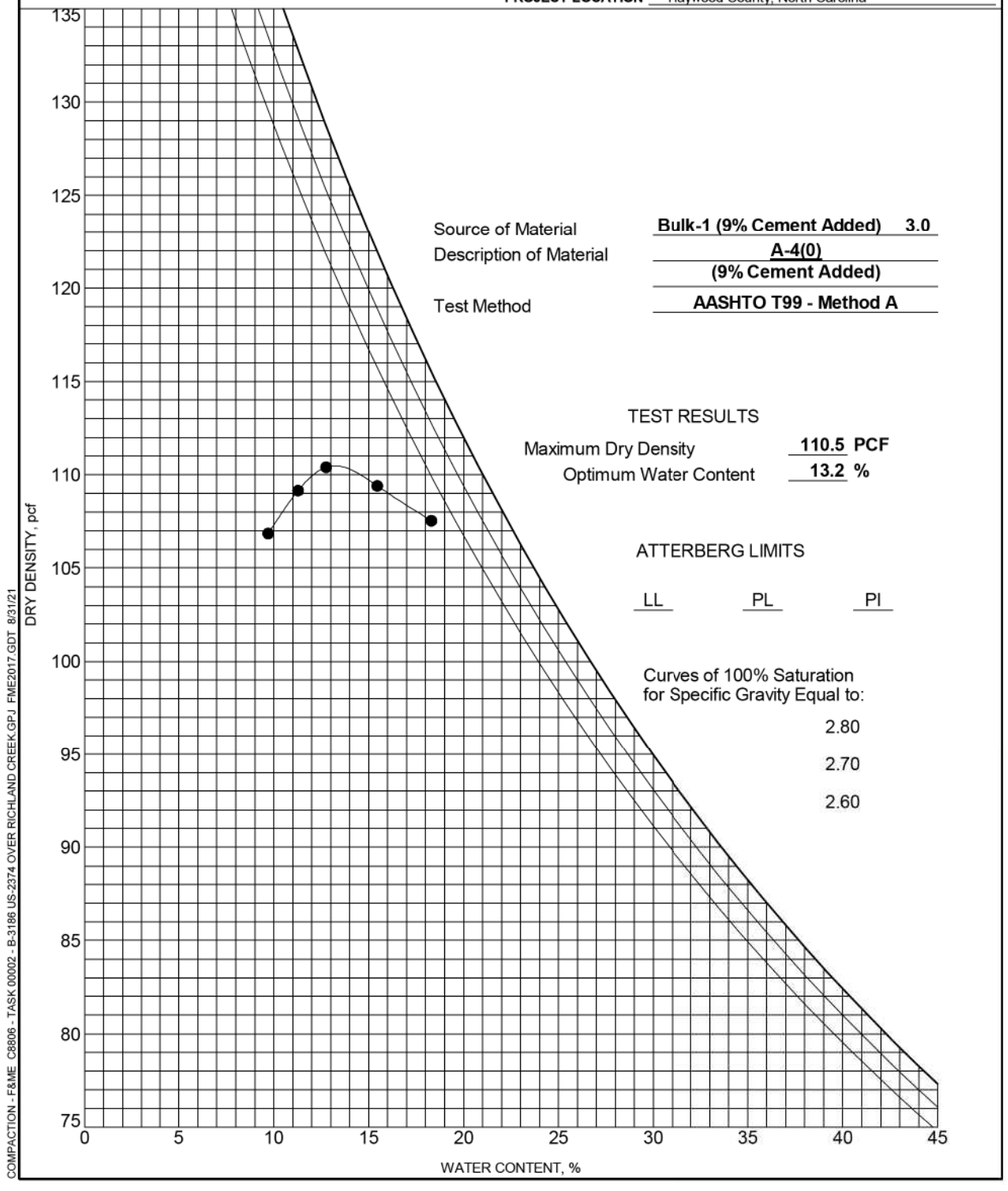
8/18/2021
Date

MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ FME2017.GDT 8/31/21

REV 08/2021

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

SAMPLE INFORMATION

Project Name	US 23 / US 74 over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-1			FME Lab ID	21-1758
Soil Description	A-4(0)			Depth/Elev.	1.0 - 3.0 ft.
Station	20+26			Offset	68' RT
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Molded	8/19/2021	Date Tested	8/26/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Cement Added to Proctor	9%
Max Dry Density (lb/ft^3)	110.5	Optimum Moisture Content (%)	13.2

TESTING RESULTS

% Cement	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
8%	7	13.0%	4.599	4.005	12.60	3990	315	260
8%	7	13.0%	4.607	4.005	12.60	2450	195	
10%	7	12.9%	4.63	4.003	12.59	5170	410	350
10%	7	12.9%	4.617	3.996	12.54	3640	290	

ADDITIONAL COMMENTS

Bulk Soil Sample Data (without Cement Added):

LL=39, PL=NP, PI=NP

%Passing #200 Sieve = 43.4%

As-Received Natural Moisture Content = 12.9%

F&ME CONSULTANTS

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

130-04-0212
NCDOT Certification No.

Reviewed By

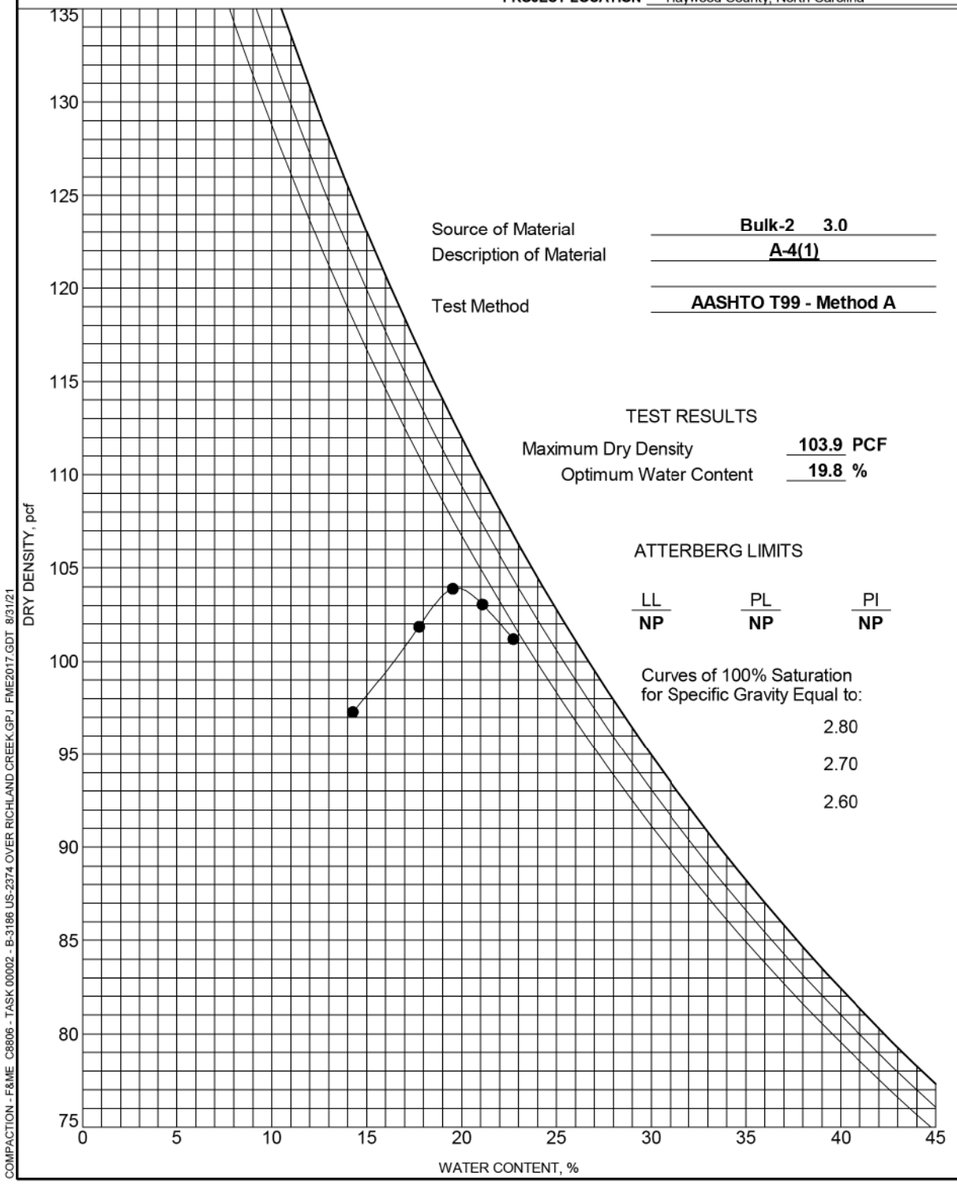
8/31/2021
Date

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



Source of Material: **Bulk-2 3.0**

Description of Material: **A-4(1)**

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

TEST RESULTS

Maximum Dry Density	**103.9**	**PCF**
Optimum Water Content	**19.8**	**%**

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ FME2017.GDT 8/31/21

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

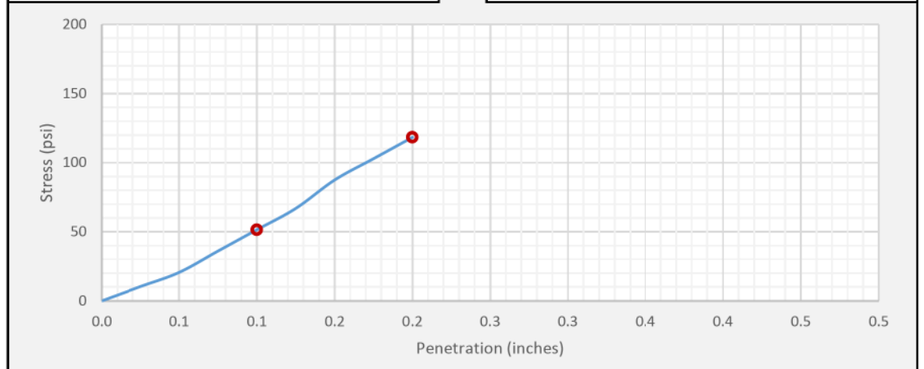
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-2			FME Lab ID	21-1759
Soil Description	A-4(1)			Depth/Elev.	1.0' - 3.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	103.9	Optimum Moisture Content (%)	19.8
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
5.1	**7.9**



Before Soaking	
Initial Dry Density (lb/ft^3)	102.1
Moisture Content	21.3%
Percent Compaction	98.3%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	100.5
Moisture Content (Top 1")	24.2%
Percent Compaction	96.7%
Percent Shrink/Swell	1.1%

ADDITIONAL COMMENTS

LL=37, PL=NP, PI=NP, %Passing #200 Sieve = 68.0
35+27, 60' LT

F&ME CONSULTANTS

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

130-04-0212
NCDOT Certification No.

Reviewed By

8/18/2021
Date

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

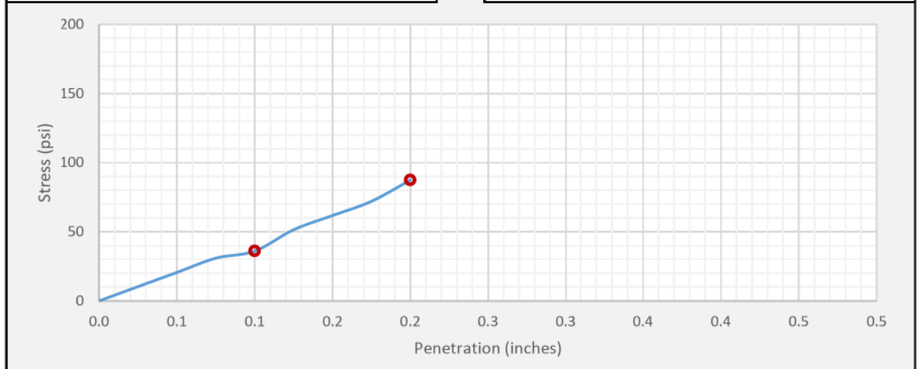
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-2			FME Lab ID	21-1759
Soil Description	A-4(1)			Depth/Elev.	1.0' - 3.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft^3)	103.9	Optimum Moisture Content (%)	19.8
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
3.6	**5.8**



Before Soaking	
Initial Dry Density (lb/ft^3)	103.4
Moisture Content	19.9%
Percent Compaction	99.5%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	99.7
Moisture Content (Top 1")	25.1%
Percent Compaction	95.9%
Percent Shrink/Swell	1.3%

ADDITIONAL COMMENTS

LL=37, PL=NP, PI=NP, %Passing #200 Sieve = 68.0
35+27, 60' LT

F&ME CONSULTANTS

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3112 Devine Street, Columbia, SC 29205

130-04-0212
NCDOT Certification No.

Reviewed By

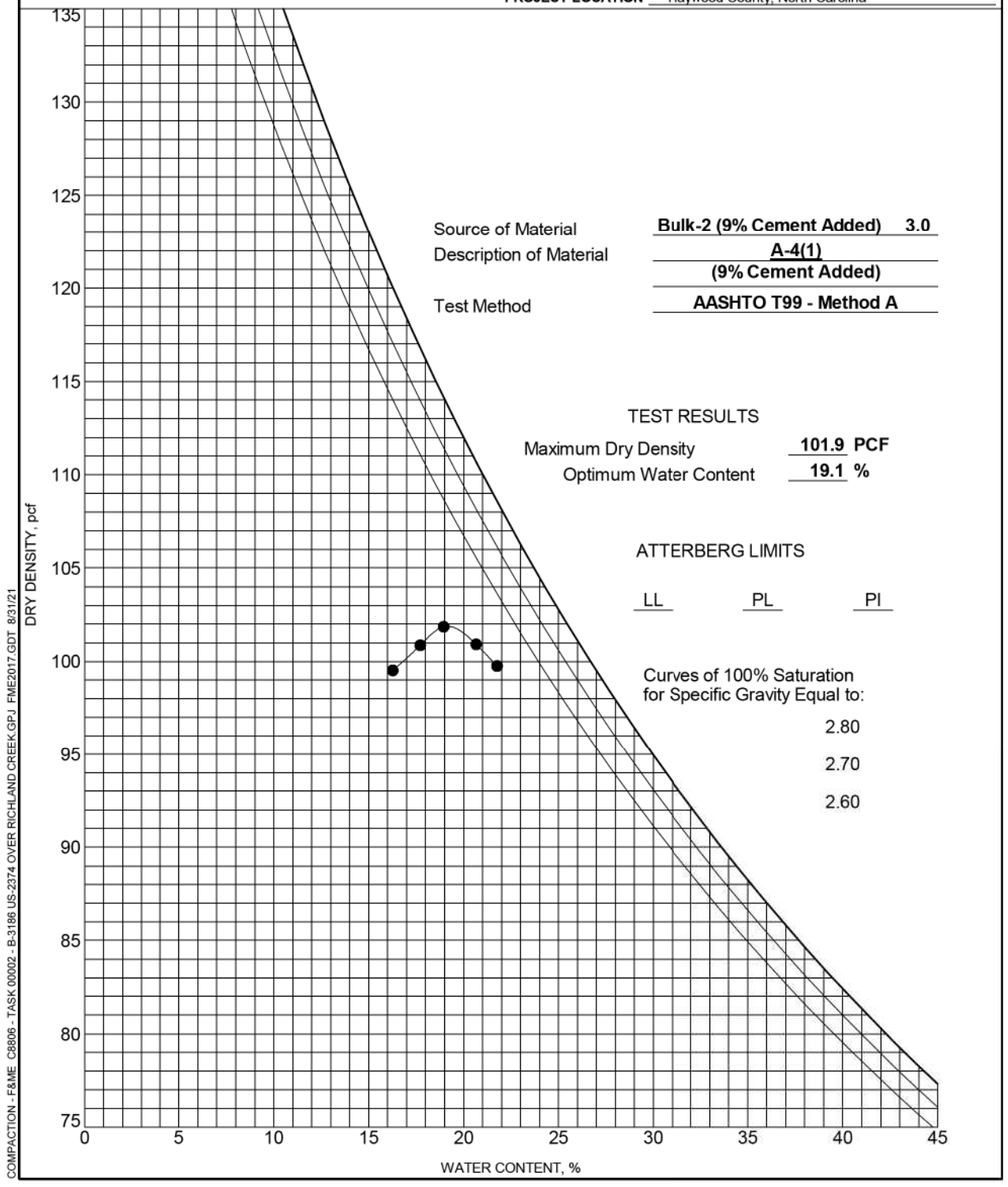
8/18/2021
Date

MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ F&ME2017.GDT 8/31/21

REV 08/2021

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

SAMPLE INFORMATION

Project Name	US 23 / US 74 over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-2			FME Lab ID	21-1759
Soil Description	A-4(1)			Depth/Elev.	1.0 - 3.0 ft.
Station	35+27			Offset	60' LT
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Molded	8/19/2021	Date Tested	8/26/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Cement Added to Proctor	9%
Max Dry Density (lb/ft^3)	101.9	Optimum Moisture Content (%)	19.1

TESTING RESULTS

% Cement	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
8%	7	19.8%	4.626	4.002	12.58	3720	295	280
8%	7	19.8%	4.619	3.999	12.56	3270	260	
10%	7	19.1%	4.614	4.002	12.58	4160	330	325
10%	7	19.1%	4.619	4.002	12.58	3950	315	

ADDITIONAL COMMENTS

Bulk Soil Sample Data (without Cement Added):

LL=37, PL=NP, PI=NP

%Passing #200 Sieve = 68.0%

As-Received Natural Moisture Content = 21.7%

F&ME CONSULTANTS

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3112 Devine Street, Columbia, SC 29205

Reviewed By

130-04-0212
NCDOT Certification No.

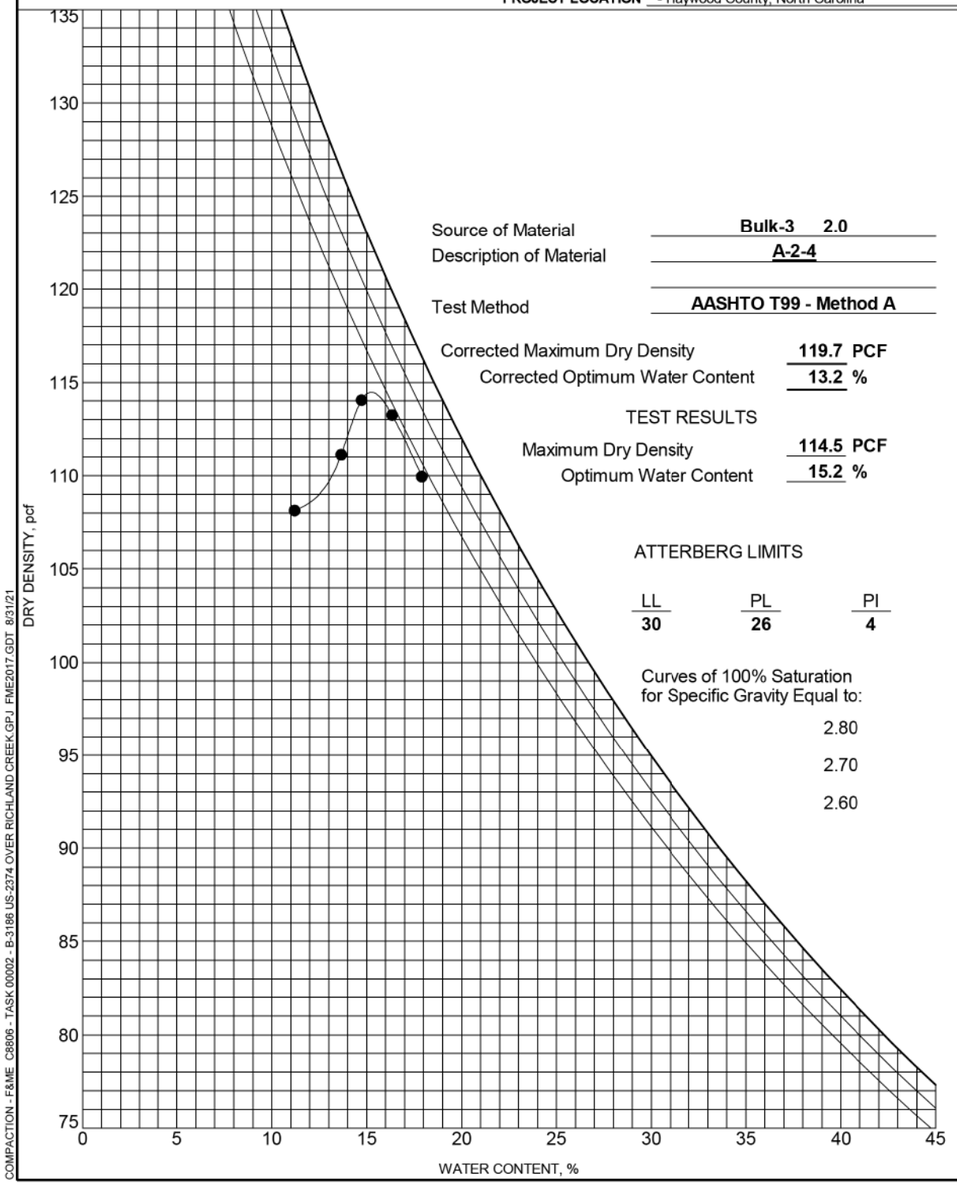
8/31/2021
Date

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



Source of Material: **Bulk-3 2.0**

Description of Material: **A-2-4**

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

Corrected Maximum Dry Density: **119.7** PCF

Corrected Optimum Water Content: **13.2** %

TEST RESULTS

Maximum Dry Density: **114.5** PCF

Optimum Water Content: **15.2** %

ATTERBERG LIMITS

LL	PL	PI
30	**26**	**4**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ FME2017.GDT 8/31/21

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

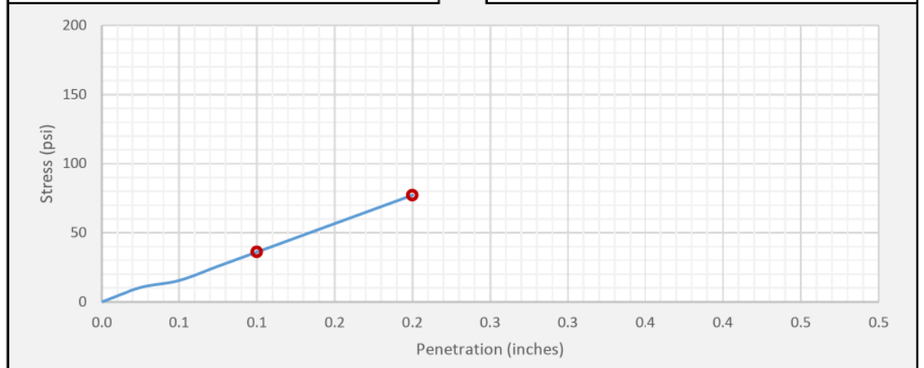
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-3			FME Lab ID	21-1760
Soil Description	A-2-4			Depth/Elev.	1.0' - 2.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	5%
Max Dry Density (lb/ft^3)	114.5	Optimum Moisture Content (%)	15.2
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
3.6	**5.1**



Before Soaking	
Initial Dry Density (lb/ft^3)	113.9
Moisture Content	15.4%
Percent Compaction	99.4%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	112.7
Moisture Content (Top 1")	17.7%
Percent Compaction	98.4%
Percent Shrink/Swell	0.4%

ADDITIONAL COMMENTS

LL=30, PL=26, PI=4, %Passing #200 Sieve = 34.3
63+31, 2' LT

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130-04-0212
NCDOT Certification No.

Reviewed By

8/18/2021
Date

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

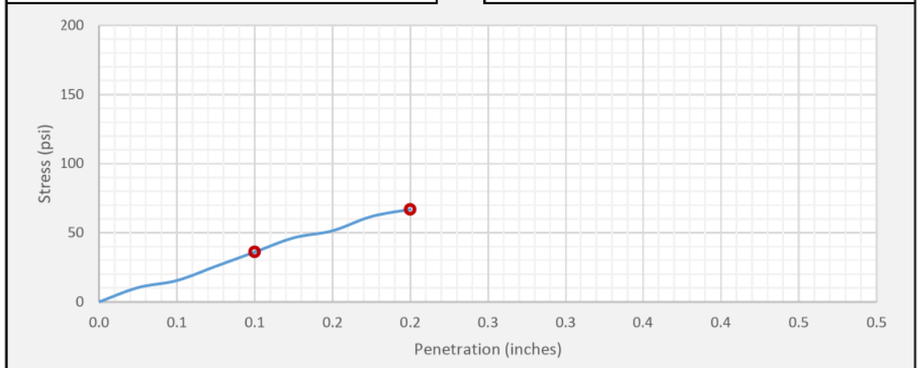
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-3			FME Lab ID	21-1760
Soil Description	A-2-4			Depth/Elev.	1.0' - 2.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	5%
Max Dry Density (lb/ft^3)	114.5	Optimum Moisture Content (%)	15.2
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
3.6	**4.5**



Before Soaking	
Initial Dry Density (lb/ft^3)	113.9
Moisture Content	15.0%
Percent Compaction	99.4%
Percent Shrink/Swell	--

After Soaking	
Dry Density (lb/ft^3)	112.5
Moisture Content (Top 1")	17.3%
Percent Compaction	98.2%
Percent Shrink/Swell	0.4%

ADDITIONAL COMMENTS

LL=30, PL=26, PI=4, %Passing #200 Sieve = 34.3
63+31, 2' LT

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8/18/2021
Date

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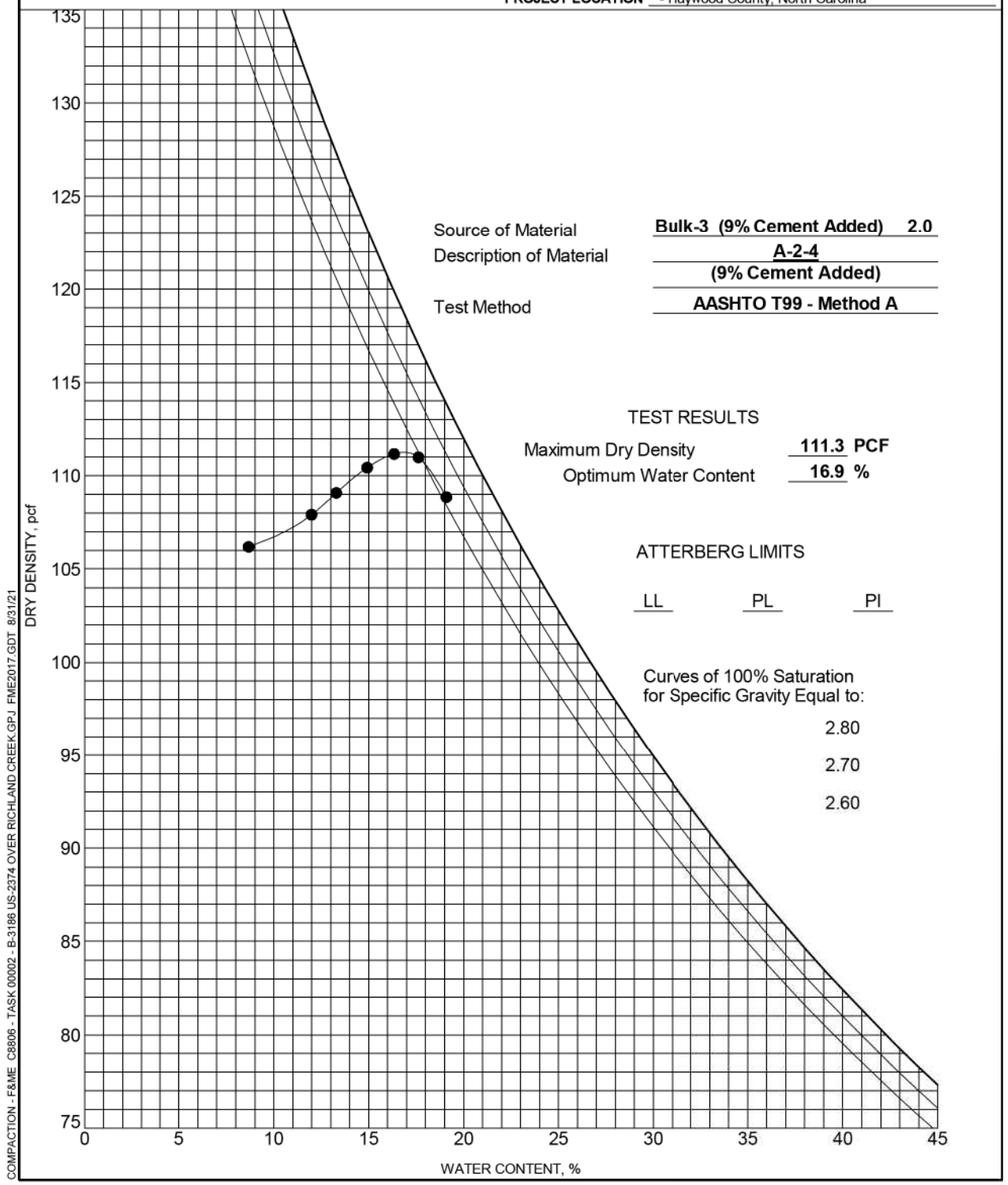
MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ FME2017.GDT 8/31/21

REV 08/2021

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

SAMPLE INFORMATION

Project Name	US 23 / US 74 over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-3			FME Lab ID	21-1760
Soil Description	A-2-4			Depth/Elev.	1.0 - 2.0 ft.
Station	65+31			Offset	2' LT
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Molded	8/19/2021	Date Tested	8/26/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Cement Added to Proctor	9%
Max Dry Density (lb/ft^3)	111.3	Optimum Moisture Content (%)	16.9

TESTING RESULTS

% Cement	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
8%	7	16.3%	4.623	4.001	12.57	4440	355	345
8%	7	16.3%	4.638	3.998	12.55	4160	330	
10%	7	16.4%	4.612	4.000	12.57	5440	435	435
10%	7	16.4%	4.613	4.001	12.57	5410	430	

ADDITIONAL COMMENTS

Bulk Soil Sample Data (without Cement Added):

LL=30, PL=26, PI=4

%Passing #200 Sieve = 34.3%

As-Received Natural Moisture Content = 11.4%

F&ME CONSULTANTS

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

Jerry P. Davis — Reviewed By

130-04-0212 — NCDOT Certification No.

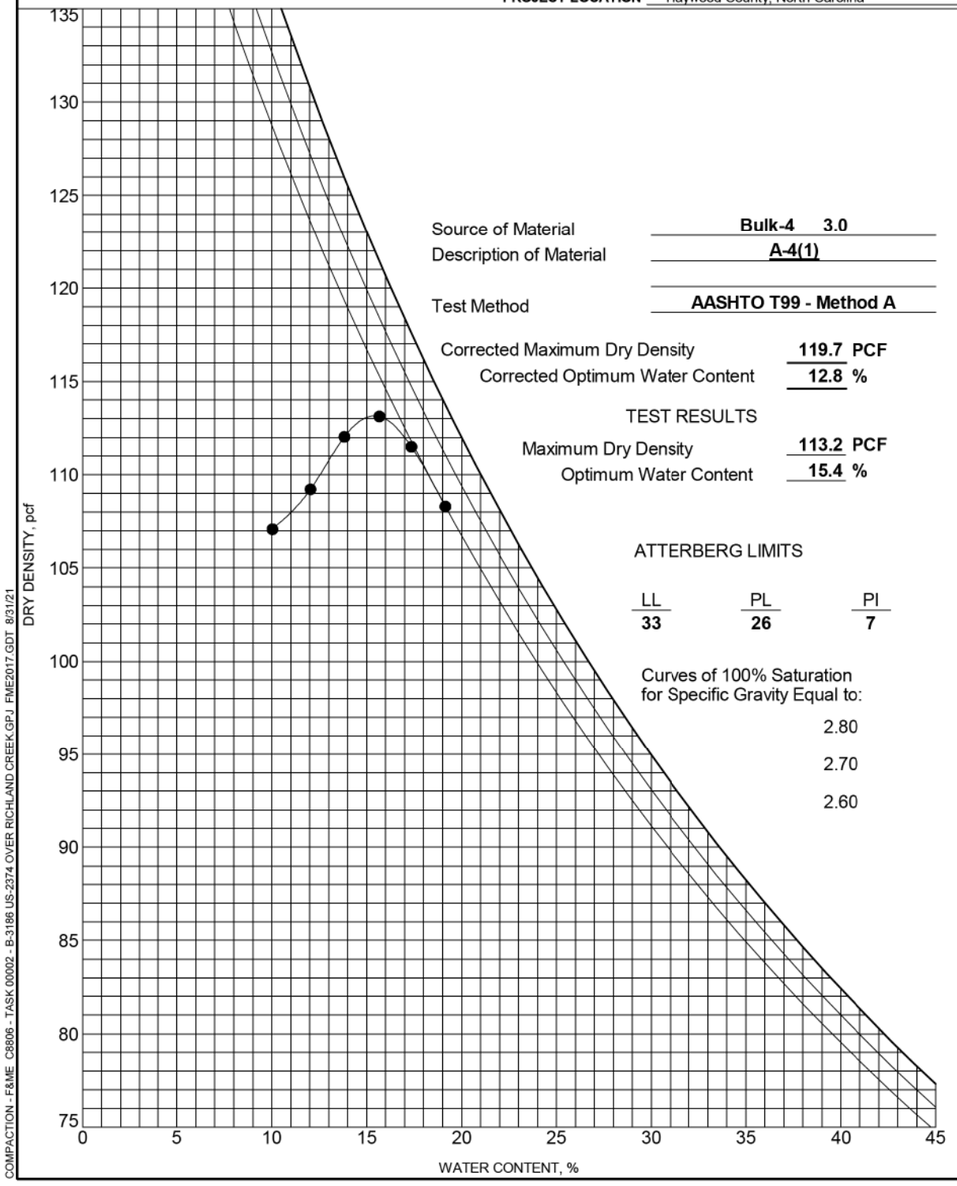
8/31/2021 — Date

MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



Source of Material: **Bulk-4 3.0**

Description of Material: **A-4(1)**

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

Corrected Maximum Dry Density: **119.7** PCF

Corrected Optimum Water Content: **12.8** %

TEST RESULTS

Maximum Dry Density: **113.2** PCF

Optimum Water Content: **15.4** %

ATTERBERG LIMITS

LL	PL	PI
33	26	7

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ FME2017.GDT 8/31/21

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

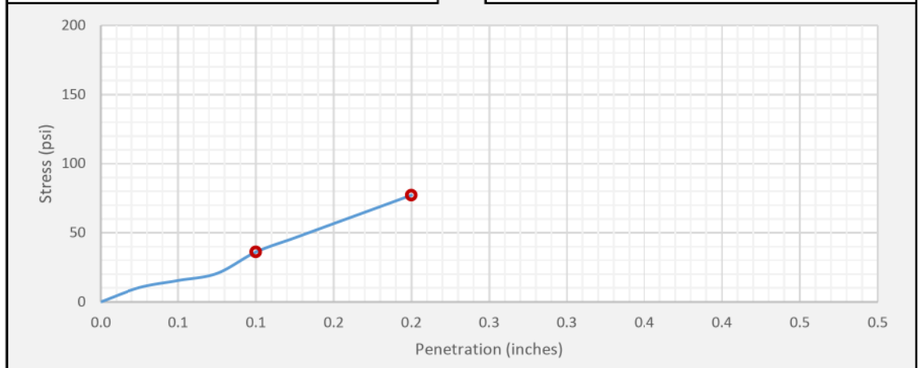
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-4			FME Lab ID	21-1761
Soil Description	A-4(1)			Depth/Elev.	1.0' - 3.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	6%
Max Dry Density (lb/ft^3)	113.2	Optimum Moisture Content (%)	15.4
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
3.6	**5.1**



Before Soaking		After Soaking	
Initial Dry Density (lb/ft^3)	112.0	Dry Density (lb/ft^3)	109.4
Moisture Content	16.2%	Moisture Content (Top 1")	19.6%
Percent Compaction	99.0%	Percent Compaction	96.6%
Percent Shrink/Swell	--	Percent Shrink/Swell	0.9%

ADDITIONAL COMMENTS

LL=33, PL=26, PI=7, %Passing #200 Sieve = 45.7
77+10, 71' RT

F&ME CONSULTANTS

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

Reviewed By

130-04-0212
NCDOT Certification No.

8/10/2021
Date

REV 08/2021

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

SAMPLE INFORMATION

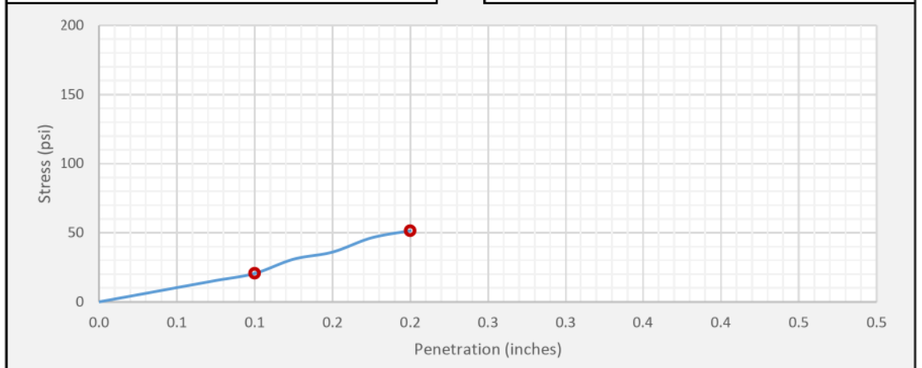
Project Name	US 23 / US 74 Over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-4			FME Lab ID	21-1761
Soil Description	A-4(1)			Depth/Elev.	1.0' - 3.0'
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Test Began	8/13/2021	Date Completed	8/17/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	6%
Max Dry Density (lb/ft^3)	113.2	Optimum Moisture Content (%)	15.4
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS

CBR at 0.10-inch penetration	CBR at 0.20-inch penetration
2.1	**3.4**



Before Soaking		After Soaking	
Initial Dry Density (lb/ft^3)	112.2	Dry Density (lb/ft^3)	109.5
Moisture Content	16.1%	Moisture Content (Top 1")	19.5%
Percent Compaction	99.1%	Percent Compaction	96.7%
Percent Shrink/Swell	--	Percent Shrink/Swell	0.9%

ADDITIONAL COMMENTS

LL=33, PL=26, PI=7, %Passing #200 Sieve = 45.7
77+10, 71' RT

F&ME CONSULTANTS

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3112 Devine Street, Columbia, SC 29205

Reviewed By

130-04-0212
NCDOT Certification No.

8/18/2021
Date

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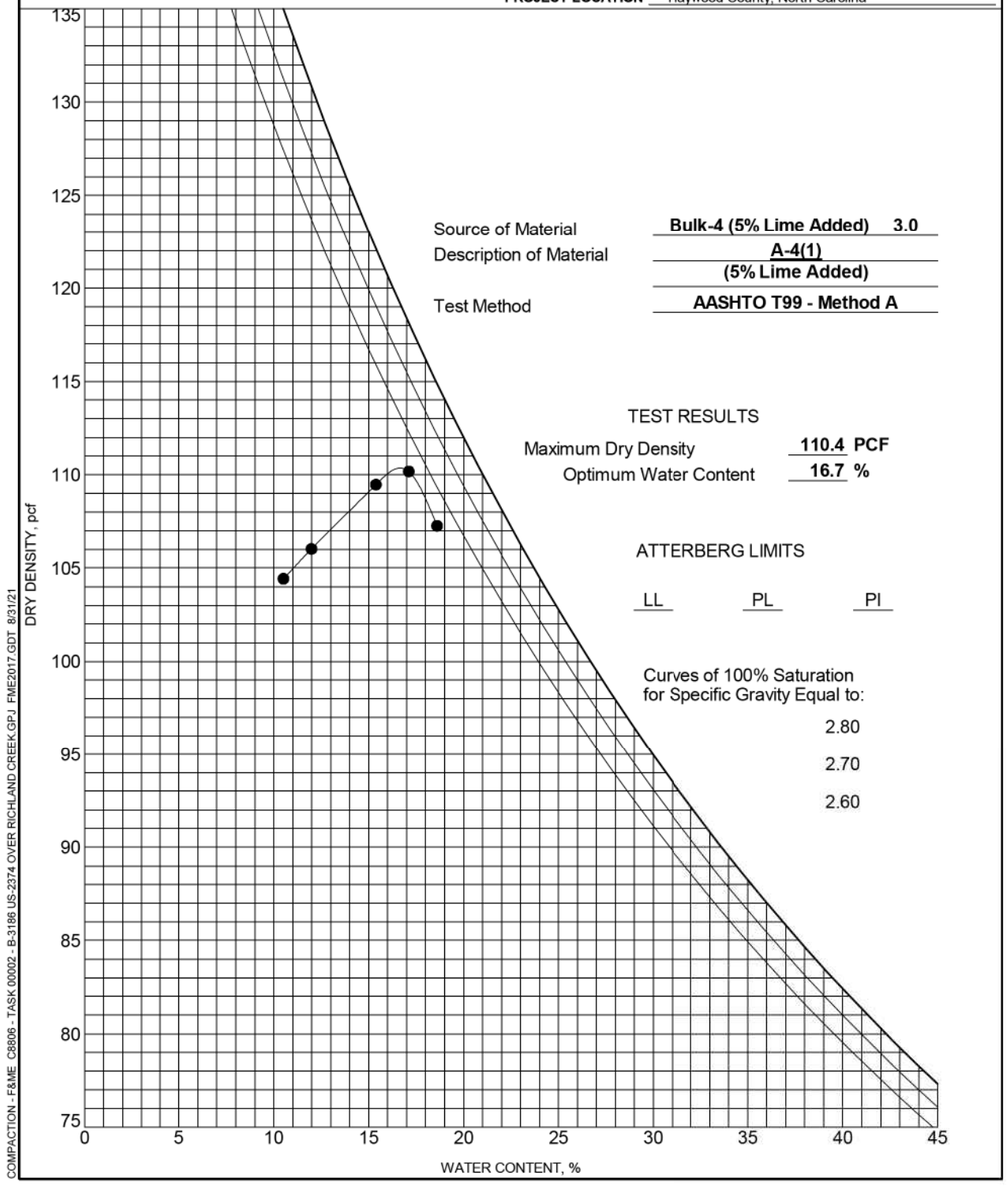
MOISTURE-DENSITY RELATIONSHIP

F&ME CONSULTANTS

PROJECT ID C8806 - Task 00002 (NCDOT STIP# B-3186/B-5898) **PROJECT NAME** US 23/US 74 over Richland Creek

PROJECT LOCATION - Haywood County, North Carolina



COMPACTION - F&ME C8806 - TASK 00002 - B-3186 US-2374 OVER RICHLAND CREEK.GPJ F&ME2017.GDT 8/31/21

REV 08/2021

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

SAMPLE INFORMATION

Project Name	US 23 / US 74 over Richland Creek			NCDOT STIP #	B-3186/B-5898
Sample Location	Bulk-4			FME Lab ID	21-1761
Soil Description	A-4(1)			Depth/Elev.	1.0 - 3.0 ft.
Station	77+10			Offset	71' RT
Date Sampled	7/28/2021	Sampled By:	CG2	Date Received	8/4/2021
Date Molded	8/19/2021	Date Tested	9/3/2021	Tested By	M. Johnson

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Lime Added to Proctor	5%
Max Dry Density (lb/ft^3)	110.1	Optimum Moisture Content (%)	16.7

TESTING RESULTS

% Lime	Age (Days)	Moisture Content	Height (in.)	Diameter (in.)	Area (in.^{2})	Maximum Load (lbf)	Compressive Strength (psi)	Avgerage Compressive Strength (psi)
4%	7	16.8%	4.628	3.993	12.52	730	60	60
4%	7	16.7%	4.608	3.995	12.53	750	60	
6%	7	16.9%	4.635	3.992	12.52	770	60	60
6%	7	16.7%	4.630	3.997	12.55	770	60	

ADDITIONAL COMMENTS

Bulk Soil Sample Data (without Lime Added):

LL=33, PL=24, PI=7

%Passing #200 Sieve = 45.7%

As-Received Natural Moisture Content = 8.9%

F&ME CONSULTANTS

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

Reviewed By

130-04-0212
NCDOT Certification No.

