STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5721	1	17

REFERENCE: B-5721

PROJECT: 45677

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	15+46.00 to 30+40.00	4, 5	6, 7
-Y-	10+00.00 to 11+35.00	5	7
-DWI-	10+00.00 to 11+75.00	4	-

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	16+50.00 to 17+50.00	8-9
-L-	19+00.00 to 20+00.00	9-10
-L-	23+00.00	11
-L-	24+00.00 to 24+50.00	11-12
-L-	26+00.00 to 28+50.00	12-14
-L-	29+50.00	14
-Y-	10+50.00 to 11+00.00	15
-DWI-	10+61.07 to 11+41.79	16

SUMMARY OF LAB TEST RESULTS 17

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *ROCKINGHAM*

PROJECT DESCRIPTION *BRIDGE 780124 ON SR 2177 (DAN VALLEY ROAD) OVER THE MAYO RIVER*

INVENTORY

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. LEAR

M. MOSELEY

J. HOWARD

INVESTIGATED BY *WOOD E&IS, INC.*

DRAWN BY *R. RAHIE*

CHECKED BY *M. LEAR*

SUBMITTED BY *K. PLUMMER*

DATE *SEPTEMBER, 2021*

WOOD E&IS, INC.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

NC Engineering F-1253 NC Geology C-247

NORTH CAROLINA LICENSED SEAL 2559 GEOLOGIST KELLY ROSS PLUMMER

DocuSigned by:
Kelly Plummer, PG 10/5/2021
412072E07B84DA...
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
B–5721	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
- [X] D-50
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 4" 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 (4-INCH DIM.) _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

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

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [X] 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: ELEVATIONS DETERMINED FROM PROVIDED ELECTRONIC FILES (b5721_ls_tin.tin) AND BENCH MARKS BM#1= 556.55 FEET AND BL-4 = 565.21FEET ELEVATION: N/A FEET

NOTES:

FIAD - FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

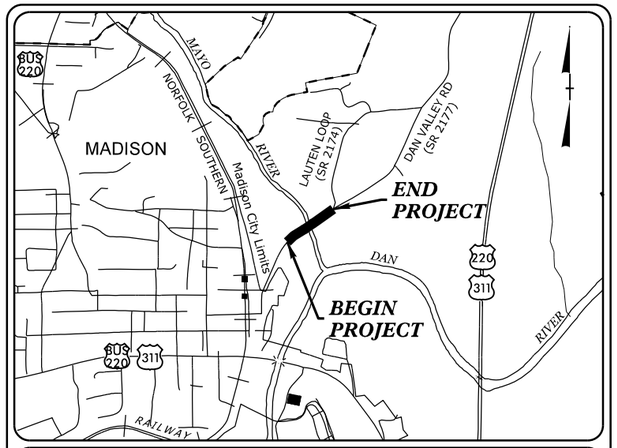
09/08/99

TIP PROJECT: B-5721

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

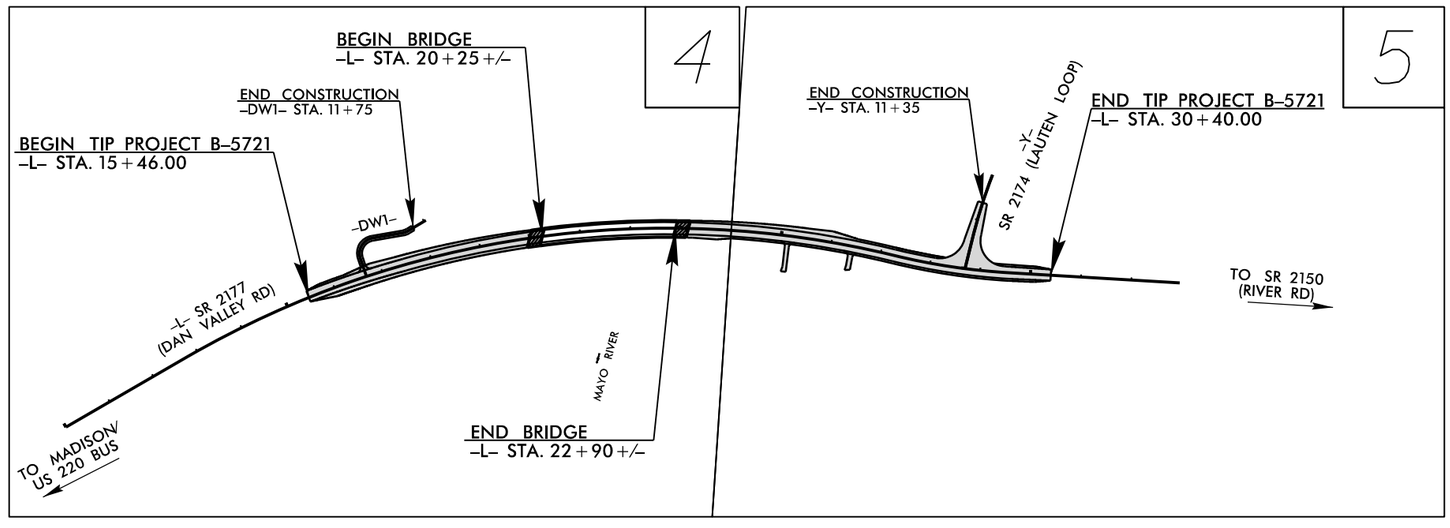
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5721	3	17
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
45677.1.1	BRZ-2177 (001)	PE	

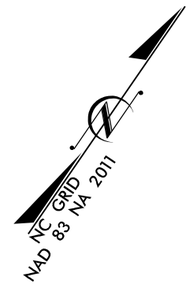


VICINITY MAP
NOT TO SCALE

LOCATION: BRIDGE 780124 ON SR 2177 (DAN VALLEY RD) OVER THE MAYO RIVER

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE





THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

CLEARING ON THE PROJECT SHALL BE TO THE LIMITS ESTABLISHED USING METHOD __.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

25% ROADWAY PLANS
MARCH 9, 2021

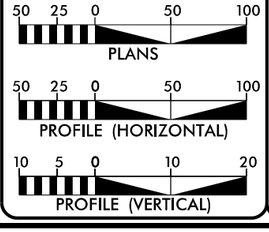
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT 2022 = 4,295
ADT 2041 = 6,100
K = 10 %
D = 55 %
T = 8% % *
V = 50 MPH
* TTST =1% DUAL 7%
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5721 = 0.233 MI
LENGTH STRUCTURE TIP PROJECT B-5721 = 0.050 MI
TOTAL LENGTH TIP PROJECT B-5721 = 0.283 MI

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 27, 2022

LETTING DATE: DECEMBER 20, 2022

GREGORY R. COLS, P.E.
PROJECT ENGINEER

NEIL J. DEAN, P.E.
PROJECT DESIGN ENGINEER

DAVID STUTTS, P.E.
NCDOT PROJECT MANAGER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

August 13, 2021

WBS Number: 45677.1.1
TIP Number: B-5721
COUNTY: Rockingham
DESCRIPTION: Roadway for Bridge 780124 on SR 2177 (Dan Valley Road) Over the Mayo River

WOOD E&IS Number: 6234210154

SUBJECT: Geotechnical Inventory Report

Project Description

The project area lies just to the north of the existing SR 2177 (Dan Valley Road) alignment on both sides of Bridge 780124 over the Mayo River and is also located approximately 0.5 miles to the northeast of Madison, NC. The proposed construction is associated with the replacement of Bridge 780124 and will consist of a 0.3-mile roadway.

