STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5721	1	23

REFERENCE: B-5721

PROJECT: 45677

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY *ROCKINGHAM*

PROJECT DESCRIPTION *REPLACE BRIDGE NO. 124 ON SR 2177 OVER MAYO RIVER*

INVENTORY

CONTENTS

CAUTION NOTICE

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

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

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

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

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INVESTIGATED BY *WOOD E&IS, INC.*

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DATE *MARCH, 2022*

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DocuSigned by:
Michael Lear 04/07/2022
SIGNATURE DATE

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
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] D-120 ATV
- [X] D-50 ATV

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 4" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [X] TRICONE 4 " 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
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] 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: BM#1 AT -L- STATION 21+13, 25' LT
BL-4 AT BL STA. 13+57.6
ELEVATION: 556.55', 565.21' FEET

NOTES:

FIAD = FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5721	3
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
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

60′ 0′ 60′
GRAPHIC SCALE

NAD 83/2001

SKEW = ~(103°-111°)

DAVID M. BRACEY
DB 1274 PG 634

MAYO RIVER

COLLAPSED ROADWAY

BM#1

BM#2

BL-4

BRIDGE #124
STL CONC. BST

BI-A
BI-B
BI-C
EBI-A
EBI-B
EB2-A
EB2-B

WOODS

EXISTING R/W

SEAT=563.19′

SEAT=563.20′

SEAT=563.18′

SEAT=563.17′

CONC.

TOP OF RAIL, ELEV. 568.7 ft,
-L- STA. 20+41, 62′ RT

TOP OF RAIL, ELEV. 568.7 ft,
-L- STA. 22+83, 75′ RT

ROGER L. AND LINDA L. SMITH
DB 779 PG 243

ROGER L. AND LINDA L. SMITH
DB 779 PG 243

Piedmont Natural Ga. Company Inc.

11.78′ R/W TO EIP

EIP

8" SOIL

N 23°53′14.6″ E

N 18°29′00″ W 47.82′

N 22°07′24″ W 65.32′

N 09°49′56″ W 83.42′

S 22°03′11″ E 54.22′

S 02°37′22″ E 50.33′

S 09°34′52″ E 45.54′

N 23°05′54″ E 286.72′

S 26°11′05″ E 32.39′

N 17°10′26″ W 15.73′

N 22°09′16″ W 43.06′

N 23°39′00″ W 29.69′

N 19°00′06″ W 53.09′

N 14°33′38″ W 46.13′

S 21°12′30″ E 100.62′

S 26°52′12″ E 36.07′

S 16°18′38″ E 41.44′

N 17°11′11″ W 312.98′

20

25

16-MAR-2022 11:25
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PROJECT REFERENCE NO.	SHEET NO.
B-5721	4
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

-L-

END BENT 1
(STA. 20+29.00 -L-)

BENT 1
(STA. 21+58.00 -L-)

END BENT 2
(STA. 22+99.00 -L-)

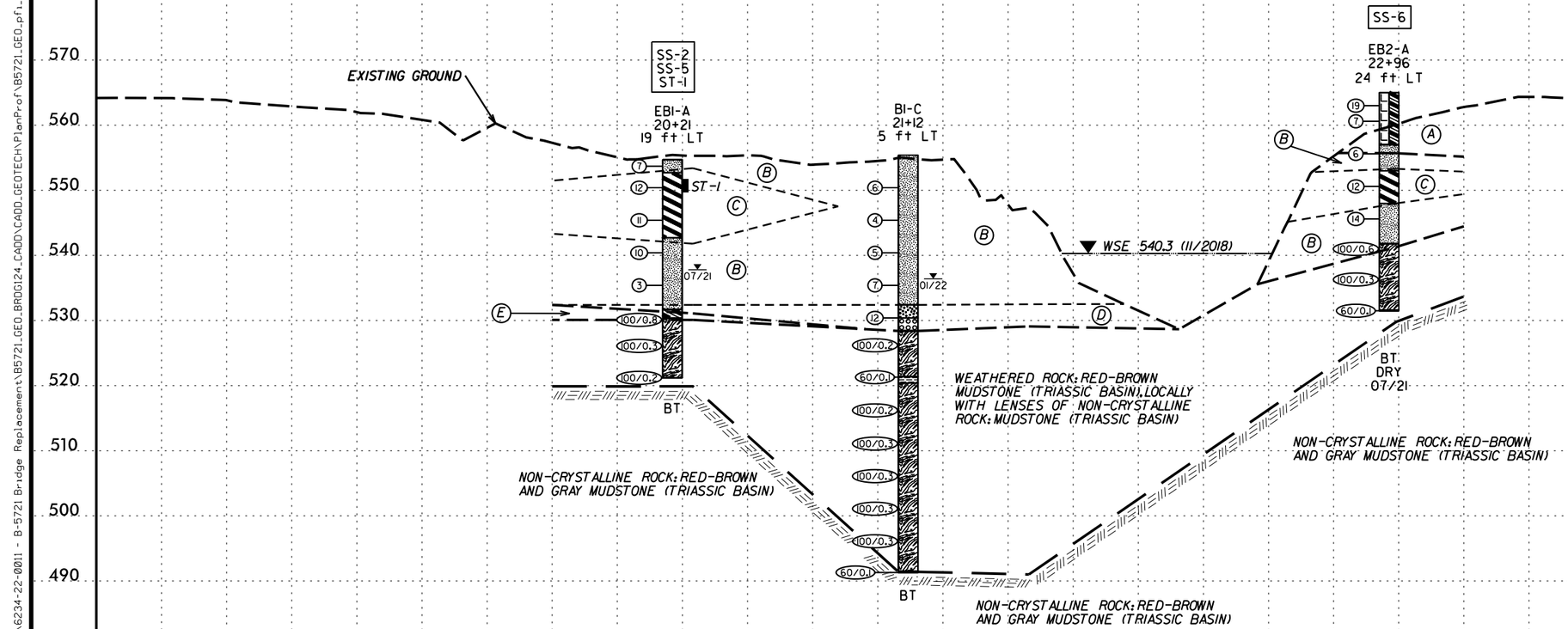
(A) ROADWAY EMBANKMENT: STIFF TO MEDIUM STIFF, DRY, TAN, RED-BROWN, FINE SANDY CLAY (A-6) WITH ASPHALT FRAGMENTS (OLD ROADWAY EMBANKMENT)