9/8/2021
Date

CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

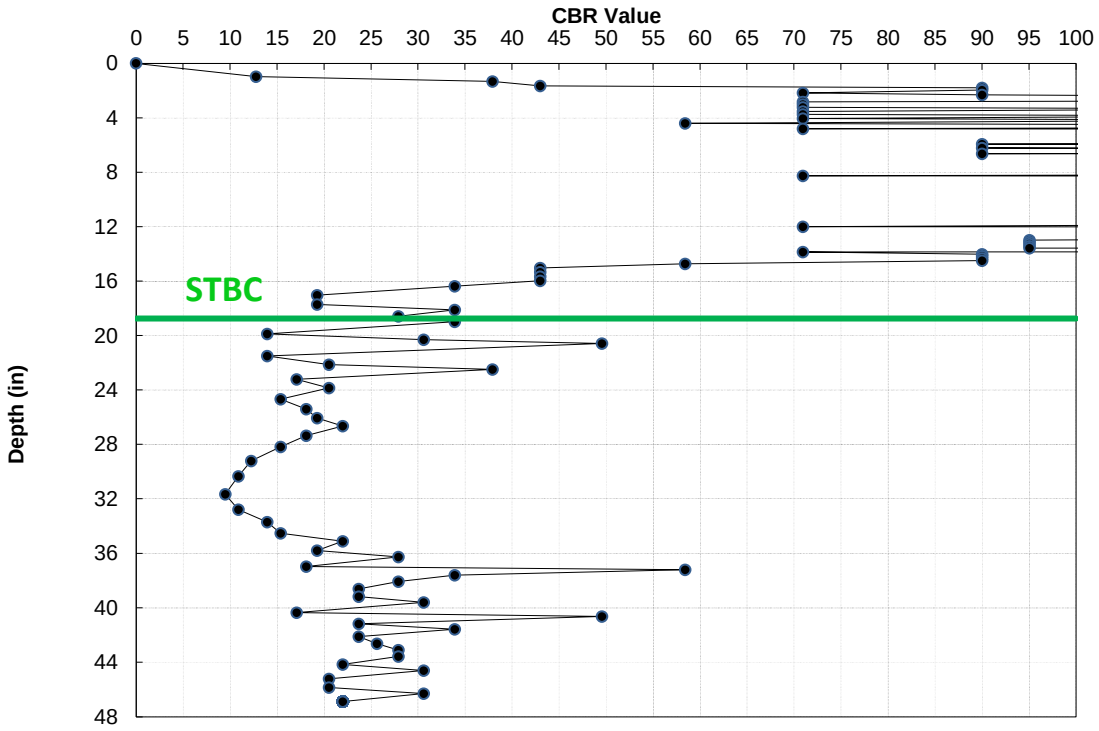
GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

FILE	B-3186_B-5898 DCP Graphs

C-1 -L- 15+32 EB OSS
5.0 FT RT FW
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 18.6	
# of Values	148
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	12.8

Interval 18.6 to 46.9	
# of Values	45
Avg CBR	24.0
Wghtd Avg.	20.6
Max CBR	58.4
Min CBR	9.5

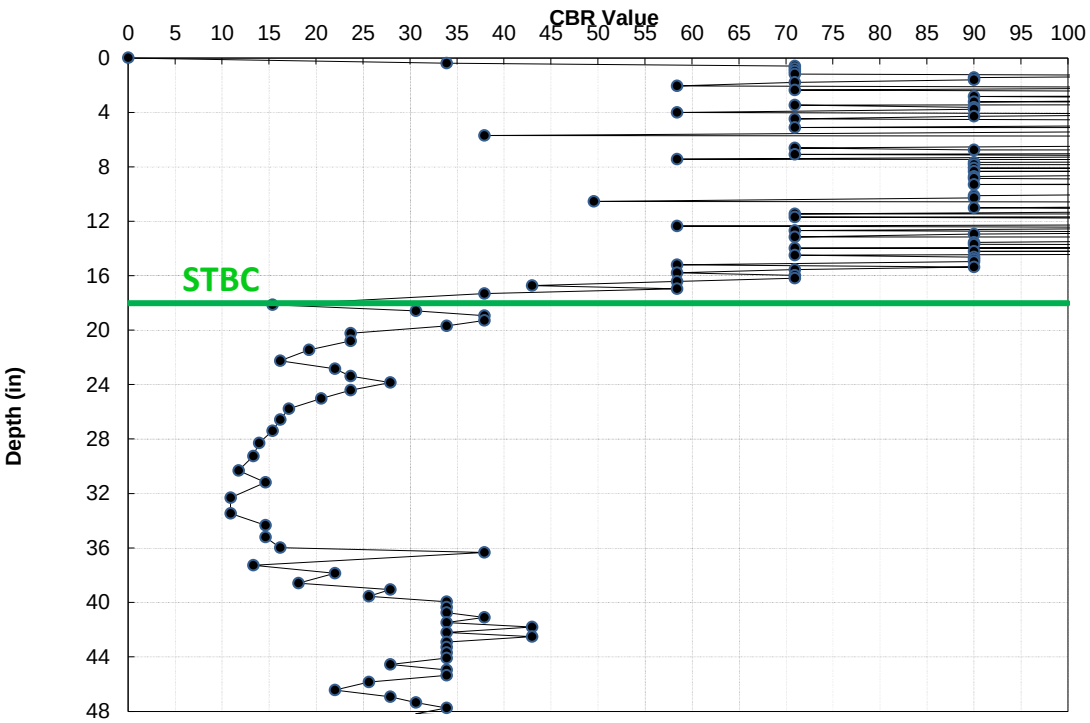


1

C-5 -L- 25+35 EB ISS
1.4 FT LT FY
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 18.1	
# of Values	122
Avg CBR	100+
Wghtd Avg.	95.6
Max CBR	100+
Min CBR	15.4

Interval 18.1 to 56.9	
# of Values	73
Avg CBR	28.0
Wghtd Avg.	24.7
Max CBR	43.0
Min CBR	10.9



2

CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

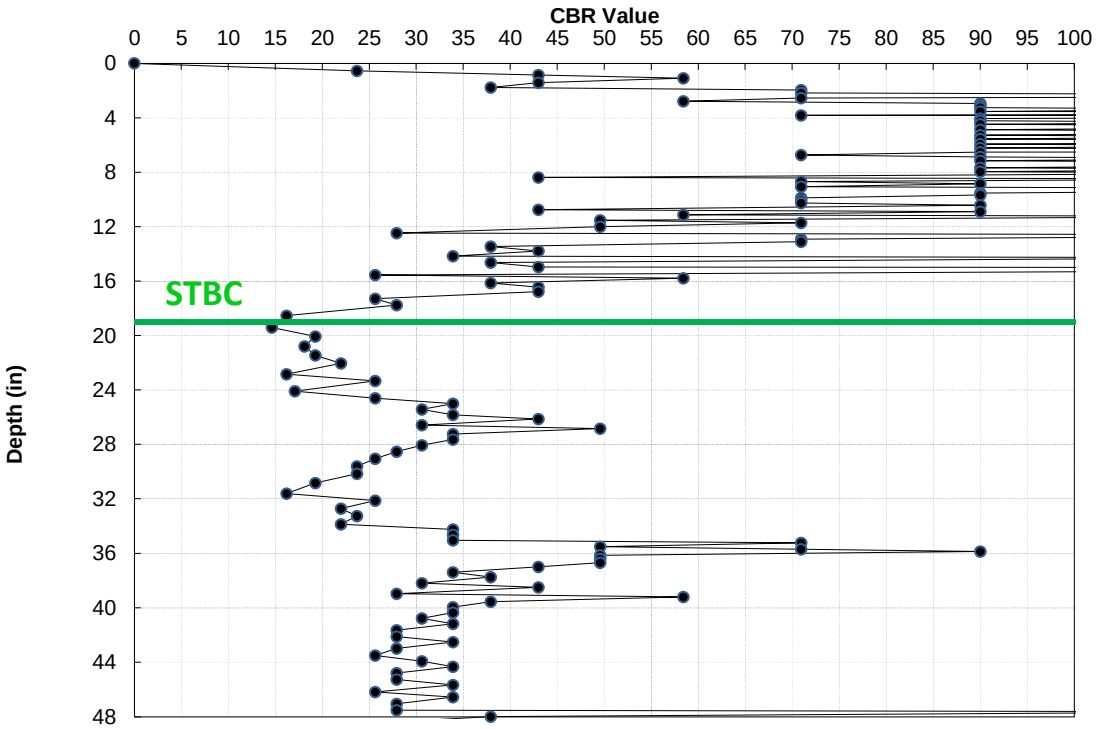
FILE	B-3186_B-5898 DCP Graphs

3

C-6 -L- 25+35 EB OSS
5.4 FT RT FW
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 19.4	
# of Values	92
Avg CBR	90.4
Wghtd Avg.	65.9
Max CBR	100+
Min CBR	14.6

Interval 19.4 to 56.3	
# of Values	87
Avg CBR	35.3
Wghtd Avg.	31.3
Max CBR	100+
Min CBR	16.2

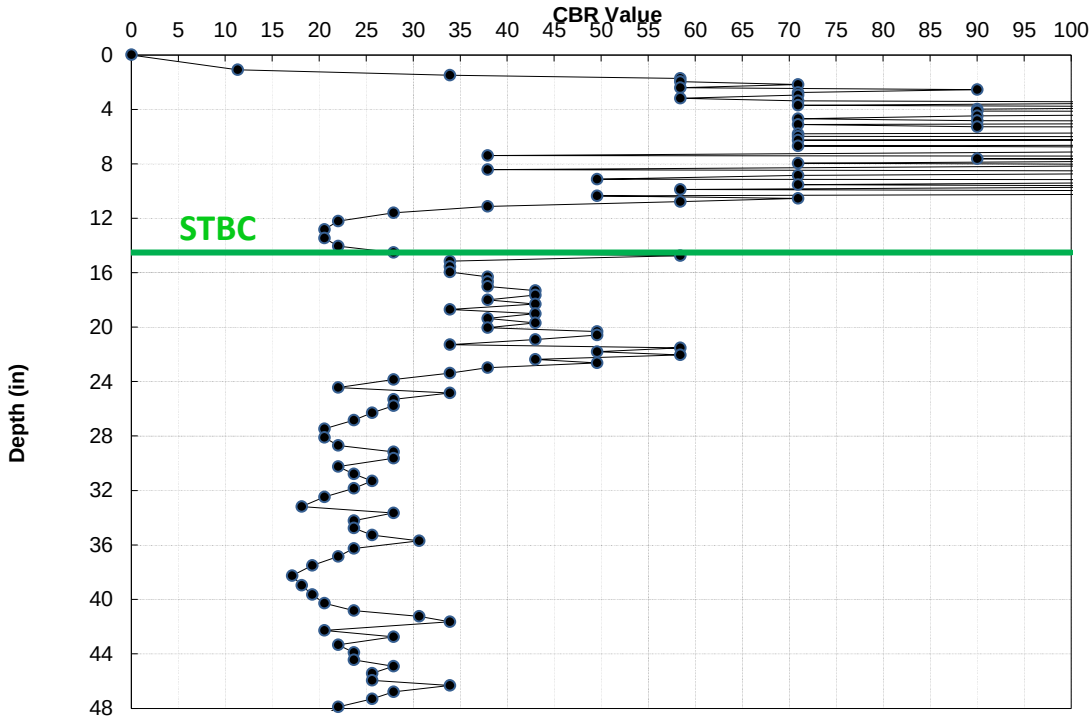


4

C-7 -L- 29+86 EB ISS
1.3 FT LT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 14.5	
# of Values	67
Avg CBR	96.8
Wghtd Avg.	64.0
Max CBR	100+
Min CBR	11.3

Interval 14.5 to 57.2	
# of Values	87
Avg CBR	29.5
Wghtd Avg.	26.8
Max CBR	58.4
Min CBR	17.1



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

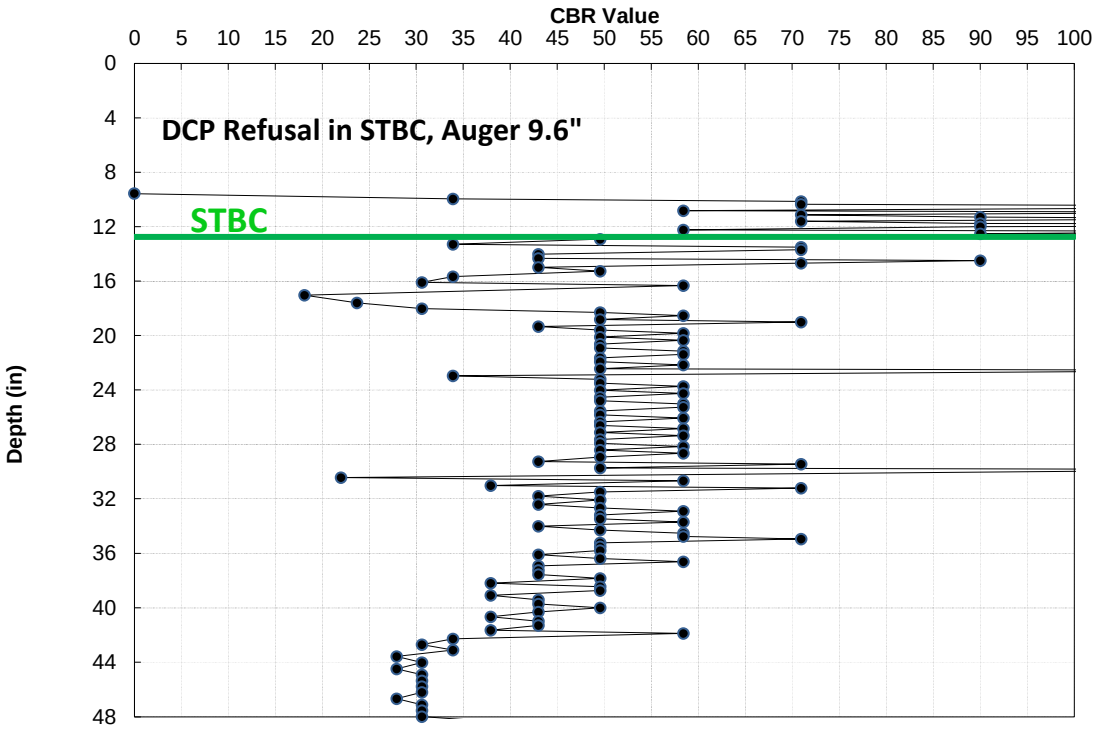
FILE	B-3186_B-5898 DCP Graphs

5

C-8 -L- 29+86 EB ISL
8.0 FT RT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 9.6 to 12.9	
# of Values	19
Avg CBR	93.0
Wghtd Avg.	79.9
Max CBR	100+
Min CBR	33.9

Interval 12.9 to 51.5	
# of Values	127
Avg CBR	48.6
Wghtd Avg.	44.7
Max CBR	100+
Min CBR	18.1

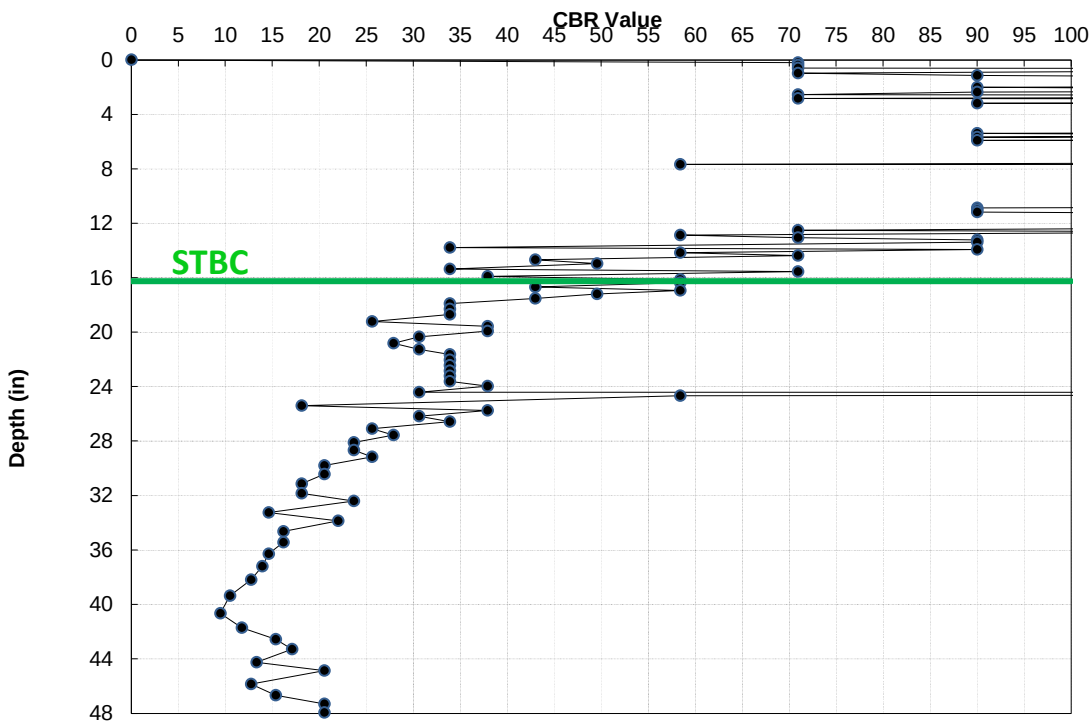


6

C-10 -L- 35+32 EB ISS
2.0 FT LT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 16.4	
# of Values	151
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	33.9

Interval 16.4 to 60.1	
# of Values	74
Avg CBR	31.4
Wghtd Avg.	22.0
Max CBR	100+
Min CBR	9.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

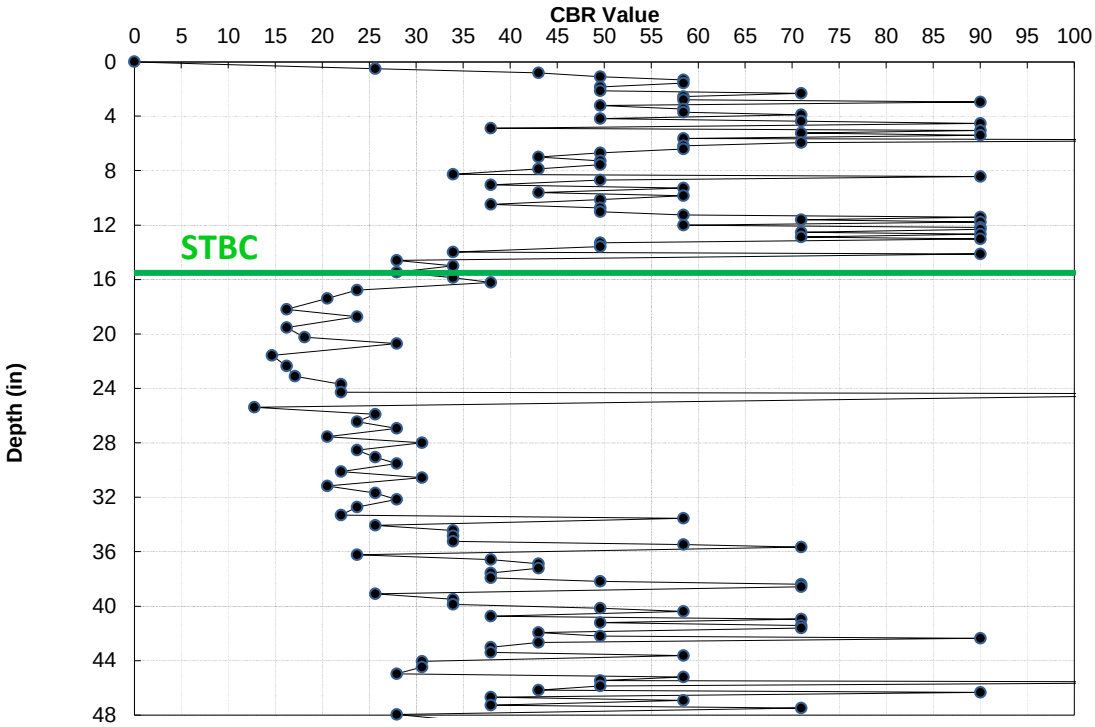
FILE	B-3186_B-5898 DCP Graphs

7

C-11 -L- 35+34 EB OSS
5.5 FT RT FW
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 15.5	
# of Values	61
Avg CBR	60.5
Wghtd Avg.	54.1
Max CBR	100+
Min CBR	25.6

Interval 15.5 to 62.2	
# of Values	127
Avg CBR	46.1
Wghtd Avg.	36.4
Max CBR	100+
Min CBR	12.8

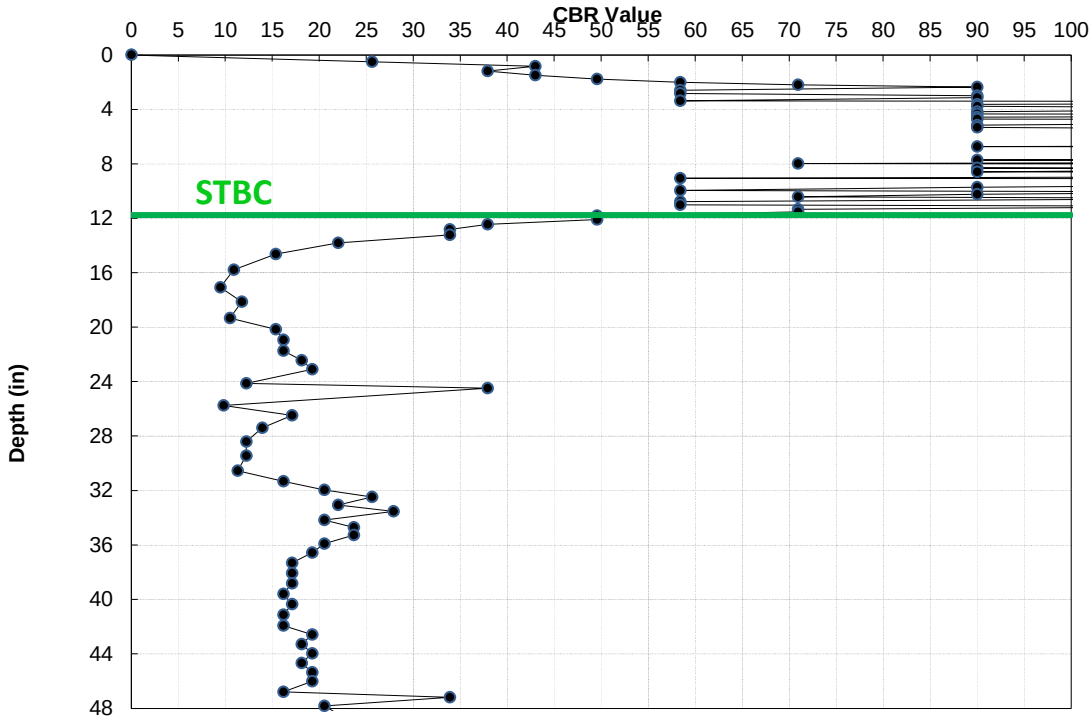


8

C-12 -L- 61+63 EB ISS
0.7 FT LT FY
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 11.8	
# of Values	81
Avg CBR	60.5
Wghtd Avg.	54.1
Max CBR	100+
Min CBR	25.6

Interval 11.8 to 55.4	
# of Values	62
Avg CBR	20.4
Wghtd Avg.	18.2
Max CBR	49.6
Min CBR	9.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

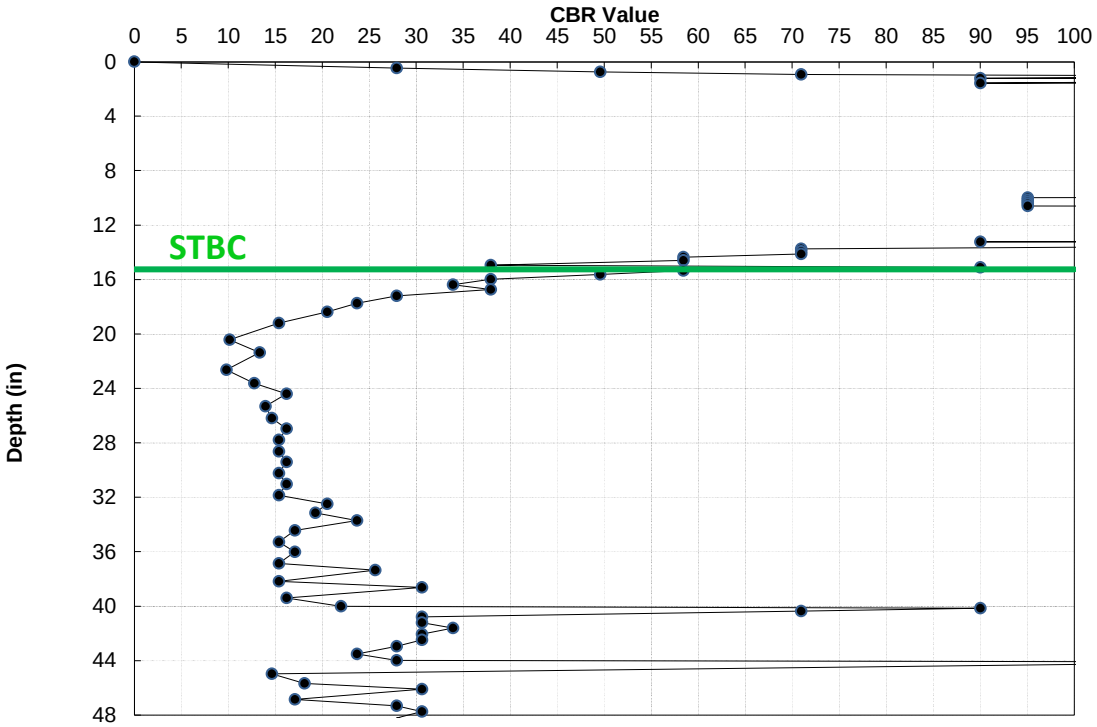
FILE	B-3186_B-5898 DCP Graphs

9

C-13 -L- 61+63 EB ISL
5.3 FT RT FY
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 15.1	
# of Values	189
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	27.9

Interval 15.1 to 55.8	
# of Values	72
Avg CBR	29.0
Wghtd Avg.	23.0
Max CBR	100+
Min CBR	9.8

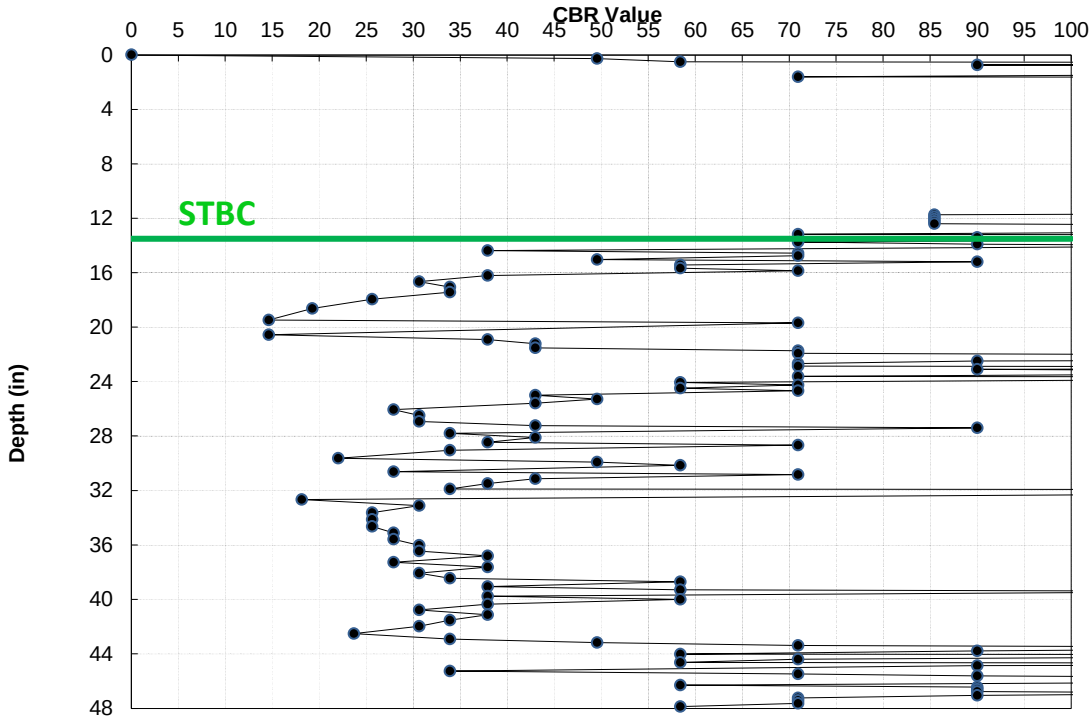


10

C-14 -L- 61+64 EB OSL
2.2 FT LT FW
Datum = STBC
RAW
Fill
8/4/2021

Interval 0.0 to 13.5	
# of Values	228
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	49.6

Interval 13.5 to 59.4	
# of Values	157
Avg CBR	63.8
Wghtd Avg.	46.5
Max CBR	100+
Min CBR	14.6



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

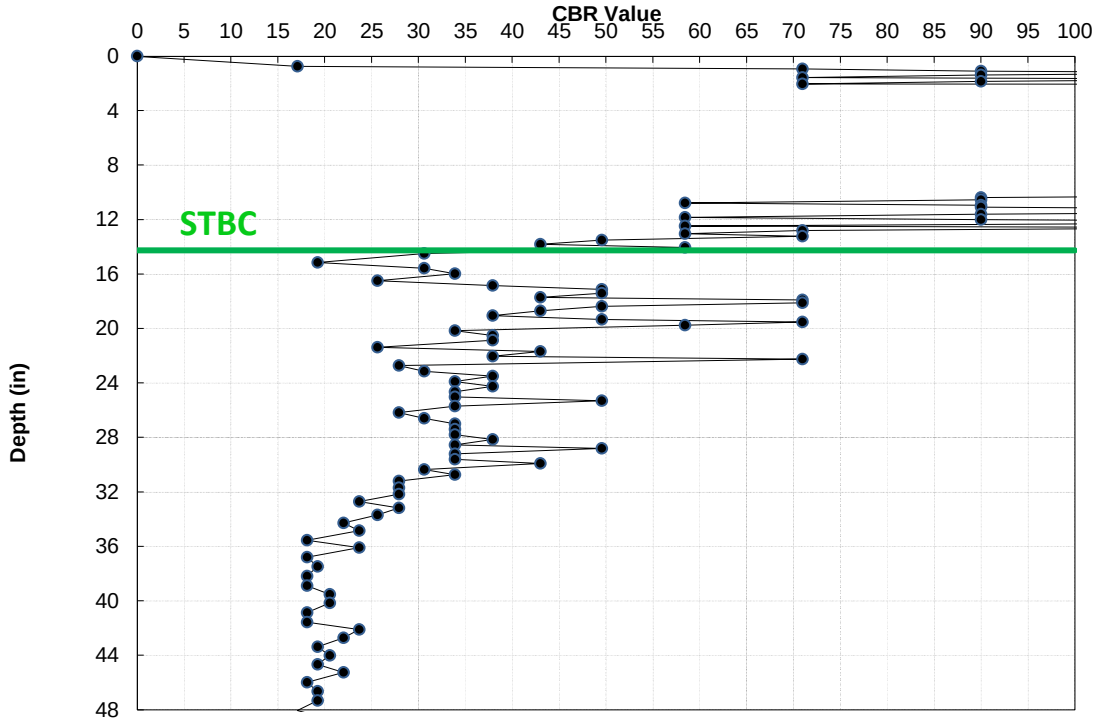
FILE	B-3186_B-5898 DCP Graphs

11

C-15 -L- 61+64 EB OSS
1.0 FT RT FW
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 14.1	
# of Values	122
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	17.1

Interval 14.1 to 53.5	
# of Values	83
Avg CBR	31.8
Wghtd Avg.	27.7
Max CBR	70.9
Min CBR	17.1

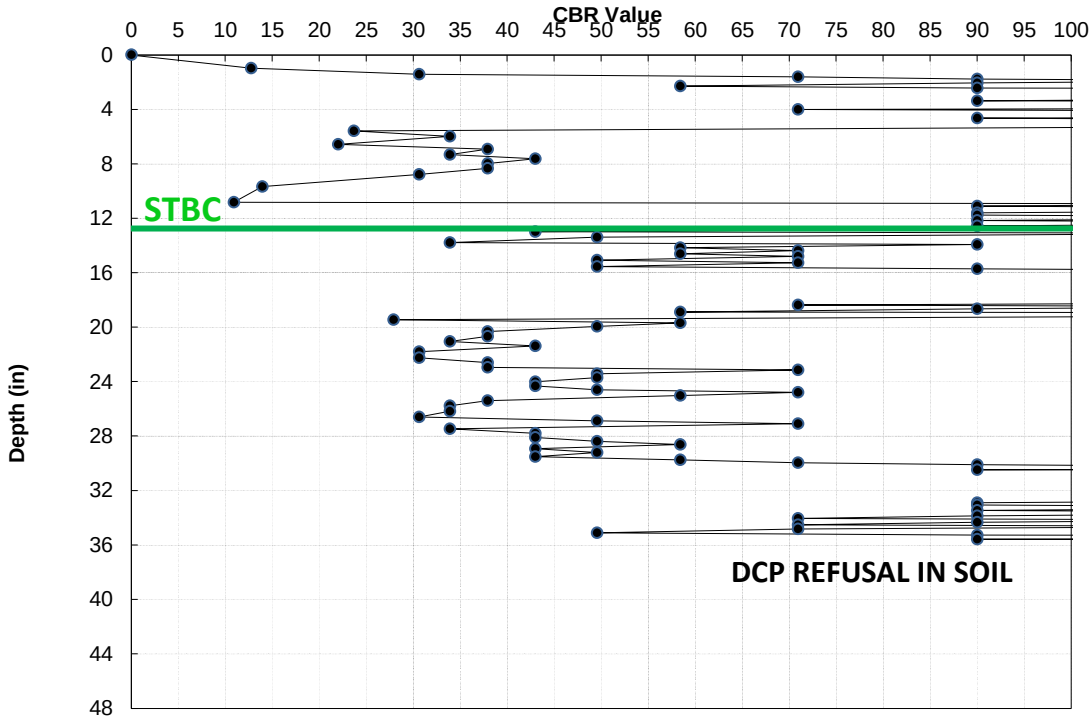


12

C-19 -L- 76+90 EB ISS
2.2 FT LT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 12.7	
# of Values	58
Avg CBR	100+
Wghtd Avg.	63.5
Max CBR	100+
Min CBR	10.9

Interval 12.7 to 36.7	
# of Values	214
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	27.9



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
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COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

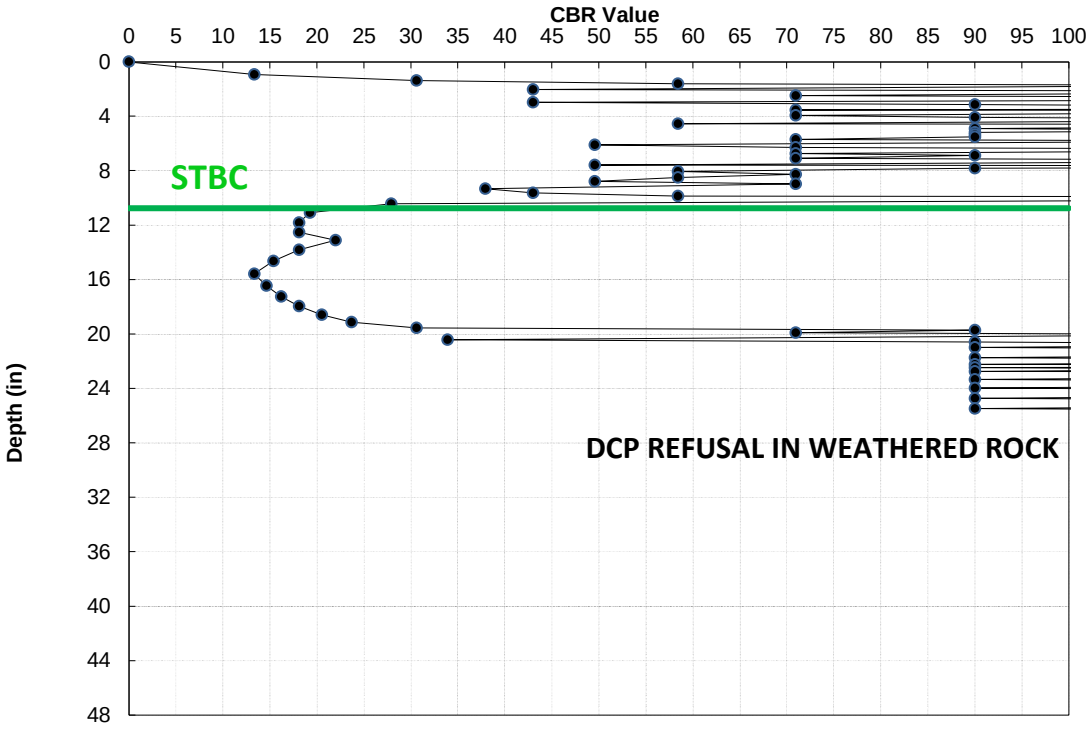
FILE	B-3186_B-5898 DCP Graphs

13

C-21 -L- 76+90 EB OSL
2.2 FT LT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 11.1	
# of Values	54
Avg CBR	93.0
Wghtd Avg.	67.7
Max CBR	100+
Min CBR	13.3

Interval 11.1 to 25.8	
# of Values	59
Avg CBR	95.1
Wghtd Avg.	55.1
Max CBR	100+
Min CBR	13.3

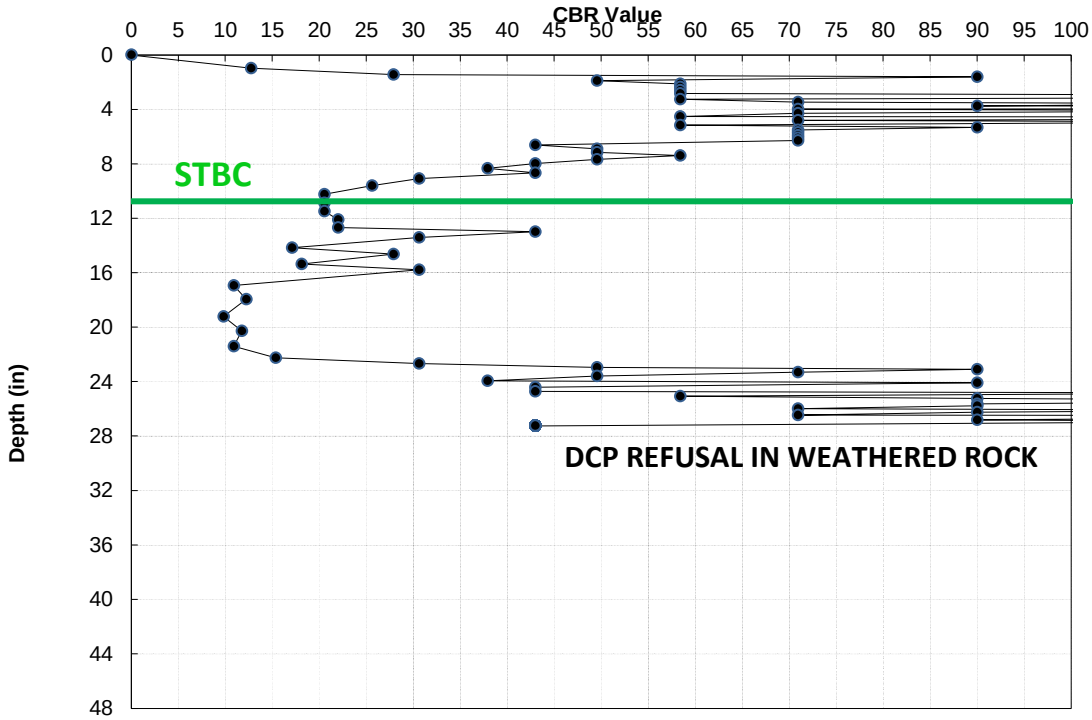


14

C-22 -L- 76+90 EB OSS
3.5 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 10.9	
# of Values	41
Avg CBR	76.6
Wghtd Avg.	51.7
Max CBR	100+
Min CBR	12.8

Interval 10.9 to 27.2	
# of Values	40
Avg CBR	60.6
Wghtd Avg.	32.5
Max CBR	100+
Min CBR	9.8



CONE PENETROMETER RESULTS
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PROJECT NO.	38332.1.FS1
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COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

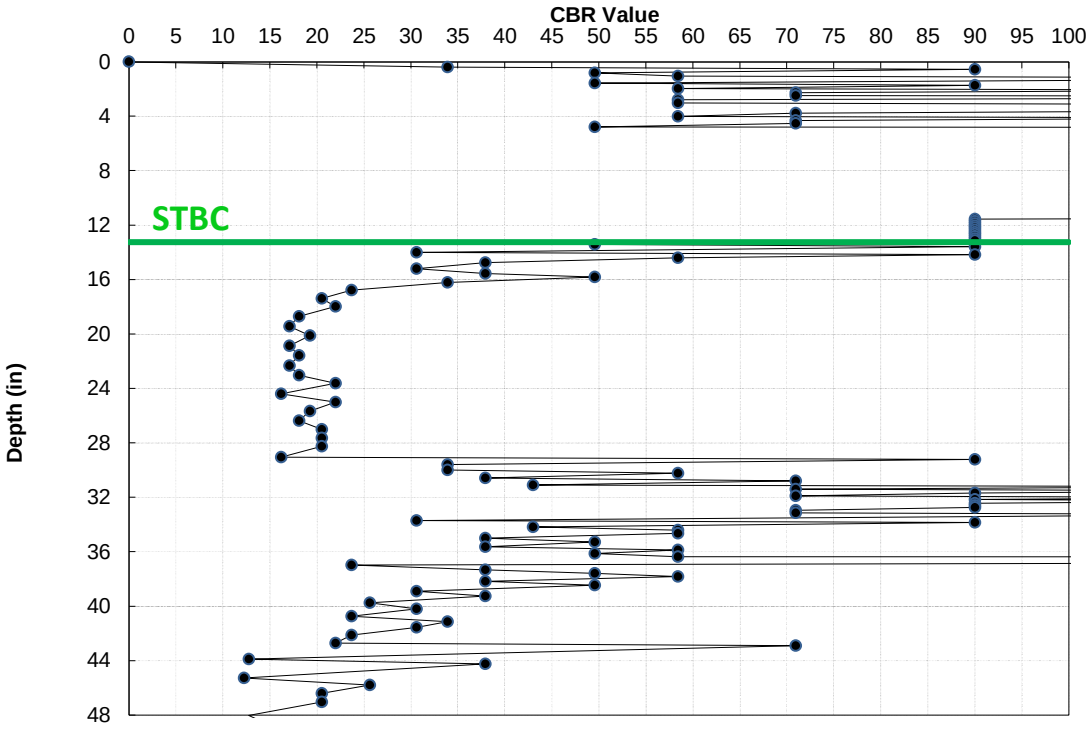
FILE	B-3186_B-5898 DCP Graphs

15

C-23 -L- 80+22 EB ISS
2.3 FT LT FY
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 13.1	
# of Values	132
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	33.9