The geotechnical field investigation for the project was conducted from July 12 to July 16, 2021. The subsurface investigation was performed using hand auger tools and a Diedrich D50 drill rig equipped with an automatic hammer. Hollow-stem auger drilling procedures were used to advance borings to the required depths. Standard Penetration Tests (SPT) 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, totalling approximately 0.3 miles (1,659 feet), were explored. Subsurface cross sections and profiles of these alignments are included in this report.

Alignment	Station (±)
-L-	15+46 to 30+40
-Y-	10+00 to 11+35
-DW1-	10+00 to 11+75

Areas of Special Geotechnical Interest

1) Soft Fine-Grained Soils: The following areas contain soft, fine grained/cohesive soils which have the potential to cause embankment/subgrade and/or slope stability problems during construction.

Line	Stations (±)	Offsets
-L-	15+46 to 20+00	LT and RT
-L-	24+50 to 24+75	LT and RT
-DW1-	10+61.07 to 11+41.79	LT and RT

2) Wells: Two existing residential water supply wells were observed within the vicinity of the right of way on this project at the following locations:

Line	Station (±)	Offset (ft.)
-L-	27+55	57 RT
-Y-	11+64	46 LT

Physiography and Geology

The project site is located within the Piedmont Physiographic Province. The topography along the project is mostly dominated by the Mayo River flood plain with some rolling hills near the end of the project. Elevations along the project alignments range from a low of 550± feet at the start of the project to a high of 582± feet at the end of the project. A mixture of mostly residential properties and small areas of woods occur along the project corridor.

Geologically, the project is located within the Newark Supergroup. Residual soils within the Newark Supergroup are derived from in-situ weathering of the underlying Triassic aged sandstones, mudstones, and conglomerates.

Soil Properties

Soils encountered during this investigation have been divided into three categories based on origin, including roadway embankment, alluvial soils, and Triassic residual soils.

Roadway embankment soils are present along most of the project corridor and can be divided between the roadway embankment for the existing roadway and roadway embankment that is present on site from a previous roadway alignment to the north. The soils for the existing roadway embankment generally consist of red-brown, tan-brown, and orange, soft to very stiff, dry to moist, sandy silt and sandy clay (A-4, A-7-6) and loose, dry, silty fine to coarse sand (A-2-4). These soils typically contain trace asphalt fragments and trace organics. The soils for the older/previous roadway embankment generally consist of red-brown and tan, soft to very stiff, fine sandy clay (A-6) locally with asphalt fragments. The roadway embankment clays exhibit medium plasticity with plastic indices ranging from 24 to 25.

Alluvial soils were encountered at the ground surface or underlying roadway embankment soils and are present throughout the project corridor in the floodplain of the Mayo River. The alluvial soils encountered primarily consist of red, brown, tan, and gray, soft to very stiff, dry to wet, fine to coarse sandy, clayey silt (A-4) and silty clay (A-6, A-7-6, A-7-5). These soils typically contain trace mica. Coarse grained soils consist of brown, red, and dark gray, loose to medium dense, wet, silty, fine to coarse sand (A-2-4). These soils typically contain gravel, wood fragments, and trace mica. The fine-grained cohesive soils typically exhibit low to medium plasticity with plastic indices ranging from 7 to 23.

Triassic residual soils are derived from the weathering of the underlying Triassic non-crystalline rocks. Triassic residual soils were encountered underlying alluvial soils on the western portion of the site and were encountered underlying roadway embankment or at the ground surface on the eastern portion of the site. These soils primarily consist of red, brown, orange, gray and tan, medium stiff to hard, dry to moist, sandy/clayey silt and sandy/silty clay (A-4, A-6, A-7-6). Coarse grained soils consist of brown, orange, and gray, medium dense to dense, dry, silty, fine to coarse sand (A-2-4). The Triassic residual fine-grained cohesive soils exhibit medium to high plasticity with plastic indices ranging from 15 to 29.
.

Rock Properties

Weathered rock and non-crystalline rock occur in several areas of the project. The weathered rock and crystalline rock encountered on this project were identified by SPT sampling and SPT refusal. Where encountered, the depths to weathered rock ranged from approximately 8± to 37± feet below existing ground surface and the elevations ranged from approximately 529.4 to 557.1 feet MSL. Where encountered, the depths to non-crystalline rock ranged from approximately 23.7± to 43.5± feet below existing ground surface and the elevations ranged from approximately 522.9 to 541.7 feet MSL. Where encountered, the weathered rock and non-crystalline rock consists of brown and red mudstone and gray sandstone belonging to the Newark Supergroup.

Groundwater

Ground water data was collected at the time of the geotechnical field investigation (July 12 to July 16, 2021). Where encountered, ground water depths ranged from approximately 14.3± to 23.1± feet below existing ground surface and elevations ranged from approximately 537.8 to 541.4 feet MSL.