(B) ALLUVIAL: SOFT TO STIFF, DRY TO WET, BROWN, TAN-ORANGE, TAN-GRAY, AND RED-BROWN, FINE TO COARSE SANDY AND CLAYEY SILT (A-4) WITH SAND LENSES, TRACE MICA AND GRAVEL

(C) ALLUVIAL: STIFF, MOIST, BROWN AND TAN-GRAY, FINE SANDY, SILTY CLAY (A-7-6)

(D) ALLUVIAL: LOOSE TO MEDIUM DENSE, WET TO SATURATED, DARK GRAY, BROWN, GRAY, AND TAN, SILTY, FINE TO COARSE SAND AND GRAVEL (A-2-4/A-1-b) WITH WOOD FRAGMENTS AND MICA

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



-GROUND LINE DRAWN FROM PROVIDED ELECTRONIC FILES ALONG CL (-L-)

-INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

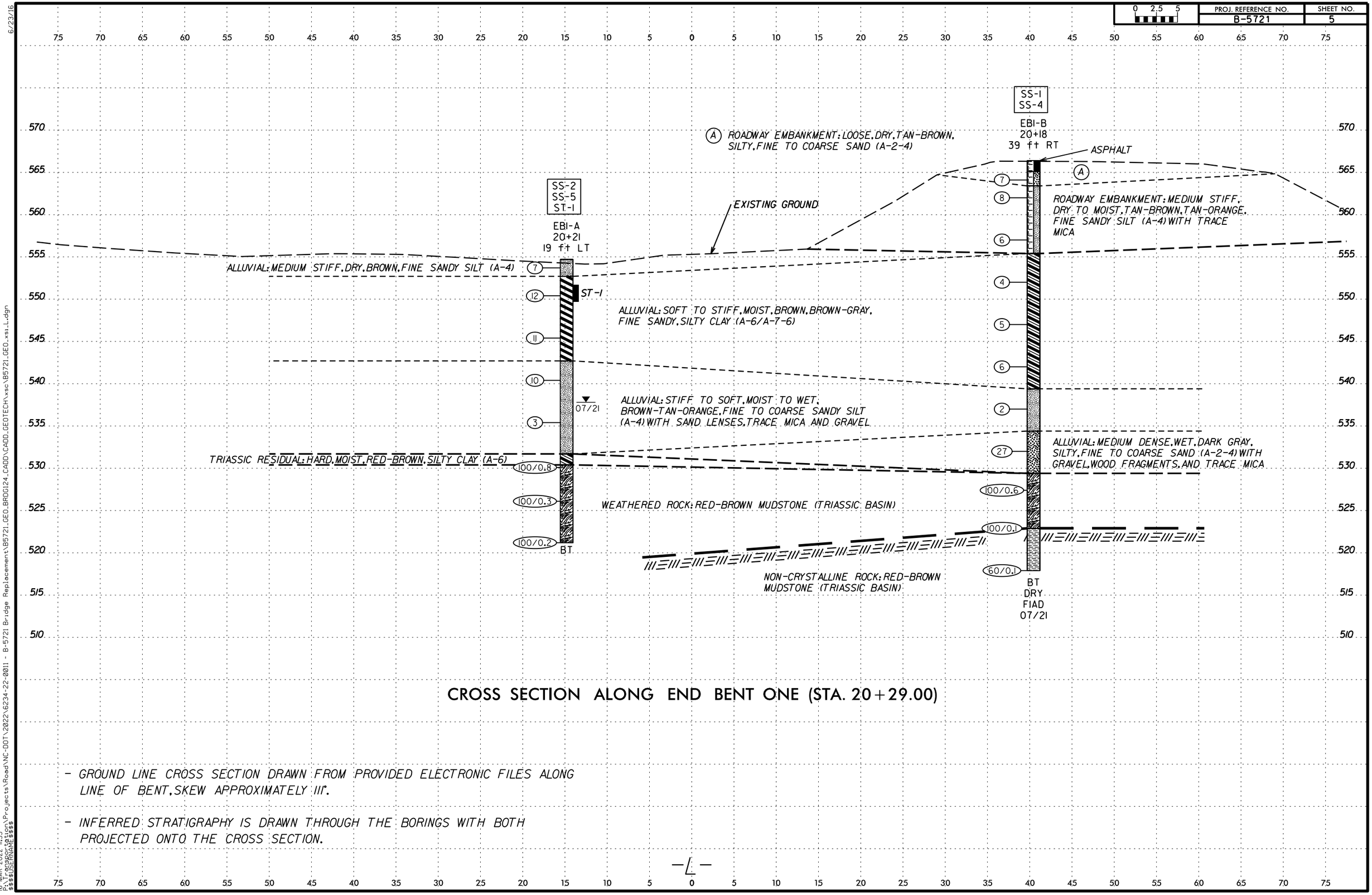
SCALE:
1" = 50' HORIZONTAL, 1" = 20' VERTICAL
VE = 2.5X