Interval 13.1 to 60.2	
# of Values	106
Avg CBR	45.4
Wghtd Avg.	29.8
Max CBR	100+
Min CBR	12.2

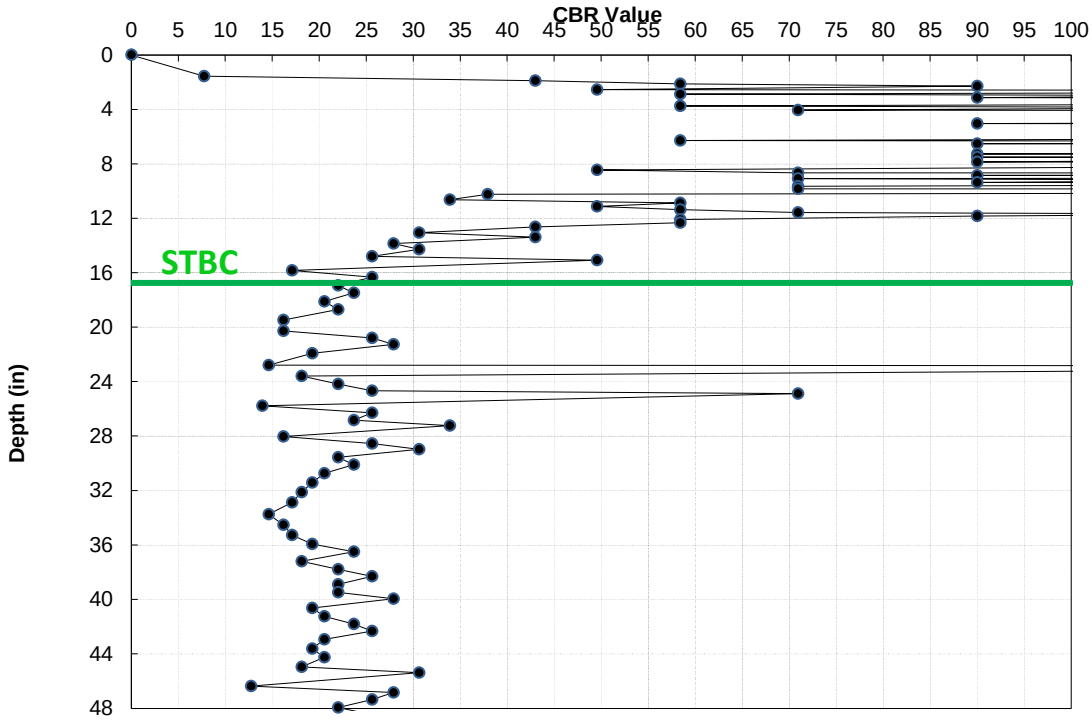


16

C-24 -L- 80+22 EB OSS
1.9 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 16.9	
# of Values	89
Avg CBR	100+
Wghtd Avg.	73.6
Max CBR	100+
Min CBR	7.7

Interval 16.9 to 56.2	
# of Values	68
Avg CBR	26.2
Wghtd Avg.	22.5
Max CBR	100+
Min CBR	12.8



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

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ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

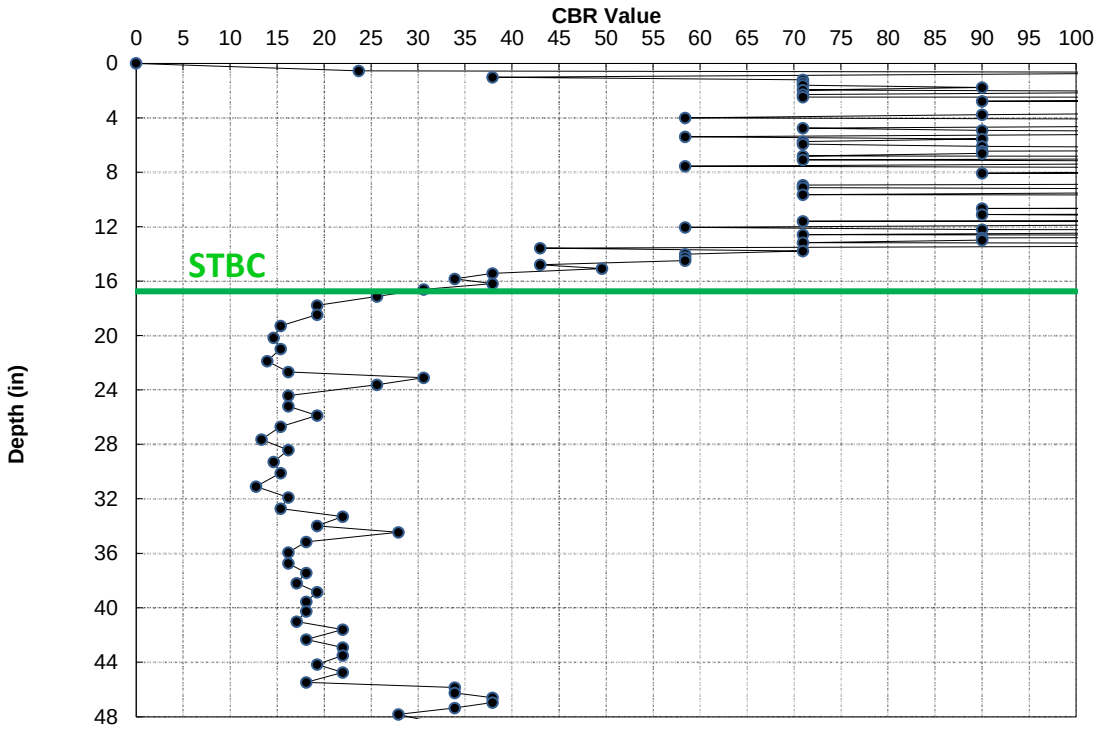
FILE	B-3186_B-5898 DCP Graphs

1

C-25 -L- 15+13 WB OSS
5.5 FT RT FW
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 16.6	
# of Values	109
Avg CBR	100+
Wghtd Avg.	93.2
Max CBR	100+
Min CBR	23.7

Interval 16.6 to 62.4	
# of Values	125
Avg CBR	86.0
Wghtd Avg.	36.6
Max CBR	100+
Min CBR	12.8

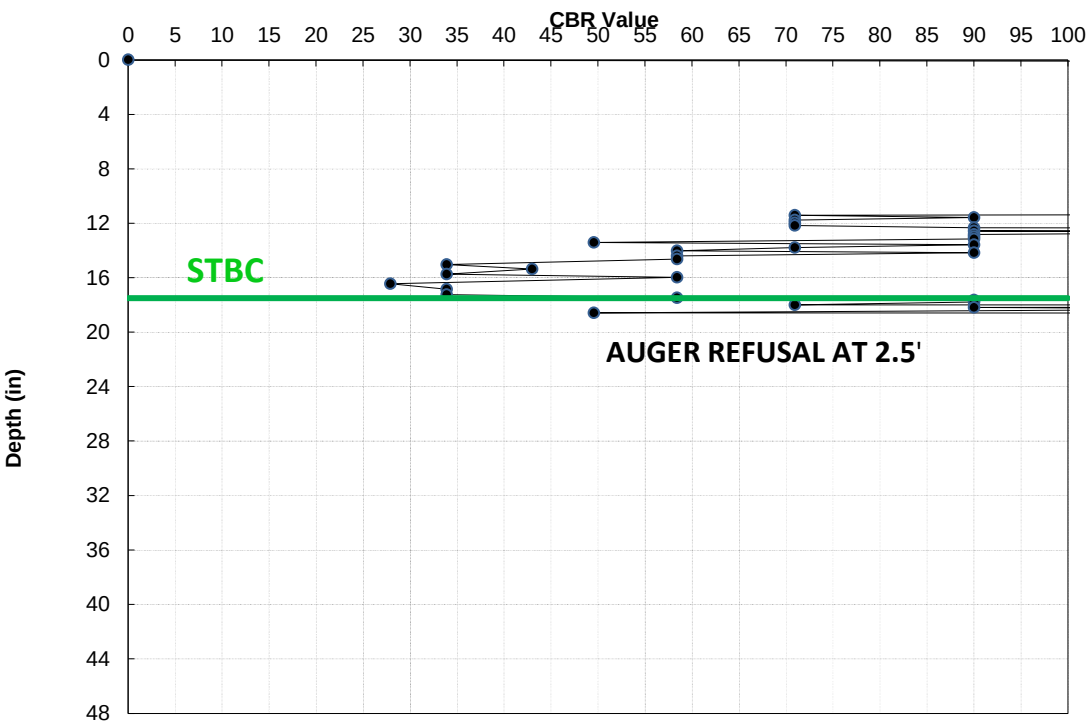


2

C-26 -L- 20+09 WB OSS
1.2 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 17.5	
# of Values	167
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	27.9

Interval 17.5 to 20.4	
# of Values	57
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	49.6



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PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
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COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

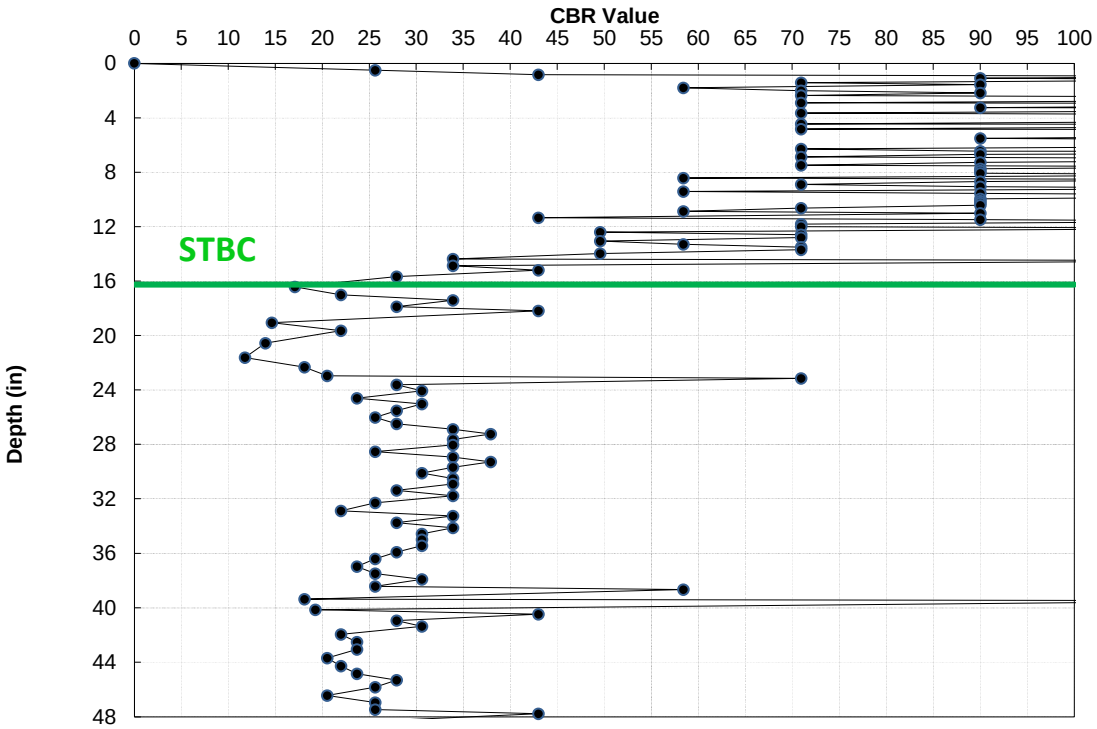
FILE	B-3186_B-5898 DCP Graphs

3

C-28 -L- 20+09 WB ISS
2.4 FT LT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 16.4	
# of Values	92
Avg CBR	96.0
Wghtd Avg.	78.8
Max CBR	100+
Min CBR	17.1

Interval 16.4 to 60.7	
# of Values	89
Avg CBR	29.1
Wghtd Avg.	26.4
Max CBR	100+
Min CBR	11.8

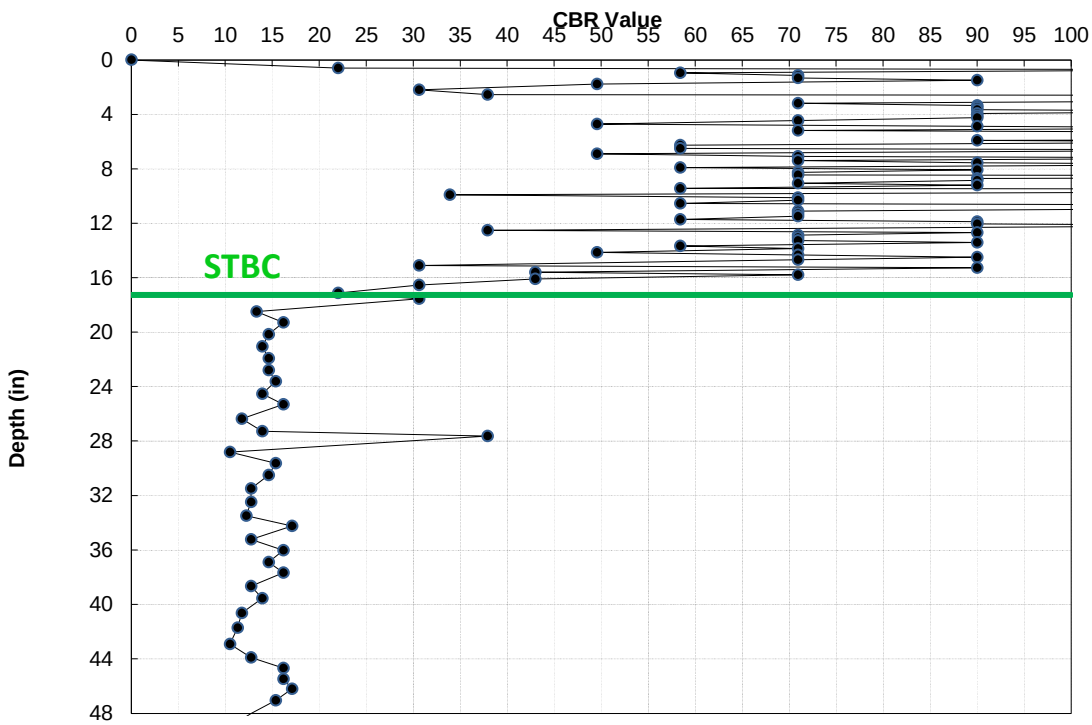


4

C-29 -L- 25+50 WB OSS
5.7 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 17.1	
# of Values	86
Avg CBR	85.0
Wghtd Avg.	70.1
Max CBR	100+
Min CBR	22.0

Interval 17.1 to 60.0	
# of Values	49
Avg CBR	15.4
Wghtd Avg.	14.5
Max CBR	37.9
Min CBR	9.5



CONE PENETROMETER RESULTS
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PROJECT NO.	38332.1.FS1
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COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

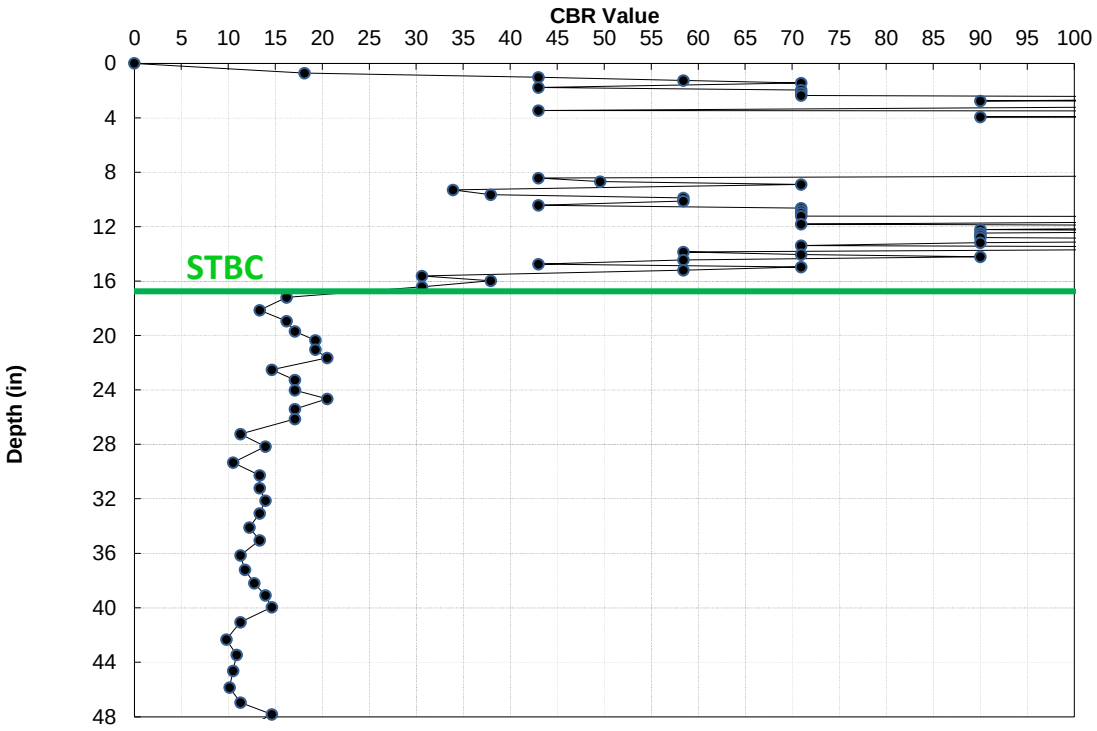
FILE	B-3186_B-5898 DCP Graphs

5

C-30 -L- 25+50 WB ISS
1.8 FT RT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 16.4	
# of Values	104
Avg CBR	100+
Wghtd Avg.	89.8
Max CBR	100+
Min CBR	18.1

Interval 16.4 to 58.4	
# of Values	45
Avg CBR	14.0
Wghtd Avg.	13.5
Max CBR	20.5
Min CBR	9.8

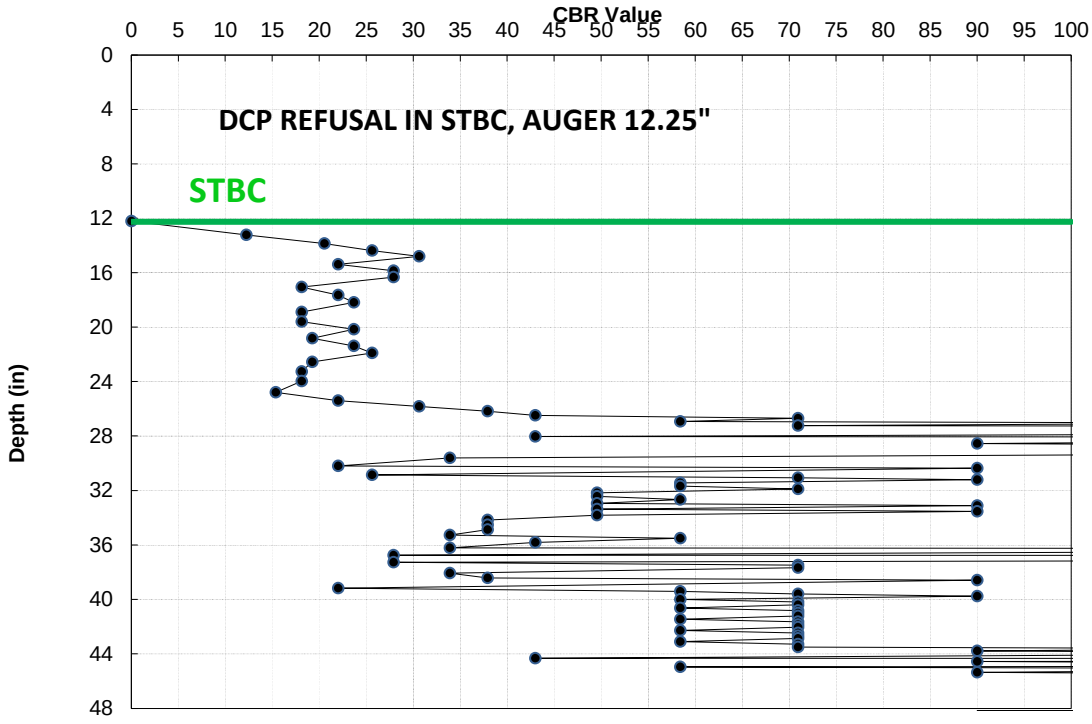


6

C-32 -L- 30+33 WB ISL
5.5 FT RT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 12.2 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 12.2 to 59.1	
# of Values	216
Avg CBR	100+
Wghtd Avg.	63.9
Max CBR	100+
Min CBR	12.2



CONE PENETROMETER RESULTS
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PROJECT ID	B-3186_B-5898
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COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

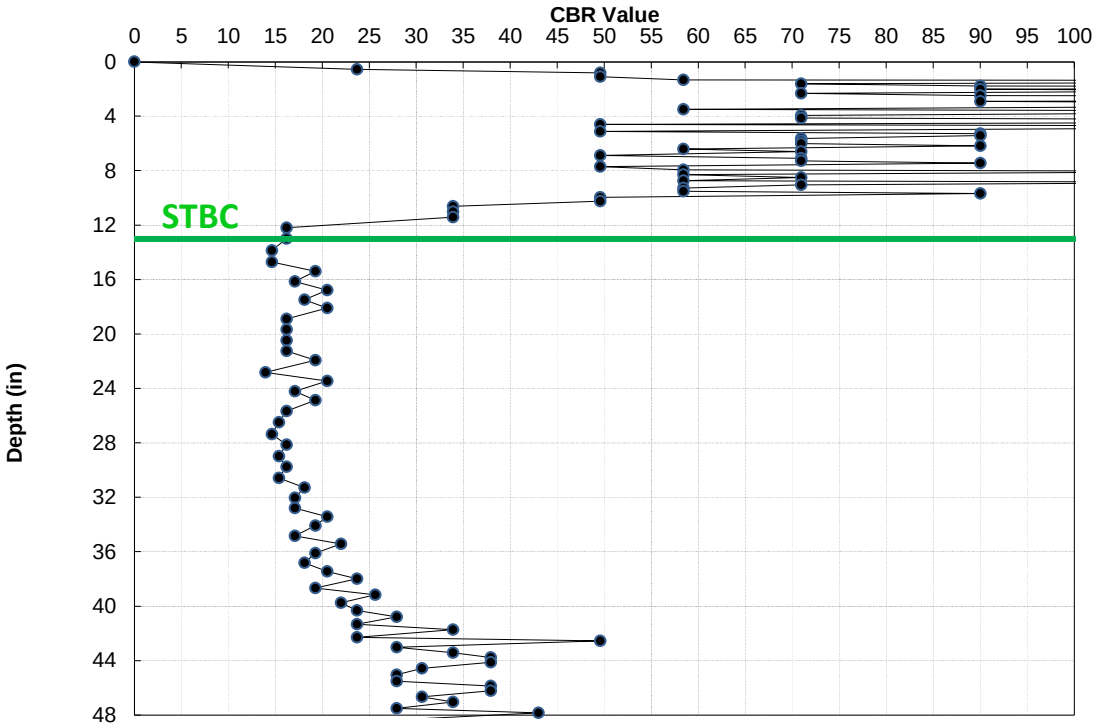
FILE	B-3186_B-5898 DCP Graphs

7

C-33 -L- 30+33 WB ISS
2.0 FT LT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 13.0	
# of Values	60
Avg CBR	84.9
Wghtd Avg.	64.1
Max CBR	100+
Min CBR	16.2

Interval 13.0 to 59.7	
# of Values	84
Avg CBR	26.1
Wghtd Avg.	23.4
Max CBR	49.6
Min CBR	13.9

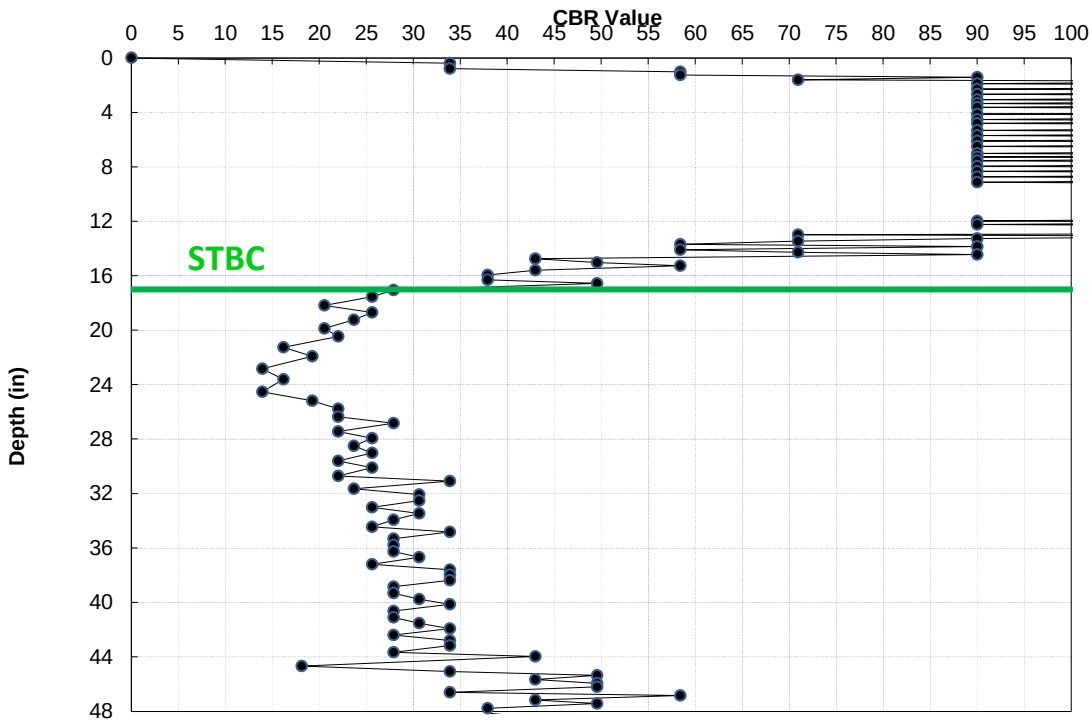


8

C-34 -L- 35+34 WB OSS
6.0 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 17.0	
# of Values	122
Avg CBR	84.9
Wghtd Avg.	64.1
Max CBR	100+
Min CBR	16.2

Interval 17.0 to 63.1	
# of Values	111
Avg CBR	35.7
Wghtd Avg.	32.0
Max CBR	70.9
Min CBR	13.9



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
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ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

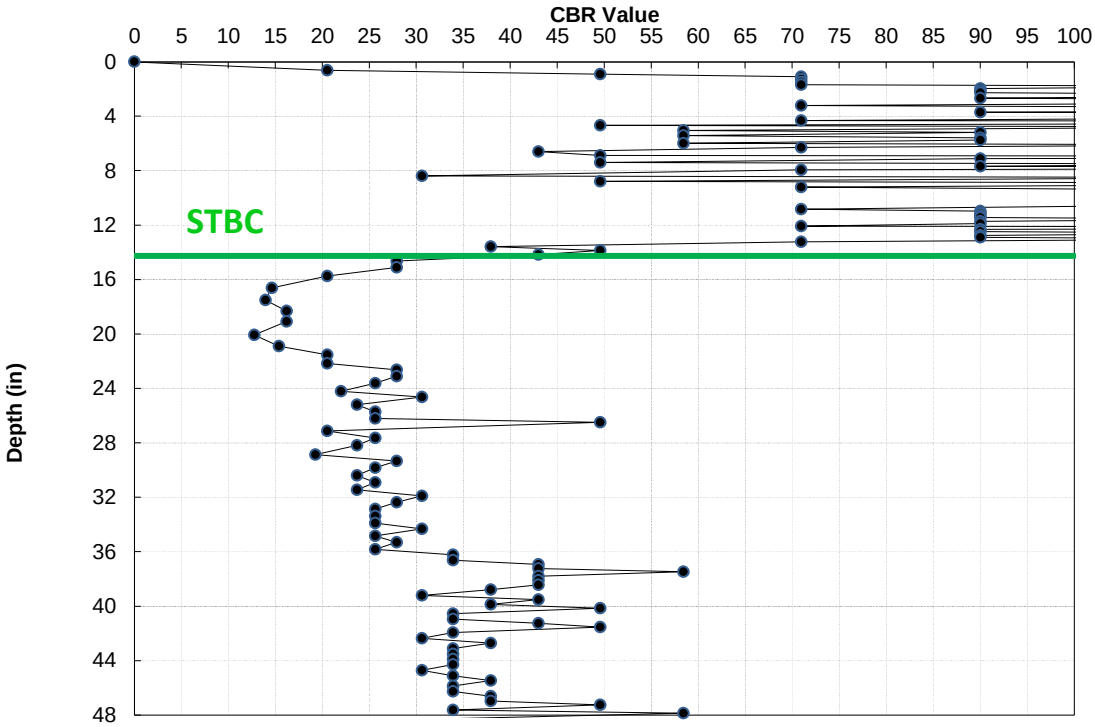
FILE	B-3186_B-5898 DCP Graphs

9

C-35 -L- 35+35 WB ISS
2.3 FT LT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 14.2	
# of Values	83
Avg CBR	98.8
Wghtd Avg.	82.6
Max CBR	100+
Min CBR	20.5

Interval 14.2 to 55.3	
# of Values	100
Avg CBR	39.5
Wghtd Avg.	32.3
Max CBR	100+
Min CBR	12.8

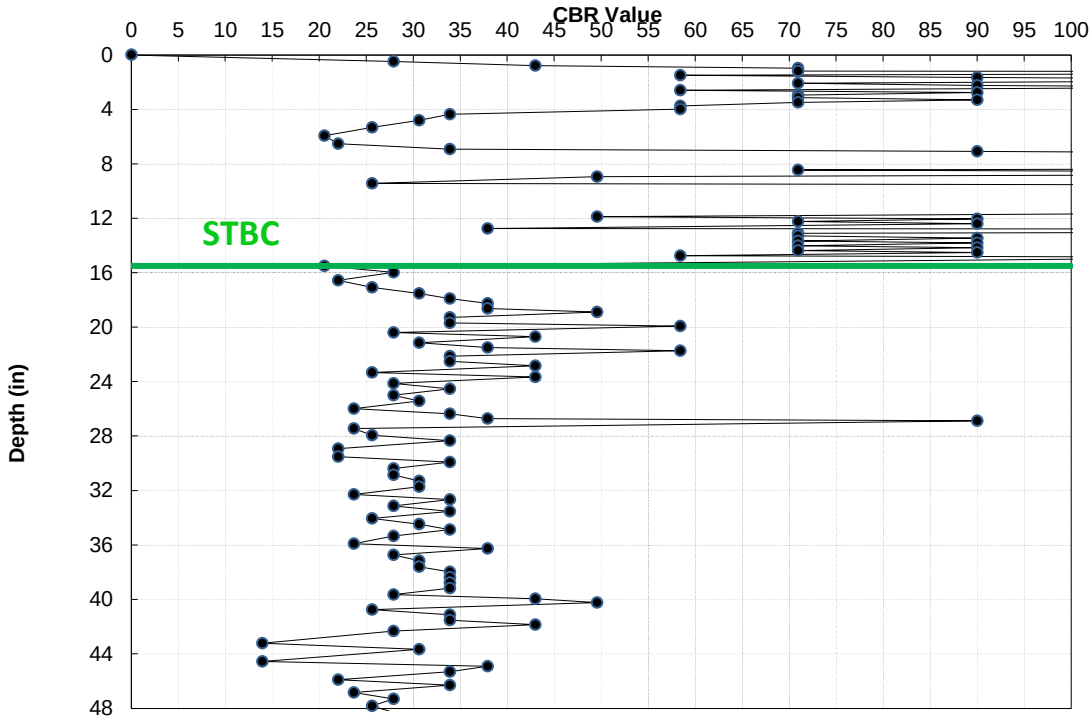


10

C-36 -L- 56+85 WB OSS
1.0 FT RT FW
Datum = STBC
RAW
Cut
8/4/2021

Interval 0.0 to 15.5	
# of Values	85
Avg CBR	100+
Wghtd Avg.	76.9
Max CBR	100+
Min CBR	20.5

Interval 15.5 to 56.1	
# of Values	92
Avg CBR	32.2
Wghtd Avg.	30.0
Max CBR	90.0
Min CBR	13.9



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

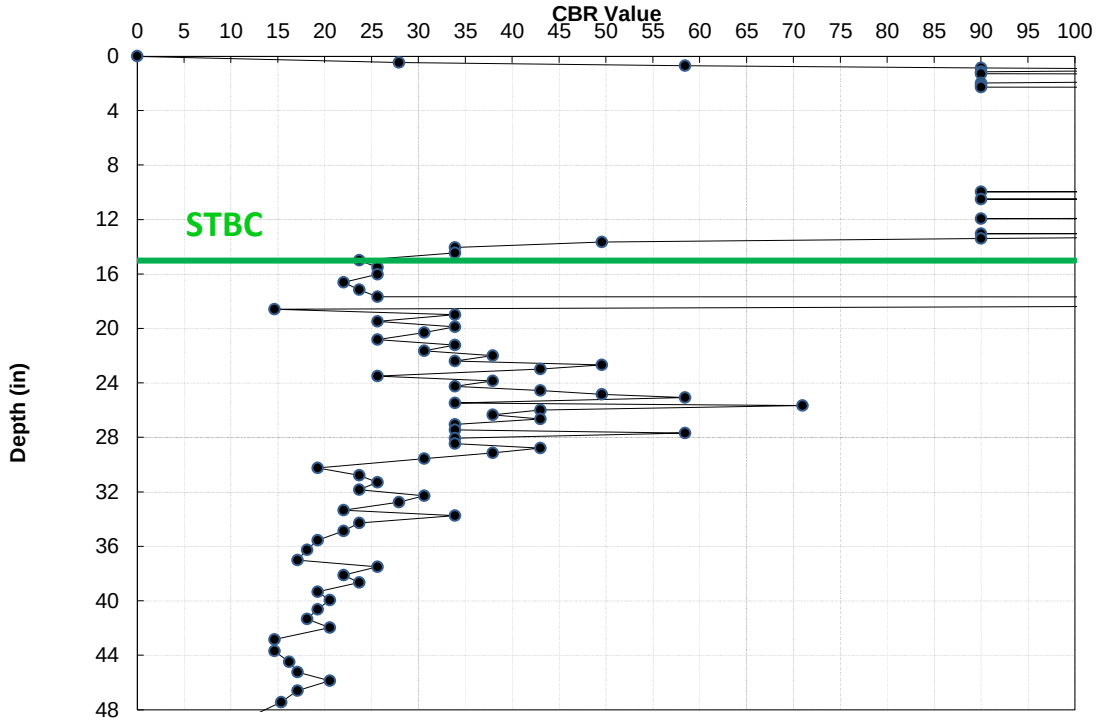
FILE	B-3186_B-5898 DCP Graphs

11

C-37 -L- 56+85 WB OSL
2.3 FT LT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 15.0	
# of Values	172
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	23.7

Interval 15.0 to 55.9	
# of Values	72
Avg CBR	32.7
Wghtd Avg.	22.9
Max CBR	100+
Min CBR	8.4

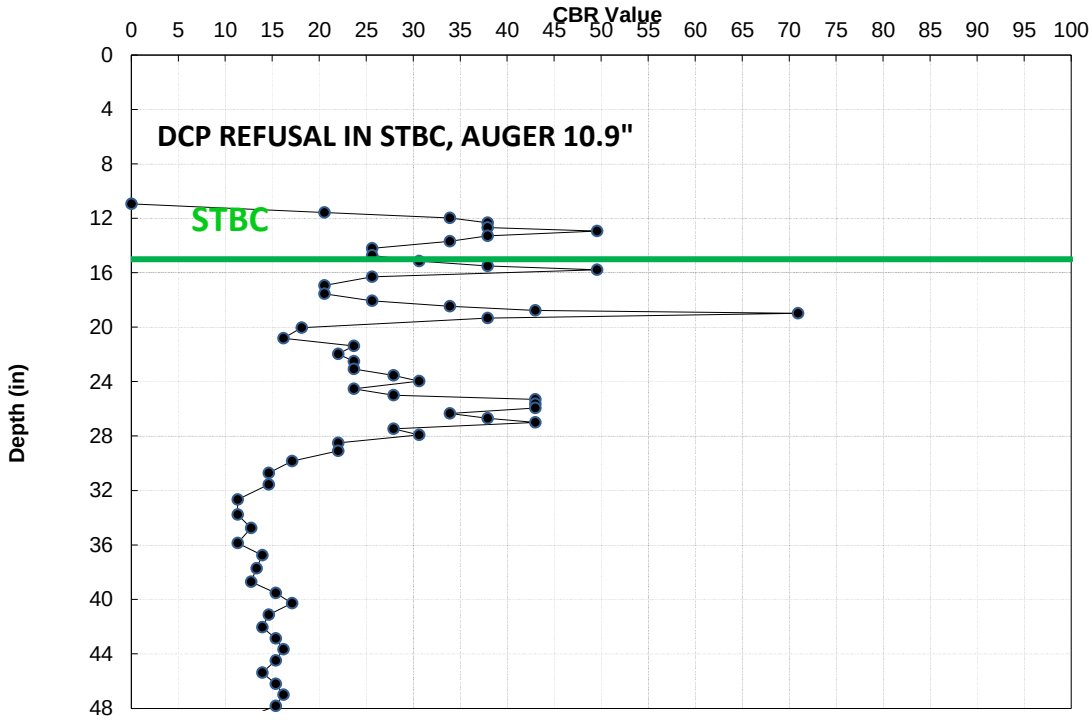


12

C-38 -L- 56+85 WB ISL
2.0 FT RT FY
Datum = STBC
RAW
Cut
08/04/21

Interval 10.9 to 15.2	
# of Values	10
Avg CBR	33.3
Wghtd Avg.	31.5
Max CBR	49.6
Min CBR	20.5

Interval 15.2 to 54.0	
# of Values	58
Avg CBR	23.4
Wghtd Avg.	19.2
Max CBR	70.9
Min CBR	11.3



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

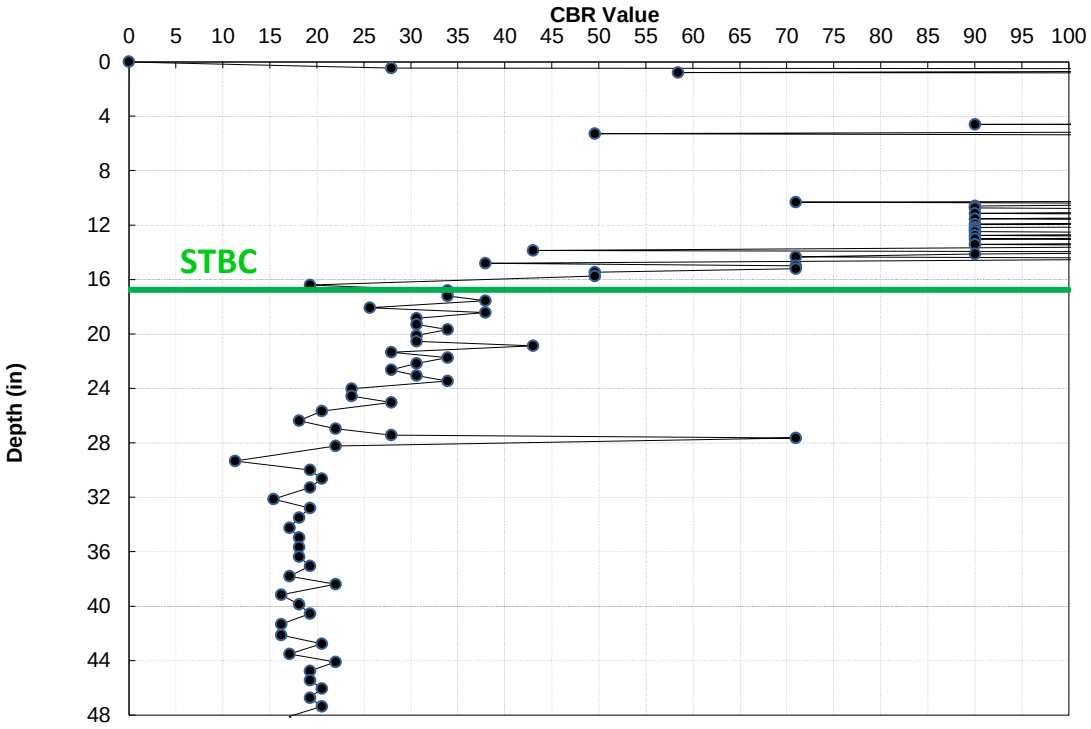
FILE	B-3186_B-5898 DCP Graphs

13

C-39 -L- 65+56 WB OSS
2.0 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 16.8	
# of Values	148
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	19.2

Interval 16.8 to 59.9	
# of Values	69
Avg CBR	22.8
Wghtd Avg.	20.7
Max CBR	70.9
Min CBR	9.5

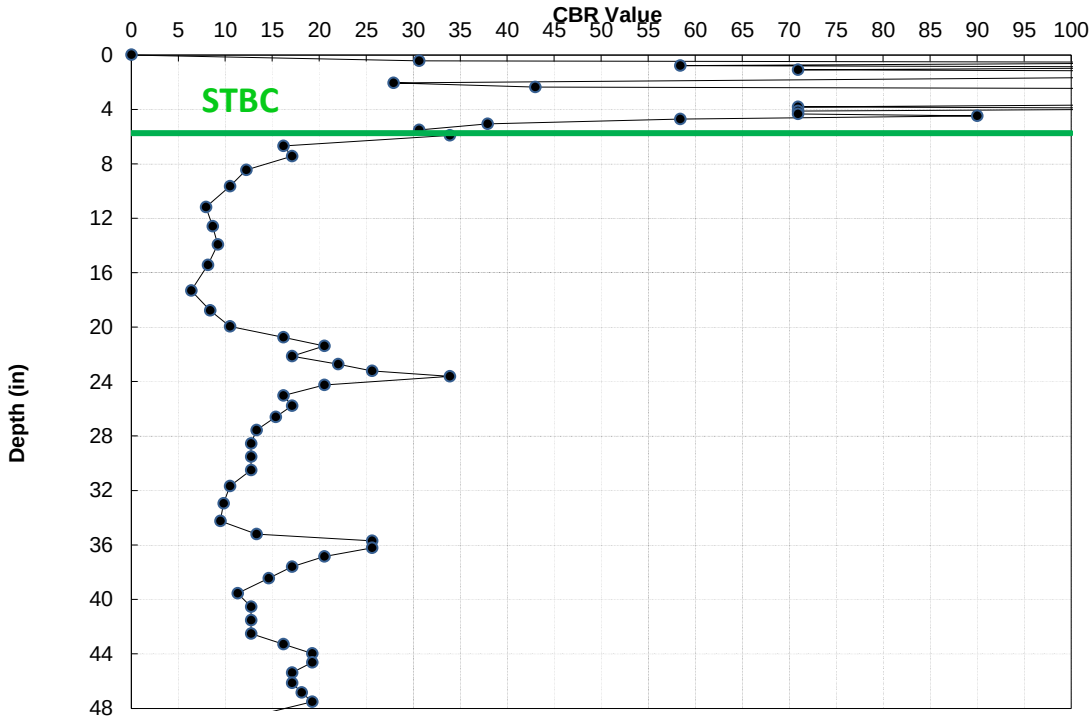


14

C-41 -L- 70+40 WB OSS
4.0 FT RT FW
Datum = STBC
RAW
Fill
08/04/21

Interval 0.0 to 5.9	
# of Values	30
Avg CBR	89.7
Wghtd Avg.	70.9
Max CBR	100+
Min CBR	27.9