Prepared By,

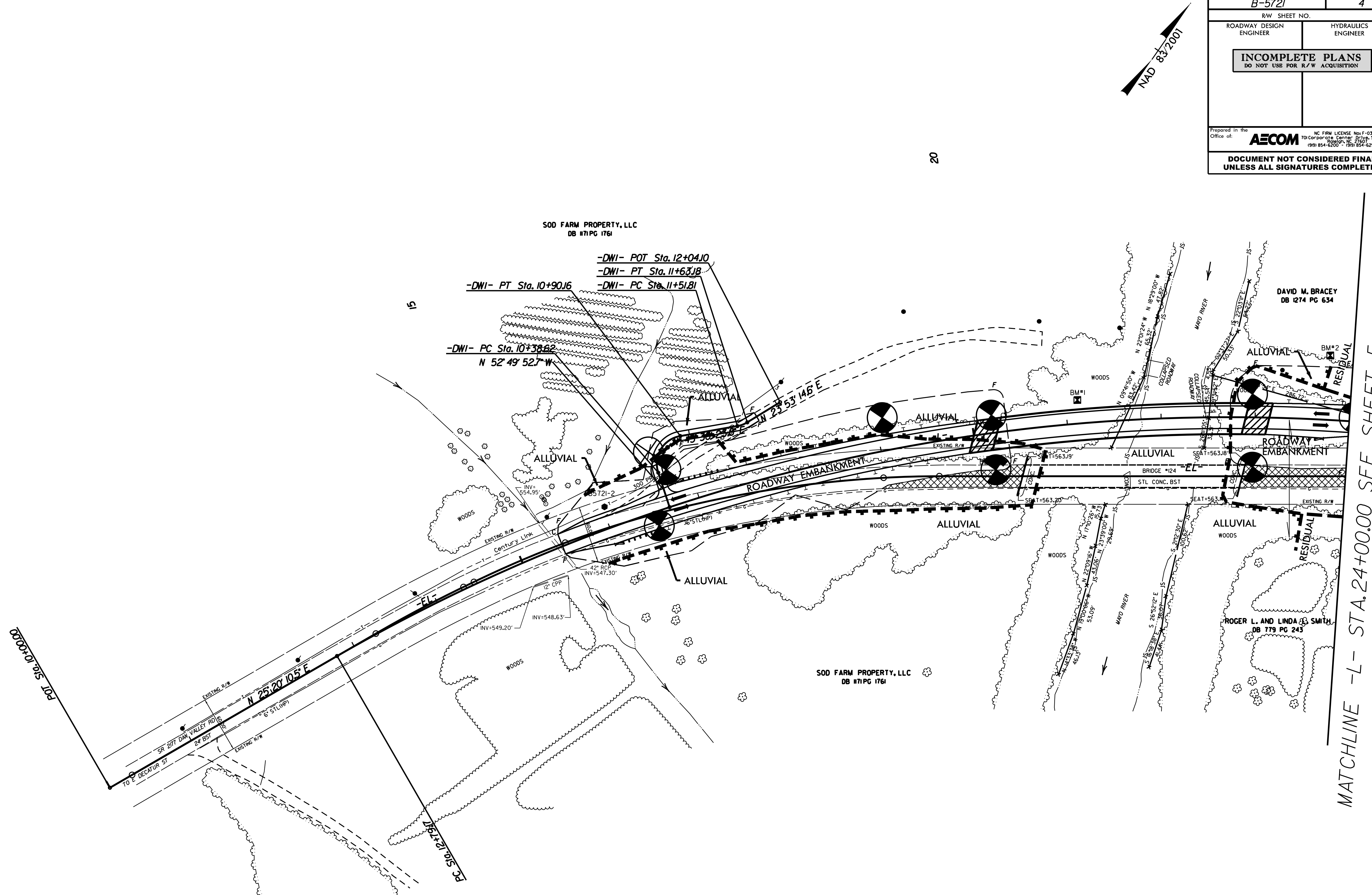
Kelly R. Plummer, PG
Project Geologist

PROJECT REFERENCE NO.	SHEET NO.
B-5721	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/14/99

17-SEP-2021 08:55
B-5721 Mayo River, Rockingham Co\B5721_GEO_RDWY_CADD\CADD_GEOTECH\PlanProf\B5721_GEO_inv_004.dgn
$$$$USERNAME$$$$

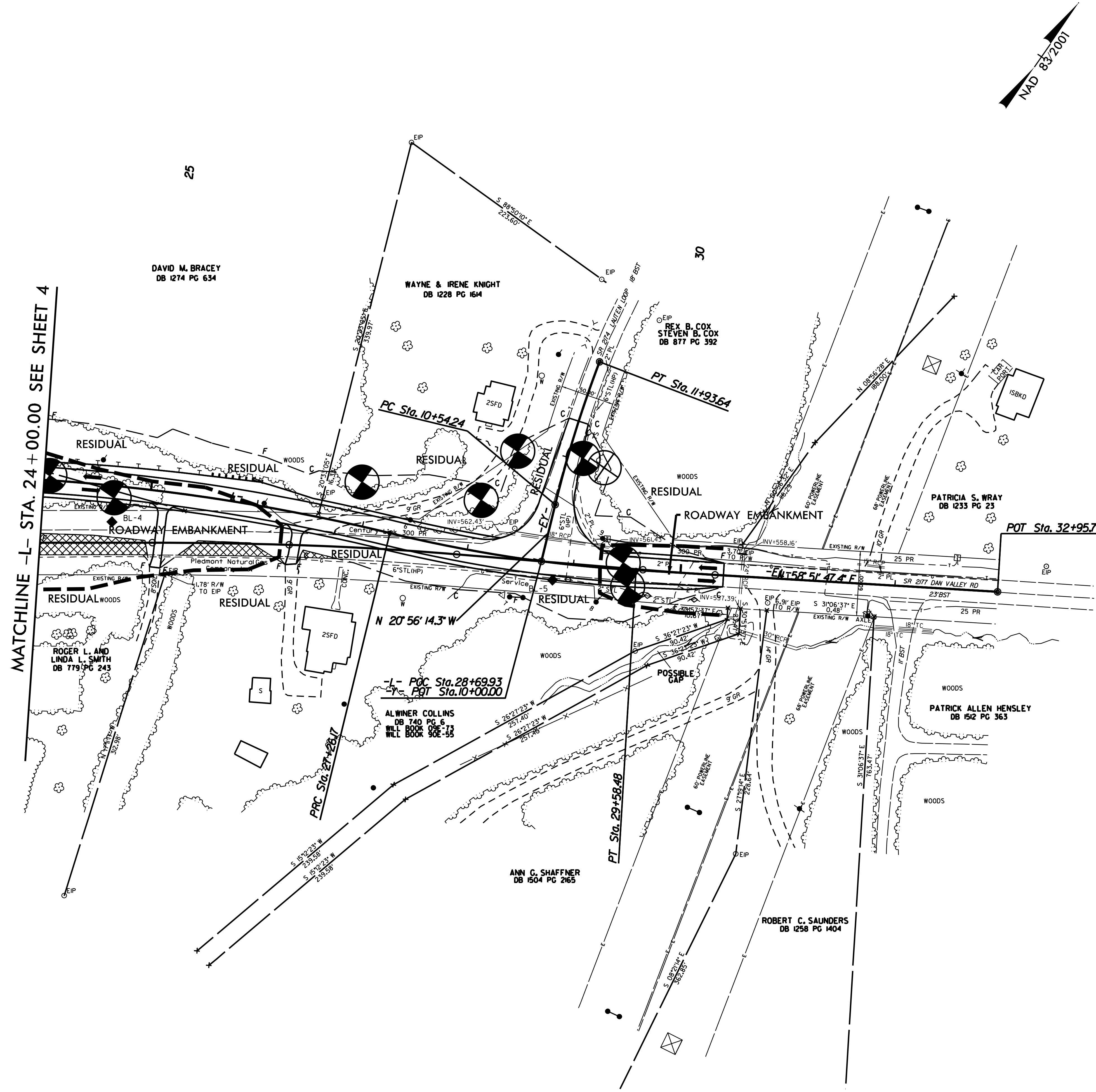
PROJECT REFERENCE NO.	SHEET NO.
B-5721	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 · (919) 854-6259(FAX)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PAVEMENT REMOVAL

17-SEP-2021 08:56
B-5721 Mayo River, Rockingham Co\B5721_GEO_RDWY_CADD\CADD_GEOTECH\PlanProf\B5721_GEO_inv_005.dgn
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5721	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

NOTE: INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE CENTERLINE WITH BORINGS PROJECTED ONTO THE PROFILE

(B) ROADWAY EMBANKMENT: SOFT TO VERY STIFF, DRY, RED-BROWN, TAN, FINE TO COARSE SANDY, SILTY CLAY (A-6) WITH ASPHALT FRAGMENTS (OLD)

(C) ALLUVIAL: MEDIUM STIFF, DRY, BROWN, TAN-GRAY, FINE SANDY SILT (A-4)

(D) ALLUVIAL: SOFT TO STIFF, DRY TO MOIST, GRAY, BROWN, TAN, FINE SANDY, SILTY CLAY (A-7-5/A-7-6)