600 590 580 570 560 550 540 530 520 510 500 490 480

18+00 18+50 19+00 19+50 20+00 20+50 21+00 21+50 22+00 22+50 23+00 23+50 24+00 24+50 25+00

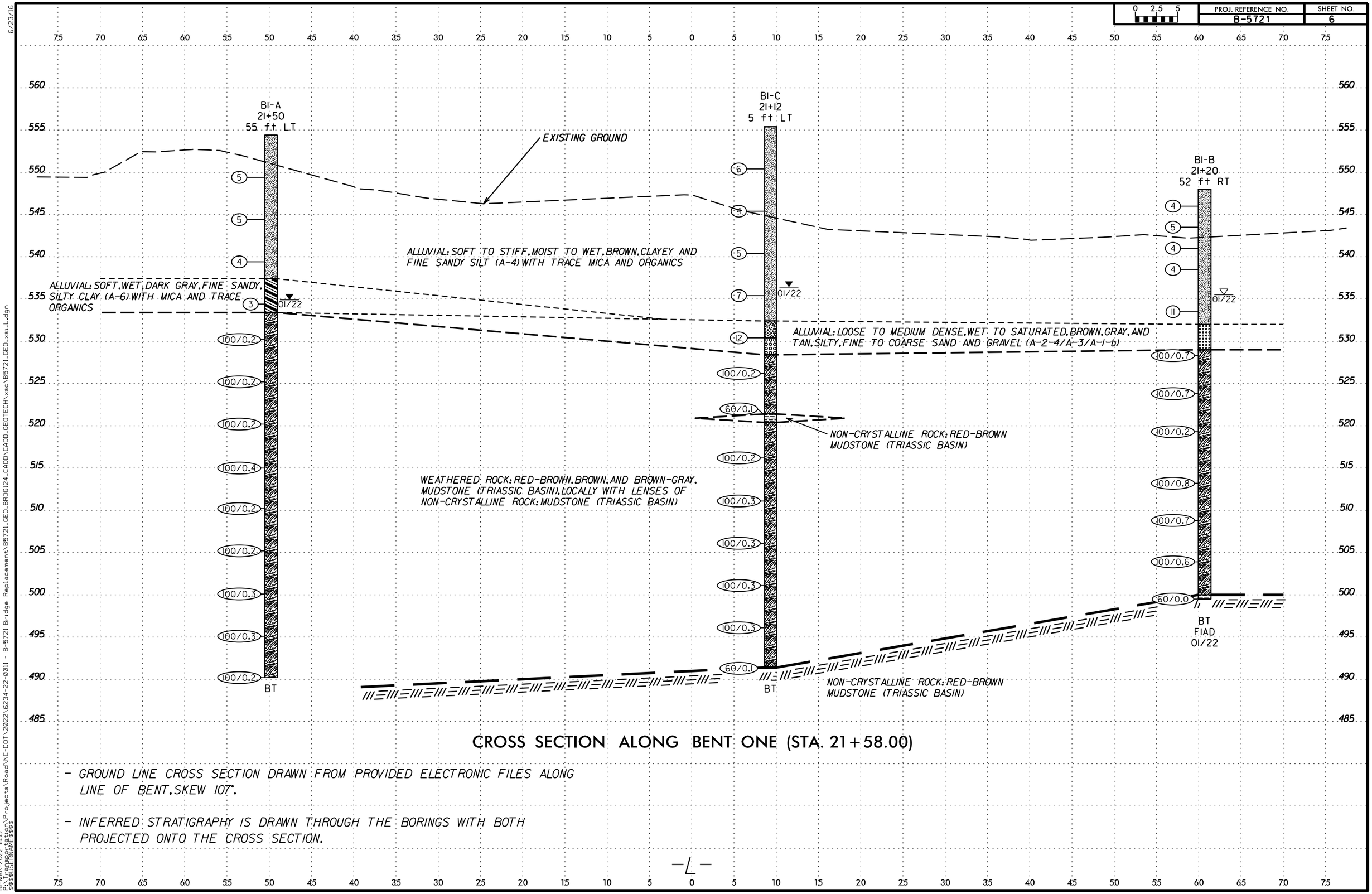
PROJ. REFERENCE NO.	SHEET NO.
B-5721	5

0 2.5 5



CROSS SECTION ALONG END BENT ONE (STA. 20+29.00)