Interval 5.9 to 54.7	
# of Values	54
Avg CBR	15.5
Wghtd Avg.	14.0
Max CBR	33.9
Min CBR	6.4



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

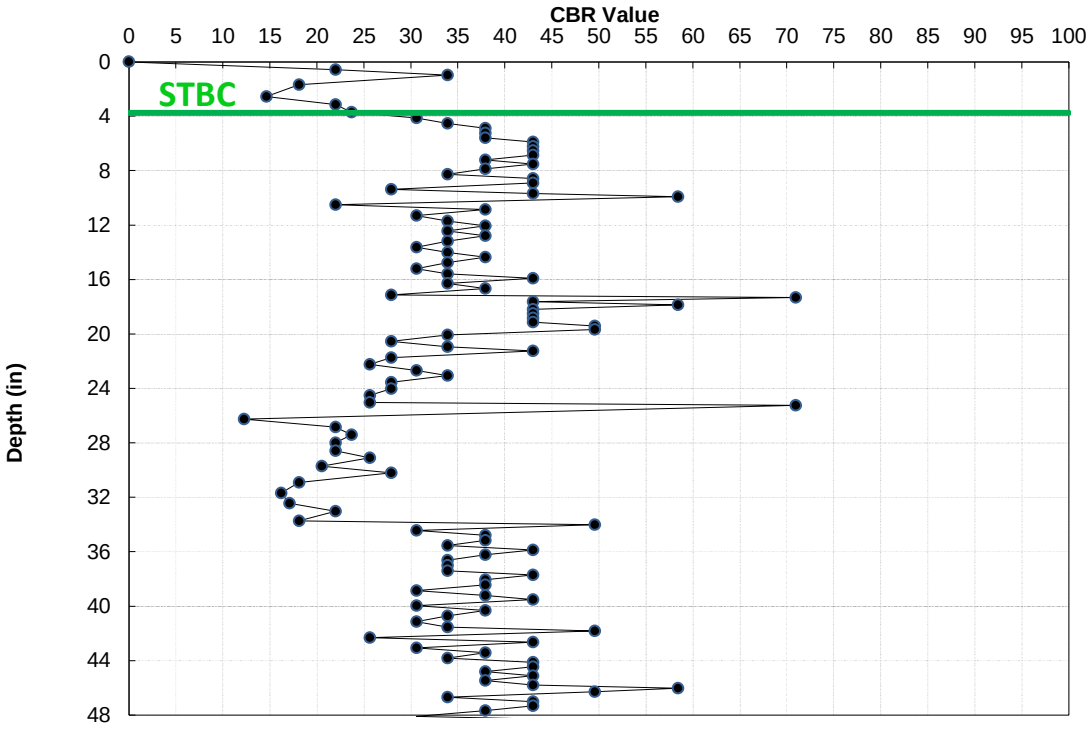
FILE	B-3186_B-5898 DCP Graphs

15

C-42 -L- 75+03 WB OSS
5.0 FT RT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 3.7	
# of Values	6
Avg CBR	22.4
Wghtd Avg.	21.0
Max CBR	33.9
Min CBR	14.6

Interval 3.7 to 53.1	
# of Values	133
Avg CBR	43.5
Wghtd Avg.	36.0
Max CBR	100+
Min CBR	12.2

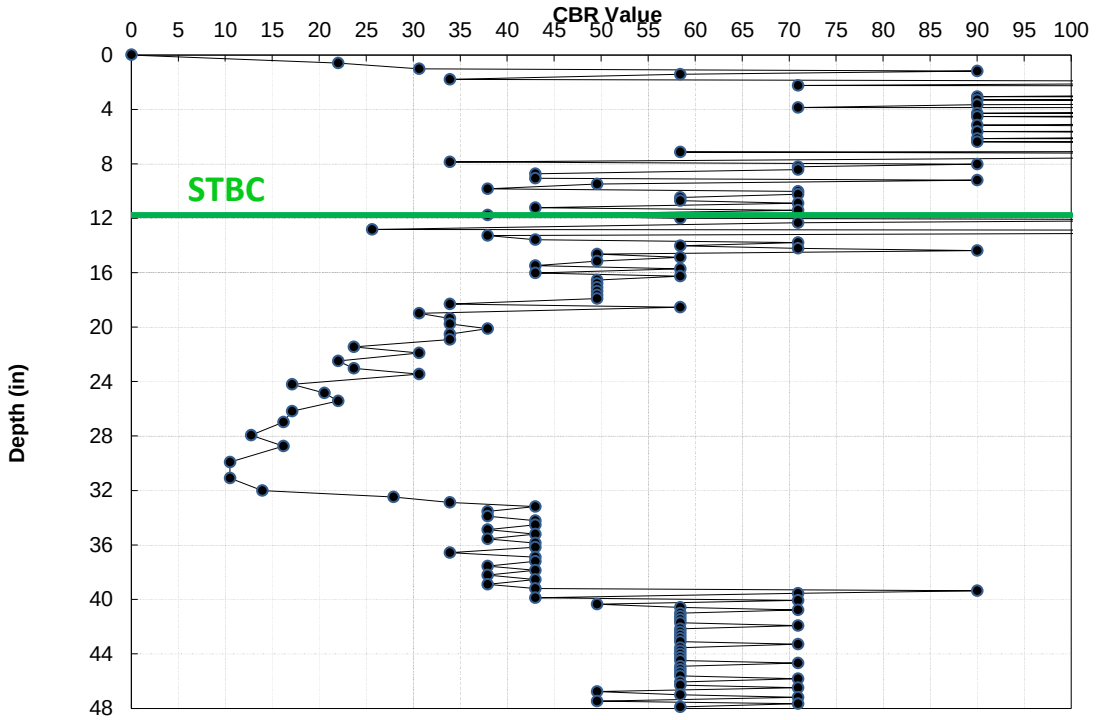


16

C-43 -L- 75+03 WB OSI
8.0 FT LT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 11.8	
# of Values	68
Avg CBR	100+
Wghtd Avg.	81.4
Max CBR	100+
Min CBR	22.0

Interval 11.8 to 53.0	
# of Values	128
Avg CBR	51.8
Wghtd Avg.	42.0
Max CBR	100+
Min CBR	10.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

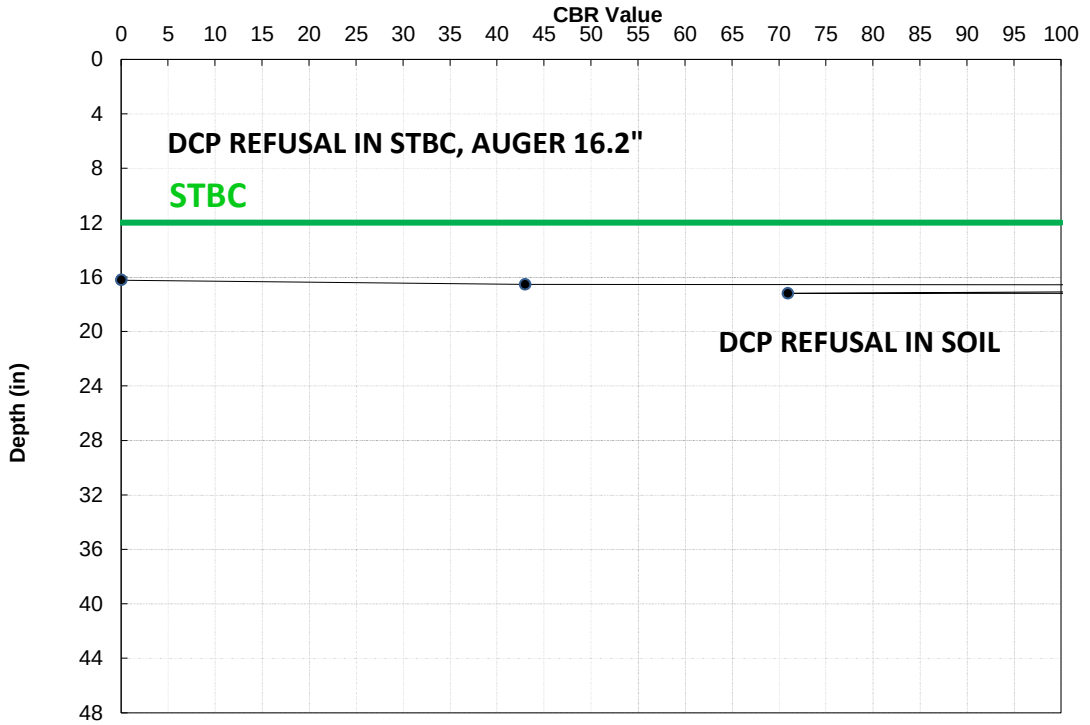
FILE	B-3186_B-5898 DCP Graphs

17

C-44 -L- 75+03 WB ISL
5.5 FT RT FY
Datum = STBC
RAW
Cut
08/04/21

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

Interval 16.2 to 18.7	
# of Values	71
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	43.0

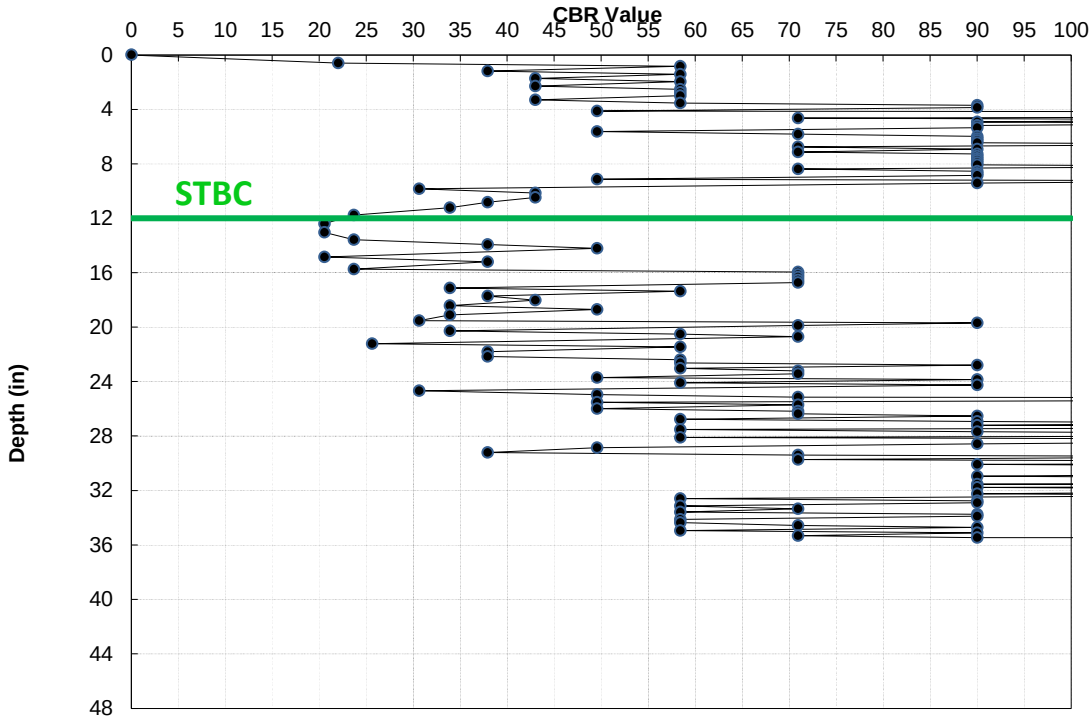


18

C-45 -L- 75+03 WB ISS
2.5 FT LT FW
Datum = STBC
RAW
Cut
08/04/21

Interval 0.0 to 11.8	
# of Values	55
Avg CBR	81.4
Wghtd Avg.	64.9
Max CBR	100+
Min CBR	22.0

Interval 11.8 to 36.5	
# of Values	167
Avg CBR	100+
Wghtd Avg.	96.3
Max CBR	100+
Min CBR	20.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

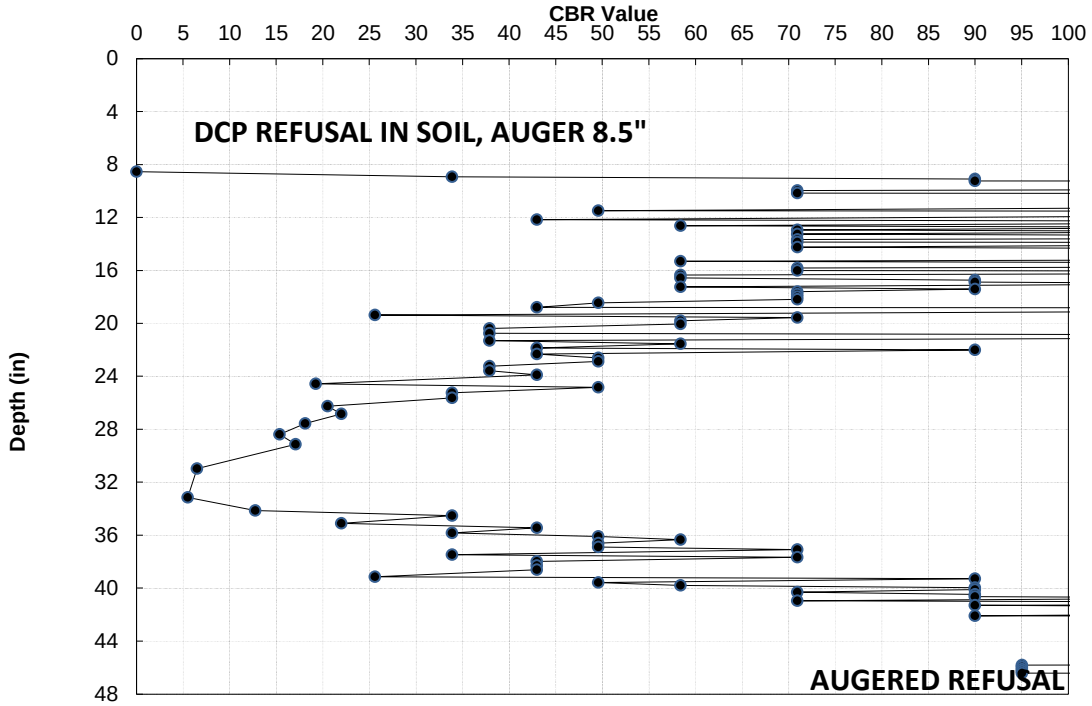
GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

FILE	B-3186_B-5898 DCP Graphs

C-47 -Y1LT- 13+66 US 19 WB RTL 1
6.0 FT RT C&G
Datum = SG
RAW
Cut
08/06/21

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

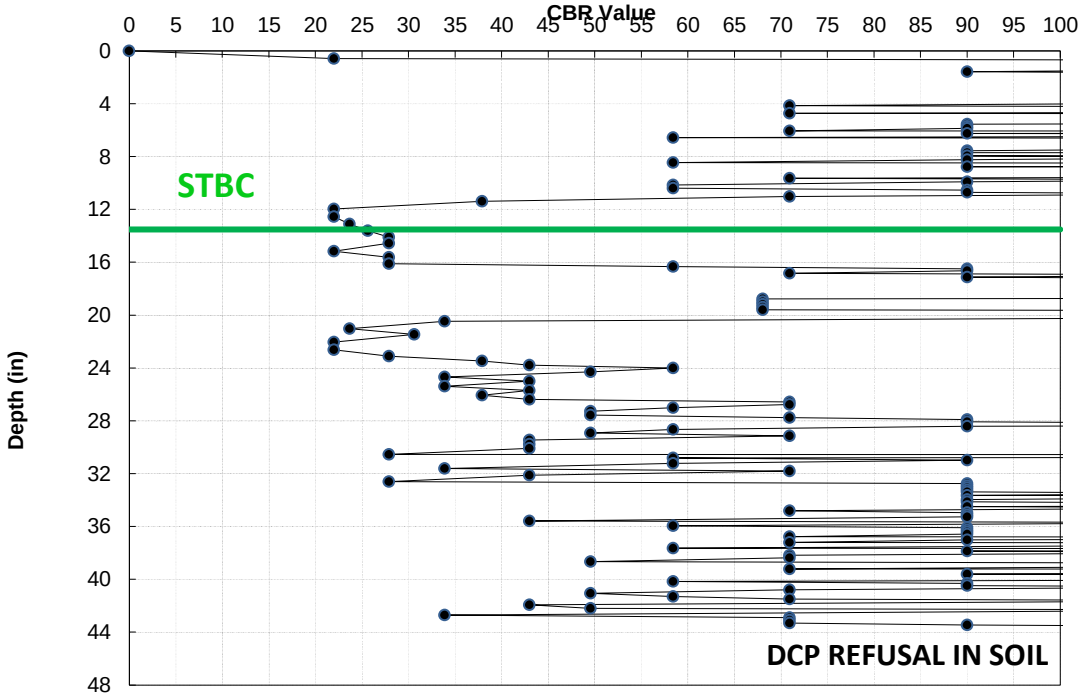
Interval 8.5 to 52.0	
# of Values	245
Avg CBR	100+
Wghtd Avg.	79.2
Max CBR	100+
Min CBR	5.5



C-48 -Y1LT- 13+66 US 19 WB OSL 2
15.5 FT LT C&G (RT)
Datum = STBC
RAW
Cut
08/06/21

Interval 0.0 to 13.6	
# of Values	101
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	22.0

Interval 13.6 to 45.8	
# of Values	204
Avg CBR	100+
Wghtd Avg.	89.9
Max CBR	100+
Min CBR	22.0



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

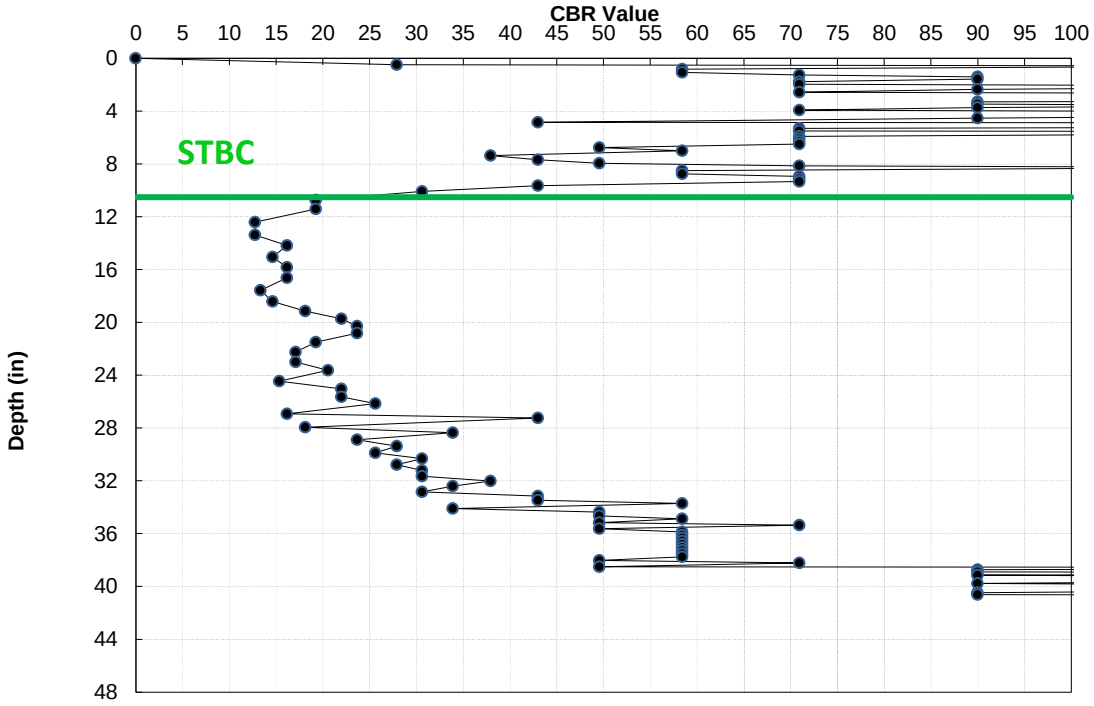
GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

FILE	B-3186_B-5898 DCP Graphs

C-49 -Y1LT- 13+67 US 19 WB ISL
2.8 FT RT C&G (FACE)
Datum = STBC
RAW
Fill
08/06/21

Interval 0.0 to 10.7	
# of Values	56
Avg CBR	93.5
Wghtd Avg.	72.9
Max CBR	100+
Min CBR	19.2

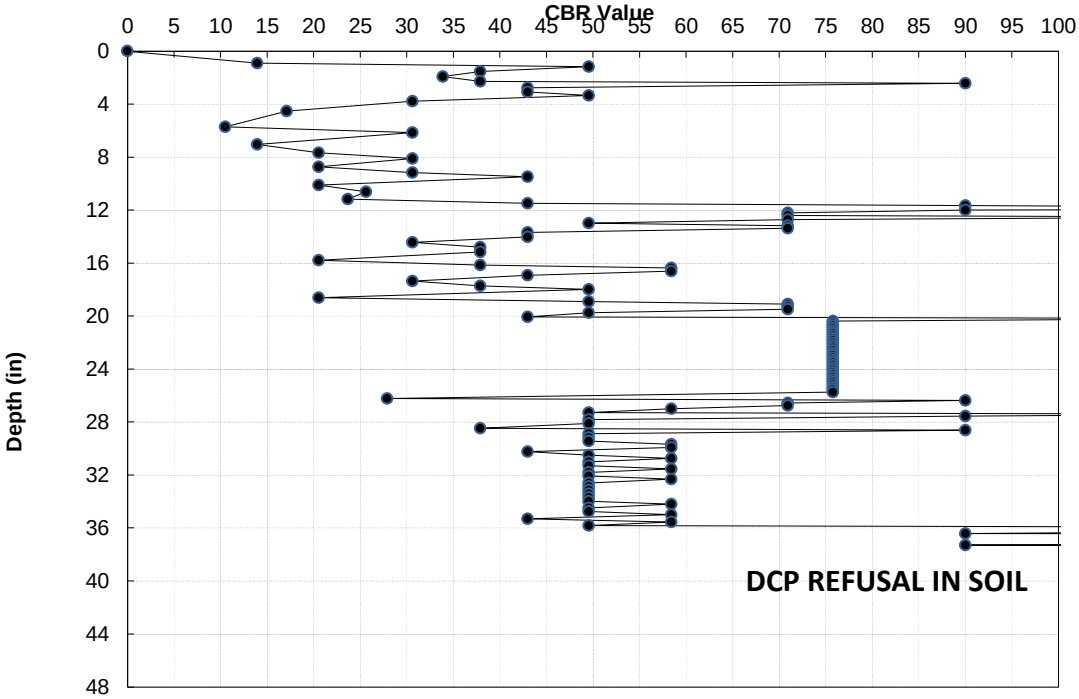
Interval 10.7 to 45.3	
# of Values	135
Avg CBR	100+
Wghtd Avg.	53.6
Max CBR	100+
Min CBR	12.8



C-50 -Y1RT- 13+67 US 19 EB ISL
1.0 FT RT FY
Datum = SG
RAW
Fill
08/06/21

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

Interval 0.0 to 42.1	
# of Values	245
Avg CBR	100+
Wghtd Avg.	81.9
Max CBR	100+
Min CBR	10.5



CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.	38332.1.FS1
PROJECT ID	B-3186_B-5898
ROUTE	US 23-74
COUNTY	HAYWOOD

GEOLOGIST	J. B. BARFIELD
GEOTECHS	CG2

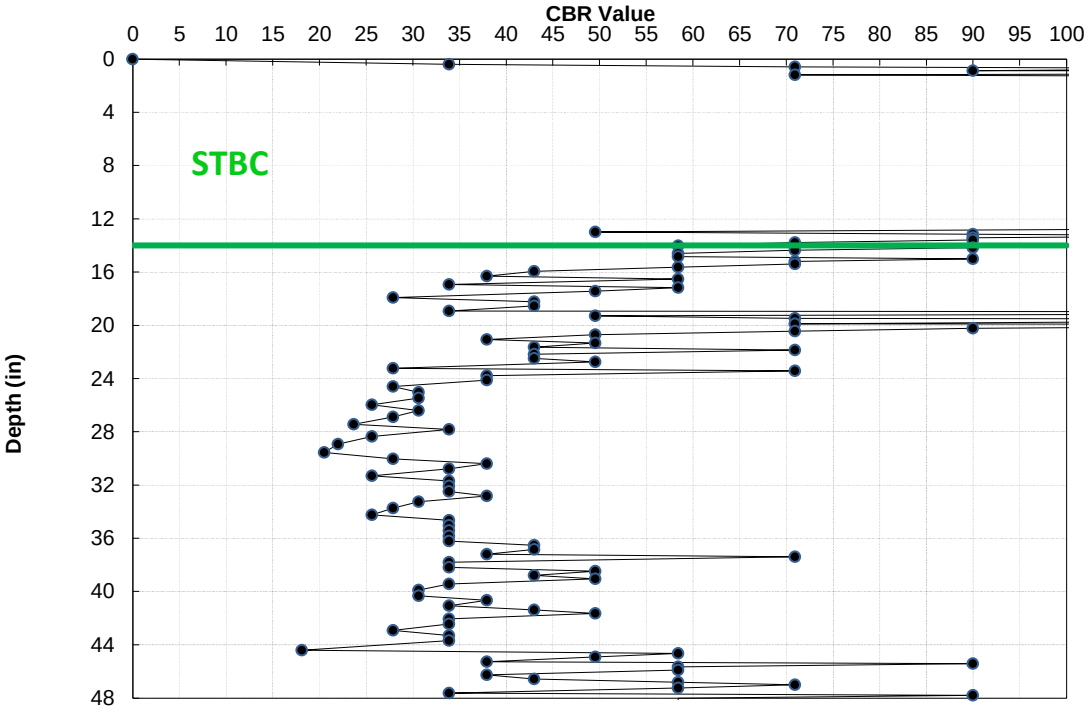
FILE	B-3186_B-5898 DCP Graphs

C-51 -Y1RT- 14+30 US 19 EB OSL 5

1.5 FT LT FW
Datum = STBC
RAW
Fill
08/06/21

Interval 0.0 to 14.0	
# of Values	293
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	33.9

Interval 14.0 to 55.2	
# of Values	142
Avg CBR	62.5
Wghtd Avg.	46.9
Max CBR	100+
Min CBR	18.1

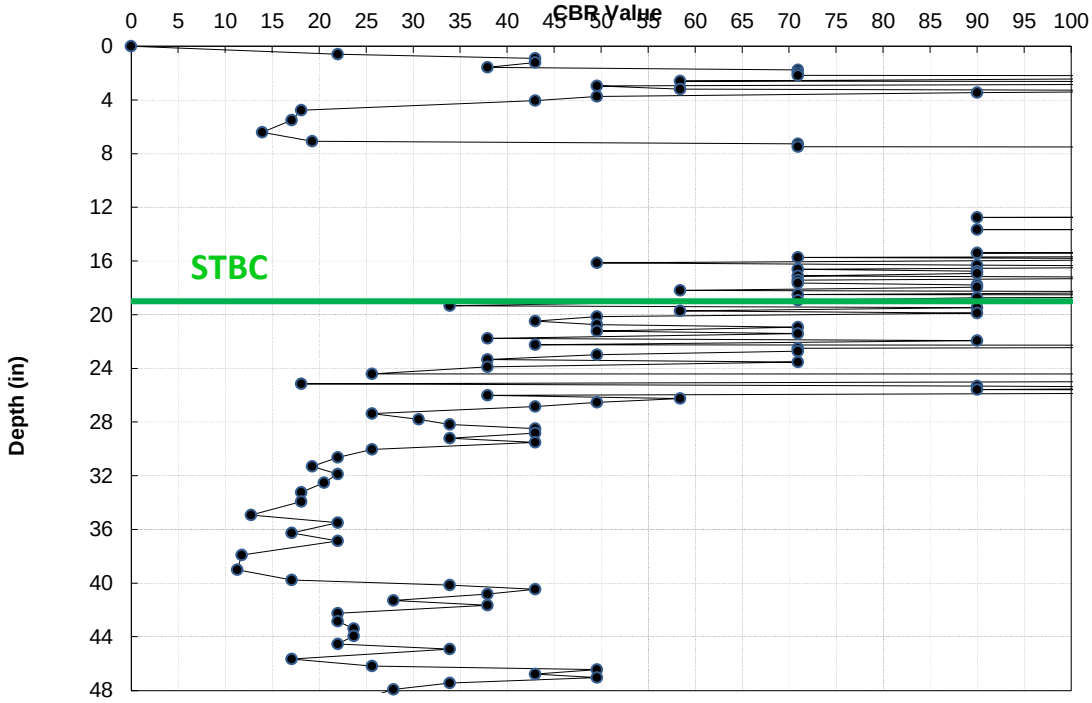


C-52 -Y1RT- 14+30 US 19 EB OSS 6

1.8 FT RT FW
Datum = STBC
RAW
Fill
08/06/21

Interval 0.0 to 18.9	
# of Values	128
Avg CBR	100+
Wghtd Avg.	96.2
Max CBR	100+
Min CBR	13.9

Interval 18.9 to 60.9	
# of Values	100
Avg CBR	46.9
Wghtd Avg.	31.6
Max CBR	100+
Min CBR	11.3



PAVEMENT CORE EVALUATION

38332.1.FS1 (B-3186, B-5898) Haywood County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-L-	15+32 EB OSS	-	4.50	S	3	lift 2 delaminated from lift 3 (mechanical break)
	Asphalt 5.25"		0.75	B	1	delaminated from upper lift
-L-	25+35 EB ISS	-	4.00	S	4	low severity oxidation in lift 1
	Asphalt 4"		0.50	B	1	
-L-	25+35 EB OSS	-	4.50	S	4	
	Asphalt 5"		0.50	B	1	aggregate missing, weathered, some pieces missing (possibly mechanical)
-L-	29+86 EB ISS	-	5.00	S	5	last 2 lifts, highly oxidized, delaminated, rubble, bottom up crack from lift 5 to lift 2
	Asphalt 5.50"					
-L-	29+86 EB ISL	-	7.00	S	5	
	Asphalt 9.75"		2.75	B	1	
-L-	35+32 EB ISS	-	4.50	S	2	top down crack through full core, roots through core, lifts delaminated
	Asphalt 5.25"					
-L-	35+34 EB OSS	-	4.50	S	4	full depth top down crack, initial signs of delamination between lifts 2 & 3, missing aggregate at
	Asphalt 4.5"					base
-L-	61+63 EB ISS	-	3.25	S	2	full depth crack
	Asphalt 3.25"		6.25	C	1	old concrete, moderate to high severity stripping, some large aggregate sections missing
-L-	61+63 EB ISL	-	5.00	S	4	6.5" top down crack, delaminated between lift 2 & 3, lift 3 & 4
	Asphalt 8.75"		3.50	B	1	
-L-	61+64 EB OSL	-	1.50	S	1	
	Asphalt 9"		3.00	I	1	
			1.50	S	1	low severity oxidation in lift 1
			3.00	I	1	
-L-	61+64 EB OSS	-	1.25	S	1	
	Asphalt 9.75"		3.00	I	1	
			5.00	B	1	
-L-	76+90 EB ISS	-	4.00	S	4	
	Asphalt 8.50"		4.50	**B**	1	mechanical break, missing aggregate at base
-L-	76+90 EB OSL	-	2.75	S	2	
	Asphalt 9.75"		7.00	B	2	low severity stripping with some small voids
-L-	76+90 EB OSS	-	5.00	S	4	
	Asphalt 8.25"		3.25	I	1	very low severity stripping with few small voids
-L-	80+20 EB ISS	-	4.50	S	4	low stripping between lifts 2 & 3
	Asphalt 5"		0.75	B	1	
-L-	80+20 EB OSS	-	3.75	S	3	low stripping in lift 1
	Asphalt 8.75"		3.00	I	2	
			1.75	S	1	some pieces of aggregate missing
-L-	15+13 WB OSS	-	4.25	S	4	
	Asphalt 5.25"		0.75	B	1	low severity stripping with some medium to small voids

PAVEMENT CORE EVALUATION

38332.1.FS1 (B-3186, B-5898) Haywood County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-L-	20+09 WB OSS	-	1.50	S	1	
	Asphalt 5.50"		3.50	I	1	bottom 1.5" mechanical break, low to moderate severity stripping with some small voids
-L-	20+09 WB ISS	-	4.75	S	3	low severity stripping with some small voids between lift 2 & 3
	Asphalt 5.75"		0.75	B	1	low severity stripping with some small voids
-L-	25+50 WB OSS	-	4.00	S	3	full-depth crack, half of lift 3 delaminated from lift 2, bottom lift of core rubble
	Asphalt 4.75"					
-L-	25+50 WB ISS	-	6.00	S	4	full-depth crack with roots, on one side of crack lift 1 delaminated, lift 2 partially delaminated,
	Asphalt 6.25"					lift 4 rubble & delaminated, 5 delaminated, highly stripped
-L-	30+33 WB ISL	-	6.00	S	4	mechanical break between lift 2 & 3
	Asphalt 8.75"		2.50	B	1	low severity stripping with some small voids
-L-	30+33 WB ISS	-	6.00	S	4	low severity stripping with few small voids between lift 2 & 3
	Asphalt 7"		1.00	B	1	low severity stripping with some small voids
-L-	35+34 WB OSS	-	4.00	S	3	
	Asphalt 5"		1.00	B	1	
-L-	35+35 WB ISS	-	7.25	S	5	low severity stripping and oxidation on top and bottom border of lift 2
	Asphalt 8.75"		1.25	B	1	low to moderate severity stripping with many medium to small voids
-L-	56+85 WB OSS	-	6.75	S	3	2" top down crack through lift 1, lift 2 delaminated, lift 3 highly oxidized
	Asphalt 6.5"					
-L-	56+85 WB OSL	-	1.25	S	1	
	Asphalt 8"		2.50	I	1	
			1.00	S	1	
			3.00	I	1	
-L-	56+85 WB ISL	-	6.00	S	3	full-depth crack, half of lift 1 delaminated, lift 3 delaminated from lift 2, lift 3 oxidized
	Asphalt 8.5"		3.00	I	1	
-L-	65+56 WB OSS	-	1.50	S	1	
	Asphalt 5.25"		3.25	I	1	last 1" low to moderate severity stripping with some small voids
-L-	70+40 WB OSS	-	5.50	S	3-4	lifts indistinguishable
	Asphalt 14.25"		8.75	B	1	
-L-	75+03 WB OSS	-	1.50	S	1	
	Asphalt 10.25"		3.50	I	1	
			5.25	B	1	
-L-	75+03 OSL	-	5.75	S	4	moderate oxidation, low severity bleeding, full-depth crack, lift 1 delaminated, part of lift 2 rubble
	Asphalt 9.25"		3.50	B	1	moderate oxidation, low severity bleeding
-L-	75+03 WB ISL	-	5.50	S	3	
	Asphalt 9"		3.50	I	1	
-L-	75+03 WB ISS	-	2.25	S	2	full-depth crack
	Asphalt 9"		2.25	I	1	intermediate delaminated from base (possible mechanical break)
			4.00	B	1	some larger chunks of aggregate missing in bottom 1"

PAVEMENT CORE EVALUATION

38332.1.FS1 (B-3186, B-5898) Haywood County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y1LT-	13+66 US19 WB RTL	-	3.50	S	3-4	lifts indistinguishable, low severity stripping with some small voids
	Asphalt 7.25"		3.50	B	1	low severity stripping, few small voids
-Y1LT-	13+66 US19 WB OSL	-	5.00	S	4	
	Asphalt 8.5"		3.50	I	1	
-Y1LT-	13+67 US19 WB ISL	-		S		
	Asphalt 11.5"					
-Y1RT-	13+67 US19 EB ISL	-	6.00	S	4	some intermediate mix wedging in lift 3, low severity stripping, few small voids
	Asphalt 12.5"		6.00	I/B	1	delaminated from surface
-Y1RT-	14+30 US19 EB OSL	-	4.50	S	4	low severity oxidation in lift 1, delaminated
	Asphalt 7"		2.75	I	1	
-Y1RT-	14+30 US19 EB OSS	-	3.00	S	2	
	Asphalt 4"		1.00	I	1	low to moderate severity stripping with some small voids

REFERENCE: B-3186/B-5898

PROJECT: 38332/48030

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

CROSS SECTIONS

APPENDICES

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *HAYWOOD*

PROJECT DESCRIPTION *US 23/US 74/US 19 (GREAT SMOKY MOUNTAIN HWY) FROM WEST OF NC 209 (CRABTREE RD.) TO EAST OF RUSS AVE.*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3816/B-5898	1	66

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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

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

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

PERSONNEL

C. SWAFFORD

R. DUGGER

N. YACOBI

GEOTECHNOLOGY, INC.

INVESTIGATED BY *C. SWAFFORD*

DRAWN BY *T. LYNN*

CHECKED BY *K. BUSSEY*

SUBMITTED BY *HDR*

DATE *NOVEMBER 2021*

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NORTH CAROLINA PROFESSIONAL SEAL 038206 ENGINEER KENNETH R. BUSSEY, JR.

Kenneth R. Bussey, Jr. 11/22/21

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	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
- [X] CME-550X
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] CME-75
- [ ] _____

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.
- [ ] CORE BIT
- [ ] _____

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

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

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: N/A

ELEVATION: FEET

NOTES:

BORING ELEVATIONS OBTAINED USING b3186_br0022_r4047_Merged_1-12-2l.tin

FIAD - FILLED IMMEDIATELY AFTER DRILLING

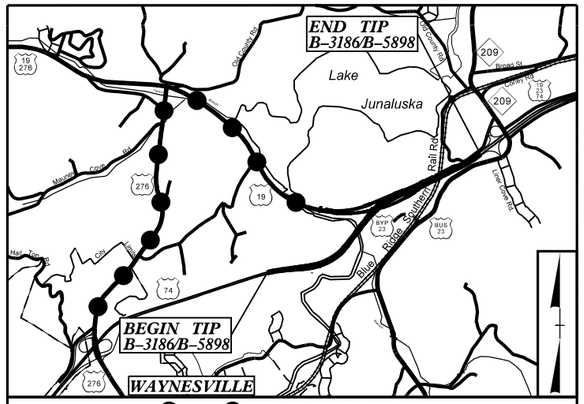
DATE: 8-15-14

09/08/99

TIP PROJECT: B-3186 /B-5898

CONTRACT: C204684

See Sheet 1-A For Conventional Symbols



VICINITY MAP

90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3186 /B-5898	3	66

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38332.1.FS.1	BRNHP-0023(32)	P.E.
48030.1.FS.1	BRSTP-0019(49)	P.E.
38332.2.1	N/A	RW/UTILITY
48030.2.1	N/A	RW/UTILITY

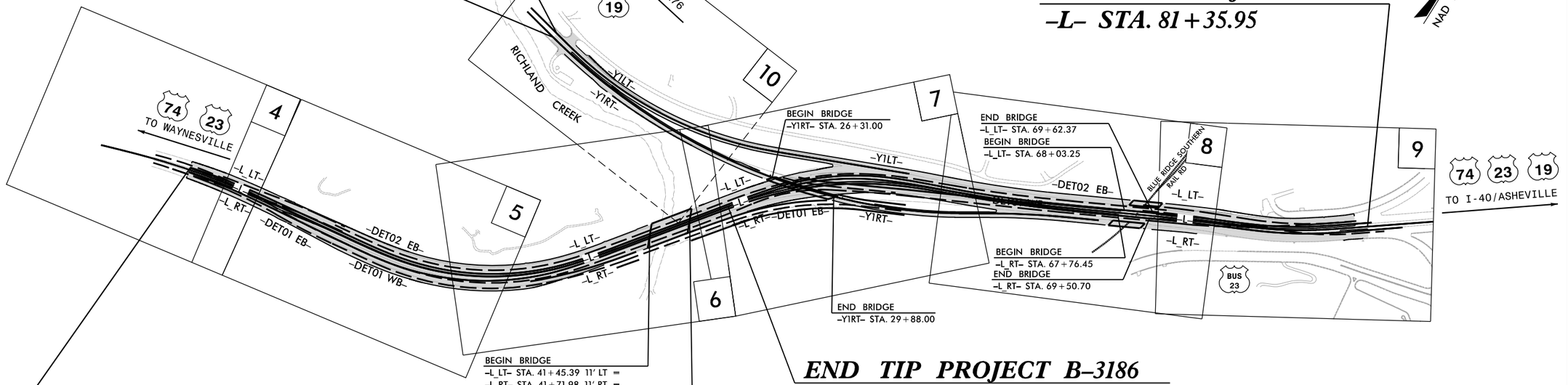
LOCATION: US 23/US 74/US 19 (GREAT SMOKY MOUNTAIN HWY) FROM WEST OF NC 209(CRABTREE RD.) TO EAST OF RUSS AVE.

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND UTILITIES.