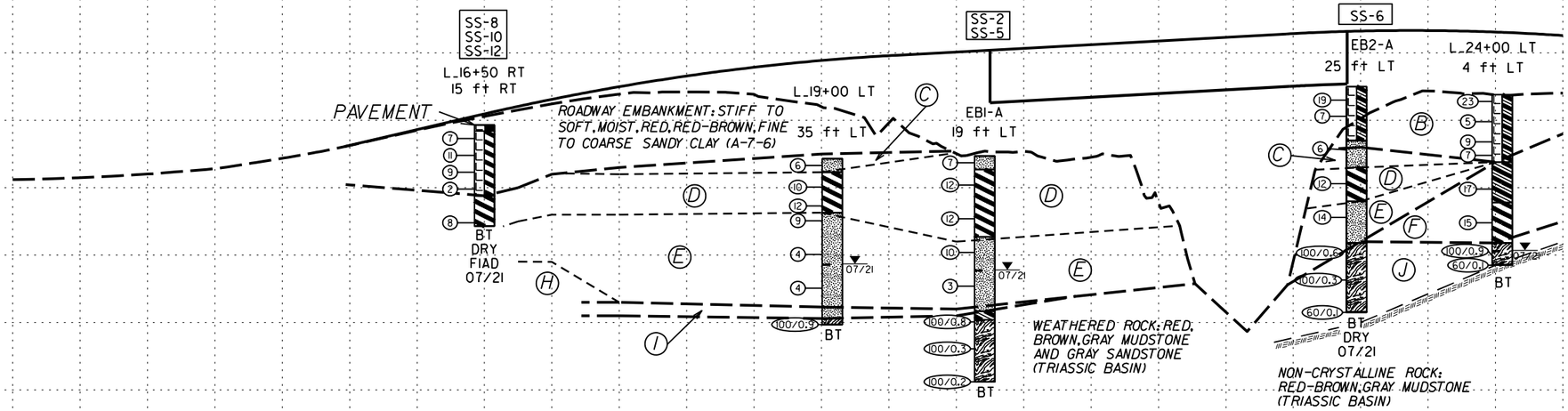
(E) ALLUVIAL: SOFT TO STIFF, MOIST TO WET, TAN-BROWN, FINE SANDY SILT (A-4) WITH SAND LENSES

(F) TRIASSIC RESIDUAL: MEDIUM STIFF TO VERY STIFF, DRY TO MOIST, ORANGE, GRAY, TAN, RED-BROWN, FINE TO COARSE SANDY, SILTY CLAY AND SILTY CLAY (A-6/A-7-6)

(H) ALLUVIAL: LOOSE, WET, BROWN, RED-BROWN, SILTY FINE SAND (A-2-4)

(I) TRIASSIC RESIDUAL: HARD, MOIST, RED-BROWN, GRAY, FINE SANDY SILT AND SILTY CLAY (A-4/A-6)

(J) WEATHERED ROCK: RED, BROWN, GRAY MUDSTONE AND GRAY SANDSTONE (TRIASSIC BASIN)



5/14/99

17-SEP-2021 08:57
P:\Projects\Road\NC-DOT\2021\6234210154 B-5721 Mayo River, Rockingham Co\B5721.GEO.ROWY.CADD\CADD.GEOTECH\PlanProf\B5721_GEO_pf1_06.dgn
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5721	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

(A) ROADWAY EMBANKMENT: STIFF TO MEDIUM STIFF, DRY TO MOIST, RED-BROWN, CLAYEY SILT AND SILTY CLAY (A-4/A-6)

(B) ROADWAY EMBANKMENT: SOFT TO VERY STIFF, DRY, RED-BROWN, TAN, FINE TO COARSE SANDY, SILTY CLAY (A-6) WITH ASPHALT FRAGMENTS

(F) TRIASSIC RESIDUAL: MEDIUM STIFF TO VERY STIFF, DRY TO MOIST, ORANGE, GRAY, TAN, RED-BROWN, FINE TO COARSE SANDY, SILTY CLAY AND SILTY CLAY (A-6/A-7-6)

(G) TRIASSIC RESIDUAL: MEDIUM DENSE TO DENSE, DRY, ORANGE-BROWN, SILTY FINE SAND (A-2-4)

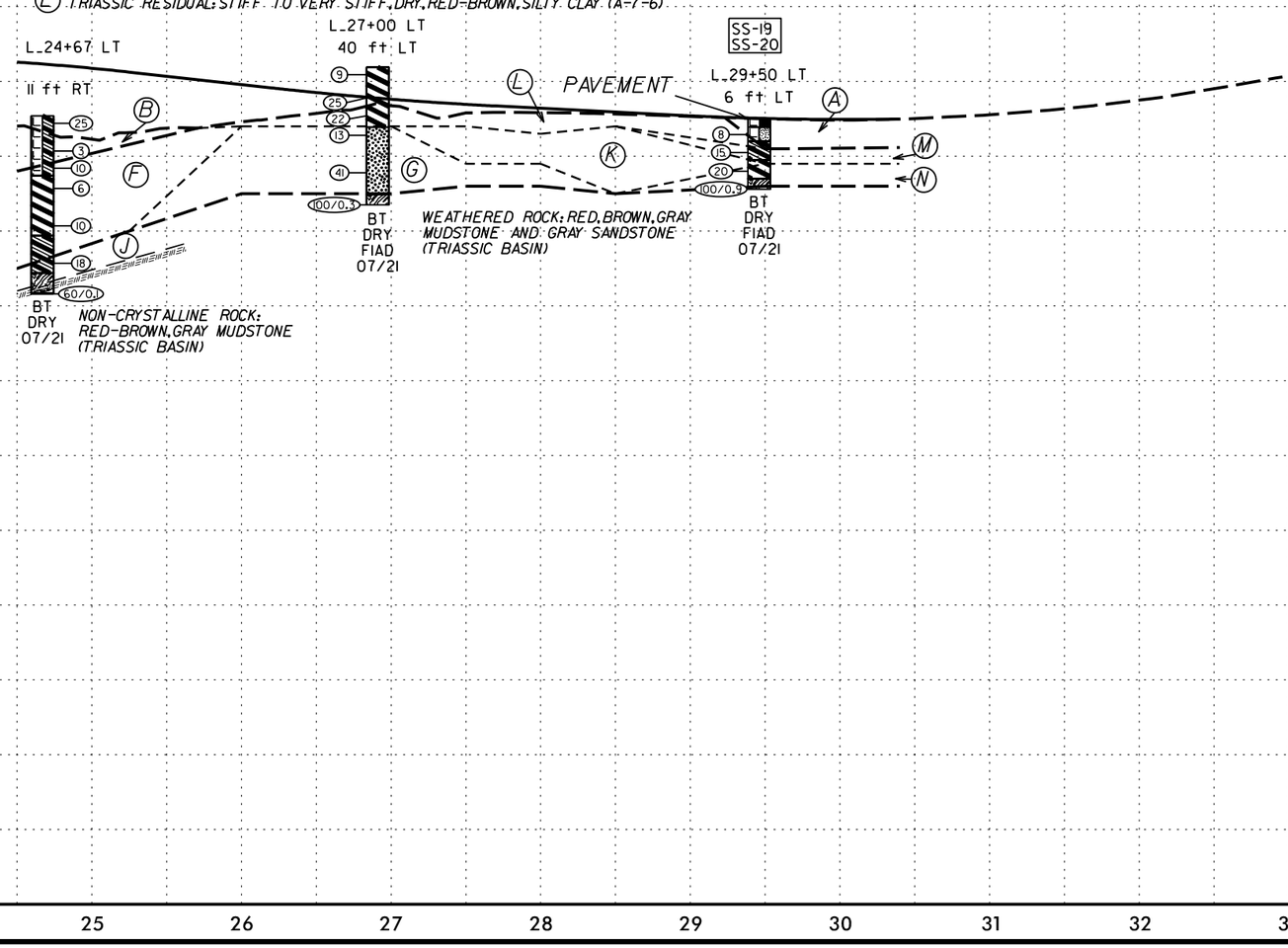
(J) WEATHERED ROCK: RED, BROWN, GRAY MUDSTONE AND GRAY SANDSTONE (TRIASSIC BASIN)