- GROUND LINE CROSS SECTION DRAWN FROM PROVIDED ELECTRONIC FILES ALONG LINE OF BENT, SKEW APPROXIMATELY 111°.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



CROSS SECTION ALONG BENT ONE (STA. 21+58.00)

- GROUND LINE CROSS SECTION DRAWN FROM PROVIDED ELECTRONIC FILES ALONG LINE OF BENT, SKEW 107°.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5721	7

SS-6
EB2-A
22+96
24 ft LT

SS-3
EB2-B
22+98
53 ft RT

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

ASPHALT

EXISTING GROUND

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

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

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

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

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

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

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

BT
DRY
07/21

BT
DRY
FIAD
07/21

CROSS SECTION ALONG END BENT TWO (STA. 22+99.00)

- GROUND LINE CROSS SECTION DRAWN FROM PROVIDED ELECTRONIC FILES ALONG LINE OF BENT, SKEW APPROXIMATELY 103°.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** J. Howard	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 20+21	**OFFSET** 19 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 554.7 ft	**TOTAL DEPTH** 33.5 ft	**NORTHING** 963,079	**EASTING** 1,719,346	**24 HR.** 16.9
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/19/2020		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 07/12/21	**COMP. DATE** 07/12/21	**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)
555											
	554.7	0.0	2	3	4	7 12		D		554.7 GROUND SURFACE	0.0
	551.4	3.3								**ALLUVIAL** Medium stiff, dry, brown, fine sandy SILT (A-4)	2.0
550			5	5	7		SS-2	23%		Stiff, moist, brown, fine sandy, silty CLAY (A-7-6)	
	546.4	8.3				11				Pushed tubes at offset location (-L- 20+21, 22 feet LT) on 1/31/2022 ST-1: 3.0-5.0 feet, Recovery = 2.0 feet ST-2: 6.0-8.0 feet, Recovery = 1.4 feet	
545			4	5	6			M			
	541.4	13.3								542.7 Stiff to soft, moist to wet, tan, tan-orange, fine to coarse sandy SILT (A-4), with sand lenses, trace mica and gravel	12.0
540			4	5	5	10		M			
	536.4	18.3									
535			2	1	2	3	SS-5	35%			
	531.4	23.3								531.7 **TRIASSIC RESIDUAL** Hard, moist, red-brown, silty CLAY (A-6)	23.0
530			36	20	80/0.3	100/0.8		M		530.4 **WEATHERED ROCK** Red-brown, MUDSTONE (TRIASSIC BASIN)	24.3
	526.4	28.3	100/0.3			100/0.3					
525											
	521.4	33.3	100/0.2			100/0.2				521.2 Boring Terminated at Elevation 521.2 ft in Weathered Rock: MUDSTONE (TRIASSIC BASIN)	33.5

NOTE: Shelby Tubes ST-1 and ST-2 pushed at offset location -L- Station 20+21, 22 ft LT on 1/31/2022

Other Samples:
ST-1 (3.0 - 5.0)
ST-2 (6.0 - 8.0)

NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

SHEET 8

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** J. Howard	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 20+18	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 566.4 ft	**TOTAL DEPTH** 48.5 ft	**NORTHING** 963,034	**EASTING** 1,719,383	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/19/2020		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 07/13/21	**COMP. DATE** 07/13/21	**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)
570											
565	565.1	1.3								566.4 PAVEMENT	0.0
	563.0	3.4	3	3	4	7 8				565.1 ASPHALT (0.0 - 0.5), ABC (0.5 - 1.3)	1.3
560			4	4	4		SS-1	18%		**ROADWAY EMBANKMENT** Loose, dry, tan-brown, silty, fine to coarse SAND (A-2-4)	3.0
	558.0	8.4						D		Medium stiff, dry to moist, tan-brown, tan-orange, fine sandy SILT (A-4) with trace mica	
555			2	3	3	6					
	553.0	13.4						M		555.4 **ALLUVIAL** Soft to medium stiff, moist, brown-gray, fine sandy, silty CLAY (A-6)	11.0
550			1	2	2	4	SS-4	26%			
	548.0	18.4									
545			2	2	3	5		M			
	543.0	23.4									
540			2	2	4	6		M		539.4 Soft, wet, brown-tan, fine to coarse sandy SILT (A-4) with trace mica	27.0
	538.0	28.4						W			
535			2	1	1	2				534.4 Medium dense, wet, dark gray, silty, fine to coarse SAND (A-2-4) with gravel, wood fragments, and trace mica	32.0
	533.0	33.4						M			
530			3	2	25	27				529.4 **WEATHERED ROCK** Red-brown, MUDSTONE (TRIASSIC BASIN)	37.0
	528.0	38.4	71	29/0.1		100/0.6					
525										522.9 **NON-CRYSTALLINE ROCK** Red-brown, MUDSTONE (TRIASSIC BASIN)	43.5
	523.0	43.4	100/0.1			100/0.1					
520											
	518.0	48.4	60/0.1			60/0.1				517.9 Boring Terminated with Standard Penetration Test Refusal at Elevation 517.9 ft in Non-Crystalline Rock: MUDSTONE (TRIASSIC BASIN)	48.5

NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** C. Tremblay	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 21+50	**OFFSET** 55 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 554.4 ft	**TOTAL DEPTH** 64.2 ft	**NORTHING** 963,191	**EASTING** 1,719,423	**24 HR.** 19.5
DRILL RIG/HAMMER EFF./DATE GEO105 Diedrich D120 78% 03/24/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER C. Carpenter	**START DATE** 01/28/22	**COMP. DATE** 01/31/22	**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)
555										554.4 GROUND SURFACE	0.0
550	550.4	4.0	2	2	3	5		M		**ALLUVIAL** Medium stiff to soft, moist, brown, fine sandy SILT (A-4) with trace mica and organics	
545	545.4	9.0	3	2	3	5		M			
540	540.4	14.0	2	2	2	4		M		537.4 Soft, wet, dark gray, fine sandy, silty CLAY (A-6) with mica and trace organics	17.0
535	535.4	19.0	2	1	2	3		W		533.4 **WEATHERED ROCK** Red-Brown MUDSTONE (Triassic Basin)	21.0
530	530.4	24.0	100/0.2			100/0.2					
525	525.4	29.0	100/0.2			100/0.2					
520	520.4	34.0	100/0.2			100/0.2					
515	515.4	39.0	100/0.4			100/0.4					
510	510.4	44.0	100/0.2			100/0.2					
505	505.4	49.0	100/0.2			100/0.2					
500	500.4	54.0	100/0.3			100/0.3					
495	495.4	59.0	100/0.3			100/0.3					
	490.4	64.0	100/0.2			100/0.2				490.2 Boring Terminated at Elevation 490.2 ft in Weathered Rock: MUDSTONE (TRIASSIC BASIN)	64.2

NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

SHEET 9

GEOTECHNICAL BORING REPORT
BORE LOG

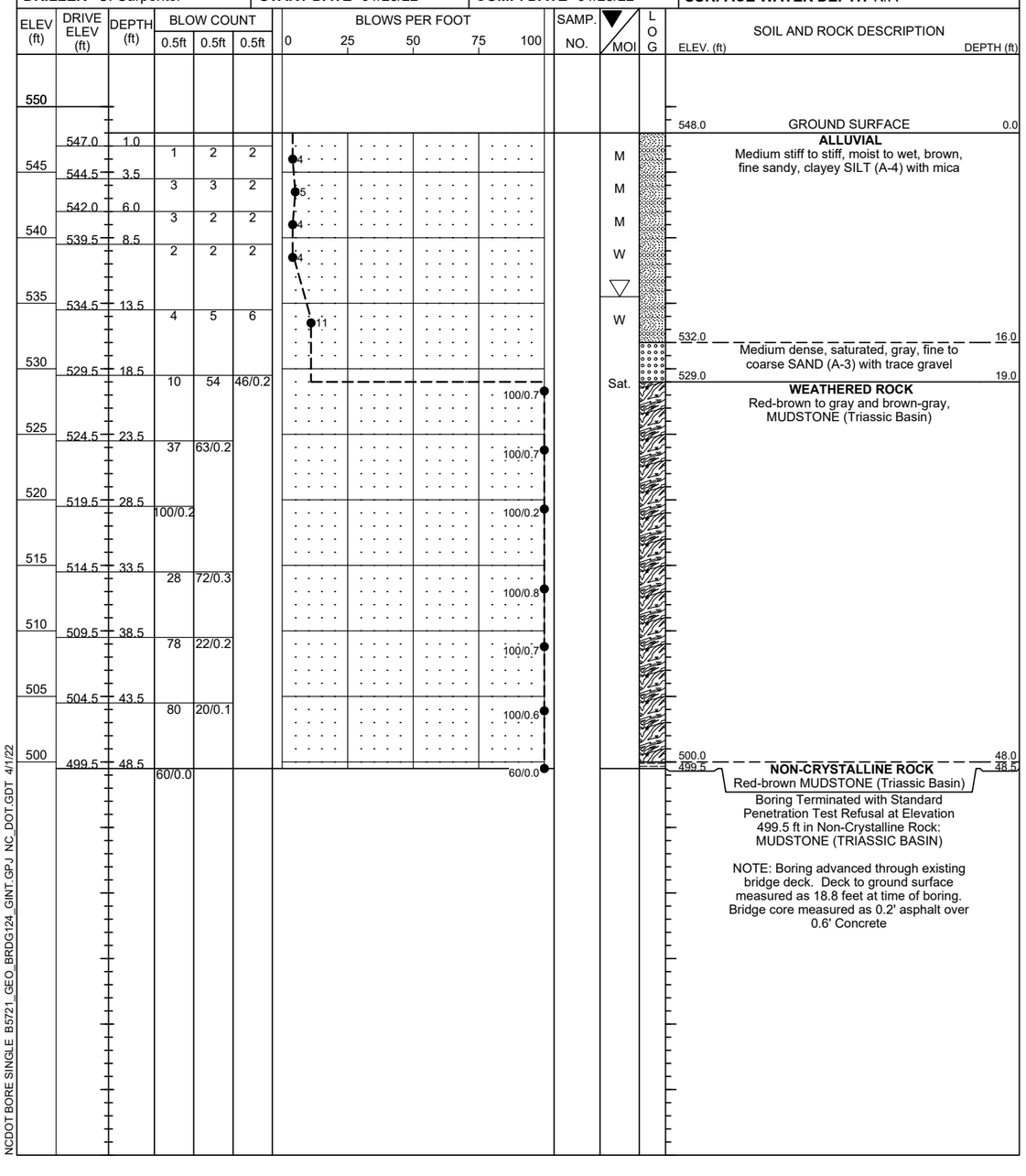
WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** C. Tremblay	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. B1-C	**STATION** 21+12	**OFFSET** 5 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 555.4 ft	**TOTAL DEPTH** 64.1 ft	**NORTHING** 963,128	**EASTING** 1,719,424	**24 HR.** 19.0
DRILL RIG/HAMMER EFF./DATE GEO105 Diedrich D120 78% 03/24/2022		**DRILL METHOD** H.S. Augers/Mud Rotary	**HAMMER TYPE** Automatic	
DRILLER C. Carpenter	**START DATE** 01/26/22	**COMP. DATE** 01/28/22	**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)
560											
555										555.4 GROUND SURFACE	0.0
550	551.4	4.0	3	3	3	6		M		**ALLUVIAL** Medium stiff, moist to wet, brown, fine sandy SILT (A-4) with mica	
545	546.4	9.0	3	2	2	4		M			
540	541.4	14.0	3	2	3	5		M			
535	536.4	19.0	3	3	4	7		W			
530	531.4	24.0	3	5	7	12		Sat.		532.4 Loose, wet, brown and gray, silty, fine SAND (A-2-4) with mica and trace gravel	23.0
525	526.4	29.0	100/0.2			100/0.2				530.4 Medium dense, saturated, tan, silty, fine to coarse sandy, GRAVEL (A-1-b)	25.0
520	521.4	34.0	60/0.1			60/0.1				528.4 **WEATHERED ROCK** Red-brown MUDSTONE (Triassic Basin)	27.0
515	516.4	39.0	100/0.2			100/0.2				521.4	34.0
510	511.4	44.0	100/0.3			100/0.3				520.4 **NON-CRYSTALLINE ROCK** Red-brown MUDSTONE (Triassic Basin) - Attempted to continue boring with rock coring methods - see Note.	35.0
505	506.4	49.0	100/0.3			100/0.3				**WEATHERED ROCK** Red-brown MUDSTONE (Triassic Basin)	
500	501.4	54.0	100/0.3			100/0.3				NOTE: Attempted to begin rock coring in boring at depth of 35.5 feet, augers were drilled out with roller cone to 35.5 ft and core tools were advanced to bottom of hole, no progress made with rock coring tooling as the core bit repeatedly plugged with clay. Unable to advance with core tools due to soft rock conditions. Boring continued with mud rotary methods and SPT's to termination with augers used as casing to stabilize boring.	
495	496.4	59.0	100/0.3			100/0.3					
	491.4	64.0	60/0.1			60/0.1				491.4	64.0
										491.3 **NON-CRYSTALLINE ROCK** Red-brown MUDSTONE (Triassic Basin) Boring Terminated with Standard Penetration Test Refusal at Elevation 491.3 ft in Non-Crystalline Rock: MUDSTONE (TRIASSIC BASIN)	64.1

NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** C. Tremblay	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 21+20	**OFFSET** 52 ft RT	**ALIGNMENT** -L-	**0 HR.** 12.5
COLLAR ELEV. 548.0 ft	**TOTAL DEPTH** 48.5 ft	**NORTHING** 963,089	**EASTING** 1,719,466	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE GEO105 Diedrich D120 78% 03/24/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER C. Carpenter	**START DATE** 01/25/22	**COMP. DATE** 01/25/22	**SURFACE WATER DEPTH** N/A	



NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** J. Howard	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 22+96	**OFFSET** 24 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 565.0 ft	**TOTAL DEPTH** 33.5 ft	**NORTHING** 963,254	**EASTING** 1,719,562	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/19/2020		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 07/15/21	**COMP. DATE** 07/15/21	**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)
565										565.0 GROUND SURFACE	0.0
	564.0	1.0	3	14	5	19		D		**ROADWAY EMBANKMENT** Stiff to medium stiff, dry, tan, red-brown, fine sandy CLAY (A-6), with asphalt fragments (Old Roadway Embankment)	
560	561.6	3.4	4	3	4	7		D			
	556.6	8.4	2	3	3	6		D		557.0 **ALLUVIAL** Medium stiff, dry, tan-gray, fine sandy SILT (A-4)	8.0
555	551.6	13.4	4	6	6	12	SS-6	24%		553.0 Stiff, moist, tan-gray, fine sandy CLAY (A-7-6)	12.0
550	546.6	18.4	5	7	7	14		M		548.0 Stiff, moist, gray, red-brown, fine sandy, clayey SILT (A-4)	17.0
545	541.6	23.4	47	53/0.1		100/0.6				541.8 **WEATHERED ROCK** Red-brown, MUDSTONE, with sandstone lens at 23.2 ft (TRIASSIC BASIN)	23.2
540	536.6	28.4	100/0.3			100/0.3					
535	531.6	33.4	60/0.1			60/0.1				531.6 531.5 **NON-CRYSTALLINE ROCK** Gray, MUDSTONE (TRIASSIC BASIN) Boring Terminated with Standard Penetration Test Refusal at Elevation 531.5 ft in Non-Crystalline Rock: MUDSTONE (TRIASSIC BASIN)	33.4 33.5

NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

SHEET 11

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 45677.1.1	**TIP** B-5721	**COUNTY** ROCKINGHAM	**GEOLOGIST** J. Howard	
SITE DESCRIPTION B-5721: Replace Bridge No. 124 on SR 2177 (Dan Valley Road) Over the Mayo River				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 22+98	**OFFSET** 53 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 566.1 ft	**TOTAL DEPTH** 37.8 ft	**NORTHING** 963,191	**EASTING** 1,719,606	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/19/2020		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 07/14/21	**COMP. DATE** 07/14/21	**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)
570										566.1 PAVEMENT	0.0
565	564.8	1.3	2	3	3	6		D		564.8 ASPHALT (0.0 - 0.6ft), ABC (0.6 - 1.3ft) **ROADWAY EMBANKMENT** Medium stiff, dry, red-brown, fine sandy CLAY (A-7-6)	1.3
	562.4	3.7	3	3	3	6		D			
560	557.4	8.7	2	3	4	7	SS-3	30%		554.1 **ALLUVIAL** Stiff, moist, tan-orange, fine sandy, CLAY (A-7-6)	12.0
555	552.4	13.7	4	4	7	11		M		548.1 Very stiff, moist, tan, gray, fine sandy SILT (A-4)	18.0
550	547.4	18.7	6	6	10	16		M		543.1 Very stiff, moist, tan-gray, fine sandy CLAY (A-6)	23.0
545	542.4	23.7	4	6	11	17		M		540.1 **WEATHERED ROCK** Red-brown, MUDSTONE (TRIASSIC BASIN)	26.0
540	537.4	28.7	100/0.3			100/0.3					
535	532.4	33.7	100/0.4			100/0.4					
530	528.6	37.5	100/0.3			100/0.3				528.3 Boring Terminated at Elevation 528.3 ft in Weathered Rock: MUDSTONE (TRIASSIC BASIN)	37.8

NCDOT BORE SINGLE B5721_GEO_BRDG124_GINT.GPJ NC_DOT.GDT 4/1/22

Wood E&IS Project No.: 6234-22-0011 | **Replace Bridge No. 124 on SR 2177 Over the Mayo River** | **Date Reported: 03/17/2022**

NCDOT WBS No.: 45677.1.1 | **TIP No.: B-5721** | **County: Rockingham** | **Date Tested: July 2021, March 2022**

SOIL TEST RESULTS

SAMPLE NO.	BORING	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-1	EB1-B	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	EB1-B	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	EB1-A	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	EB1-A	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	-
ST-1	EB1-A	20+21	22' LT	-L-	3.0'-5.0'	A-7-6(17)	45	21	0.8	30.8	31.7	36.7	100.0	99.7	78.5	21.7	-
SS-6	EB2-A	22+96	24' 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	EB2-B	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	-