BEGIN CONSTRUCTION
–YILT– STA. 11+99.83

BEGIN CONSTRUCTION
–YIRT– STA. 12+00.00

END TIP PROJECT B–5898
–L– STA. 81+35.95



BEGIN TIP PROJECT B–3186
–L– STA. 15+00.00

BEGIN BRIDGE
–L_LT– STA. 41+45.39 11' LT =
–L_RT– STA. 41+71.98 11' RT =
–L– STA. 41+55.00

END BRIDGE
–L_LT– STA. 43+77.64 11' LT =
–L_RT– STA. 44+04.23 11' RT =
–L– STA. 43+87.25

END TIP PROJECT B–3186
BEGIN TIP PROJECT B–5898
–L– STA. 46+11.55

NAD 83/2011

THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
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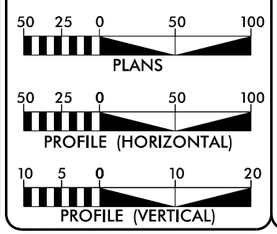
GRAPHIC SCALES



DESIGN DATA

ADT 2022 = 47,300
ADT 2042 = 59,400
K = 8 %
D = 55 %
T = 5 % *
V = 65 MPH
* TTST = 2% DUAL 3%

FUNC CLASS = FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–3186 = 0.545 miles
TOTAL STRUCTURES TIP PROJECT B–3186 = 0.044 miles
TOTAL LENGTH TIP PROJECT B–3186 = 0.589 miles

LENGTH ROADWAY TIP PROJECT B–5898 = 0.636 miles
TOTAL STRUCTURES TIP PROJECT B–5898 = 0.033 miles
TOTAL LENGTH TIP PROJECT B–5898 = 0.669 miles

(LENGTHS BASED ON L_RT ALIGNMENT)

Prepared In the Office of:
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 8, 2021

LETTING DATE:
MARCH 15, 2022

PHILLIP E. ROGERS, PE
PROJECT ENGINEER

HENRY W. BARE
PROJECT DESIGN ENGINEER

GARRETT HIGDON
NCDOT CONTACT

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

PLOT DRIVER: NCDOT_pdf_color_eng_100.pit
USER: TLYNN
FILE: NCDOT\NCDOT-B3186_T02.c:\6.0_CAD_BIM\6.2_Work_In_Progress\B-3186-B-5898\Geotech\InvestigationDesign\B3186_GEO_RDY\CADD_GEOTECH\PlanProf\B3186-B5898_RDY_GEO_TSH.dgn
DATE: 10/22/2021
TIME: 3:47:35 PM
PENTABLE: NCDOT_Title Sheets.tbl

November 3, 2021

STATE PROJECT: B-3186/B-5898
FEDERAL PROJECT: N/A
COUNTY: HAYWOOD
DESCRIPTION: US 23/US 74/US 19 (Great Smoky Mountain Hwy.) from West of NC 209 (Crabtree Rd.) to East of Russ Ave.
SUBJECT: Geotechnical Inventory Report

Project Description

The project area lies in the town of Lake Junaluska, NC between Highway 276 and NC 209. This project consists of upgrading US 74 to a six-lane, median divided facility from east of the US 276 Interchange to the US 23 Business Interchange. Additionally, US 19 will be upgraded with full depth paved, 10-ft shoulders from east of Holston Village Road to the US 74 Interchange. In total, approximately 1.2 miles of roadway will be upgraded. Finally, a two-span bridge on US 19 over US 74/US 23, a three-span bridge on US 19/US 23/US 74 over Richland Creek, a dual, three-span bridges on US 19/US 23/US 74 over the Blue Ridge Southern Railroad, and nine retaining walls are included with this project, but are covered under separate reports.

The geotechnical field investigation was conducted from January 2021 to April 2021. Three drill rigs mounted on a rubber tracked all-terrain carrier and equipped with an automatic hammer (CME 55, CME 550X, and CME 75) were used to advance borings for the subsurface exploration. Hollow stem auger drilling procedures were used to advance borings to the required depths. Standard Penetration Tests were performed at approximately 2.5-foot to 5.0-foot intervals to termination in selected borings. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis.

The following alignments were explored. Subsurface profiles and/or cross sections of these alignments are included in this report.

Line	Stations (±)
-L-	20+00 – 81+35.95
-Y1RT-	10+00 – 44+31.29
-Y1LT-	10+00 – 33+16.69

Areas of Special Geotechnical Interest

1) Loose/Soft Soils: Very soft or very loose soils were encountered during the investigation. Such soils (N-value < 4) could have the potential to cause embankment/subgrade and/or slope stability problems during construction. These soils were encountered along the following intervals:

Line	Station (±)	Offset (ft)
-L-	54+50	RT
-L-	57+00 – 59+50	RT
-L-	66+50	RT
-Y1RT-	20+00	RT
-Y1RT-	25+50	RT

2) Highly Plastic Soils: Highly plastic coils were encountered as part of the investigation. However, these soils were encountered at depths great enough to not adversely impact embankment/subgrade and/or slope stability. However, if encountered during construction, these soils have the potential to cause such problems.

3) Organic Soils: Though not encountered during the investigation, organic matter and wood debris could be present along the project limits, especially near streams and creeks.

4) Artificial Fill: Artificial fill was encountered at the following locations.

Line	Station (±)	Offset (ft)
-L-	38+00 – 41+00	LT to RT
-L-	44+50 – 46+50	LT

Several smaller areas of artificial fill may be present throughout the project corridor and are related to business developments, gravel, and soil driveways, as well as previous construction of utility lines.

5) Crystalline Rock: Crystalline rock was encountered within 6 feet of proposed grade at the following locations:

Line	Station (±)	Offset (ft)
-L-	32+00	RT
-L-	75+00 – 77+00	LT to RT
-Y1RT-	17+00 – 18+00	LT to RT

6) Groundwater: High groundwater was not encountered during the investigation. However, especially around streams and creeks, seasonal high ground water or the potential for groundwater related construction problems could be present.

7) Ponds: No ponds were found or identified on or within close proximity of right of way on this project. These were noted at the following locations:

8) Water Wells: Water wells were not found or identified within or in close proximity to the proposed right of way.

Physiography and Geology

The project is located in the Blue Ridge Physiographic Province. Land use along the project corridor consists of residential, agricultural, commercial businesses and woods. Geologically, the project is located within the Blue Ridge Belt. Bedrock generally consists of rocks from the Coweeta Group **(ZYbn)**, consisting of migmatitic Biotite Gneiss interlayered and gradational with biotite-garnet gneiss and amphibolite, with intrusive metamorphosed gabbro and diorite.

Soil Properties

Soils encountered at the project site include roadway embankment, artificial fill, alluvial, residual, weathered metamorphic rock and crystalline metamorphic rock.

Roadway Embankment soils were mainly encountered along the existing sections of US 74 and US 19 and consisting of gray, red, and brown, very soft to very stiff silt and clay (A-4, A-5, A-6, A-7) and loose to medium dense, clayey and silty sand and gravel (A-2-6, A-2-4, A-3, A-1-b).

Artificial fill soils consist of brown, orange, and gray, very soft to stiff, silt and clay (A-4, A-6, A-7-6), and loose to medium dense, sand and gravel (A-3, A-1-b). The artificial fill is underlain by residual soils.

Alluvial deposits are located within the floodplains of Richland Creek and nearby streams within the project limits. These soils are black, gray, and brown, very soft to medium stiff, silt and clay (A-4, A-5, A-7), and very loose to dense, sand and gravel and silty sand (A-1-b, A-2-4, A-2-6, A-3).

Residual soils were encountered throughout the project. These soils consist primarily of red, tan, and brown, soft to hard silt and clay (A-4, A-5, A-7), and loose to very dense, silty and clayey sand (A-2-4, A-2-5, A-2-6, A-2-7, A-3).

Rock Properties

Weathered rock was encountered during the roadway investigation at elevations ranging from approximately 2638 to 2551 feet. It originates from the underlying metamorphic rock, specifically Gneiss.

Crystalline rock was encountered during the roadway investigation at elevations ranging from approximately 2653 to 2523 feet and consists of Gneiss. Refer to the “Areas of Special Geotechnical Interest” for areas of rock encountered within 6 feet of proposed grade.

Ground Water

Groundwater was encountered in multiple borings and ranges in elevation from approximately 2620 to 2567 feet. Groundwater may fluctuate with seasonal precipitation.

Prepared By,
HDR Engineering, Inc., of the Carolinas

Kenneth R. Bussey, Jr., P.E.
Senior Geotechnical Engineer

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NAD 83/2011

REVISIONS

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PENTABLE: NCDOT_Plan Sheets_STR.tbl
DATE: 11/3/2021
TIME: 11:47:20 AM

1

GOLF COURSE
WOODS
50' DUKE POWER CO. EASEMENT
-L_LT- ST Sta. 20+44.53
BM #6
-WBL- STATION 10+60
41' LEFT
ELEV.= 268.63'
-L_LT- TS Sta. 24+49.39
-L_LT- SC Sta. 27+85.39
-L- SC Sta. 27+88.34
MATCHLINE -L- STA. 31+00, SEE SHEET 5
4" WW & ISBW
L_2000ASPT
L_2000BSPT
L2000PC
L_2300SPT
L_2700SPT
L_2900SPT
L3000PC
RESIDUAL
-DET02 WBXT-
-DET02 EB-
-L LT-
-L-
N 82° 55' 48.3" E
N 82° 44' 23.7" E
N 83° 47' 43.1" E
GRADE TO DRAIN
ROADWAY EMBANKMENT
-L RT-
-DET01 WB-
-DET01 EB-
L2500PC
L_2500SPT
RWB-1
RWB-2
RWB-3
20+00
25+00
30+00
-L- ST Sta. 20+47.64
-L_RT- ST Sta. 20+10.00
-L_RT- TS Sta. 24+06.01
-L- TS Sta. 24+52.34
-L_RT- SC Sta. 27+42.01

2

DELTA = 102°04'36"
RADIUS = 100.12'
ARC LENGTH = 178.37'
N 36°29'24" E
51.04'
N 01°50'12" E
68.56'
N 40°49'22" E
204.48'
N 47°25'02" W
175.79'
DELTA = 45°09'56"
RADIUS = 130.02'
ARC LENGTH = 102.49'
N 86°35'12" W
178.79'

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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NAD 83/2011

MATCHLINE -L- STA. 31+00, SEE SHEET 4

MATCHLINE -L- STA. 45+00, SEE SHEET 6

-L_LT- CS Sta. 36+28.46

-L- CS Sta. 36+26.50

-L_LT- ST Sta. 39+64.46

-L- ST Sta. 39+62.50

-L_RT- CS Sta. 36+07.43

-L_RT- ST Sta. 39+43.43

-L_RT- TS Sta. 44+95.45

L_3300SPT

L_3500SPT

L_3700SPT

L_3900A

L_3900B

RESIDUAL

ROADWAY EMBANKMENT

ALLUVIAL

-DET02 EB-

-DET01 WB-

-L LT-

-L-

-L RT-

35+00

40+00

45+00

BM #7
-WBL- STATION 28+48
68' LEFT
ELEV.= 2589.00'

BM #1
-EBL- STA. 37+05
59' RIGHT
ELEV.= 2596.60'

GOLF COURSE

WOODS

HEDGE

WOOD FRAME BATHROOM

ISFD

ISMTL BUS

RICHLAND CREEK

50' DUKE POWER CO. EASEMENT

APPROXIMATE LOCATION OF SEWER LINE FROM AS-BUILT DRAWINGS PROVIDED BY THE CITY OF WAYNESVILLE

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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NAD 83/2011

MATCHLINE -YIRT- STA. 23+00, SEE SHEET 9

MATCHLINE -L- STA. 45+00, SEE SHEET 5

MATCHLINE -L- STA. 59+00, SEE SHEET 7

-YILT- CS Sta. 24+65.97

-YILT- ST Sta. 26+65.97

-L- CS Sta. 54+04.47

-L_LT- CS Sta. 54+40.85

-L_LT- TS Sta. 46+20.74

-L_LT- SC Sta. 49+56.74

-L- POC STA 49+91.10 =
-YIRT- POC STA 27+54.43

-YILT- POT Sta. 33+16.69 =
-L_LT- POS Sta. 56+11.71 36' LT

-L- TS Sta. 58+97.47

-L_LT- SRS Sta. 57+76.85

-L- SC Sta. 49+47.55

-L- TS Sta. 46+11.55

-L_RT- SC Sta. 48+31.45

-L_RT- CS Sta. 55+30.36

-YIRT- PCC Sta. 32+50.64

-YIRT- CS Sta. 36+12.49
-L_RT- SRS Sta. 58+66.36

-DETOI EB- PC Sta. 56+08.35 =
-YIRT- POC Sta. 33+75 7' RT

-L- ST Sta. 57+40.47

ROADWAY EMBANKMENT

RESIDUAL

ALLUVIAL

-DETO2 EB-

-DETOI WB-

-DETOI EB-

-L LT-

-L-

-L RT-

N 67° 27' 44.6" E

N 67° 58' 51.4" E

DELTA = 14°46'10"
RADIUS = 388.10'
ARC LENGTH = 214.29'

DELTA = 01°45'35"
RADIUS = 388.10'
ARC LENGTH = 11.92'

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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MATCHLINE -L- STA. 59+00, SEE SHEET 6

MATCHLINE -L- STA. 73+00, SEE SHEET 8

-L_LT- SC Sta. 59+02.85
-L- SC Sta. 60+97.47
-L- CS Sta. 63+82.63
-L_LT- CS Sta. 63+74.83
-L_LT- ST Sta. 65+00.83
-L- ST Sta. 65+82.63
-L- POT Sta. 68+72.05 =
-RR- POC Sta. 311+02.79
-RR- PC Sta. 1307+03.14
-RR- PT Sta. 1307+89.92
-RR- PC Sta. 1308+35.40
-L_LT- PC Sta. 70+02.65
-L- PT Sta. 72+69.17
-L- PC Sta. 69+98.45
-L_RT- PC Sta. 70+19.82
-L_RT- PT Sta. 72+90.89
-YIRT- CS Sta. 41+60.85
-L_RT- CS Sta. 65+25.52
-YIRT- ST Sta. 43+10.85
-YIRT- POT Sta. 44+31.29 =
-L_RT- ST Sta. 66+75.52
36' RT
-YIRT- SC Sta. 39+12.49
-L_RT- SC Sta. 60+16.36
-YIRT- SRS Sta. 37+62.49

RESIDUAL
ROADWAY EMBANKMENT
RESIDUAL
ROADWAY EMBANKMENT

RW4_44 RW4_45 RW4_46 RW4_47 RW4_48 RW4_49 RW4_50 RW4_51 RW4_52 RW4_53 RW4_54A RW4_54B RW4_55 RW4_56 RW4_57 RW4_58 RW4_59
RW3_16 RW3_17 RW3_18 RW3_19 RW3_20 RW3_21 RW3_22 RW3_24 RW3_25 RW3_26 RW3_27 RW3_28 RW3_30
RW6_3 RW6_4 RW6_5 RW6_6
RW7_2 RW7_3 RW7_4 RW7_5 RW7_6

L6000PC L6500PC L7000PC

-DET02 EB- -DET02 WBX2- -DET01 WB-

N 63° 27' 13.0" E

-RR-
PI Sta 1307+46.53
Δ = 1° 25' 14.2" (RT)
D = 1° 38' 13.3"
L = 86.78'
T = 43.39'
R = 3,500.00'

PI Sta 1310+39.71
Δ = 16° 43' 25.2" (RT)
D = 4° 07' 19.2"
L = 405.72'
T = 204.31'
R = 1,390.00'

REVISIONS
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PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

NAD 83-2011

MATCHLINE -L- STA. 73+00, SEE SHEET 7

-L_LT- PT Sta. 73+39.22
-L_LT- TS Sta. 73+59.22
-L- TS Sta. 74+00.70
-L_LT- SC Sta. 75+69.22
-L- SC Sta. 76+10.70
-L_LT- CS Sta. 78+01.02
-L- CS Sta. 78+32.58
-L_LT- ST Sta. 80+11.02
-L- ST Sta. 80+42.58
-L_LT- POT Sta. 80+64.17 =
-L- POT Sta. 80+69.89 20.16' LT
-L_LT- POT Sta. 81+54.17 =
-L- POT Sta. 81+59.89 19.96' LT

TO I-40/ASHEVILLE

GRADE TO DRAIN

RW6_8 RW6_7 RW6_9 RW6_10 RW6_11 RW6_12 RW6_13 RW6_14 RW6_15 RW6_16 RW6_17

N 65° 26' 15.2" E
N 65° 02' 58.0" E
N 65° 03' 05.2" E

75+00

-DET02 EBX2-
-L LT
-DET01WB-

L8000PC
80+00

N 53° 49' 34.2" E
N 53° 41' 54.7" E

RW7_8 RW7_9 RW7_10 RW7_11 RW7_12 RW7_13 RW7_14 RW7_15 RW7_16 RW7_17 RW7_18 RW7_19 RW7_20 RW7_21 RW7_22 RW7_23 RW7_7

-DET01EB-
-L RT-
-DET02 WBX2-

ROADWAY EMBANKMENT

RESIDUAL

RESIDUAL

-L_RT- TS Sta. 74+36.30
-L_RT- SC Sta. 76+46.30
-L_RT- CS Sta. 78+74.64
-L_RT- ST Sta. 80+84.64
-L_RT- POT Sta. 83+34.64=
-L- POT Sta. 83+25.95 19.48' RT
-L RT- POT Sta. 81+44.64 =
-L- POT Sta. 81+35.95 20.03' RT

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PENTABLE: NCDOT_Plan Sheets_STR.tbl
DATE: 11/3/2021
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NAD 83/2011

UTILITY OWNERS

DUKE ENERGY CAROLINAS
217 CRAIG MANOR ROAD
LANCASTER, S.C. 29720
AT&T
P.O. BOX 537104
ATLANTA, GA. 30353
TOWN OF WAYNESVILLE
16 SOUTH MAIN STREET
P.O. BOX 100
WAYNESVILLE, N.C. 28786
TOWN OF WAYNESVILLE
16 SOUTH MAIN STREET, P.O. BOX 100
WAYNESVILLE, N.C. 28786
LAKE JUNALASKA ASSEMBLY PUBLIC WORKS
91 N. LAKESHORE DRIVE
LAKE JUNALUSKA, N.C. 28745
JUNALUSKA SANITARY DISTRIC
558 OLD CLYDE ROAD
CLYDE, N.C. 28721

TO US-276

-YILT- POT Sta. 10+00.00
-YILT- TS Sta. 12+06.91
-YILT- SC Sta. 14+06.91
-YIRT- POT Sta. 10+00.00
-YIRT- TS Sta. 11+12.00
-YIRT- SC Sta. 13+12.00

ROADWAY EMBANKMENT
RESIDUAL
GRADE TO DRAIN

MATCHLINE -YIRT- STA. 23+00, SEE SHEET 6

BM #8
-EBYI- STATION 5+00
N 76°31'22.3" W DIST 75'
ELEV.= 2589.00'

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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PENTABLE: NCDOT_Plan Sheets_STR.tbl
DATE: 11/3/2021
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REVISIONS

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Ⓐ **ROADWAY EMBANKMENT:** *Loose, red and brown, clayey SAND (A-2-6), dry*

Ⓑ **ROADWAY EMBANKMENT:** *Soft to medium stiff, red and brown, sandy CLAY (A-6, A-7-6), dry to moist*

Ⓒ **ARTIFICIAL FILL:** *Medium dense, brown, SAND (A-3), with some rock fragments (quartz), moist*

Ⓓ **ARTIFICIAL FILL:** *Stiff, brown, SILT (A-4), with little gravel, micaceous, dry*

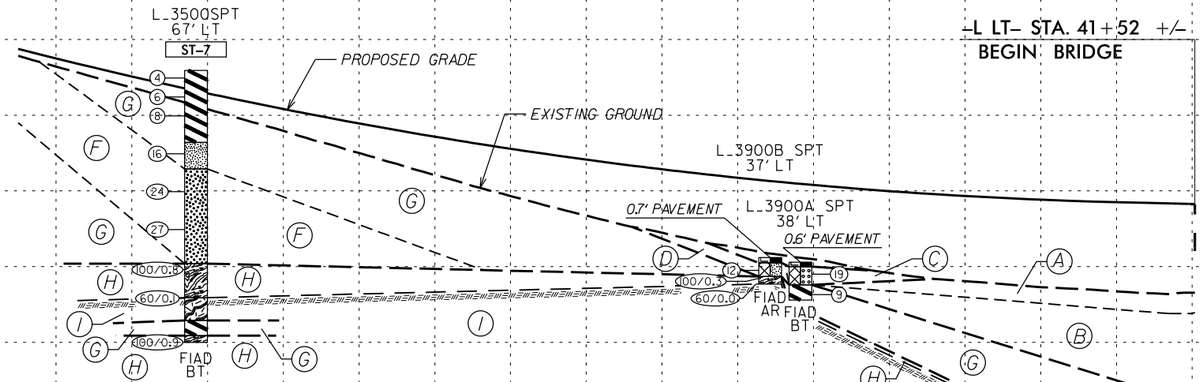
Ⓔ **ALLUVIAL:** *Dense, gray and black, SAND and GRAVEL (A-1-b), dry to moist*

Ⓕ **RESIDUAL:** *Medium dense, brown, tan and red, silty SAND (A-2-4), with trace clay, micaceous, dry*

Ⓖ **RESIDUAL:** *Medium stiff to very stiff, red, brown and orange, SILT and silty CLAY (A-4, A-7-5), contains trace rock fragments, micaceous, dry to moist*

Ⓗ **WEATHERED ROCK:** *Brown and gray, GNEISS*

Ⓘ **CRYSTALLINE ROCK:** *Brown and gray, GNEISS*



-L_LT-

2710 2700 2690 2680 2670 2660 2650 2640 2630 2620 2610 2600 2590 2580 2570 2560 2550 2540 2530 2520 2510

29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00

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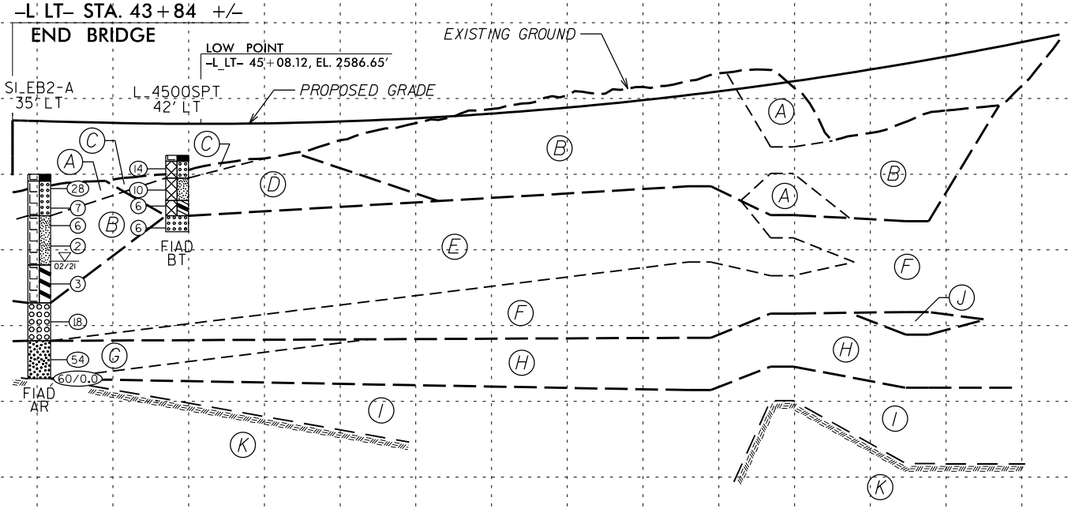
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



(A) **ROADWAY EMBANKMENT:** *Loose to medium dense, brown and gray, fine to coarse SAND (A-2-4, A-3), with trace to some gravel, dry to moist*

(B) **ROADWAY EMBANKMENT:** *Soft to medium stiff, gray, orange and brown, SILT, clayey SILT and CLAY (A-4, A-5, A-7-6), contains trace root and wood fragments, with trace sand, micaceous, organic odor, moist to wet*

(C) **ARTIFICIAL FILL:** *Medium dense, brown, SAND (A-3), with some rock fragments, moist*

(D) **ARTIFICIAL FILL:** *Medium stiff to stiff, brown, orange and gray, SILT and silty CLAY (A-4, A-6), with trace sand, micaceous, mottled, moist*

(E) **ALLUVIAL:** *Very loose to loose, gray, SAND and GRAVEL and silty SAND (A-1-b, A-2-4, A-3), micaceous, wet*

(F) **ALLUVIAL:** *Very soft to medium stiff, gray and brown, sandy SILT, SILT and sandy CLAY (A-4, A-5, A-7), contains trace wood fragments, micaceous, organic odor, wet*

(G) **RESIDUAL:** *Very dense, brown, orange and white, silty SAND (A-2-4), saprolitic, wet*

(H) **RESIDUAL:** *Very stiff to hard, tan, brown and orange, sandy SILT and sandy CLAY (A-4, A-7), contains trace rock fragments, micaceous, saprolitic, moist to wet*

(I) **WEATHERED ROCK:** *Brown, orange and white, GNEISS, micaceous*

(J) **NON-CRYSTALLINE ROCK:** *Light gray, BOULDER (quartz fragments)*

(K) **CRYSTALLINE ROCK:** *Light gray, black and white, Migmatic Biotite GNEISS*

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

(A) **ROADWAY EMBANKMENT:** *Loose to medium dense, brown, tan and orange, SAND and GRAVEL and clayey SAND (A-1-b, A-2-6), micaceous, dry*

(B) **ROADWAY EMBANKMENT:** *Medium stiff to very stiff, brown and orange, clayey SILT and sandy CLAY (A-5, A-6), micaceous, dry*

(C) **ARTIFICIAL FILL:** *Loose to medium dense, brown and gray, SAND and GRAVEL (A-1-b), saturated*

(D) **ARTIFICIAL FILL:** *Very soft to medium stiff, brown, orange and tan, silty CLAY (A-7-6), micaceous, moist*

(E) **ALLUVIAL:** *Medium dense, brown and gray, SAND and GRAVEL (A-1-b)*

(F) **RESIDUAL:** *Loose to very dense, brown, white and black, silty SAND (A-2-4, A-2-5), with trace rock fragments, micaceous, saprolitic, dry*

(G) **RESIDUAL:** *Medium stiff to hard, red, brown and gray, SILT, clayey SILT and silty CLAY (A-4, A-5, A-7-5) with little rock fragments, micaceous, saprolitic, dry to moist*

(H) **WEATHERED ROCK:** *Brown, tan and white, GNEISS*

(I) **CRYSTALLINE ROCK:** *GNEISS*

RW8_9
31' RT

RW8_10
31' RT

(19) (16) (18) (19) (54)
FIAD
BT

(17) (9) (21) (12) (17)
FIAD
BT

L-3700SPT
42' RT

SS-1011

(17) (10) (6) (7) (11) (9)
FIAD
BT

PROPOSED GRADE

EXISTING GROUND

–L RT– STA. 41+66 +/–
BEGIN BRIDGE

–L_RT–

2710 2700 2690 2680 2670 2660 2650 2640 2630 2620 2610 2600 2590 2580 2570 2560 2550 2540 2530 2520 2510

29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Ⓐ ***ROADWAY EMBANKMENT:*** *Loose to medium dense, brown and orange, silty SAND and GRAVEL and clayey SAND (A-1-b, A-2-6), micaceous, dry to moist*

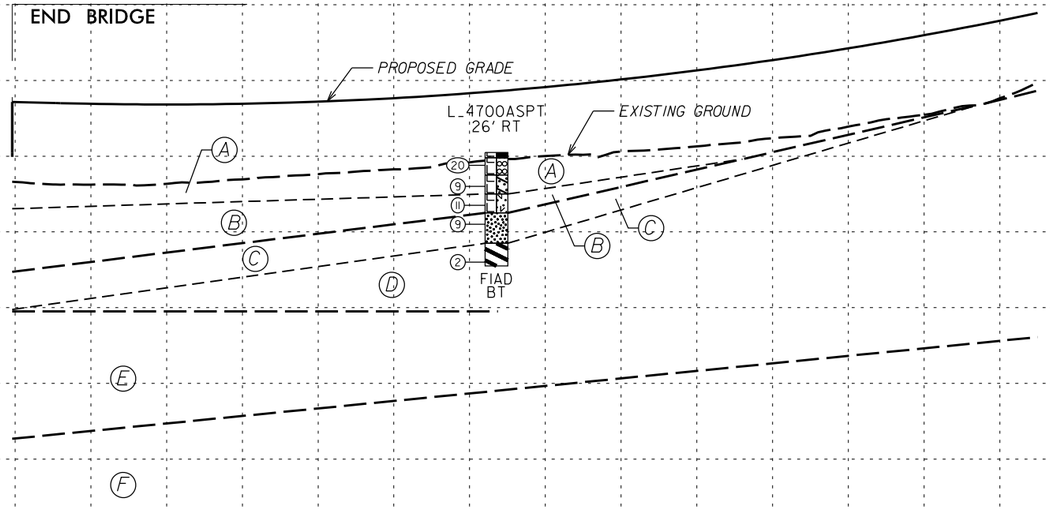
Ⓑ ***ROADWAY EMBANKMENT:*** *Medium stiff to stiff, brown and orange, sandy SILT and clayey SILT (A-4, A-5) with trace rock fragments, micaceous, dry to moist*

Ⓒ ***ALLUVIAL:*** *Loose to medium dense, brown and gray, SAND and clayey SAND (A-2-4, A-2-6) with little gravel, moist*

Ⓓ ***ALLUVIAL:*** *Very soft, gray, CLAY (A-7-6), contains little roots and wood fragments, moist*

Ⓔ ***RESIDUAL:*** *Medium dense to very dense, brown, white and orange, SAND, silty SAND and clayey SAND (A-3, A-2-4, A-2-7) with trace to little rock fragments, micaceous, saprolitic, dry to saturated*

Ⓕ ***WEATHERED ROCK:*** *Brown and orange, GNEISS*



–L_RT–

2690 2680 2670 2660 2650 2640 2630 2620 2610 2600 2590 2580 2570 2560 2550 2540 2530 2520 2510 2500 2490

43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

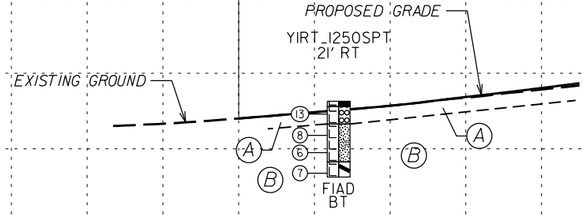
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

2690 2680 2670 2660 2650 2640 2630 2620 2610 2600 2590 2580 2570 2560 2550 2540 2530 2520 2510 2500 2490

Ⓐ *ROADWAY EMBANKMENT: Medium dense, brown, fine to coarse sandy GRAVEL (A-1-b), moist*

Ⓑ *ROADWAY EMBANKMENT: Medium stiff to stiff, brown, orange and black, SILT and CLAY (A-4, A-7) with trace rock fragments, contains trace wood fragments, micaceous, moist*

–Y1RT– STA. 12+00.00 =
EL. 2574.01'
BEGIN CONSTRUCTION



–Y1RT–

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

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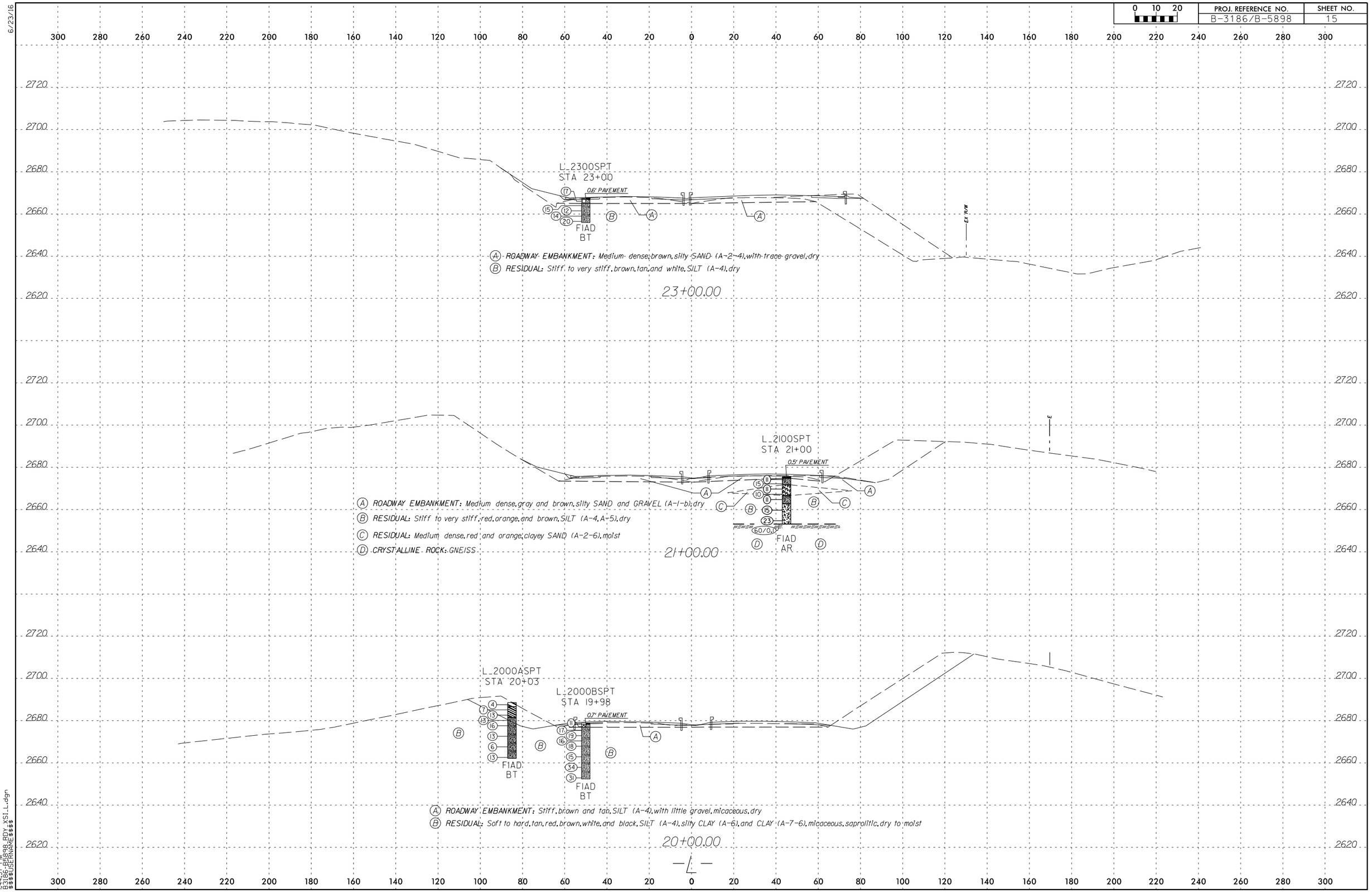
B3186_EM

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	15



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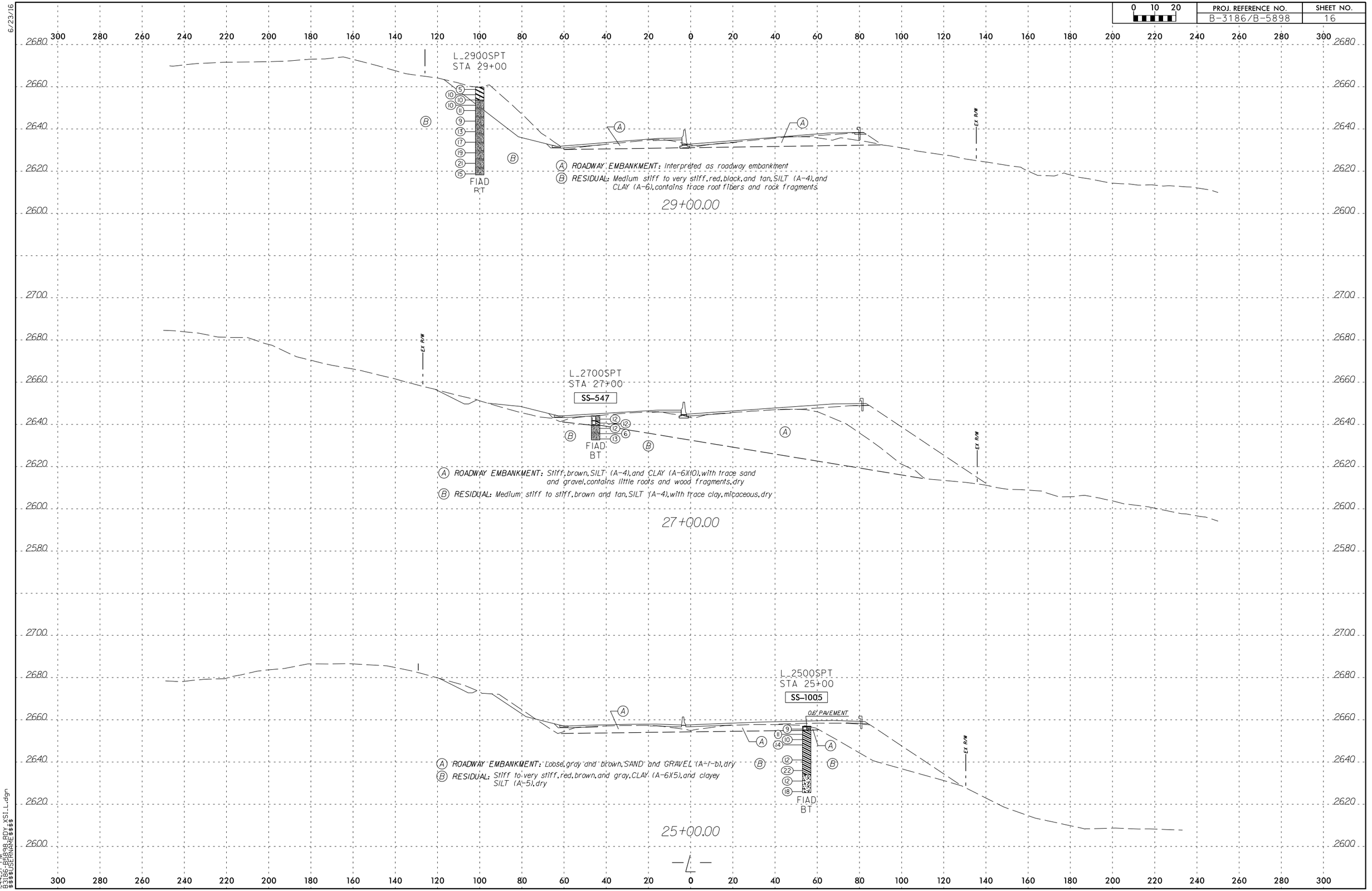
	B-3186/B-5898	16



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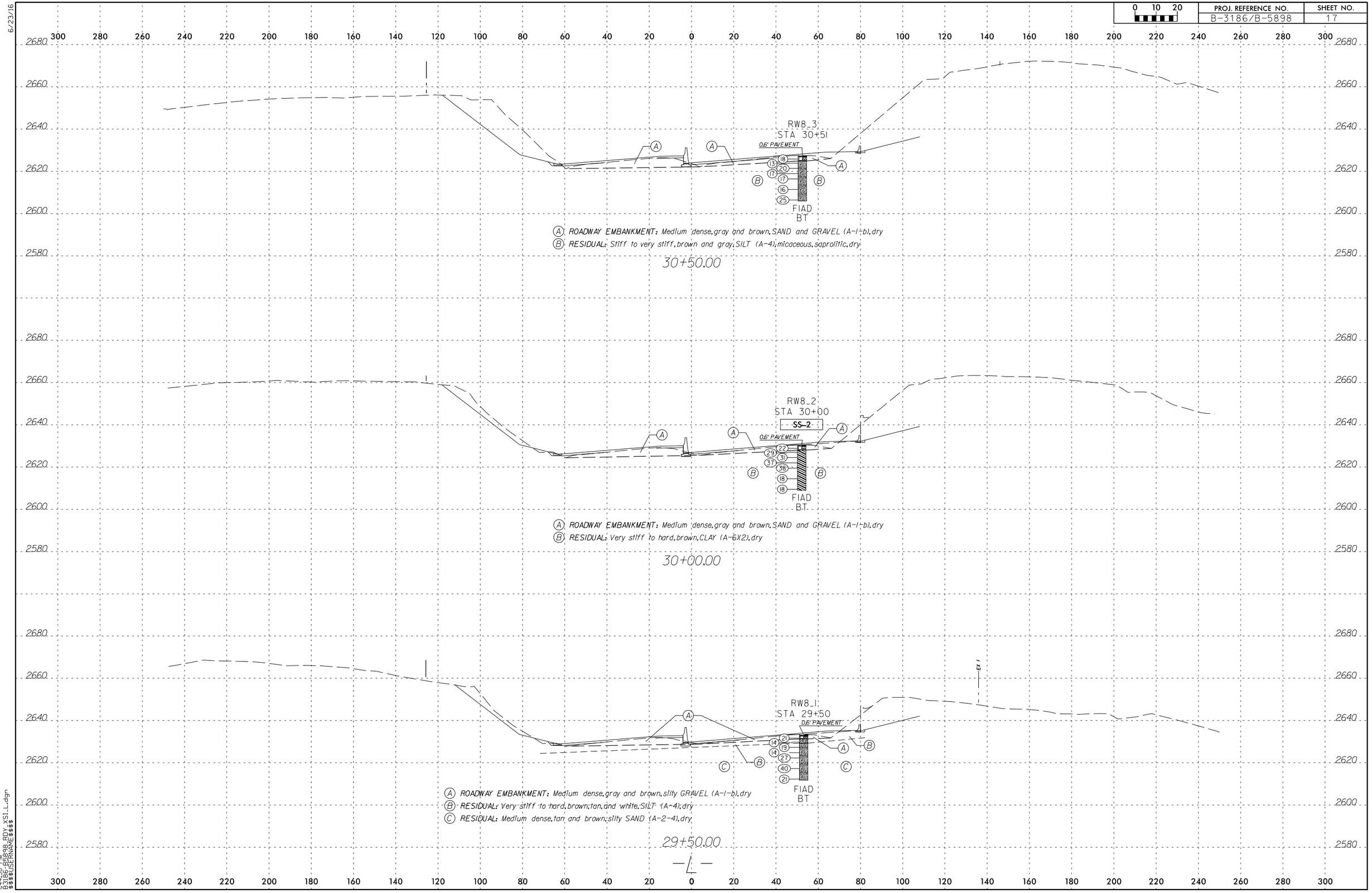

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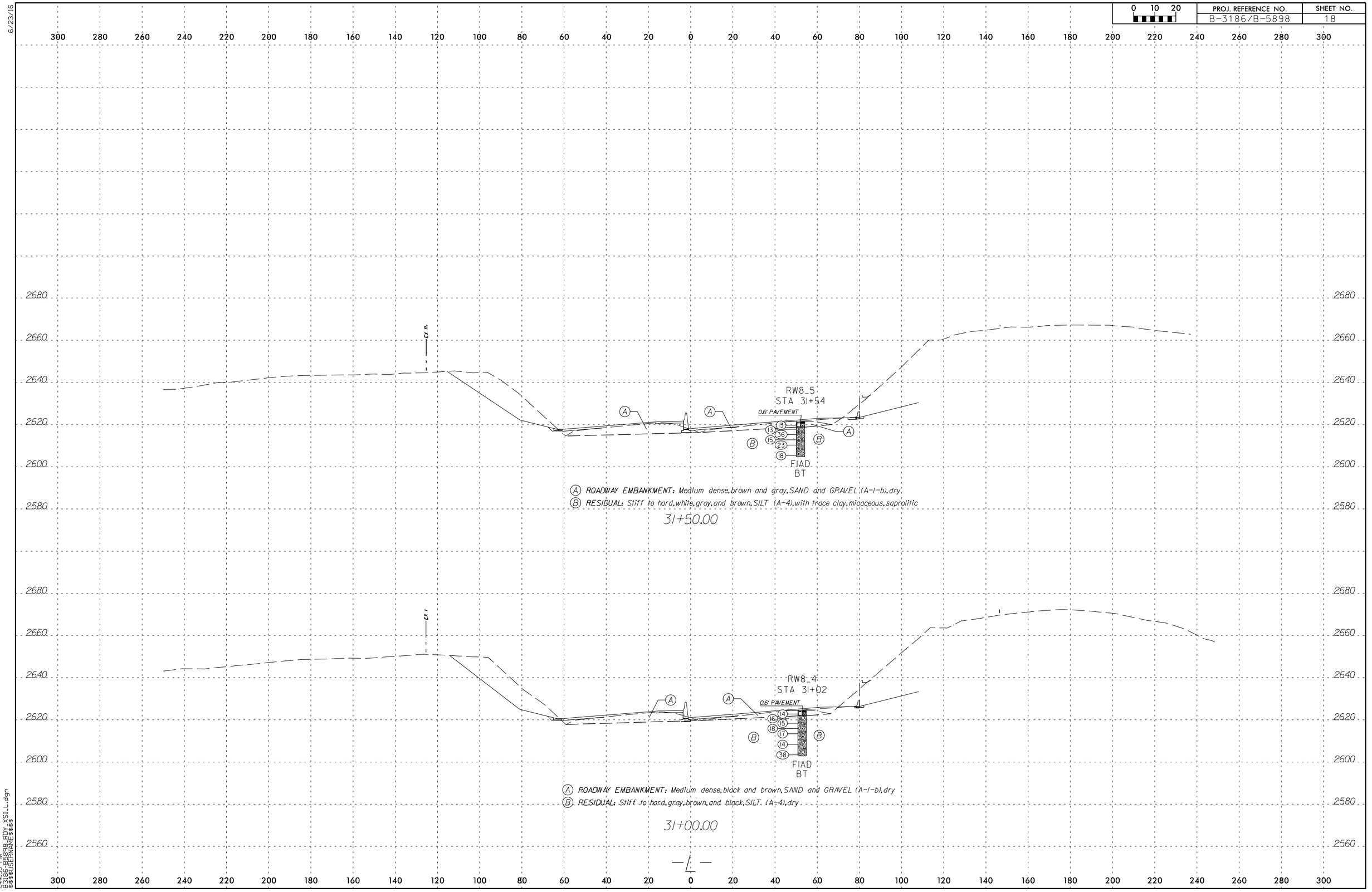
	B-3186/B-5898	18