(M) TRIASSIC RESIDUAL: STIFF, DRY TO MOIST, RED-BROWN, FINE SANDY SILTY CLAY (A-6)

(N) TRIASSIC RESIDUAL: STIFF, MOIST, RED-BROWN, FINE SANDY SILTY CLAY (A-7-6)

(K) TRIASSIC RESIDUAL: STIFF, DRY, ORANGE-BROWN, FINE SANDY SILT (A-4)

(L) TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)



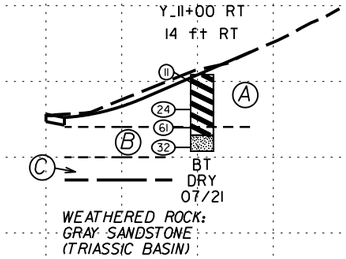
-Y-

NOTE: INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE CENTERLINE WITH BORINGS PROJECTED ONTO THE PROFILE

(A) TRIASSIC RESIDUAL: STIFF TO HARD, DRY, RED-BROWN, ORANGE-BROWN, FIN. SILTY CLAY (A-7-6)

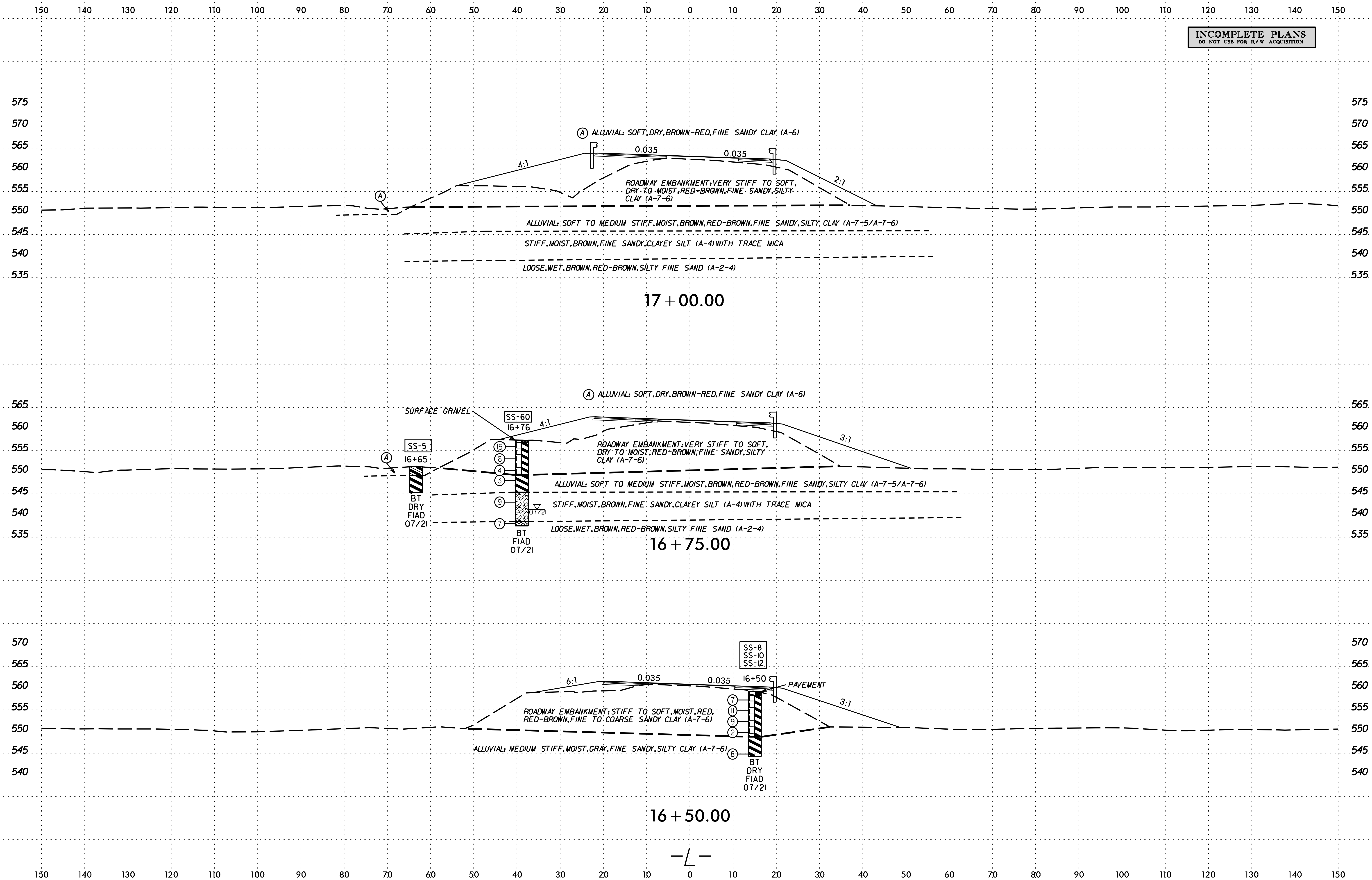
(B) TRIASSIC RESIDUAL: HARD, DRY, BROWN, FINE SANDY SILT (A-4)

(C) TRIASSIC RESIDUAL: DENSE, DRY, GRAY, SILTY FINE SAND (A-2-4)



PROJ. REFERENCE NO.	SHEET NO.
B-5721	8

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



6/23/16
17-SEP-2021 09:06
P:\Transportation\Projects\Road\NC-DOT\2021\6234210154 B-5721 Mayo River, Rockingham Co\B5721_GEO_RDWY_CADD\CADD_GEOTECH\xsc\B5721_Rdy_xsl_L.dgn
$$$$USERNAME$$$$

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	9

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

575 570 565 560 555 550 545 540 535 530

Ⓐ ROADWAY EMBANKMENT: LOOSE, DRY, TAN-BROWN, SILTY, FINE TO COARSE SAND (A-2-4)

0.035 0.035 6:1 2:1

ROADWAY EMBANKMENT: MEDIUM STIFF, DRY TO MOIST, TAN-BROWN, TAN-ORANGE, FINE SANDY SILTY (A-4)

19+08

6 10 12 9 4 4 4 100/0.3

07/21

BT

ALLUVIAL: MEDIUM STIFF, DRY, BROWN, FINE SANDY SILT (A-4)

STIFF, DRY, BROWN, FINE SANDY, SILTY CLAY (A-7-6)

STIFF TO SOFT, MOIST TO WET, TAN-BROWN, FINE SANDY SILT (A-4) WITH SAND LENSES

TRIASSIC RESIDUAL: HARD, MOIST, GRAY, FINE SANDY SILT (A-4)

WEATHERED ROCK: BROWN-GRAY, MUDSTONE (TRIASSIC BASIN)

19 + 00.00

575 570 565 560 555 550 545 540 535

Ⓐ ALLUVIAL: MEDIUM STIFF, DRY, BROWN, FINE SANDY SILT (A-4)

0.035 0.035 2:1 2:1

ROADWAY EMBANKMENT: VERY STIFF TO SOFT, DRY TO MOIST, RED-BROWN, FINE SANDY, SILTY CLAY (A-7-6)

STIFF, DRY, BROWN, FINE SANDY, SILTY CLAY (A-7-6)

STIFF TO SOFT, MOIST TO WET, TAN-BROWN, FINE SANDY SILT (A-4) WITH SAND LENSES

TRIASSIC RESIDUAL: HARD, MOIST, GRAY, FINE SANDY SILT (A-4)

WEATHERED ROCK: BROWN-GRAY, MUDSTONE (TRIASSIC BASIN)

17 + 50.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

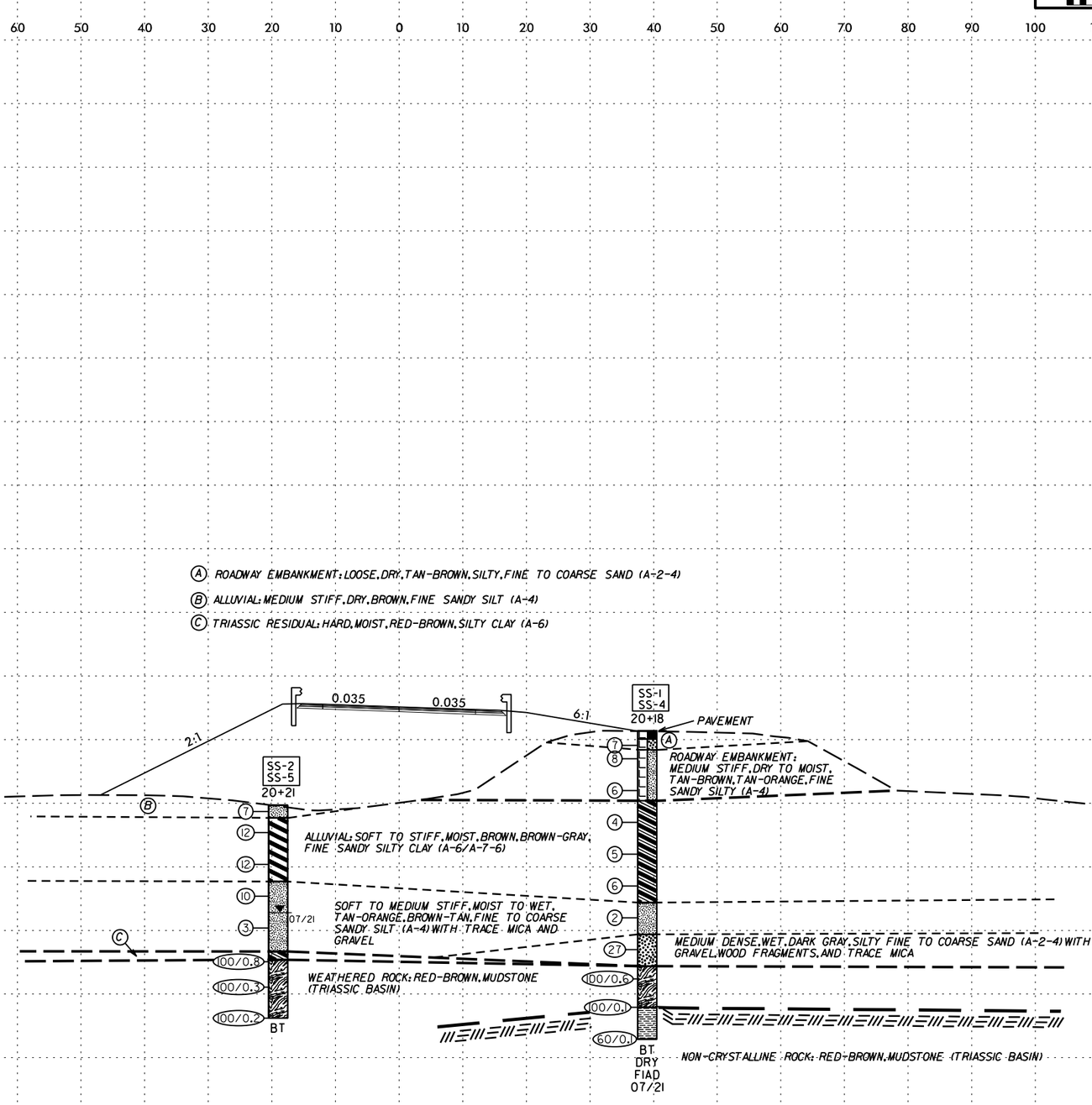
17-SEP-2021 09:07
P:\Transportation\Projects\Road\NC-DOT\2021\6234210154 B-5721 Mayo River, Rockingham Co\B5721_GEO_RDWY_CADD\CADD\GEOTECH\xsc\B5721_Rdy_xs1_L.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
B-5721	10

Ⓐ ROADWAY EMBANKMENT: LOOSE, DRY, TAN-BROWN, SILTY, FINE TO COARSE SAND (A-2-4)

Ⓑ ALLUVIAL: MEDIUM STIFF, DRY, BROWN, FINE SANDY SILT (A-4)

Ⓒ TRIASSIC RESIDUAL: HARD, MOIST, RED-BROWN, SILTY CLAY (A-6)



20+00.00

PROJ. REFERENCE NO.	SHEET NO.
B-5721	11

0 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

580 575 570 565 560 555 550 545 540 535

Ⓐ ROADWAY EMBANKMENT: VERY STIFF TO MEDIUM STIFF, DRY, TAN, RED-BROWN, FINE SANDY CLAY (A-6) WITH ASPHALT FRAGMENTS (OLD)

0.035 0.035

2:1

5:1

24+05

23
5
9
7

Ⓐ ROADWAY EMBANKMENT: MEDIUM STIFF, DRY TO MOIST, RED-BROWN, FINE SANDY CLAY (A-7-6)

17

TRIASSIC RESIDUAL: VERY STIFF, MOIST, ORANGE, FINE SANDY, SILTY CLAY (A-6) WITH TRACE CHARCOAL FRAGMENTS

15

VERY STIFF, MOIST, GRAY, SILTY CLAY (A-7-6)

100/0.9 07/21

60/0.1

WEATHERED ROCK: RED, MUDSTONE (TRIASSIC BASIN)

BT

NON-CRYSTALLINE ROCK: MUDSTONE (TRIASSIC BASIN)

24+00.00

585 580 575 570 565 560 555 550 545 540 535 530 525 520

Ⓐ ROADWAY EMBANKMENT: MEDIUM STIFF, DRY TO MOIST, RED-BROWN, FINE SANDY CLAY (A-7-6)

Ⓑ ROADWAY EMBANKMENT: VERY STIFF TO MEDIUM STIFF, DRY, TAN, RED-BROWN, FINE SANDY CLAY (A-6) WITH ASPHALT FRAGMENTS (OLD)

Ⓒ ALLUVIAL: MEDIUM STIFF, DRY, TAN-GRAY, FINE SANDY SILT (A-4)

Ⓓ ALLUVIAL: VERY STIFF, MOIST, TAN-GRAY, FINE SANDY CLAY (A-6)

SS-6

0.035 0.035

2:1

5:1

SS-3

22+97

22+98

PAVEMENT

19
7

Ⓑ

6

Ⓒ

12

ALLUVIAL: STIFF, MOIST, TAN-GRAY, TAN-ORANGE, FINE SANDY CLAY (A-7-6)

14

STIFF TO VERY STIFF, MOIST, GRAY, RED-BROWN, TAN, FINE SANDY CLAYEY SILT (A-4)

100/0.6

100/0.3

60/0.1

WEATHERED ROCK: RED-BROWN, MUDSTONE WITH SANDSTONE LENSES (TRIASSIC BASIN)

BT
DRY
07/21

NON-CRYSTALLINE ROCK: RED-BROWN, MUDSTONE (TRIASSIC BASIN)