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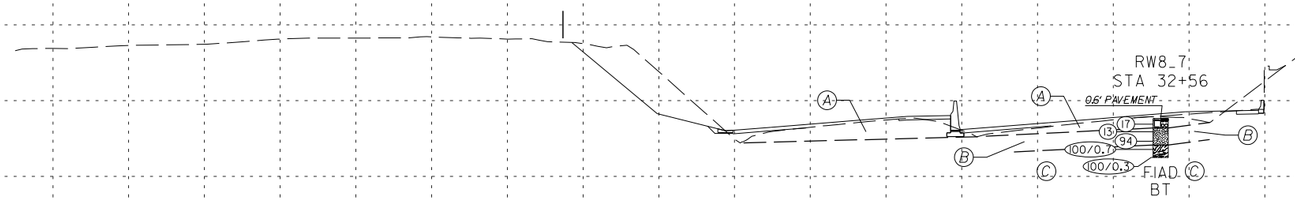
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	19

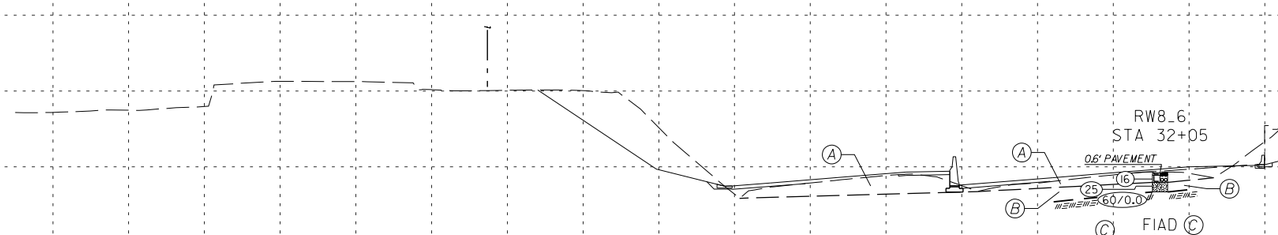
300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2660 2640 2620 2600 2580 2560



(A) ROADWAY EMBANKMENT: Medium dense, gray and brown, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Stiff to hard, gray and brown, SILT (A-4), dry
(C) WEATHERED ROCK: GNEISS

32+50.00



(A) ROADWAY EMBANKMENT: Medium dense, gray and brown, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Very stiff, gray, brown, and black, SILT (A-4), dry
(C) CRYSTALLINE ROCK: GNEISS

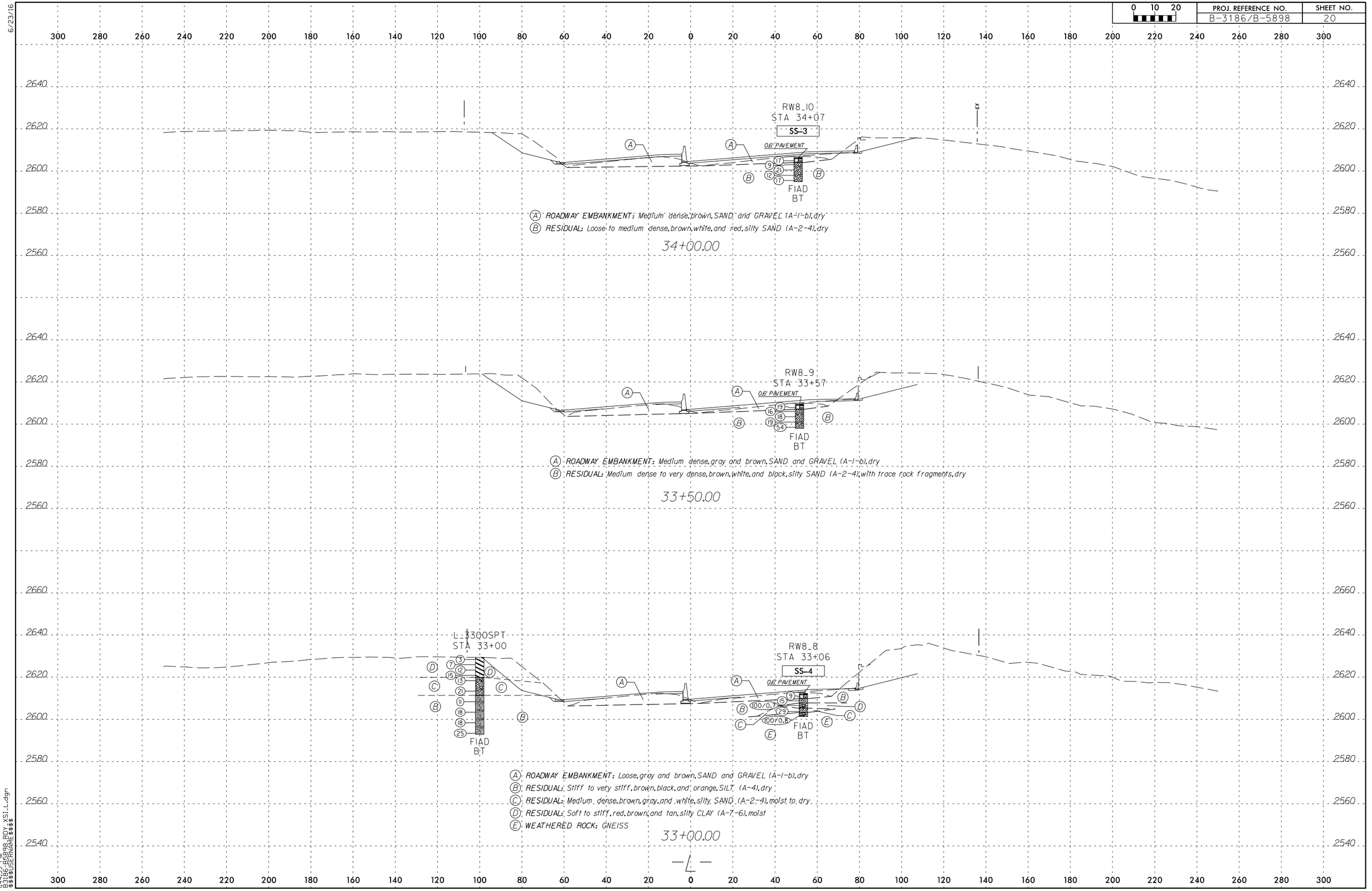
32+00.00

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2660 2640 2620 2600 2580 2560

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	20



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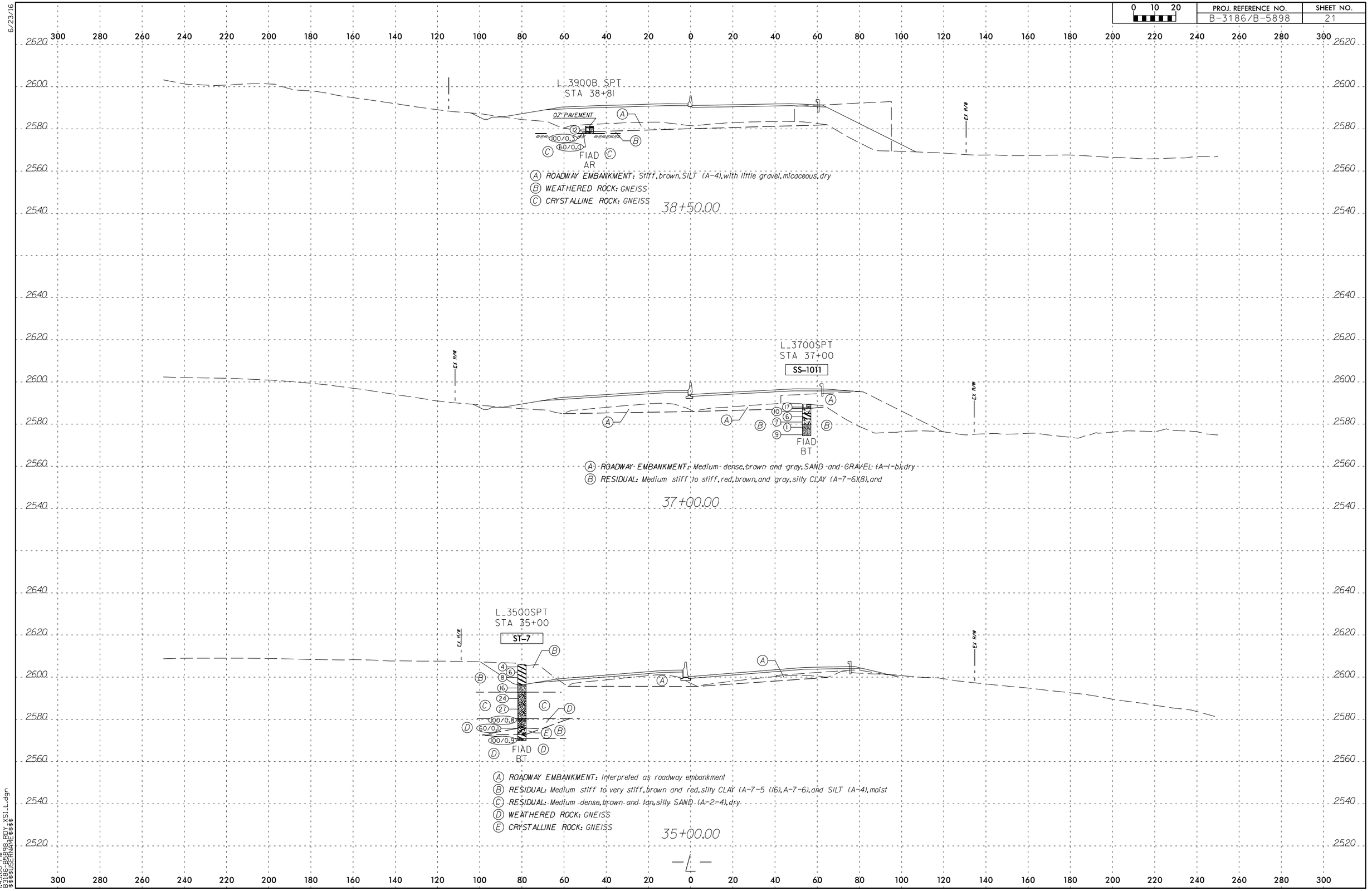
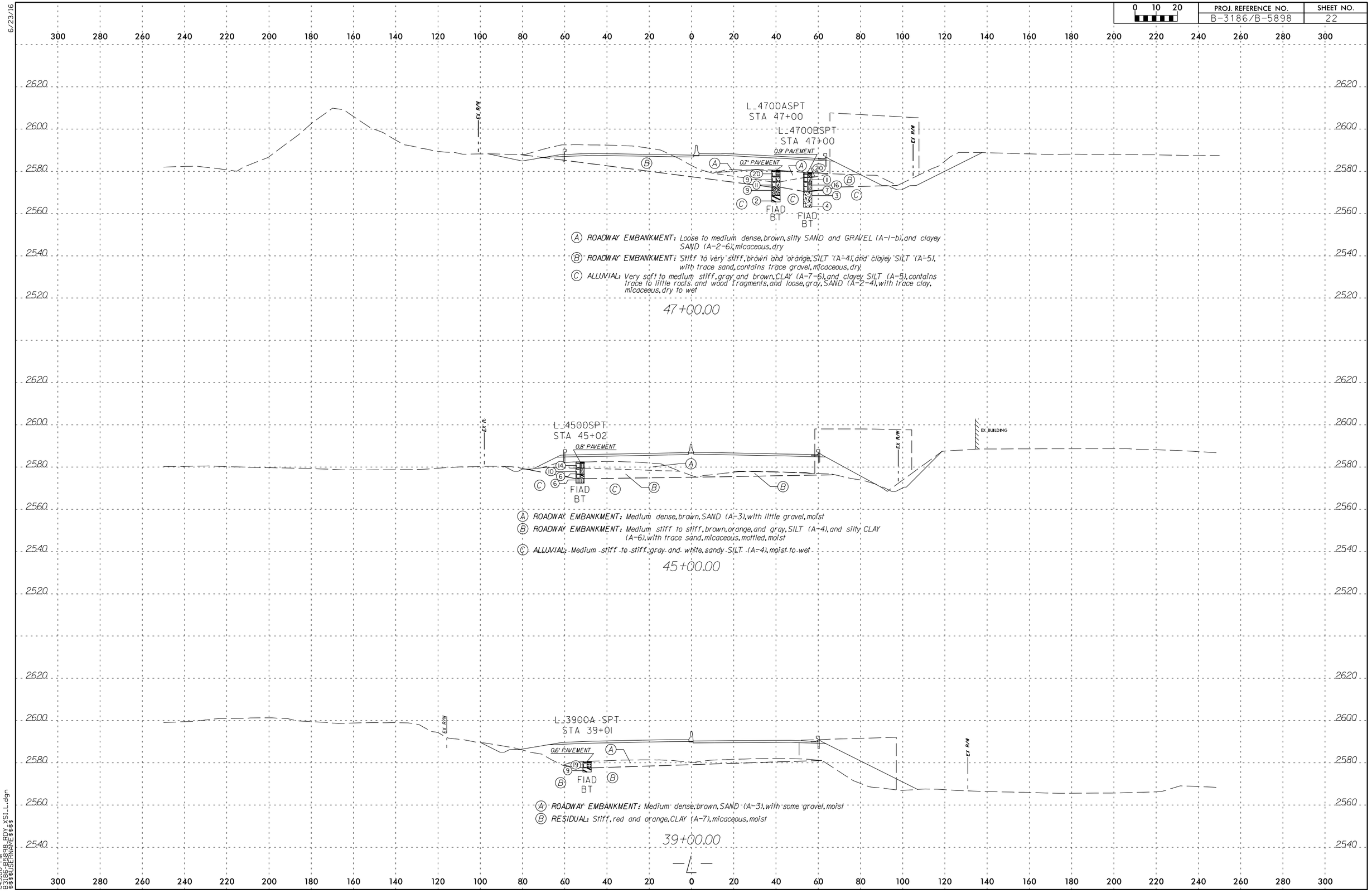

L_3900B SPT
STA 38+81
07" PAVEMENT
100/0.3
60/0.0
FIAD
AR
(A) ROADWAY EMBANKMENT: Stiff, brown, SILT (A-4), with little gravel, micaceous, dry
(B) WEATHERED ROCK: GNEISS
(C) CRYSTALLINE ROCK: GNEISS
38+50.00
EX R/W
L_3700SPT
STA 37+00
SS-1011
FIAD
BT
(A) ROADWAY EMBANKMENT: Medium dense, brown and gray, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff to stiff, red, brown, and gray, silty CLAY (A-7-6)(8), and
37+00.00
L_3500SPT
STA 35+00
ST-7
100/0.8
50/0.1
100/0.9
FIAD
BT
(A) ROADWAY EMBANKMENT: Interpreted as roadway embankment
(B) RESIDUAL: Medium stiff to very stiff, brown and red, silty CLAY (A-7-5 (16), A-7-6), and SILT (A-4), moist
(C) RESIDUAL: Medium dense, brown and tan, silty SAND (A-2-4), dry
(D) WEATHERED ROCK: GNEISS
(E) CRYSTALLINE ROCK: GNEISS
35+00.00


L_4700ASPT
STA 47+00
L_4700BSPT
STA 47+00
0.9' PAVEMENT
0.7' PAVEMENT
EX R/W
EX R/W
FIAD
BT
FIAD
BT
(A) ROADWAY EMBANKMENT: Loose to medium dense, brown, silty SAND and GRAVEL (A-1-b), and clayey SAND (A-2-6), micaceous, dry
(B) ROADWAY EMBANKMENT: Stiff to very stiff, brown and orange, SILT (A-4), and clayey SILT (A-5), with trace sand, contains trace gravel, micaceous, dry
(C) ALLUVIAL: Very soft to medium stiff, gray and brown, CLAY (A-7-6), and clayey SILT (A-5), contains trace to little roots and wood fragments, and loose, gray, SAND (A-2-4), with trace clay, micaceous, dry to wet
47+00.00
L_4500SPT
STA 45+02
0.8' PAVEMENT
EX R/W
EX BUILDING
FIAD
BT
(A) ROADWAY EMBANKMENT: Medium dense, brown, SAND (A-3), with little gravel, moist
(B) ROADWAY EMBANKMENT: Medium stiff to stiff, brown, orange, and gray, SILT (A-4), and silty CLAY (A-6), with trace sand, micaceous, mottled, moist
(C) ALLUVIAL: Medium stiff to stiff, gray and white, sandy SILT (A-4), moist to wet
45+00.00
L_3900A SPT
STA 39+01
0.6' PAVEMENT
EX R/W
EX R/W
FIAD
BT
(A) ROADWAY EMBANKMENT: Medium dense, brown, SAND (A-3), with some gravel, moist
(B) RESIDUAL: Stiff, red and orange, CLAY (A-7), micaceous, moist
39+00.00
2620
2600
2580
2560
2540
2520
300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

380 360 340 320 300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220

2700 2680 2660 2640 2620 2600 2580 2560 2540 2520

EX R/W

SP-3
STA 49+03

0.4' PAVEMENT

C 14 13 16 23 D 24 11 14 14 17 C 30

FIAD
BT

EX R/W

RW4_23
STA 49+13

SS-2018
SS-2019
SS-2021

0.8' PAVEMENT

17 10 12 11 C 12

FIAD
BT

EX R/W
EX RETAINING WALL
EX BUILDING

(A) ROADWAY EMBANKMENT: Loose to medium dense, brown and gray, fine to coarse, SAND (A-2-4), with trace gravel, and soft, brown and orange, CLAY (A-7), moist to saturated

(B) ALLUVIAL: Soft, gray, SILT (A-5)(9), and sandy SILT (A-4), micaceous, and very loose, gray, fine silty SAND (A-2-4), micaceous, wet

(C) RESIDUAL: Stiff to very stiff, tan, brown, and orange, fine sandy SILT (A-4, A-5(2)), and CLAY (A-6(8), A-7-5(11), A-7-6), micaceous, saprolitic, moist to wet

(D) RESIDUAL: Medium dense, tan, white, and orange, silty SAND (A-2-4), moist

(E) WEATHERED ROCK: GNEISS

(F) CRYSTALLINE ROCK: GNEISS

49+00.00

RW5_21
STA 48+17

6 B B 5 3 5 C 12 B D2/21 D 20 61 E E 100/1.0 60/0.0

F FIAD AR F

EX R/W
EX RETAINING WALL

(A) ROADWAY EMBANKMENT: Interpreted as roadway embankment

(B) ALLUVIAL: Soft to stiff, brown and gray, CLAY (A-6, A-7-6), and SILT (A-5), with trace sand, contains little organics, moist to saturated

(C) ALLUVIAL: Loose, gray, SAND (A-2-4), moist

(D) RESIDUAL: Very stiff to hard, gray, brown, and white, SILT (A-5), saturated

(E) WEATHERED ROCK: GNEISS

(F) CRYSTALLINE ROCK: GNEISS

48+00.00

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	24

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2680 2660 2640 2620 2600 2580 2560 2540 2520

EX R/W

RW4_25
STA 49+99
0.7' PAVEMENT

10 13 7 11 13 6

FIAD
BT

Ⓒ

Ⓐ ROADWAY EMBANKMENT: Medium stiff to very stiff, brown, gray, and orange, CLAY (A-7) and SILT (A-4), moist

Ⓑ ALLUVIAL: Very soft to soft, gray and brown, CLAY (A-7), wet

Ⓒ RESIDUAL: Medium stiff to very stiff, brown, tan, and white, silty CLAY (A-6), and sandy SILT (A-4), micaceous, saprolitic, moist

Ⓓ WEATHERED ROCK: GNEISS

Ⓔ NON-CRYSTALLINE ROCK: BOULDER

Ⓕ CRYSTALLINE ROCK: GNEISS

Ⓐ Ⓑ Ⓒ Ⓔ Ⓓ Ⓕ

50+00.00

EX R/W

EX R/W

RW4_24
STA 49+48
0.8' PAVEMENT

13 10 11 14 10

FIAD
BT

Ⓒ Ⓓ Ⓒ Ⓒ

Ⓐ ROADWAY EMBANKMENT: Stiff, brown and orange, SILT (A-5), and loose to dense, brown and gray, SAND (A-2-6, A-2-4), moist to dry

Ⓑ ALLUVIAL: Very soft, brown and gray, CLAY (A-7-5(16), A-7-6), and SILT (A-5(13)), and very loose to loose, brown and gray, silty SAND (A-2-4), and SAND and GRAVEL (A-1-b), dry to saturated

Ⓒ RESIDUAL: Stiff to very stiff, brown, orange, and tan, sandy SILT (A-4) with little rock fragments, micaceous, saprolitic, dry to moist

Ⓓ RESIDUAL: Medium dense to dense, brown, white, and tan, silty SAND (A-2-4) with little rock fragments, micaceous, saprolitic, dry to moist

Ⓔ WEATHERED ROCK: GNEISS

Ⓕ CRYSTALLINE ROCK: GNEISS, METAGRAYWACK, and QUARTZ

Ⓐ Ⓑ Ⓒ Ⓔ Ⓕ

49+50.00

—/.—

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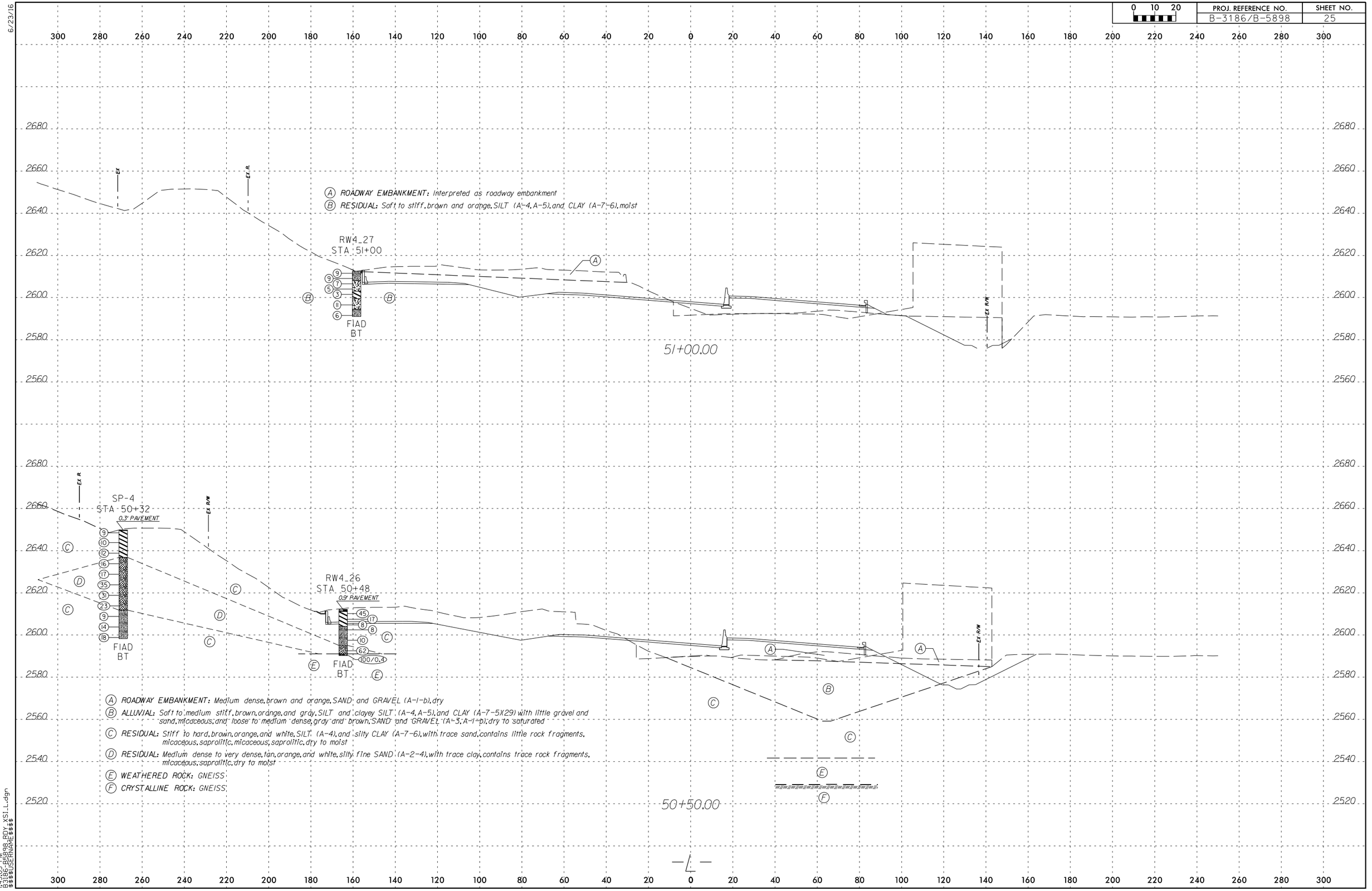
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	25



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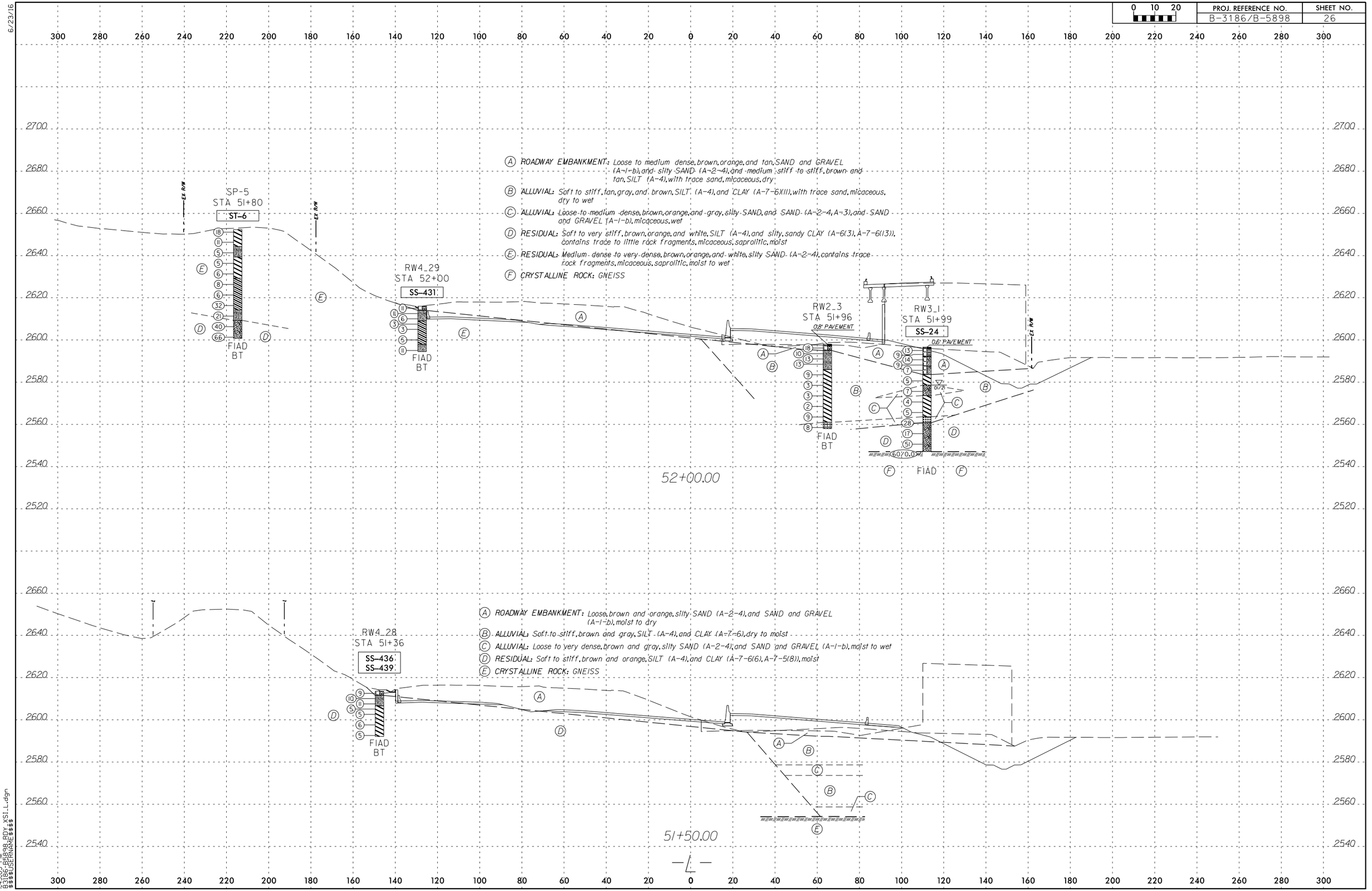

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	27

(A) ROADWAY EMBANKMENT: Medium dense, brown, orange, and tan, SAND and GRAVEL (A-1-b), dry
(B) ROADWAY EMBANKMENT: Medium stiff to very stiff, brown, orange, and gray, SILT, and fine to coarse, sandy SILT (A-4, A-5(2)), with trace to little clay and little gravel, micaceous, dry to moist
(C) ALLUVIAL: Medium stiff, gray, highly silty CLAY (A-7-5(31)), with little fine to coarse sand, micaceous, moist
(D) ALLUVIAL: Medium dense, brown, SAND (A-3), wet
(E) RESIDUAL: Soft to very stiff, brown, orange, and tan, SILT (A-4), and sandy CLAY (A-6), contains little rock fragments, micaceous, saprolitic, dry to moist
(F) RESIDUAL: Very loose to medium dense, brown, orange, and tan, silty SAND (A-2-4), contains trace rock fragments, micaceous, dry
(G) WEATHERED ROCK: GNEISS
(H) CRYSTALLINE ROCK: GNEISS

EX R/W

RW4_30
STA 52+50
SS-422
FIAD
BT

RW2_4
STA 52+50
0.8' PAVEMENT
FIAD
BT

RW3_2
STA 52+50
SS-58
SS-62
FIAD
AR

52+50.00

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2700 2680 2660 2640 2620 2600 2580 2560 2540 2520 2500

EX R/W

EX R/W

RW4_3I
STA 53+00

14
11 12
7 34
50
100/0.6
100/0.2
60/0.0

FIAD
AR

RW3_3
STA 53+00

SS-35
SS-46

0.6' PAVEMENT

12
12 18
8 8
5
5
5
28
11
18
35
42
36
34
60/0.4

FIAD
AR

EX R/W

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry

(B) ROADWAY EMBANKMENT: Medium stiff to very stiff, brown, tan, and orange, fine to coarse, sandy SILT (A-4X2), with trace gravel and little clay, micaceous, dry

(C) ALLUVIAL: Medium stiff, gray, silty CLAY (A-7-6), micaceous, moist

(D) ALLUVIAL: Medium dense, brown and gray, fine to coarse, silty SAND and SAND (A-2-4, A-3), micaceous, wet

(E) RESIDUAL: Medium stiff to hard, brown, tan, and white, SILT (A-4), with trace clay, micaceous, saprolitic, dry

(F) RESIDUAL: Medium dense to dense, brown, tan, and orange, fine to coarse SAND (A-2-4), with little silt and clay, contains trace rock fragments, micaceous, saprolitic, dry to wet

(G) WEATHERED ROCK: GNEISS

(H) CRYSTALLINE ROCK: GNEISS

53+00.00

—L—

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	29

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600 2580 2560 2540 2520

(A) ROADWAY EMBANKMENT: Loose, brown, orange, and tan, SAND and GRAVEL (A-1-b), and silty SAND (A-2-4), dry
(B) ROADWAY EMBANKMENT: Soft, brown and tan, SILT (A-4), dry
(C) ALLUVIAL: Very soft to medium stiff, dark gray, clayey SILT (A-5), and silty CLAY (A-7-6), micaceous, moist to wet
(D) ALLUVIAL: Medium dense, gray, coarse SAND (A-3), wet
(E) RESIDUAL: Very stiff to hard, brown, tan, and orange, SILT (A-4), micaceous, dry
(F) RESIDUAL: Loose to medium dense, tan, red, and brown, silty SAND (A-2-4), micaceous, saprolitic, dry to moist
(G) WEATHERED ROCK: GNEISS
(H) CRYSTALLINE ROCK: GNEISS

EX RW

EX RW

RW4_32
STA 53+50

13 24 23 33 100/0.8 38 100/0.2 60/0.0

FIAD
AR

RW3_4
STA 53+50

EX RW

5 3 3 4 2 3 4 12 12 5 29 100+

FIAD
BT

53+50.00

—L—

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B3186-B5898_RDY_XSLL.dgn
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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	30

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

27.40
27.20
27.00
2680
2660
2640
2620
2600
2580
2560
2540

EX RW

EX RW

(A) ROADWAY EMBANKMENT: Loose to medium dense, brown, orange, and tan, SAND and GRAVEL (A-1-b), and silty SAND (A-2-4), with trace clay, micaceous, dry to moist

(B) ROADWAY EMBANKMENT: Soft to medium stiff, brown, SILT (A-4), moist

(C) ALLUVIAL: Soft, gray, green, and red-orange, clayey SILT (A-5), and fine sandy and silty CLAY (A-6, A-7-6), micaceous, moist to wet

(D) ALLUVIAL: Very loose, gray and green, SAND (A-3), with a 0.1' layer of clay, wet

(E) RESIDUAL: Very stiff to hard, brown, tan, and orange, SILT (A-4), with trace sand, micaceous, dry

(F) WEATHERED ROCK: GNEISS

(G) CRYSTALLINE ROCK: GNEISS

RW4_33
STA 54+00

15
24 100/0.2
38 100/0.6
100/0.2
60/0.0

(D) (E) (D) (E) (F) FIAD AR

(A) (D) (E) (F)

RW3_5
STA 54+01

EX RW

(B) (D) (C) (A) (B) (D) (C)

8 4 2 2 2 3 4 6 60+

FIAD AR (F)

54+00.00

—℄—

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	31

(A) ROADWAY EMBANKMENT: Loose to medium dense, brown and orange, silty SAND (A-2-4), and SAND and GRAVEL (A-1-b), dry to moist
(B) ROADWAY EMBANKMENT: Stiff, brown and white, SILT (A-4), dry
(C) ALLUVIAL: Loose, gray and brown, silty SAND (A-2-4), moist
(D) ALLUVIAL: Very soft to stiff, gray, silty CLAY (A-7-6), with trace sand, micaceous, moist to saturated
(E) RESIDUAL: Stiff, brown and tan, SILT (A-4), dry
(F) RESIDUAL: Medium dense, brown and white, silty SAND (A-2-4), dry
(G) WEATHERED ROCK: GNEISS
(H) CRYSTALLINE ROCK: GNEISS

RW4_34
STA 54+49

FIAD
BT

RW3_6
STA 54+50

FIAD
AR

EX R/W

54+50.00

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	32

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600 2580 2560

EX R/W

EX R/W

Ⓐ ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Very stiff to hard, brown and tan, SILT (A-4), dry
Ⓒ RESIDUAL: Dense, brown, red, and white, fine silty SAND (A-2-4), with trace clay, contains trace rock fragments, saprolitic, dry
Ⓓ WEATHERED ROCK: GNEISS
Ⓔ CRYSTALLINE ROCK: GNEISS

RW4_36
STA 55+50

11 10 12 10 10 21 31 63 60/0.0

FIAD
AR

EX R/W

RW3_8
STA 55+50

10 5 14 8 15 42 31 100/0.3 60/0.0

FIAD
AR

55+50.00

EX R/W

EX R/W

Ⓐ ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Very stiff to hard, brown and tan, SILT (A-4), dry
Ⓒ WEATHERED ROCK: GNEISS

RW4_35
STA 55+00

12 18 11 43 53 100/0.8 78 100/0.8

FIAD
BT

EX R/W

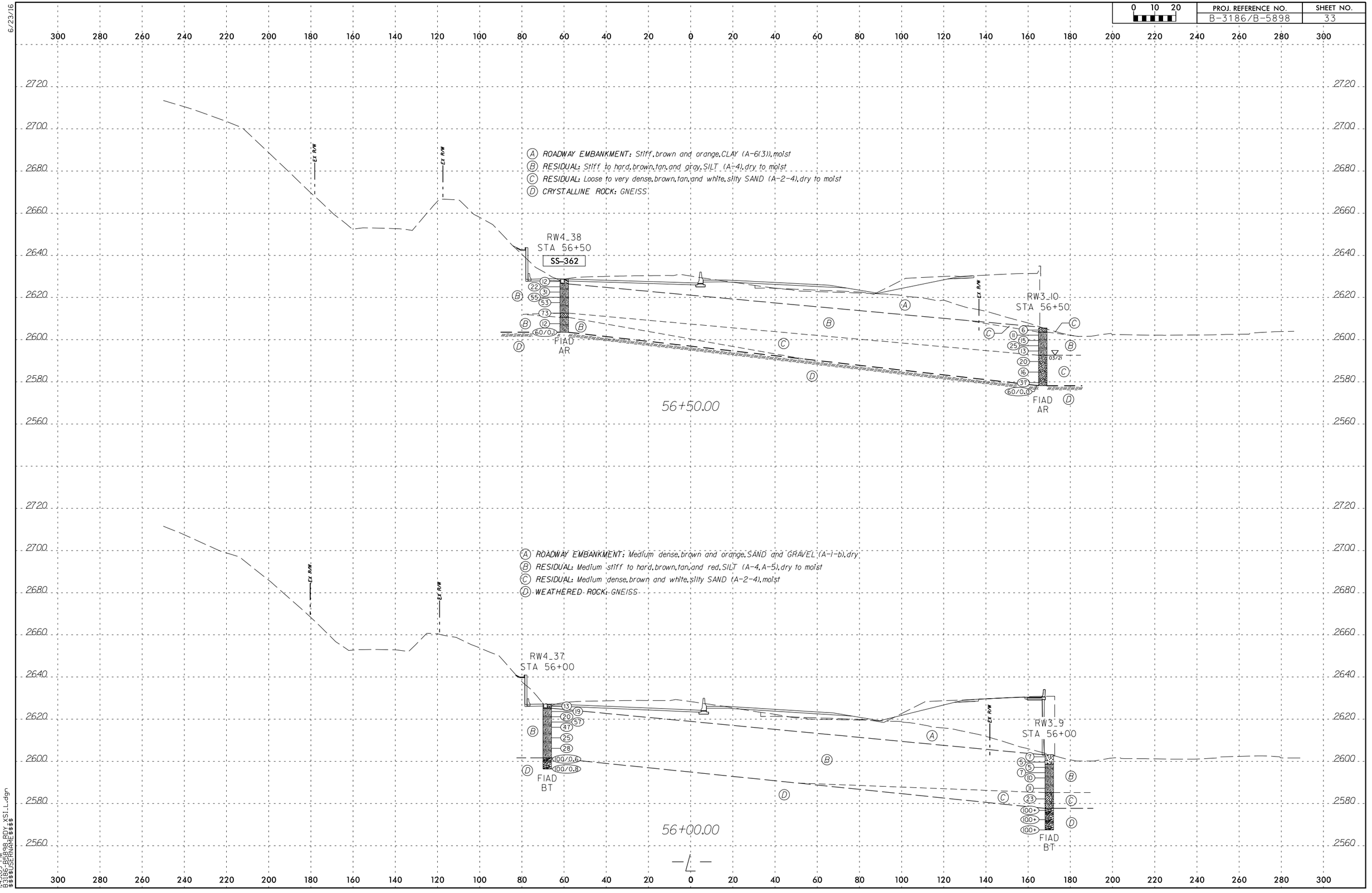
0.020

55+00.00

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	33



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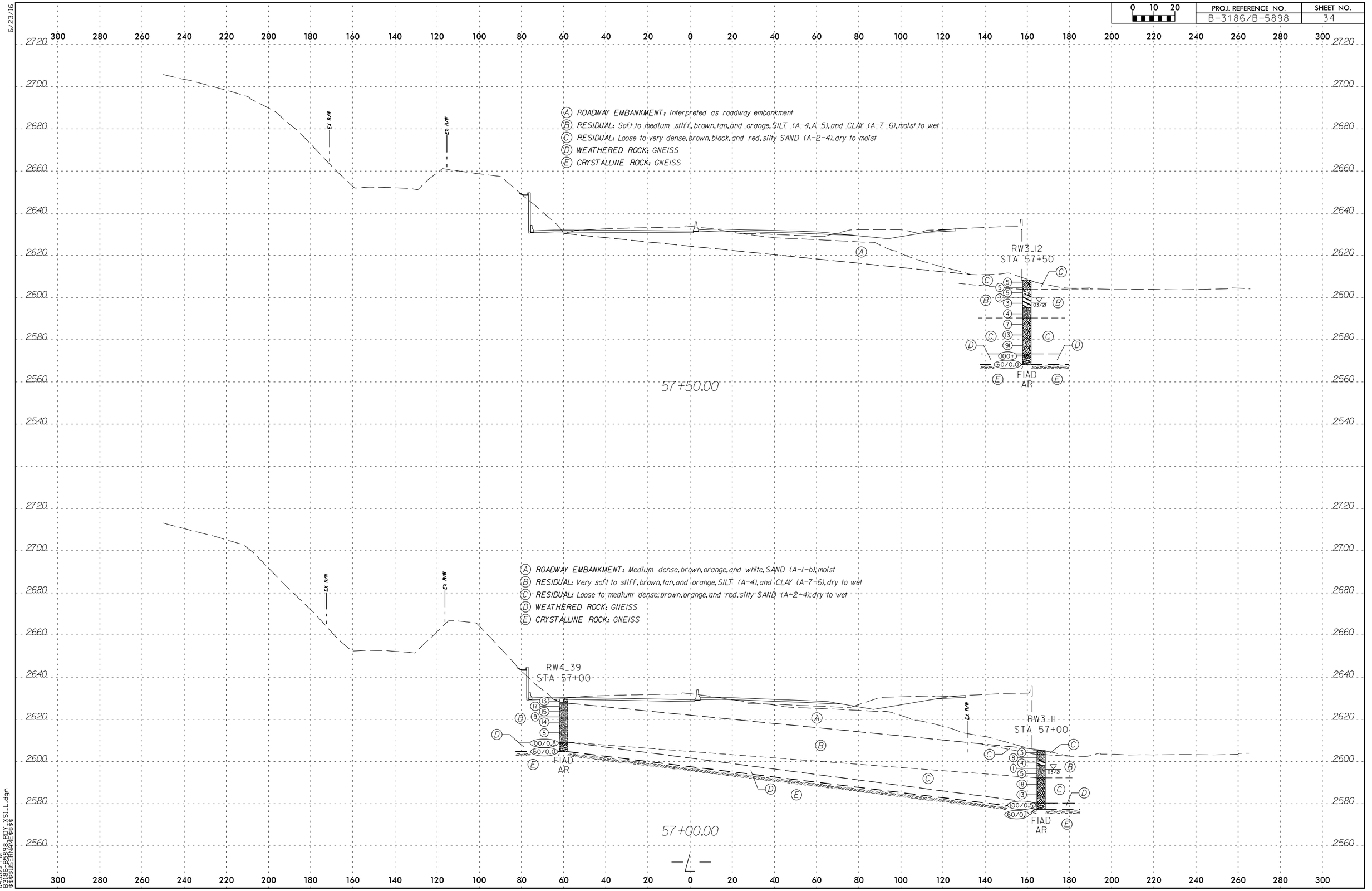
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	34



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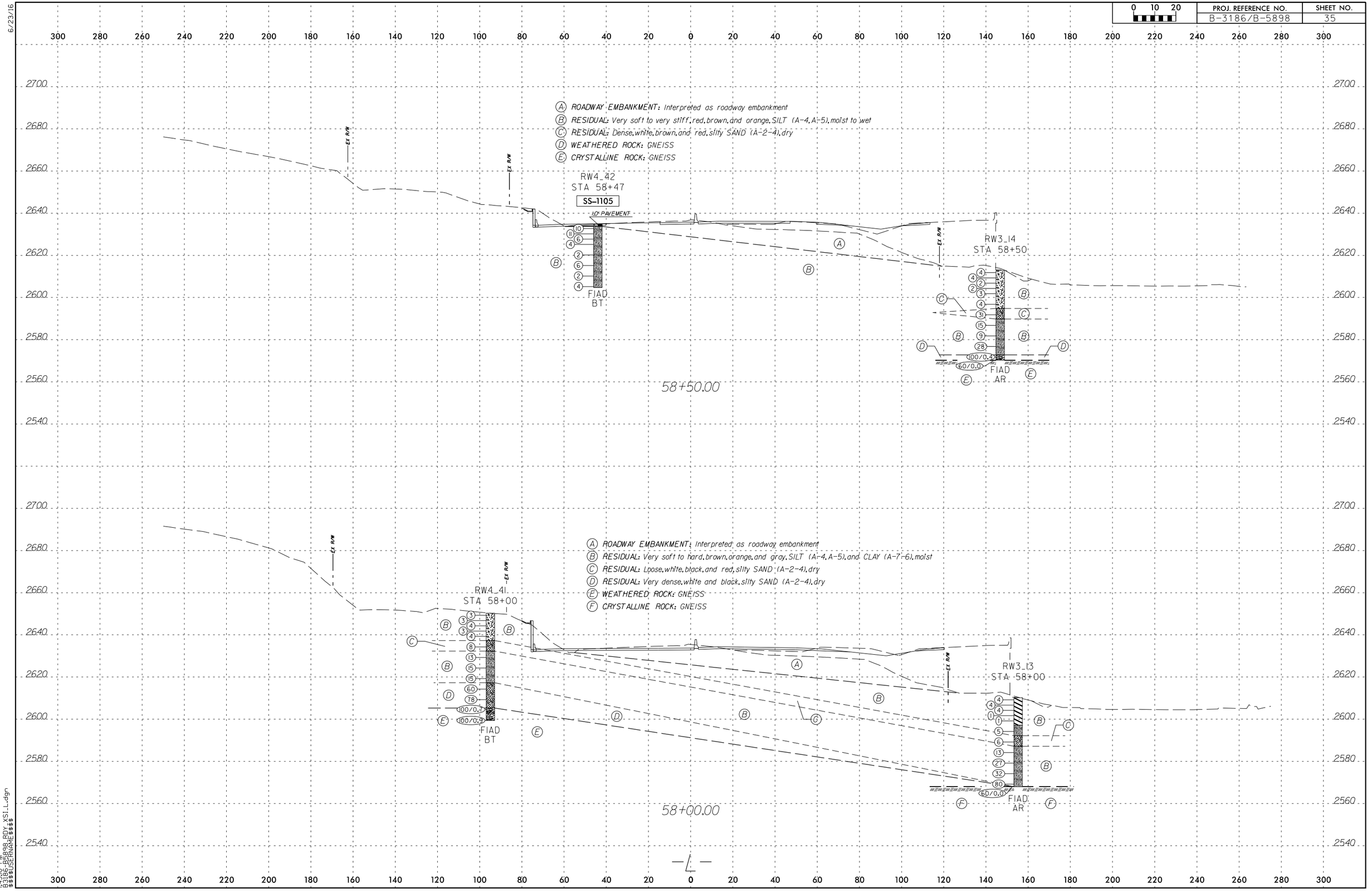
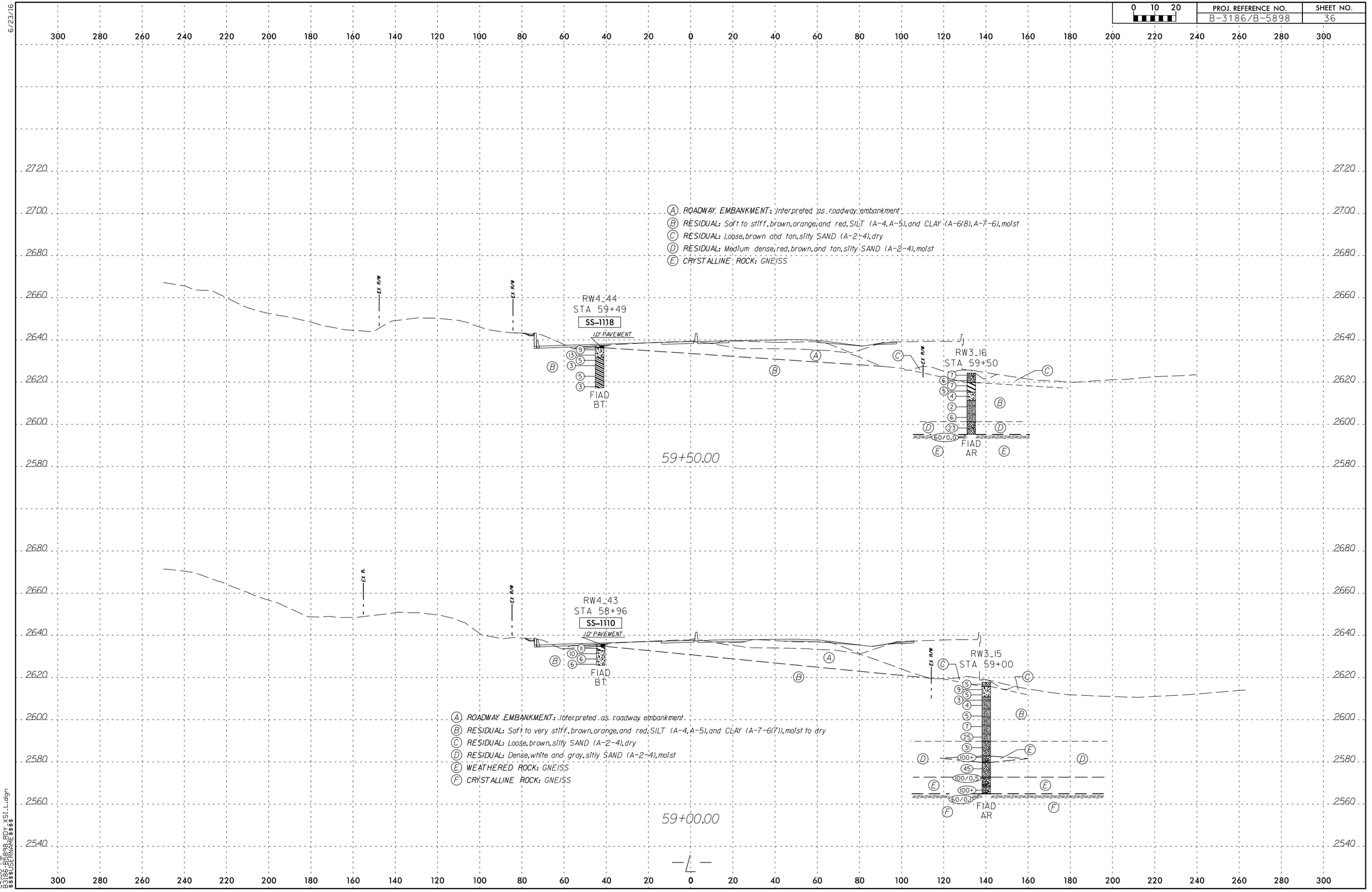
0 10 20

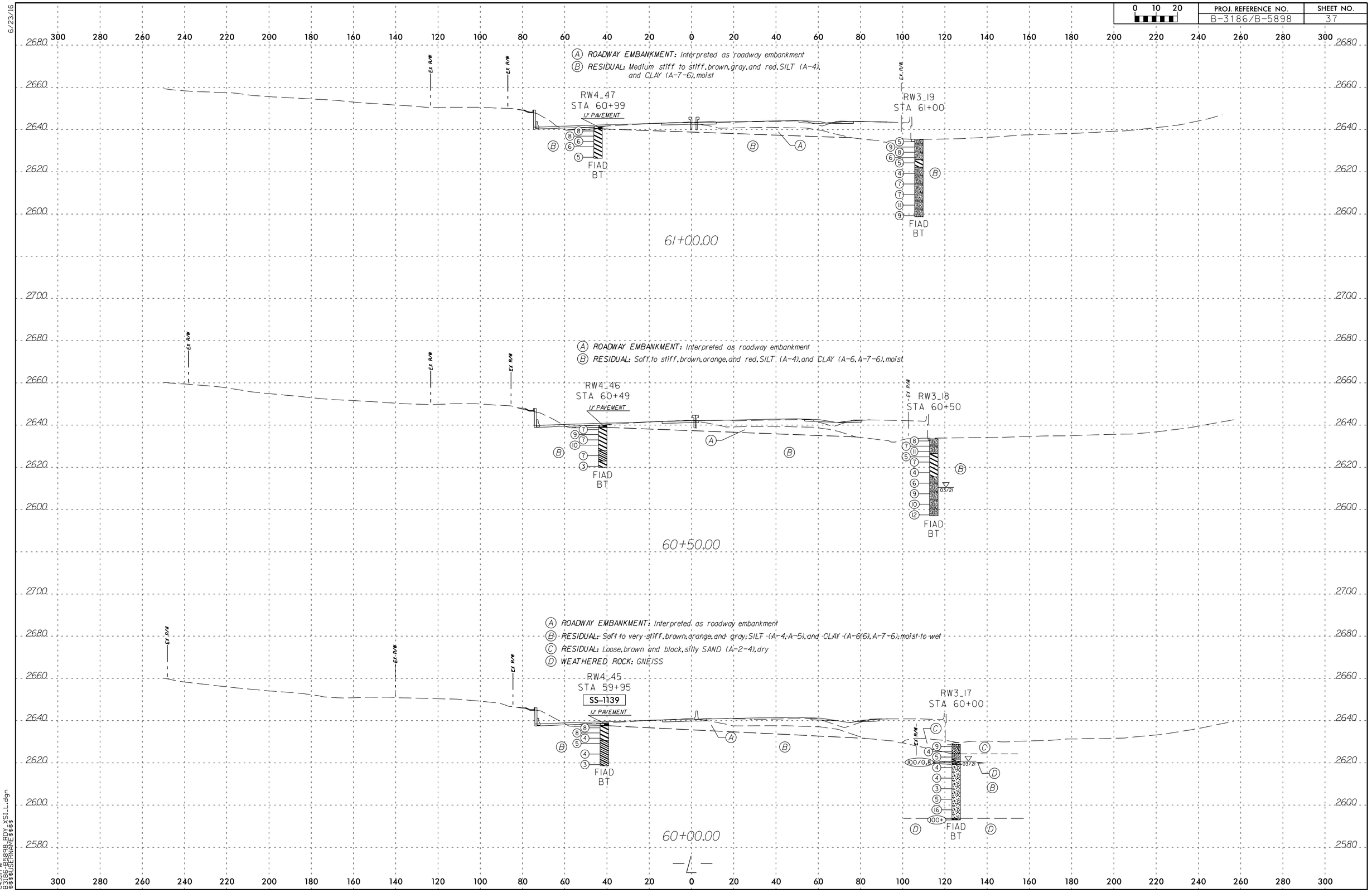
PROJ. REFERENCE NO.	SHEET NO.
B-3186/B-5898	35




300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
2720
2700
2680
2660
2640
2620
2600
2580
2560
2540
EX R/W
RW4_44
STA 59+49
SS-1118
10' PAVEMENT
FIAD
BT
RW3_16
STA 59+50
FIAD
AR
59+50.00
(A) ROADWAY EMBANKMENT: Interpreted as roadway embankment
(B) RESIDUAL: Soft to stiff, brown, orange, and red, SILT (A-4, A-5), and CLAY (A-6(8), A-7-6), moist
(C) RESIDUAL: Loose, brown and tan, silty SAND (A-2-4), dry
(D) RESIDUAL: Medium dense, red, brown, and tan, silty SAND (A-2-4), moist
(E) CRYSTALLINE ROCK: GNEISS
EX R.
RW4_43
STA 58+96
SS-1110
10' PAVEMENT
FIAD
BT
RW3_15
STA 59+00
FIAD
AR
59+00.00
(A) ROADWAY EMBANKMENT: Interpreted as roadway embankment
(B) RESIDUAL: Soft to very stiff, brown, orange, and red, SILT (A-4, A-5), and CLAY (A-7-6(7)), moist to dry
(C) RESIDUAL: Loose, brown, silty SAND (A-2-4), dry
(D) RESIDUAL: Dense, white and gray, silty SAND (A-2-4), moist
(E) WEATHERED ROCK: GNEISS
(F) CRYSTALLINE ROCK: GNEISS

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
B-3186/B-5898	37



0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	38

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2700 2680 2660 2640 2620

EX R/W EX R/W

RW4_50
STA 62+50
1.4" PAVEMENT

(A) ROADWAY EMBANKMENT: Interpreted as roadway embankment
(B) RESIDUAL: Medium stiff to stiff, brown, orange, and red, SILT (A-4), and CLAY (A-7-6), moist
(C) RESIDUAL: Medium dense, brown and tan, silty SAND (A-2-4), moist

(B) 10 9 9 9 FIAD BT

(B) (A) (C)

EX R/W

RW3_22
STA 62+50

(B) 8 17 9 6 8 8 6 9 FIAD BT (C) (B)

62+50.00

EX R/W EX R/W

RW4_49
STA 62+00
0.6" PAVEMENT

(B) 12 8 8 3 2 4 FIAD BT

(A) (B) (C)

EX R/W

RW3_21
STA 62+00

(B) 10 12 7 9 6 8 13 7 FIAD BT (C) (B)

62+00.00

EX R/W EX R/W

RW4_48
STA 61+50
0.4" PAVEMENT

(A) ROADWAY EMBANKMENT: Interpreted as roadway embankment
(B) RESIDUAL: Soft to very stiff, brown, orange, and red, SILT (A-4, A-5), and CLAY (A-6, A-7-6), moist

(B) 15 8 5 4 3 4 FIAD BT

(A) (B)

EX R/W

RW3_20
STA 61+50

9 10 12 14 6 6 4 4 6 FIAD BT (B)

61+50.00

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
B-3186/B-5898	39

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620

(A) ROADWAY EMBANKMENT: Loose, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff to very stiff, brown, orange, and white, SILT (A-4, A-5), dry to moist
(C) RESIDUAL: Loose, white and gray, silty SAND (A-2-4), dry

EX. R/W

RW4_54B
STA 64+17

FIAD
B.T

RW4_53
STA 64+00

FIAD
B.T

64+00.00

RW3_25
STA 64+00

10' PAVEMENT

EX. BUILDING

FIAD
B.T

(A) ROADWAY EMBANKMENT: Loose, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff to stiff, brown, orange, and white, SILT (A-4, A-5(4)), dry to moist

RW4_52
STA 63+50

SS-302

FIAD
B.T

RW3_24
STA 63+50

0.9' PAVEMENT

FIAD
B.T

63+50.00

(A) ROADWAY EMBANKMENT: Loose, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Stiff, brown, orange, and tan, SILT (A-4), dry

RW4_51
STA 63+00

FIAD
B.T

63+00.00

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
B-3186/B-5898	40

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2700
2680
2660
2640
2620

Ⓐ ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Medium stiff to very stiff, brown, orange, and tan, SILT (A-4), dry to moist

RW4_56
STA 65+50
SS-260
10 7 21 10 13 13 16 23
FIAD
BT

65+50.00

RW3_28
STA 65+50
6 7 6 8 9 11
FIAD
BT

EX R/W

EX R/W

2700
2680
2660
2640
2620

Ⓐ ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Medium stiff to very stiff, brown, orange, and tan, SILT (A-4, A-5), dry to moist

EX R/W

RW4_55
STA 65+00
12 7 11 10 7 13 10 17
FIAD
BT

65+00.00

EX R/W
EX BUILDING
RW3_27
STA 65+00
12 7 9 8 8
I.D. PAVEMENT
FIAD
BT

EX R/W

2680
2660
2640
2620
2600

Ⓐ ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Medium stiff to very stiff, brown, orange, and tan, SILT (A-4), dry to moist

EX R/W

RW4_54A
STA 64+50
12 8 15 16 12 9 5 10 15 15
FIAD
BT

64+50.00

EX R/W
EX BUILDING
RW3_26
STA 64+50
13 8 8 8 8
I.D. PAVEMENT
FIAD
BT

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	41

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2700 2680 2660 2640 2620

EX R/W

RW4_59
STA 67+00
SS-278
SS-282

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff, brown, orange, and tan, CLAY (A-7-6(2)), dry
(C) RESIDUAL: Medium dense, brown, tan, and white, clayey SAND (A-2-7(1)), dry

(B) 18 8 8 13 12 (C) 12 10 12 (B) (A)

FIAD
BT

67+00.00

EX R/W

RW4_58
STA 66+50
SS-242

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Soft to very stiff, brown, orange, and tan, SILT (A-4) and CLAY (A-7-5(2)), dry to moist

(B) 11 12 16 11 20 13 13 7 10 (A) (B)

FIAD
BT

EX R/W

RW3_30
STA 66+50

3 3 10 10 7 9 (B)

FIAD
BT

66+50.00

EX R/W

RW4_57
STA 66+00
SS-256
SS-258

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff to very stiff, brown, orange, and tan, SILT (A-4, A-5), dry to moist
(C) RESIDUAL: Loose to medium dense, brown, tan, and orange, silty SAND (A-2-4), dry

(B) 13 17 19 15 12 10 9 19 (C) (A) (B) (C)

FIAD
BT

EX R/W

RW3_29
STA 66+00

5 4 7 7 7 9 (B)

FIAD
BT

EX R/W

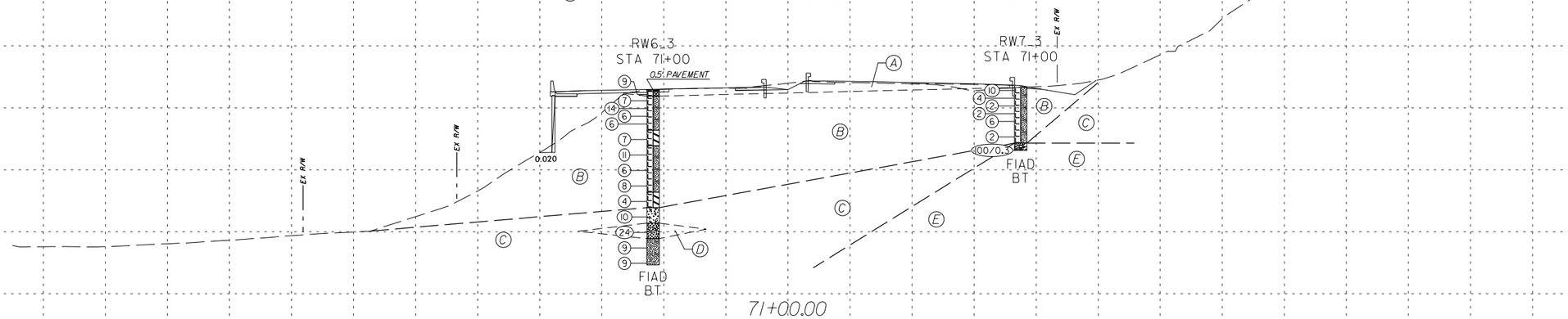
66+00.00

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	42

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

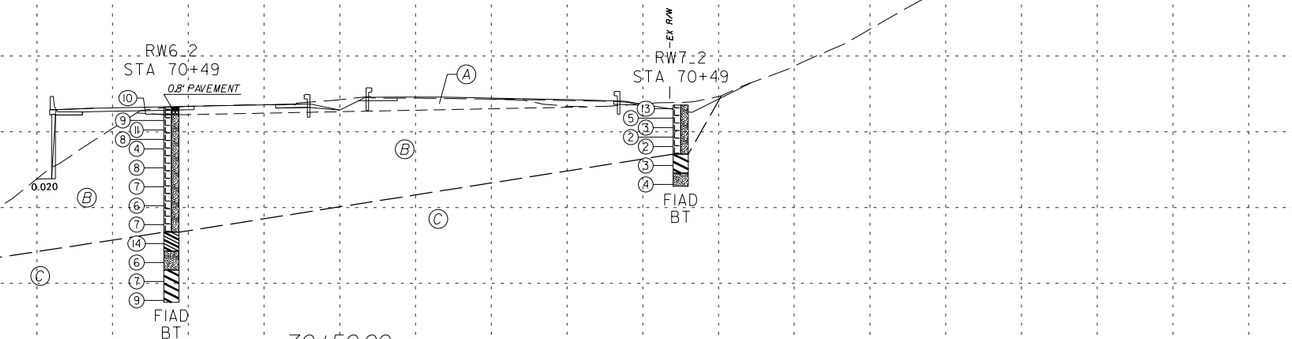
2720 2700 2680 2660 2640 2620 2600 2580

(A) ROADWAY EMBANKMENT: Loose, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) ROADWAY EMBANKMENT: Soft to stiff, brown, orange, and tan, SILT (A-4), and CLAY (A-7-6), dry to moist
(C) RESIDUAL: Stiff, brown, tan, and orange, SILT (A-5, A-4), dry to moist
(D) WEATHERED ROCK: GNEISS
(E) RESIDUAL: Medium dense, brown and orange, silty SAND (A-2-4), with boulders, dry



71+00.00

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Soft to stiff, brown, orange, and tan, SILT (A-4), and CLAY (A-6), dry to moist
(C) RESIDUAL: Soft, brown, orange, and tan, CLAY (A-7-6, A-6), and SILT (A-4), moist



70+50.00

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	43

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), and silty SAND (A-2-4), dry
(B) ROADWAY EMBANKMENT: Medium stiff to stiff, brown, orange, and tan, SILT (A-4), dry
(C) RESIDUAL: Medium dense to hard, brown, tan, and orange, SILT (A-4), and CLAY (A-7-6), dry to moist
(D) RESIDUAL: Dense, gray, SAND (A-3), with boulders, dry
(E) RESIDUAL: Very dense, brown, tan, and white, silty SAND (A-2-4), with rock fragments, dry
(F) WEATHERED ROCK: GNEISS
(G) CRYSTALLINE ROCK: GNEISS

RW6_5
STA 72+01
0.8' PAVEMENT
EX R/W
0.020
10 13 9 5 4 4 4 45 6 10 10
FIAD BT

RW7_5
STA 72+00
EX R/W
12 33 60 100/0.3 60/0.0
16 C 11 E G F
FIAD AR

72+00.00

(A) ROADWAY EMBANKMENT: Loose, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) ROADWAY EMBANKMENT: Very soft to stiff, brown, orange, and tan, SILT (A-4), dry to moist
(C) RESIDUAL: Medium stiff to stiff, brown, tan, and orange, SILT (A-4), and CLAY (A-7-6), dry to moist
(D) RESIDUAL: Dense, brown, tan, and orange, silty SAND (A-2-4), with rock fragments, dry
(E) WEATHERED ROCK: GNEISS

RW6_4
STA 71+51
0.5' PAVEMENT
EX R/W
0.020
11 9 9 7 6 12 13 8 7 9 7 11 8
FIAD BT

RW7_4
STA 71+50
EX R/W
11 8 2 6 5 49 100/0.9
FIAD BT

71+50.00

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	44

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2700 2680 2660 2640 2620 2600

(A) ROADWAY EMBANKMENT: Medium stiff to stiff, brown, red, and gray, SILT (A-4, A-5), dry to moist
(B) RESIDUAL: Soft to hard, brown, red, and orange, SILT (A-4, A-5), and CLAY (A-7-6), moist to dry
(C) WEATHERED ROCK: GNEISS
(D) CRYSTALLINE ROCK: GNEISS

RW6_7
STA 73+02

10' PAVEMENT

0.020

11 7 13 13 9 4 5 10 95 52

FIAD
BT

RW7_7
STA 73+00

11 13 20 100/0.6 60/0.0

FIAD
AR

73+00.00

(A) ROADWAY EMBANKMENT: Loose to dense, brown and orange, SAND and GRAVEL (A-1-b), and silty SAND (A-2-4), dry
(B) ROADWAY EMBANKMENT: Soft to stiff, brown and orange, SILT (A-4), and CLAY (A-7-6), dry
(C) RESIDUAL: Stiff to hard, brown, tan, and orange, SILT (A-4), dry
(D) RESIDUAL: Very dense, brown, tan, and black, silty SAND (A-2-4), with rock fragments, dry
(E) WEATHERED ROCK: GNEISS
(F) CRYSTALLINE ROCK: GNEISS

RW6_6
STA 72+52

10' PAVEMENT

0.020

9 4 9 7 4 3 4 9 13 12 11

FIAD
BT

RW7_6
STA 72+49

34 42 62 100/0.5 100/0.5 60/0.0

FIAD
AR

72+50.00

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	45

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600

Ⓐ RESIDUAL: Soft to hard, brown, gray, and orange, SILT (A-4) and CLAY (A-7-6, A-6), moist to dry
Ⓑ WEATHERED ROCK: GNEISS

EX BUILDING

RW6_9
STA 74+01
0.8' PAVEMENT
9 8 4 8 12 17 12 16 58
FIAD
BT

RW7_9
STA 74+00
0.8' PAVEMENT
14 14 100/0.3

74+00.00

Ⓐ ROADWAY EMBANKMENT: Soft to medium stiff, brown, red, and pink, SILT (A-4), dry to moist
Ⓑ RESIDUAL: Stiff to hard, brown, red, and gray, SILT (A-4, A-5) and CLAY (A-7-6), moist to dry

RW6_8
STA 73+51
SS-186
0.8' PAVEMENT
0.020
8 4 4 11 18 16 57
3 2
FIAD
BT

RW7_8
STA 73+50
1.0' PAVEMENT
32 27 30 24
FIAD
BT

73+50.00

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	46

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600

Ⓐ RESIDUAL: Medium stiff to hard, brown and tan, SILT (A-4), dry
Ⓑ RESIDUAL: Dense to very dense, brown and orange, silty SAND (A-2-4), dry
Ⓒ CRYSTALLINE ROCK: GNEISS

EX BUILDING

RW6_II
STA 74+99
10' PAVEMENT

Ⓐ 27 23 39 37 Ⓑ 57 60/0.1 Ⓒ FIAD AR

RW7_II
STA 74+99
10' PAVEMENT

Ⓐ 35 60/0.0 Ⓐ Ⓒ FIAD AR

75+00.00

Ⓐ ROADWAY EMBANKMENT: Medium dense, gray, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Medium dense to very dense, brown, white, and gray, silty SAND (A-2-4), dry
Ⓒ WEATHERED ROCK: GNEISS

EX BUILDING

RW6_10
STA 74+49
SS-1077
11' PAVEMENT

Ⓐ 11 13 16 19 Ⓑ 36 100+ Ⓒ 70 FIAD BT

RW7_10
STA 74+49
SS-1022
0.7' PAVEMENT

Ⓐ 11 15 11 Ⓑ 100/0.2 Ⓒ FIAD BT

74+50.00

2720 2700 2680 2660 2640 2620 2600

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	47

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600

(A) ROADWAY EMBANKMENT: Medium dense, brown and tan, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Stiff, brown, orange, and white, SILT (A-4), dry
(C) RESIDUAL: Medium dense, brown and tan, silty SAND (A-2-4), dry
(D) WEATHERED ROCK: GNEISS
(E) CRYSTALLINE ROCK: GNEISS

RW6_13
STA 76+01
11" PAVEMENT

RW7_13
STA 76+01
07" PAVEMENT

FIAD
AR

FIAD
BT

76+00.00

(A) RESIDUAL: Stiff, brown, SILT (A-4), dry
(B) RESIDUAL: Dense to very dense, brown and gray, silty SAND (A-2-4), dry
(C) WEATHERED ROCK: GNEISS

EX BUILDING

RW6_12
STA 75+50
11" PAVEMENT

RW7_12
STA 75+49
07" PAVEMENT

FIAD
BT

FIAD
BT

75+50.00

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	48

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2720 2700 2680 2660 2640 2620 2600

Ⓐ RESIDUAL: Medium stiff, brown, SILT (A-4), dry
Ⓑ RESIDUAL: Medium dense to very dense, brown and gray, silty SAND (A-2-4), dry
Ⓒ WEATHERED ROCK: GNEISS
Ⓓ CRYSTALLINE ROCK: GNEISS

RW6_I5
STA 77+00
0.9' PAVEMENT
FIAD
BT

RW7_I5
STA 76+99
0.9' PAVEMENT
FIAD
AR

77+00.00

Ⓐ RESIDUAL: Medium stiff to hard, brown and gray, SILT (A-4), dry
Ⓑ RESIDUAL: Medium dense, brown and gray, silty SAND (A-2-4), dry
Ⓒ WEATHERED ROCK: GNEISS

RW6_I4
STA 76+53
1.2' PAVEMENT
FIAD
BT

RW7_I4
STA 76+49
0.8' PAVEMENT
FIAD
BT

76+50.00

—L—

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	49

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2700 2680 2660 2640 2620 2600

Ⓐ RESIDUAL: Medium dense to very dense, brown, gray, and black, silty SAND (A-2-4), and GRAVEL (A-1-b), dry
Ⓑ WEATHERED ROCK: GNEISS

RW6_I7
STA 78+00
SS-1046
0.9' PAVEMENT
10 13 15 13
FIAD
BT

RW7_I7
STA 78+00
SS-1027
1.0' PAVEMENT
11 20 21 68 100/0.6
FIAD
BT

78+00.00

2720 2700 2680 2660 2640 2620 2600

Ⓐ RESIDUAL: Stiff, brown, black, and gray, SILT (A-4, A-5), dry
Ⓑ RESIDUAL: Medium dense to very dense, brown, black, and gray, silty SAND (A-2-4), dry
Ⓒ CRYSTALLINE ROCK: GNEISS

RW6_I6
STA 77+50
SS-1053
1.0' PAVEMENT
35 67 17 6
FIAD
BT

RW7_I6
STA 77+50
1.0' PAVEMENT
9 9 13 11
60/0.0
FIAD
AR

77+50.00

—L—

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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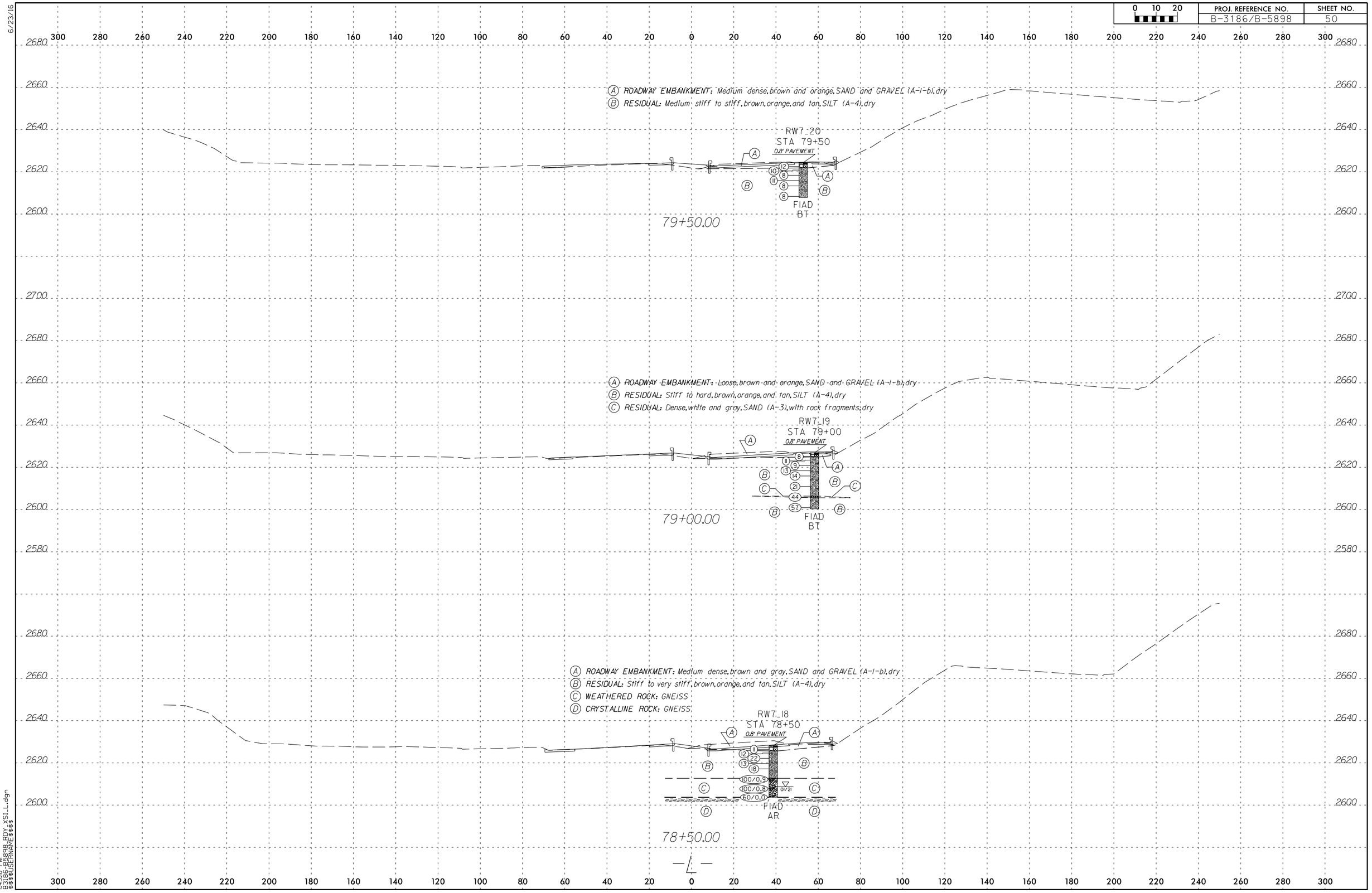
	B-3186/B-5898	50



6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	51

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2660 2640 2620 2600

RW7_23
STA 80+99
SS-721
0.8' PAVEMENT

RESIDUAL: Medium stiff to stiff, brown, orange, and tan, SILT (A-4(6), A-5), dry.

(12) (6) (9) (4) (5) (4)

FIAD
BT

81+00.00

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff to stiff, brown, orange, and tan, SILT (A-4), dry

RW7_22
STA 80+49
0.8' PAVEMENT

(A) (11) (9) (8) (7) (12) (7) (B)

FIAD
BT

80+50.00

(A) ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium stiff to stiff, brown, orange, and tan, SILT (A-4), dry

RW7_21
STA 79+99
0.8' PAVEMENT

(A) (15) (9) (9) (9) (8) (A) (B)

FIAD
BT

80+00.00

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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	52

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2640 2620 2600 2580 2560 2540

Ⓐ RESIDUAL: Medium stiff to hard,brown and orange,SILT (A-4),and CLAY (A-7-6),dry to moist
Ⓑ RESIDUAL: Very dense,brown and tan,silty SAND (A-2-4),dry
Ⓒ WEATHERED ROCK: GNEISS
Ⓓ CRYSTALLINE ROCK: GNEISS

EX R/W — EX R/W

RW4_2
STA 15+00

Ⓐ 7 86
Ⓑ 64 96
Ⓒ 100/0.5
60/0.0
Ⓓ

FIAD
AR

15+00.00

EX W/P — EX W/P — EX R/W

Ⓐ RESIDUAL: Soft to very stiff,brown and orange,SILT (A-4),and CLAY (A-7-6),dry to moist
Ⓑ RESIDUAL: Medium dense,brown,silty SAND (A-2-4),dry
Ⓒ WEATHERED ROCK: GNEISS

EX R/W — EX R/W

RW4_1
STA 14+59
SS-503

Ⓐ 4 7
Ⓑ 8 28
25
Ⓒ 100/0.8

FIAD
BT

14+50.00

EX W/P — EX W/P — EX R/W

EX R/W — EX R/W

YIRT_1250SPT
STA 12+66

Ⓐ 0.3' PAVEMENT
Ⓑ 8 13
6
7

FIAD
BT

Ⓐ ROADWAY EMBANKMENT: Medium dense,brown,sandy GRAVEL (A-1-b),moist
Ⓑ ROADWAY EMBANKMENT: Medium stiff to stiff,brown,orange,and black,SILT (A-4),and CLAY (A-7),moist

12+50.00

-YIRT-

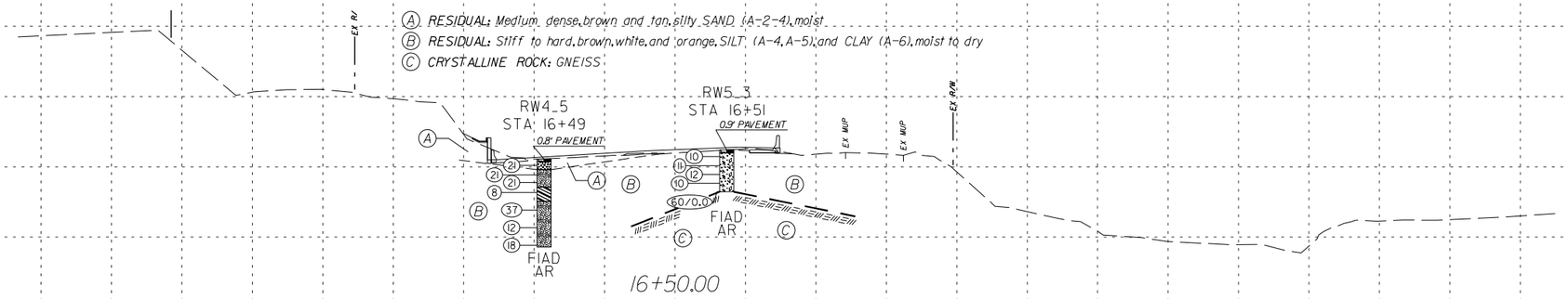
6/23/16

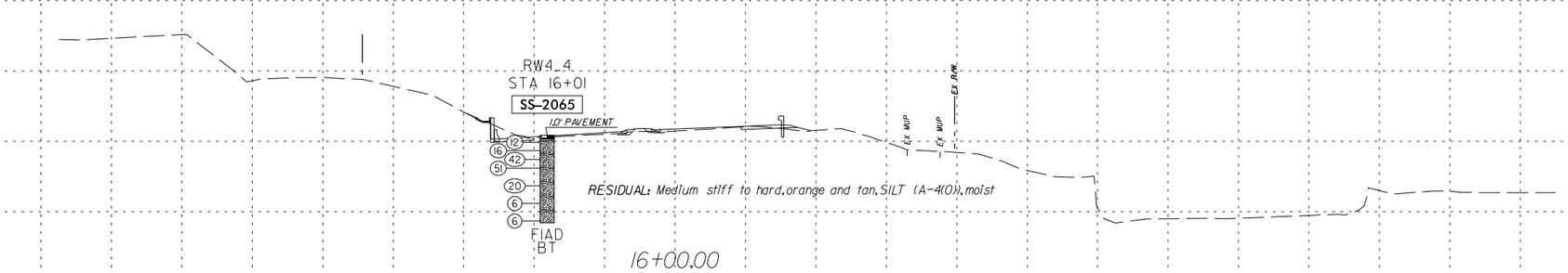
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	53

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2640 2620 2600 2580 2560 2540

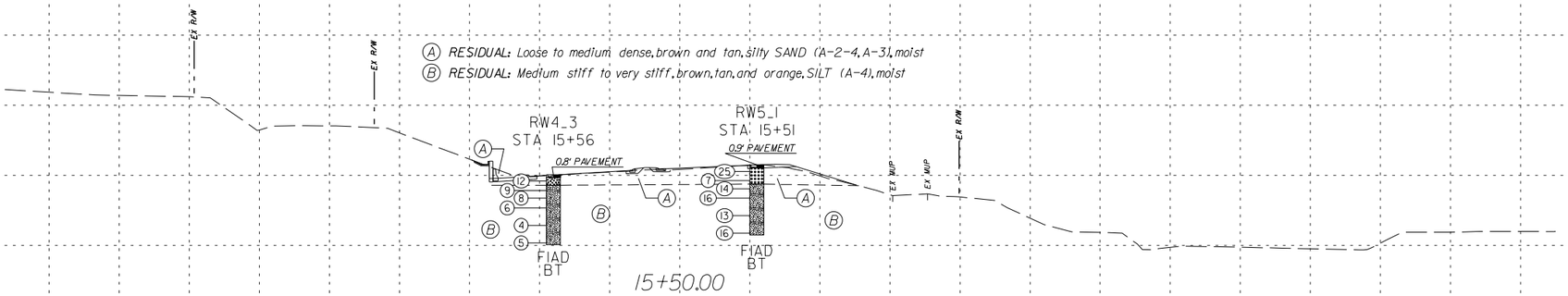
Ⓐ RESIDUAL: Medium dense, brown and tan, silty SAND (A-2-4), moist
Ⓑ RESIDUAL: Stiff to hard, brown, white, and orange, SILT (A-4, A-5), and CLAY (A-6), moist to dry
Ⓒ CRYSTALLINE ROCK: GNEISS