6
6

Ⓐ

7
11
16
17

Ⓓ

100/0.3
100/0.4
100/0.3

BT
DRY
FIAD
07/21

23+00.00

—℄—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

17-SEP-2021 09:08
P:\Transportation\Projects\Road\NC-DOT\2021\6234210154 B-5721 Mayo River, Rockingham Co\B5721.GEO.RDWY.CADD\CADD_GEOTECH\xsc\B5721.Rdy_xs1_L.dgn
$$$$USERNAME$$$$

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	12

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

570 565 560 555 550

TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)

4:1 6:1 0.035 0.035 0.08 0.07

TRIASSIC RESIDUAL: MEDIUM DENSE TO DENSE, DRY, ORANGE-BROWN, SILTY FINE SAND (A-2-4)

WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

26+42.00

(A) ROADWAY EMBANKMENT: MEDIUM STIFF, DRY TO MOIST, RED-BROWN, FINE SANDY CLAY (A-7-6)

(B) TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)

570 565 560

(B) 4:1 0.035 0.035 6:1 (A)

TRIASSIC RESIDUAL: MEDIUM DENSE TO DENSE, DRY, ORANGE-BROWN, SILTY FINE SAND (A-2-4)

WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

26+00.00

580 575 570 565 560 555 550 545 540 535

(A) ROADWAY EMBANKMENT: SOFT TO VERY STIFF, DRY, TAN, RED-BROWN, FINE TO COARSE SANDY CLAY (A-6) WITH ASPHALT FRAGMENTS (OLD)

2:1 0.035 0.035 5:1

24+67

25 3 10 6 10 18 60/0.1

(A) ROADWAY EMBANKMENT: MEDIUM STIFF, DRY TO MOIST, RED-BROWN, FINE SANDY CLAY (A-7-6)

TRIASSIC RESIDUAL: MEDIUM STIFF TO STIFF, DRY TO MOIST, RED-BROWN, TAN, GRAY, FINE SANDY, SILTY CLAY (A-7-6)

VERY STIFF, MOIST, TAN, RED-BROWN, COARSE SANDY CLAY (A-6)

WEATHERED ROCK: RED-BROWN, MUDSTONE (TRIASSIC BASIN)

BT DRY 07/21

NON-CRYSTALLINE ROCK: RED-BROWN, MUDSTONE (TRIASSIC BASIN)

24+50.00

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

17-SEP-2021 09:09
P:\TFS-Projects\Production\Projects\Road\NC-DOT\2021\6234210154 B-5721 Mayo River, Rockingham Co\B5721.GEO.RDWY.CADD\CADD
$$$$USERNAME$$$$

B-5721_Rdy_xs1_L.dgn

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	13

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

575
570
565
560
555

TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)

2:1 4:1 6:1 0.010 0.010 6:1 4:1 2:1

TRIASSIC RESIDUAL: STIFF, DRY, ORANGE, FINE SANDY SILT (A-4)

DENSE, DRY, GRAY, SILTY FINE SAND (A-2-4)

WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

27+50.00

580
575
570
565
560
555
550
545

(A) TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)

26+91

(9) (A) (25) (22) (13) (41) (100/0.3)

2:1 4:1 6:1 0.01 0.01 6:1 4:1

BT
DRY
FIAD
07/21

TRIASSIC RESIDUAL: MEDIUM DENSE TO DENSE, DRY, ORANGE-BROWN, SILTY FINE SAND (A-2-4)

WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

27+00.00

570
565
560
555

0.032 0.032

4:1 6:1 6:1 4:1

TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)

TRIASSIC RESIDUAL: MEDIUM DENSE TO DENSE, DRY, ORANGE-BROWN, SILTY FINE SAND (A-2-4)

WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

26+50.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	14

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

585 580 575 570 565 560 555 550 545

(A) ROADWAY EMBANKMENT: MEDIUM STIFF TO STIFF, DRY TO MOIST, RED-GRAY, RED-BROWN, FINE SANDY, CLAYEY SILT AND SILTY CLAY (A-4/A-6)

(B) TRIASSIC RESIDUAL: VERY STIFF TO STIFF, DRY TO MOIST, RED-BROWN, FINE SANDY, SILTY CLAY (A-6) WITH TRACE ORGANICS

(C) TRIASSIC RESIDUAL: VERY STIFF, MOIST, RED-BROWN, FINE SANDY, SILTY CLAY (A-7-6)

SS-19
SS-20

29+46
0.02
PAVEMENT
2:1
4:1
6:1
8
15
C
20
100/0.9
BT
DRY
FIAD
07/21
WEATHERED ROCK: RED-BROWN, MUDSTONE (TRIASSIC BASIN)

0.004
29+52
A
14
B
7
11
27
100/0.9
BT
DRY
07/21
4:1
TRIASSIC RESIDUAL: VERY STIFF, DRY, RED-BROWN, SANDY, CLAYEY SILT (A-4)

29+50.00

SHEAR LINE Y STA. 10+50.00
545.36

(A) TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)

0.04
0.04
0.045
6:1
A
TRIASSIC RESIDUAL: STIFF, DRY, ORANGE, FINE SANDY SILT (A-4)
WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

28+50.00

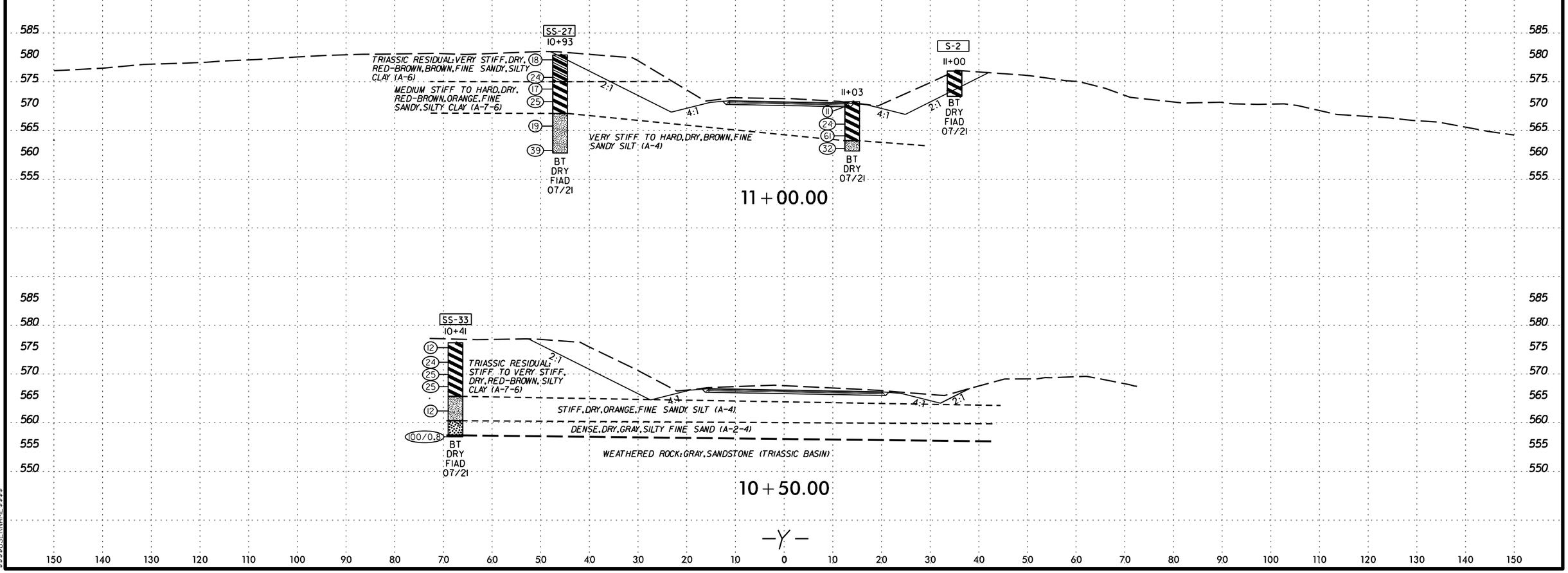
SS-33
28+05
12
24
25
25
12
100/0.8
BT
DRY
FIAD
07/21
2:1
TRIASSIC RESIDUAL: STIFF TO VERY STIFF, DRY, RED-BROWN, SILTY CLAY (A-7-6)
4:1
6:1
0.03
0.03
6:1
4:1
2:1
TRIASSIC RESIDUAL: STIFF, DRY, ORANGE, FINE SANDY SILT (A-4)
DENSE, DRY, GRAY, SILTY FINE SAND (A-2-4)
WEATHERED ROCK: GRAY, SANDSTONE (TRIASSIC BASIN)

28+00.00

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	15

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	16

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

565 560 555 550 545 540 535

Ⓐ ALLUVIAL: SOFT, DRY, BROWN-RED, FINE SANDY CLAY (A-6)

2:1 4:1

Ⓐ

SOFT TO MEDIUM STIFF, MOIST, RED-BROWN, SILTY CLAY (A-7-5)

STIFF, MOIST, BROWN, FINE SANDY, CLAYEY SILT (A-4) WITH TRACE MICA

LOOSE, WET, BROWN, SILTY FINE SAND (A-2-4)

11 + 41.79

Ⓐ ROADWAY EMBANKMENT: VERY STIFF TO SOFT, DRY TO MOIST, RED-BROWN, FINE SANDY, SILTY CLAY (A-7-6)

Ⓑ ALLUVIAL: SOFT, DRY, BROWN-RED, FINE SANDY CLAY (A-6)

Ⓒ ALLUVIAL: SOFT TO MEDIUM STIFF, MOIST, RED-BROWN, SILTY CLAY (A-7-5)

565 560 555 550 545 540 535

Ⓑ 2:1 2:1 Ⓐ

Ⓒ

ALLUVIAL: STIFF, MOIST, BROWN, FINE SANDY, CLAYEY SILT (A-4) WITH TRACE MICA

LOOSE, WET, BROWN, SILTY FINE SAND (A-2-4)

10 + 89.71

570 565 560 555 550 545 540 535

Ⓐ ALLUVIAL: SOFT, DRY, BROWN-RED, FINE SANDY CLAY (A-6)

Ⓑ ALLUVIAL: SOFT TO MEDIUM STIFF, MOIST, RED-BROWN, SILTY CLAY (A-7-5)

SS-60
10+39
2:1

S-5
10+58

Ⓐ 2:1

15 6 4 3 Ⓑ 9 7

ROADWAY EMBANKMENT: VERY STIFF TO SOFT, DRY TO MOIST, RED-BROWN, FINE SANDY, SILTY CLAY (A-7-6)

ALLUVIAL: STIFF, MOIST, BROWN, FINE SANDY, CLAYEY SILT (A-4) WITH TRACE MICA

07/21

LOOSE, WET, BROWN, SILTY FINE SAND (A-2-4)

BT
DRY
FIAD
07/21

BT
FIAD
07/21

10 + 61.07

-DW1-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

17-SEP-2021 09:45
P:\Transportation\Projects\Road\NC-DOT\2021\6234210154 B-5721 Mayo River, Rockingham Co\B5721.GEO.RDWY.CADD\CADD_GEOTECH\xsc\B5721.Rdy_xs1.DW1.dgn
$$$$USERNAME$$$$

Wood E&IS Project No.: 6234-21-0154 **Bridge 780124 on SR 2177 (Dan Valley Rd.) Over the Mayo River** **Date Reported: 08/02/2021**

NCDOT WBS No.: 45677.1.1 **Tip No.: B-5721** **County: Rockingham** **Date Tested: July 2021**

SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-8	16+50	15' RT	-L-	1.0 '- 2.5'	A-7-6(19)	49	25	11.6	23.1	18.9	42.1	95.7	89.8	74.7	30.1	-
SS-10	16+50	15' RT	-L-	6.0' - 7.5'	A-7-6(16)	49	24	7.6	26.3	12.6	51.7	98.2	94.8	69.0	28.2	-
SS-12	16+50	15' RT	-L-	13.5' - 15.0'	A-7-6(18)	46	18	0.6	16.9	32.4	50.0	99.9	99.7	88.9	31.7	-
SS-1	20+18	39' RT	-L-	1.3' - 2.8'	A-2-4(0)	31	6	33.4	38.9	12.2	13.7	98.2	79.6	32.2	18.0	-
SS-4	20+18	39' RT	-L-	13.4' - 14.9'	A-6(10)	37	14	0.8	37.7	28.3	33.2	100.0	99.9	75.0	26.2	-
SS-2	20+21	19' LT	-L-	3.3' - 4.8'	A-7-6(15)	46	20	0.5	30.1	26.8	42.6	100.0	99.8	74.8	23.1	-
SS-5	20+21	19' LT	-L-	18.3' - 19.8'	A-4(0)	27	7	9.5	53.6	17.5	19.4	100.0	99.1	44.2	34.8	-
SS-6	22+97	25' LT	-L-	13.4' - 14.9'	A-7-6(14)	44	18	3.2	30.4	22.4	44.0	100.0	99.2	74.8	24.4	-
SS-3	22+98	53' RT	-L-	8.7' - 10.2'	A-7-6(19)	51	25	2.1	30.8	18.3	48.8	100.0	99.5	73.9	30.1	-
SS-33	28+05	47' LT	-L-	3.0' - 4.5'	A-7-6(30)	54	29	2.0	9.8	25.5	62.7	100.0	99.3	91.2	23.3	-
SS-19	29+46	6' LT	-L-	3.5' - 5.0'	A-6(4)	30	15	10.2	44.8	15.3	29.7	100.0	97.8	51.9	19.2	-
SS-20	29+46	6' LT	-L-	6.0' - 7.5'	A-7-6(15)	41	19	3.0	24.4	29.3	42.9	99.6	98.9	78.8	34.4	-
SS-27	10+93	46' LT	-Y-	3.6' - 5.1'	A-6(11)	39	18	10.7	24.7	15.8	48.4	99.6	93.9	68.5	16.7	-
S-2	11+00	35' RT	-Y-	3.0' - 4.0'	A-7-6(16)	44	23	8.9	23.2	18.5	49.1	99.7	95.8	72.2	16.7	-
SS-60	10+39	9.0' RT	-DW1-	0.5' - 2.0'	A-7-6(18)	45	24	5.3	18.9	29.8	45.7	99.7	98.9	75.9	15.2	-
S-5	10+58	11' LT	-DW1-	2.0' - 3.0'	A-7-5(27)	53	23	0.4	5.7	50.7	43.2	100.0	99.7	95.8	20.6	-

ND = NOT DETERMINED
NV = NO VALUE
NP = NON-PLASTIC

Albert S. Romero — 115-01-0504 — Albert Romero

Signature — Certification # — Print Name