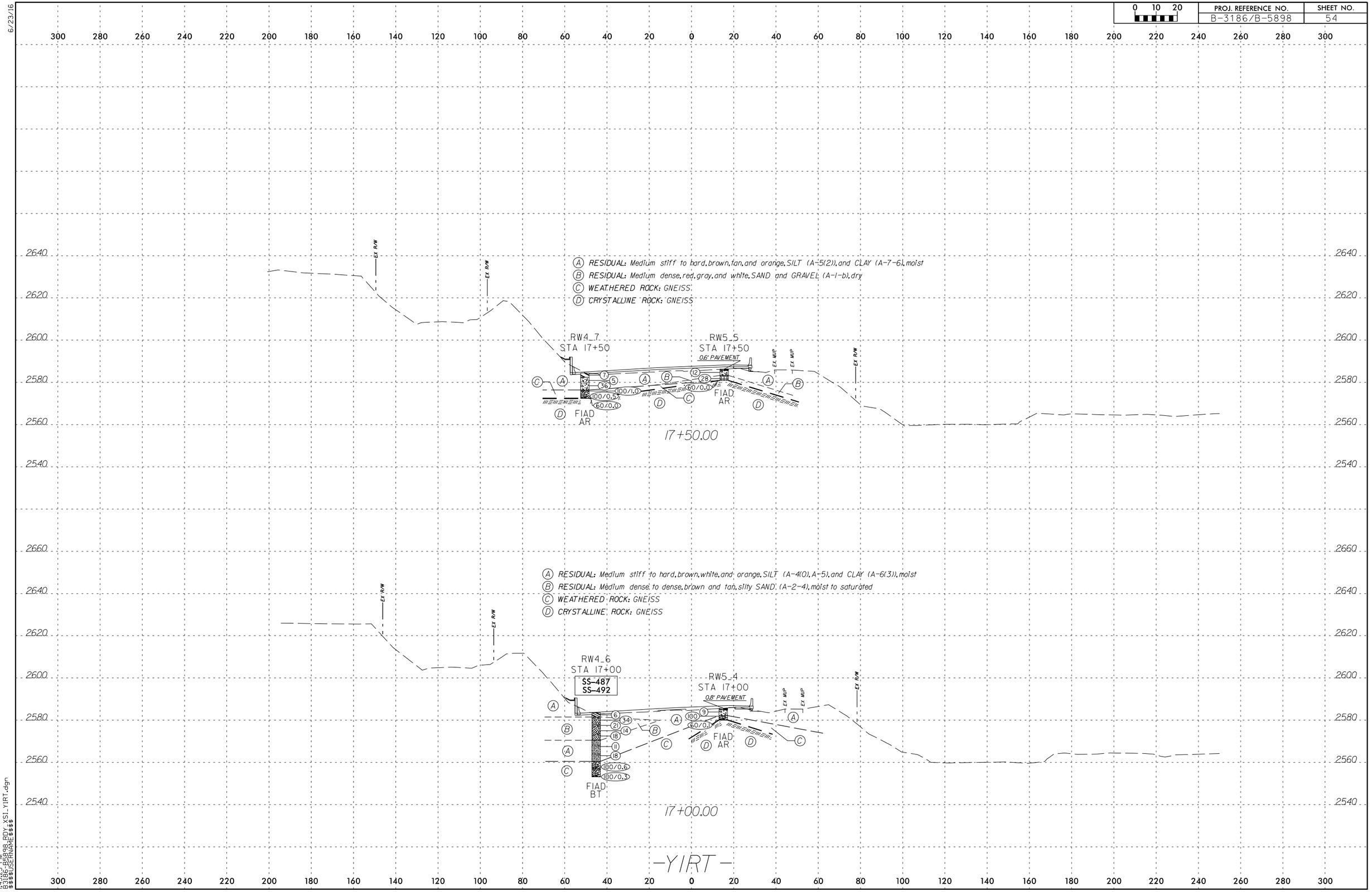
RESIDUAL: Medium stiff to hard, orange and tan, SILT (A-4(0)), moist

Ⓐ RESIDUAL: Loose to medium dense, brown and tan, silty SAND (A-2-4, A-3), moist
Ⓑ RESIDUAL: Medium stiff to very stiff, brown, tan, and orange, SILT (A-4), moist



-YIRT-

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	54



0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	55

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2660 2640 2620 2600 2580 2560 2540

EX R/W

EX R/W

Ⓐ RESIDUAL: Soft to stiff, red, brown, and orange, SILT (A-5), and CLAY (A-7-6), dry to moist
Ⓑ WEATHERED ROCK: GNEISS
Ⓒ CRYSTALLINE ROCK: GNEISS

RW4_9
STA 18+50

RW5_7
STA 18+50

0.7' PAVEMENT

EX MUP

EX MUP

EX R/W

100/0.4

100/0.5

60/0.0

60/0.0

FIAD
BT

FIAD
AR

18+50.00

EX R/W

EX R/W

Ⓐ RESIDUAL: Medium stiff to hard, brown, gray, and red, SILT (A-5), and CLAY (A-7-5(3)), dry to wet
Ⓑ CRYSTALLINE ROCK: GNEISS

RW4_8
STA 18+00

SS-480

RW5_6
STA 18+00

0.5' PAVEMENT

EX MUP

EX MUP

EX R/W

60/0.0

60/0.0

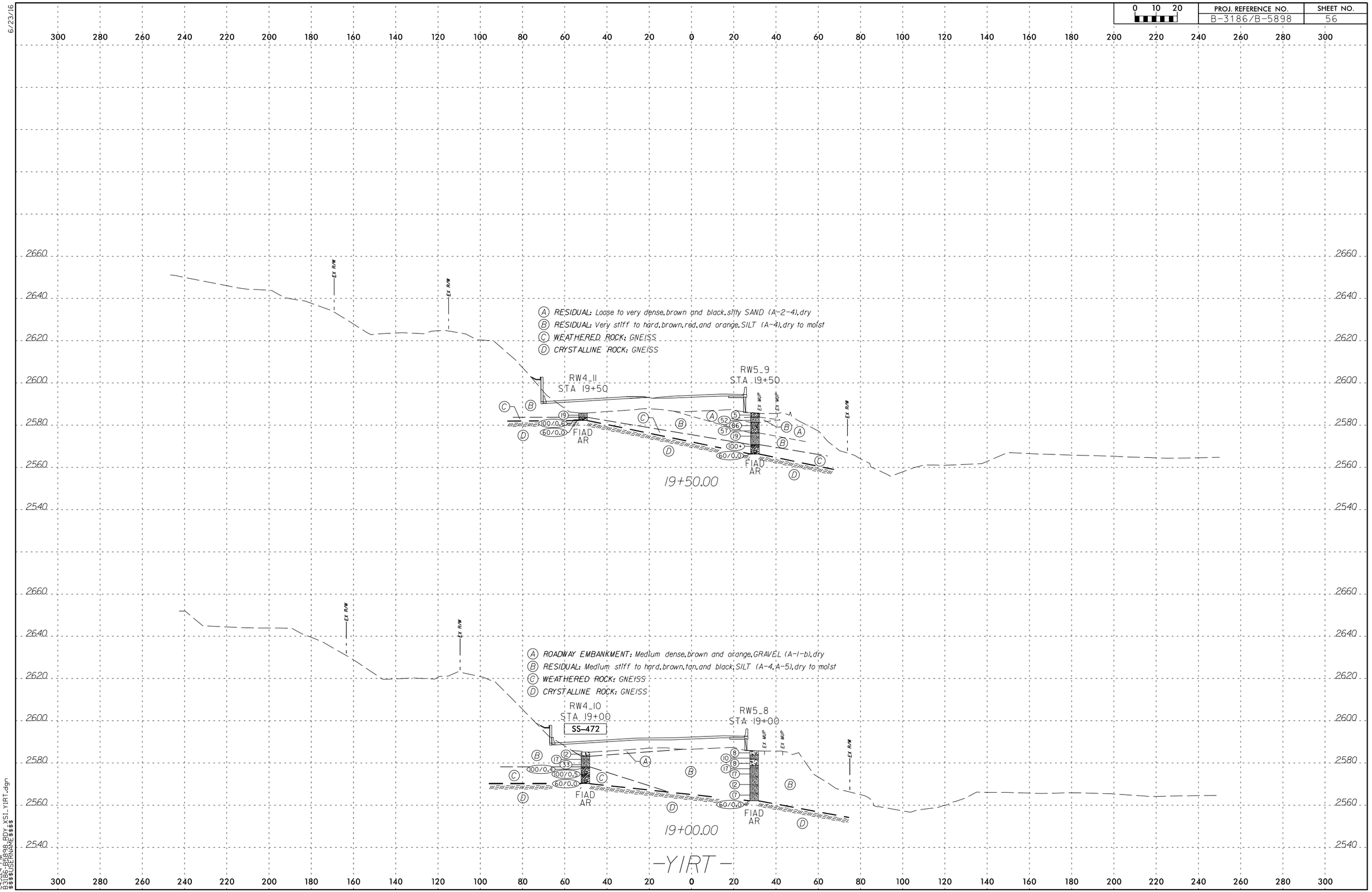
FIAD
AR

FIAD
AR

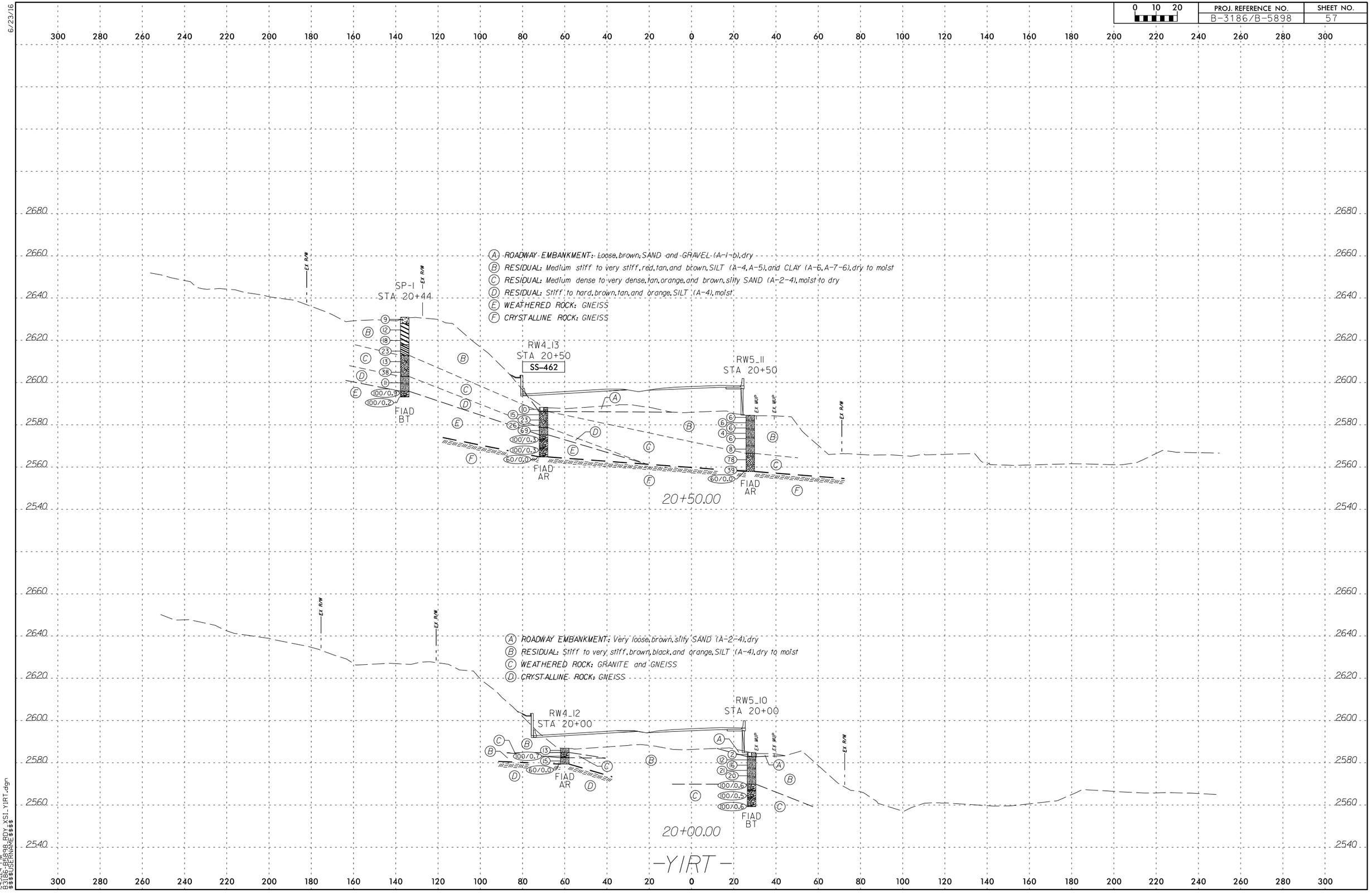
18+00.00

-YIRT-

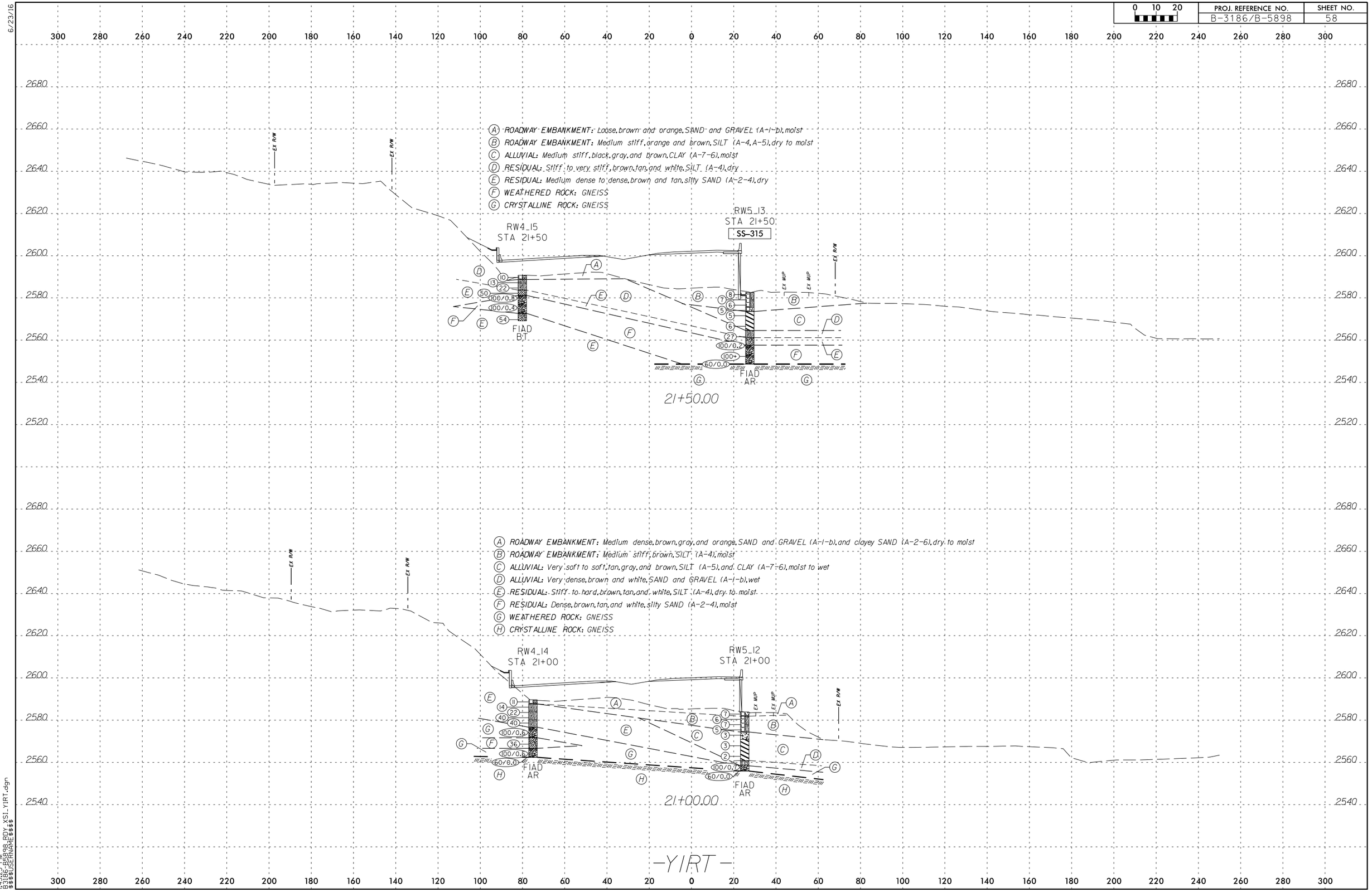
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	56



0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	57



0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	58



0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	59

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2660 2640 2620 2600 2580 2560 2540

EX R/W

EX R/W

(A) ROADWAY EMBANKMENT: Loose to medium dense, brown, black, and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium dense to very dense, brown and tan, silty SAND (A-2-4), moist
(C) RESIDUAL: Medium stiff to hard, white and tan, SILT (A-4(0)), moist to dry
(D) WEATHERED ROCK: QUARTZ and AMPHIBOLITE

RW4_17
STA 22+51
SS-2051
SS-2052
10' PAVEMENT

B 21 17 51 B 74 C 94 C B

FIAD
BT

RW5_15
STA 22+50

A 10 6 26 40 78 31 100/0.3 100/0.5 100/0.4 A C C D D

FIAD
BT

22+50.00

EX R/W

EX R/W

(A) ROADWAY EMBANKMENT: Loose to medium dense, brown, tan, and orange, SAND and GRAVEL (A-1-b), dry
(B) RESIDUAL: Medium dense, brown and tan, silty SAND (A-2-4), moist
(C) RESIDUAL: Stiff to hard, brown, white, and tan, SILT (A-4(0)), moist to dry
(D) WEATHERED ROCK: GNEISS
(E) CRYSTALLINE ROCK: GNEISS

RW4_16
STA 22+01
SS-2056
0.9' PAVEMENT

B 27 14 9 23 C 15 B

FIAD
BT

RW5_14
STA 22+00

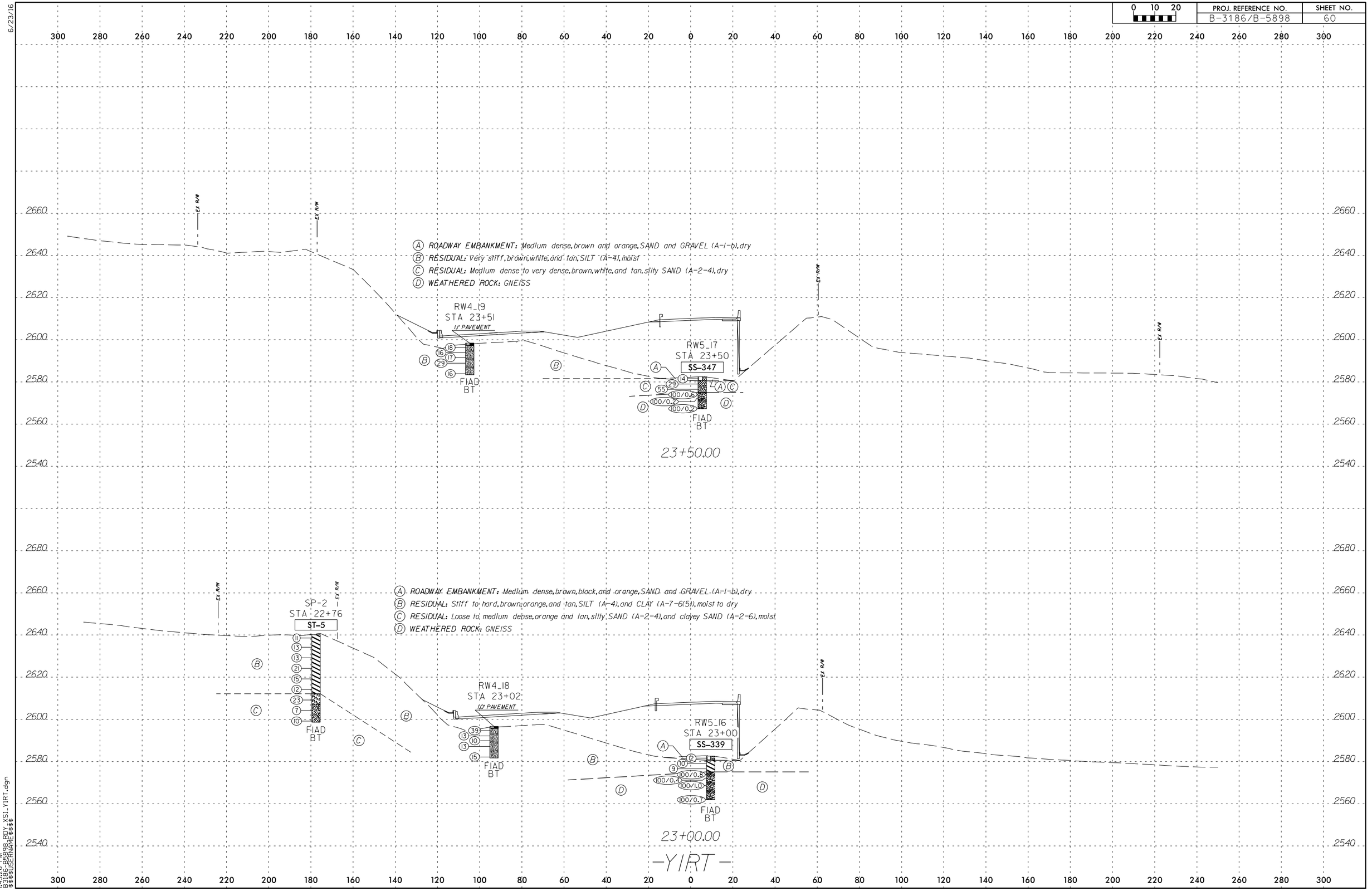
EX R/W

A 8 27 50 33 49 A C C 100/0.8 D 100/0.4 D 60/0.0 E E

FIAD
AR

22+00.00

-YIRT-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2660
2640
2620
2600
2580
2560
2540
EX R/W
EX R/W
EX R/W
EX R/W
Ⓐ ROADWAY EMBANKMENT: Medium dense, brown and orange, SAND and GRAVEL (A-1-b), dry
Ⓑ RESIDUAL: Very stiff, brown, white, and tan, SILT (A-4), moist
Ⓒ RESIDUAL: Medium dense to very dense, brown, white, and tan, silty SAND (A-2-4), dry
Ⓓ WEATHERED ROCK: GNEISS
RW4_19
STA 23+51
11' PAVEMENT
18
16
17
29
16
FIAD
BT
RW5_17
STA 23+50
SS-347
29
14
55
100/0.6
100/0.3
100/0.2
FIAD
BT
23+50.00
SP-2
STA 22+76
ST-5
11
13
13
21
15
12
23
7
10
FIAD
BT
RW4_18
STA 23+02
10' PAVEMENT
39
13
10
13
15
FIAD
BT
RW5_16
STA 23+00
SS-339
12
10
9
100/0.8
100/0.4
100/1.0
100/0.7
FIAD
BT
23+00.00
-YIRT-

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	61

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2680 2660 2640 2620 2600 2580 2560 2540

EX R/W

SP-3
STA 24+71
0.4' PAVEMENT
14 13 16 23 24 11 14 14 17 30
FIAD
BT

RW4_21
STA 24+48
0.8' PAVEMENT
21 12 10 16 37
FIAD
BT

RW5_19
STA 24+50
7 6 11 11 7 100+
FIAD
BT

EX R/W

EX R/W

EX R/W

(A) ROADWAY EMBANKMENT: Medium dense, brown, silty SAND (A-2-4), moist
(B) RESIDUAL: Medium stiff to very stiff, brown, tan, and white, SILT (A-4, A-5), and CLAY (A-7-6), moist
(C) RESIDUAL: Medium dense to dense, tan, white, and orange, silty SAND (A-2-4), moist
(D) WEATHERED ROCK: GNEISS

24+50.00

EX R/W

EX R/W

EX R/W

(A) ROADWAY EMBANKMENT: Dense, brown, GRAVEL (A-1-b), moist
(B) RESIDUAL: Stiff to hard, brown, white, and tan, SILT (A-4, A-5), moist to dry
(C) WEATHERED ROCK: GNEISS
(D) CRYSTALLINE ROCK: GNEISS

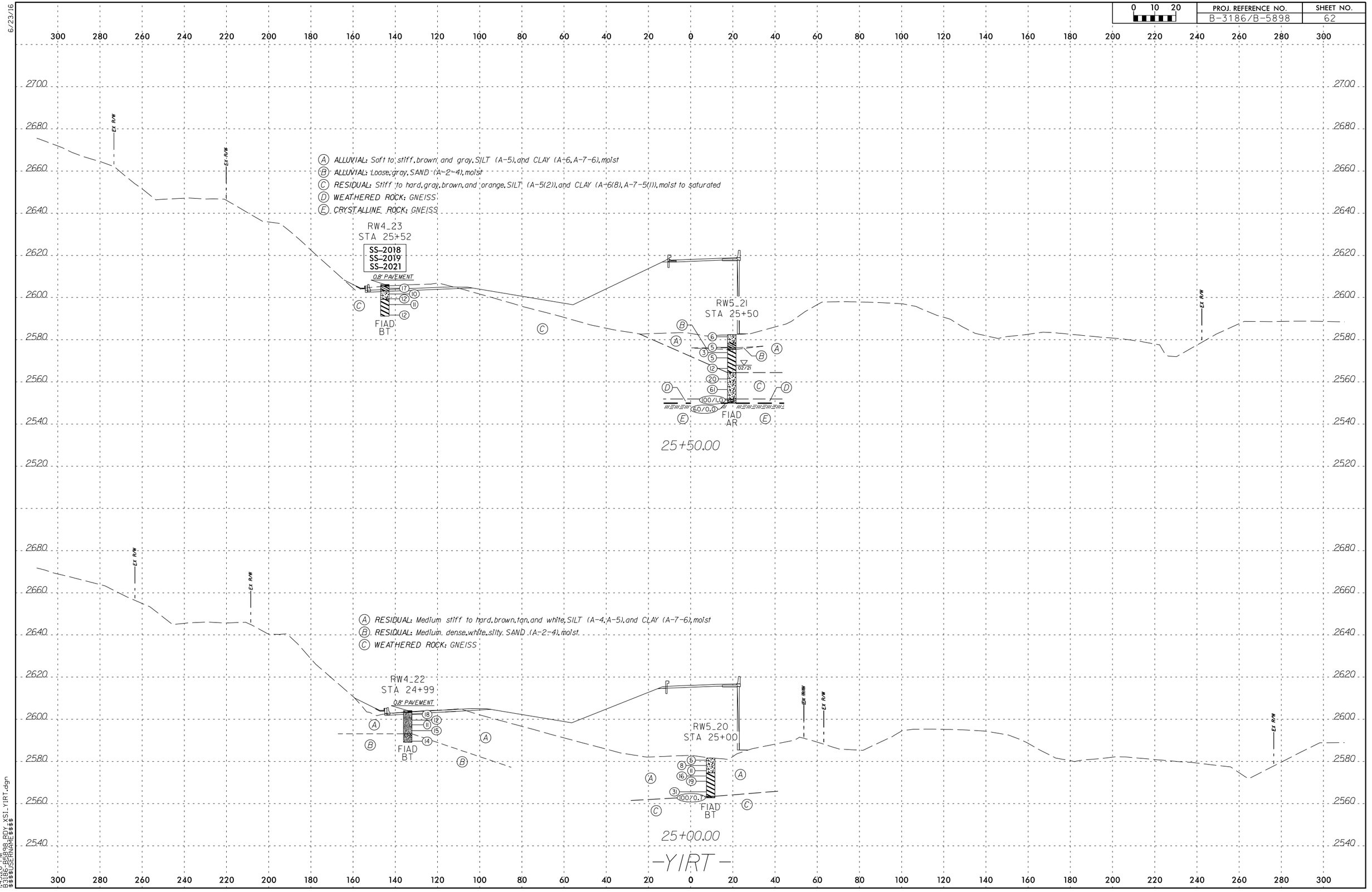
RW4_20
23+99.88 R
0.8' PAVEMENT
33 17 12 41 100/0.3
FIAD
BT

RW5_18
STA 24+00
12 41 64 100+ 60/0.0
FIAD
AR

24+00.00

-YIRT-

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	62



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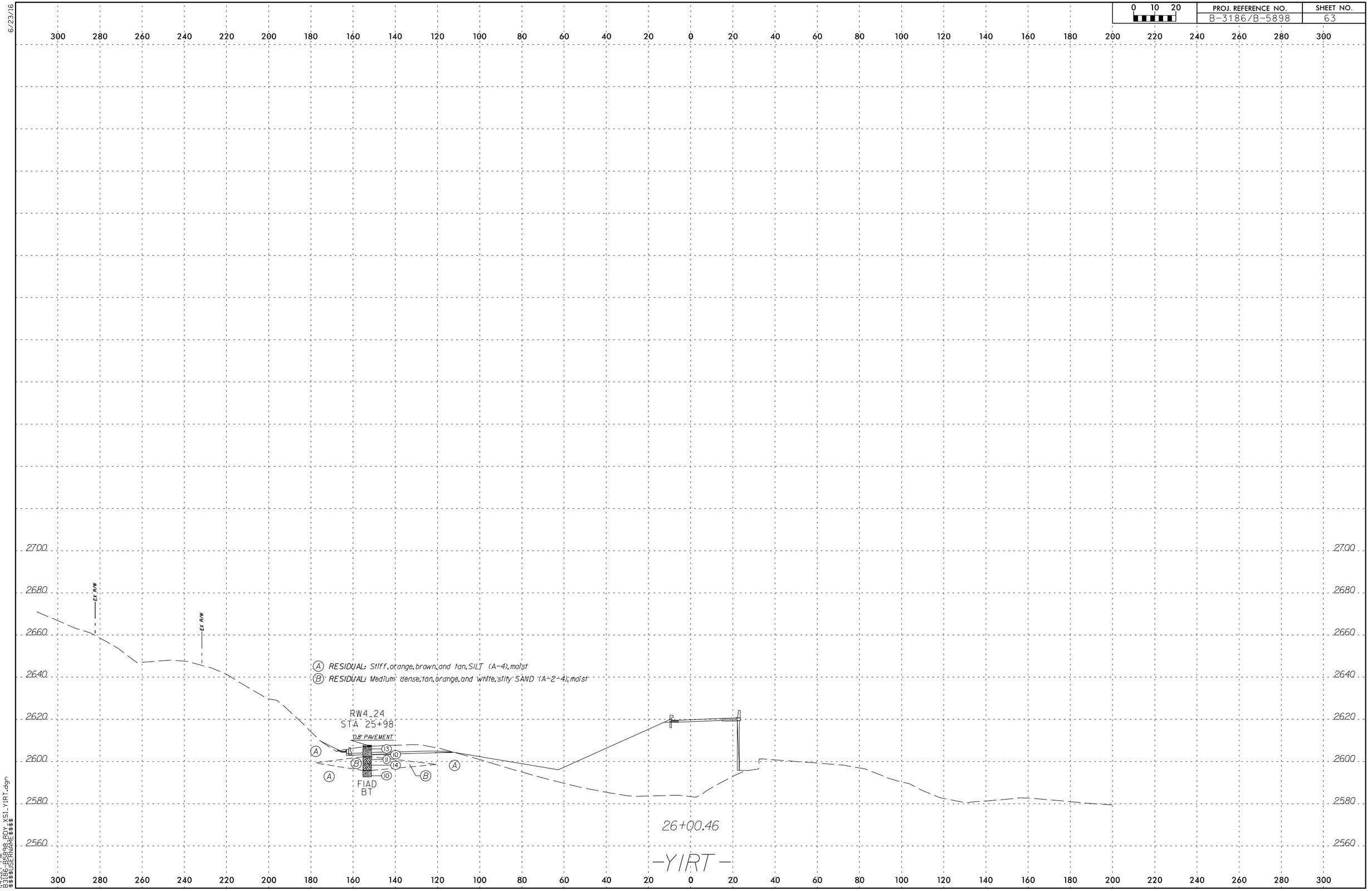
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	B-3186/B-5898	63



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GEOTECHNICAL BORING REPORT
BORE LOG

WBS 38332.1.FS1	**TIP** B-3186 / B-5898	**COUNTY** HAYWOOD	**GEOLOGIST** N. Yacobi	
SITE DESCRIPTION Retaining Wall No. 5 from -Y1RT- STA 15+25 to 26+13				**GROUND WTR (ft)**
BORING NO. RW5_2	**STATION** 16+54	**OFFSET** 16 ft LT	**ALIGNMENT** -RW5-	**0 HR.** Dry
COLLAR ELEV. 2,583.8 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 666,847	**EASTING** 818,249	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER K. Boone	**START DATE** 02/13/21	**COMP. DATE** 02/13/21	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2585										2,583.8 GROUND SURFACE	0.0
	2,583.0	0.8	2	4	6	10		D		2,583.0 0.8' Pavement	0.8
2580	2,580.3	3.5	5	6	7			D		**ROADWAY EMBANKMENT** 2,580.8 Loose to medium dense, red and brown, silty GRAVEL (A-1-b)	3.0
	2,577.8	6.0	4	7	10	13 17		D		**RESIDUAL** 2,578.3 Stiff, red and brown, SILT (A-4), micaceous	5.5
2575	2,575.3	8.5	3	8	13	21		D		Very stiff, gray, clayey SILT (A-5), micaceous, saprolitic	
2570	2,570.3	13.5	3	8	11	19		M			
2565	2,565.3	18.5	4	8	12	20		M		2,563.8	20.0
										Boring Terminated at Elevation 2,563.8 ft in SILT	

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	65
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

-L- SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS- 1005	55' RT	25+00	15.0' - 16.5'	A-6 (5)	38	13	29.4	21.7	36.0	12.9	99.3	80.2	53.9	17	-
SS- 547	45' LT	27+00	2.5' - 4.0'	A-6 (10)	38	15	17.5	29.7	30.4	22.4	93.5	84.2	72.0	21	-
SS- 2	52' RT	30+00	2.5' - 4.0'	A-6 (2)	34	13	33.6	31.1	30.2	5.1	96.0	76.0	41.0	15	-
SS- 4	53' RT	33+06	7.5' - 9.0'	A-2-4 (0)	28	6	54.4	23.4	15.4	6.8	87.7	50.7	24.3	10	-
SS- 3	51' RT	34+07	2.5' - 4.0'	A-2-5 (0)	44	7	54.2	24.3	14.6	6.9	95.1	55.9	25.7	26	-
ST- 7	80' LT	35+00	3.5' - 5.5'	A-7-5 (16)	53	19	12.4	12.2	15.6	59.8	99.1	91.7	75.0	34	-
SS- 1011	55' RT	37+00	5.0' - 6.5'	A-7-5 (8)	49	17	23.9	20.6	42.7	12.8	90.6	76.4	54.6	28	-
SS- 2018	230' LT	49+13	0.8' - 2.3'	A-6 (8)	38	15	13.9	20.3	29.7	36.1	91.2	83.0	63.9	13	-
SS- 2019	230' LT	49+13	3.5' - 5.0'	A-5 (2)	45	6	23.5	31.4	38.6	6.5	92.9	77.9	49.7	12	-
SS- 2021	230' LT	49+13	8.5' - 10.0'	A-7-5 (1)	48	14	33.9	28.3	28.5	9.3	83.1	62.6	36.8	24	-
SS- 436	147' LT	51+36	7.5' - 9.0'	A-7-5 (8)	55	20	24.0	23.4	34.3	18.3	87.8	73.7	50.2	27	-
SS- 439	147' LT	51+36	20.0' - 21.5'	A-7-6 (6)	44	18	23.0	32.0	20.6	34.4	97.8	84.3	49.3	24	-
ST- 6	214' LT	51+80	18.0' - 20.0'	A-7-6 (13)	50	25	24.5	14.8	15.4	45.3	97.2	80.0	59.4	25	-
SS- 431	127' LT	52+00	15.0' - 16.5'	A-6 (3)	40	11	34.3	21.8	22.1	21.8	96.4	71.7	46.6	18	-
SS- 24	112' RT	51+99	15.0' - 16.1'	A-7-6 (11)	47	23	20.8	20.5	23.6	35.1	92.0	79.1	58.5	26	-
SS- 422	112' LT	52+50	10.0' - 11.5'	A-2-4(0)	33	9	47.9	18.0	20.2	13.8	88.9	54.7	33.4	17	-
SS- 58	130' RT	52+50	7.5' - 9.0'	A-5 (2)	44	10	26.6	29.4	23.9	20.1	88.8	73.7	44.4	28	-
SS- 62	130' RT	52+50	25.0' - 26.5'	A-7-5(31)	82	33	16.9	8.5	58.4	16.2	100	87.0	77.1	71	-
SS- 35	145' RT	53+00	10.0' - 11.5'	A-4 (2)	38	9	27.5	26.8	24.5	21.2	94.3	76.9	48.8	25	-
SS- 46	145' RT	53+00	55.0' - 56.5'	A-2-4(0)	32	NP	47.6	32.0	9.7	10.7	98.9	67.6	26.2	18	-
SS- 362	60' LT	56+50	0.0' - 1.5'	A-6 (3)	36	14	20.9	24.3	28.8	26.0	78.9	68.2	46.9	14	-
SS- 1105	44' LT	58+47	8.5' - 10.0'	A-4 (4)	40	9	17.8	28.7	36.5	17.0	99.3	88.9	59.4	29	-
SS- 1110	43' LT	58+96	1.0' - 2.5'	A-7-6 (7)	46	16	21.9	23.4	26.4	28.3	92.4	78.2	55.1	10	-
SS- 1118	43' LT	59+49	13.5' - 15.0'	A-6 (8)	38	15	15.7	24.8	46.0	13.5	98.6	89.3	63.5	28	-
SS- 1139	41' LT	59+95	8.5' - 10.0'	A-6 (6)	34	13	13.3	30.8	33.9	22.0	100.0	92.9	62.1	22	-
SS- 302	60' LT	63+50	2.5' - 4.0'	A-5 (4)	46	5	10.9	29.7	45.7	13.7	95.0	89.1	64.5	26	-
SS- 260	55' RT	65+50	0.0' - 1.5'	A-5 (5)	47	10	20.1	25.6	23.3	31.0	92.1	80.0	54.9	17	-
SS- 256	60' LT	66+00	15.0' - 16.5'	A-4 (1)	38	10	41.6	22.4	25.9	10.1	98.2	65.9	40.0	12	-
SS- 258	60' LT	66+00	25.0' - 26.5'	A-2-5(0)	42	10	47.2	26.8	24.5	1.5	92.0	60.9	28.4	34	-
SS- 242	55' LT	66+50	7.5' - 9.0'	A-7-5 (2)	52	13	33.8	32.5	25.1	8.6	98.6	76.8	39.8	28	-
SS- 278	60' LT	67+00	5.0' - 6.5'	A-7-6 (2)	42	13	21.7	44.4	31.8	2.1	100.0	91.3	42.2	22	-
SS- 282	60' LT	67+00	20.0' - 21.5'	A-2-7 (1)	53	16	38.6	36.2	22.5	2.7	95.9	73.1	29.7	18	-
SS- 186	61' LT	73+51	7.5' - 9.0'	A-4(0)	32	4	22.9	33.3	30.7	13.1	97.7	84.3	50.7	21	-
SS- 1077	59' LT	74+49	8.5' - 10.0'	A-2-4(0)	35	8	44.0	27.6	20.9	7.5	97.4	66.1	34.0	16	-
SS- 1022	47' RT	74+49	3.5' - 5.0'	A-2-4(0)	31	9	35.4	28.0	18.9	17.7	75.8	59.9	32.7	10	-
SS- 1053	65' LT	77+50	8.5' - 10.0'	A-4 (1)	39	10	39.1	23.4	19.6	17.9	96.5	69.9	41.0	30	-
SS- 1046	65' LT	78+00	0.9' - 2.4'	A-2-4(0)	39	9	21.0	45.2	20.8	13.0	80.7	74.1	33.9	15	-
SS- 1027	50' RT	78+00	8.5' - 10.0'	A-2-4(0)	29	NP	44.1	34.2	12.7	9.0	95.3	68.2	26.8	8	-
SS-721	62' RT	80+99	10.0' - 11.5'	A-4 (6)	40	10	14.7	31.3	51.1	2.9	98.8	90.7	63.1	38	-

-Y1RT- SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
SS- 503	58' LT	14+59	2.5' - 4.0'	A-4(0)	36	4	30.1	31.9	21.0	17.0	88.4	70.9	39.3	27	-
SS- 2065	36' LT	16+01	1.0' - 2.5'	A-4(0)	31	9	33.4	31.2	33.9	1.5	87.3	68.3	36.8	16	-
SS- 487	45' LT	17+00	0.0' - 1.5'	A-6 (3)	39	14	23.2	23.9	27.6	25.3	79.8	67.3	45.9	20	-
SS- 492	45' LT	16+94	15.0' - 16.5'	A-4	35	7	34.3	25.0	26.4	14.3	83.0	62.5	38.6	21	-
SS- 480	50' LT	18+00	2.5-4.0'	A-7-5 (3)	46	14	27.2	32.8	28.2	11.8	94.9	79.7	44.6	31	-
SS- 472	50' LT	19+00	0.0' - 1.5'	A-2-6	33	12	37.6	26.4	13.9	22.1	57.5	41.8	23.5	9	-

PLOT DRIVER: NCDOT.pdf.color_eng.100.plt
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PENTABLE: NCDOT_Title Sheets.tbl
DATE: 10/22/2021
TIME: 3:30:57 PM

REVISIONS

-Y1RT- SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
SS-462	70' LT	20+50	2.5' - 4.0'	A-2-4	40	9	44.0	25.3	19.7	11.0	94.6	62.5	34.0	11	-
SS-315	28' RT	21+50	2.5' - 4.0'	A-4 (1)	38	8	28.5	29.9	34.3	7.3	94.2	75.9	45.9	21	-
SS-2056	75' LT	22+01	8.8' - 10.3'	A-4	31	NP	34.8	27.9	34.3	3.0	98.2	73.2	42.6	19	-
SS-2051	84' LT	22+51	8.6' - 10.1'	A-2-4	32	NP	37.1	25.9	33.1	3.9	59.6	43.3	25.7	8	-
SS-2052	84' LT	22+51	13.6' - 15.1'	A-4	31	NP	39.5	22.7	34.4	3.4	98.5	70.5	41.7	13	-
ST-5	178' LT	22+76	35.0' 37.0'	A-2-4(0)	NP	NP	51.7	20.6	16.5	11.2	98.2	65.2	28.2	42	-
SS-339	9' RT	23+00	2.5' - 4.0'	A-7-6 (5)	45	16	12.2	49.5	29.5	8.8	100.0	95.7	49.2	25	-
SS-347	5' RT	23+50	5.0' - 6.5'	A-2-4	34	8	39.8	31.4	18.9	9.9	96.5	70.5	33.6	11	-
SS-2018	145' LT	25+52	0.8' - 2.3'	A-6 (8)	38	15	13.9	20.3	29.7	36.1	91.2	83.0	63.9	13	-
SS-2019	145' LT	25+52	3.5' - 5.0'	A-5 (2)	45	6	23.5	31.4	38.6	6.5	92.9	77.9	49.7	12	-
SS-2021	145' LT	25+52	8.5' - 10.0'	A-7-5 (1)	48	14	33.9	28.3	28.5	9.3	83.1	62.6	36.8	24	-

PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	66
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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REVISIONS