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

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

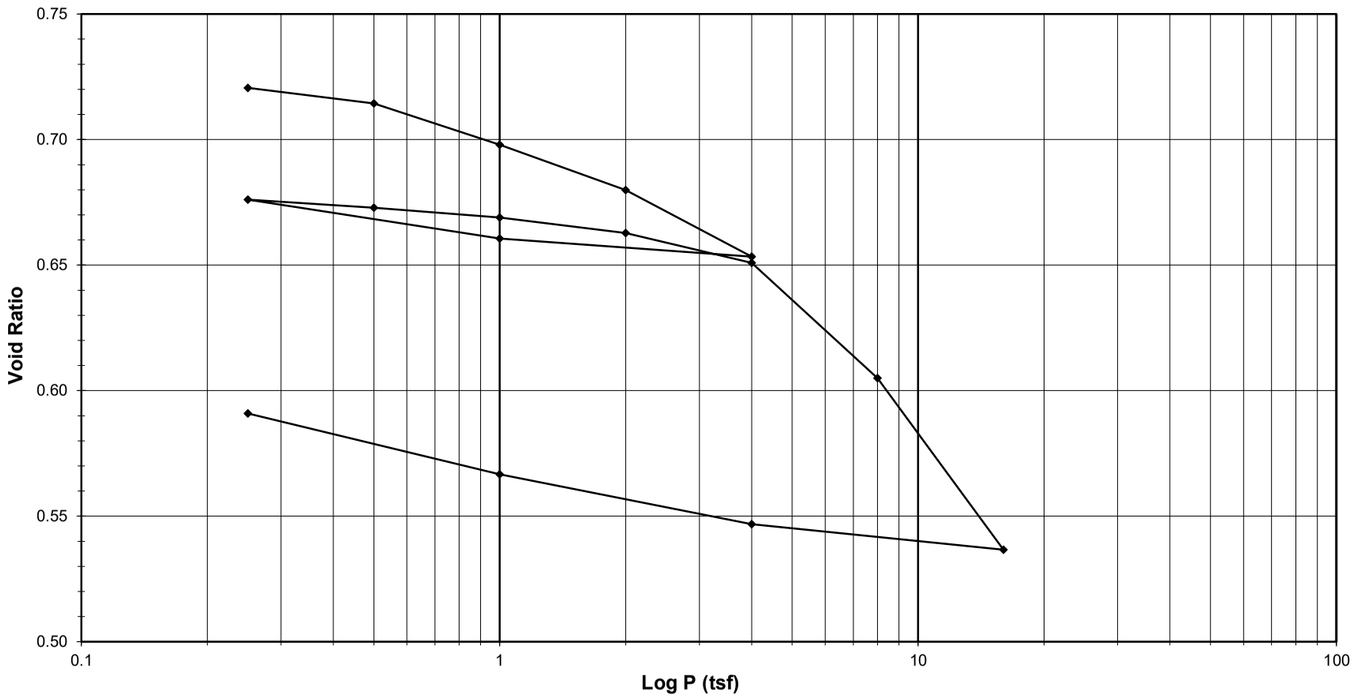
Signature | Certification # | Print Name

ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-	
Client Reference	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT	
Project No.	R-2022-047-001	Sample No.	ST-1		
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand		

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-07-0411 *Date* 3/3/2022 *Approved By* MPS *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 6

Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT

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ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-	
Client Reference	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT	
Project No.	R-2022-047-001	Sample No.	ST-1		
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand		

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED
Consolidometer No. R470
1 Division = 0.0001 (in.)

Sample Properties	**Initial**	**Final**
Water Content		
Tare Number	719	479
Wt. Tare & WS (g)	401.49	248.19
Wt. Tare & DS (g)	346.12	223.40
Wt. Water (g)	55.37	24.79
Wt. Tare (g)	91.40	98.94
Wt. DS (g)	254.72	124.46
Water Content (%)	21.74	19.92
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.0000	0.9231
Sample Volume (cc)	80.44	74.26
Wt. Wet Sample + Ring (g)	366.40	364.12
Wt. of Ring (g)	214.12	214.12
Wt. of Wet Sample (g)	152.28	150.00
Wet Density (pcf)	118.13	126.05
Wet Density (g/cc)	1.89	2.02
Water Content (%)	21.74	19.92
Wt. of Dry Sample (g)	125.09	125.09
Dry Density (pcf)	97.04	105.12
Dry Density (g/cc)	1.56	1.68
Void Ratio	0.7234	0.5909
Saturation (%)	80.53	90.34
Specific Gravity	2.68	*Assumed*

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cc)	Dry Density (g/cc)	Void Ratio
Seating	0	0	0	25.400	80.440	1.55506	**0.72341**
0.25	61.5	45.2	16.3	25.359	80.309	1.55760	**0.72060**
0.5	116.9	64.6	52.3	25.267	80.019	1.56323	**0.71440**
1	237.7	90.0	147.7	25.025	79.252	1.57837	**0.69795**
2	375.2	122.6	252.6	24.758	78.408	1.59536	**0.67988**
4	563.6	157.2	406.4	24.368	77.171	1.62094	**0.65336**
1	483.2	118.9	364.3	24.475	77.509	1.61386	**0.66062**
0.25	356.9	82.3	274.5	24.703	78.231	1.59896	**0.67609**
0.5	383.1	89.8	293.4	24.655	78.080	1.60206	**0.67285**
1	420.6	104.4	316.2	24.597	77.896	1.60584	**0.66891**
2	479.5	127.9	351.6	24.507	77.612	1.61173	**0.66281**
4	579.5	158.5	421.0	24.331	77.054	1.62340	**0.65086**
8	882.6	195.7	686.9	23.655	74.914	1.66976	**0.60502**
16	1328.0	244.2	1083.7	22.647	71.722	1.74407	**0.53664**
4	1205.5	180.9	1024.6	22.797	72.198	1.73258	**0.54682**
1	1044.5	135.2	909.3	23.090	73.125	1.71061	**0.56669**
0.25	867.9	99.0	768.8	23.447	74.255	1.68458	**0.59091**

Tested By 129-07-0411 *Date* 3/3/2022 *Input Checked By* GEM *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 6

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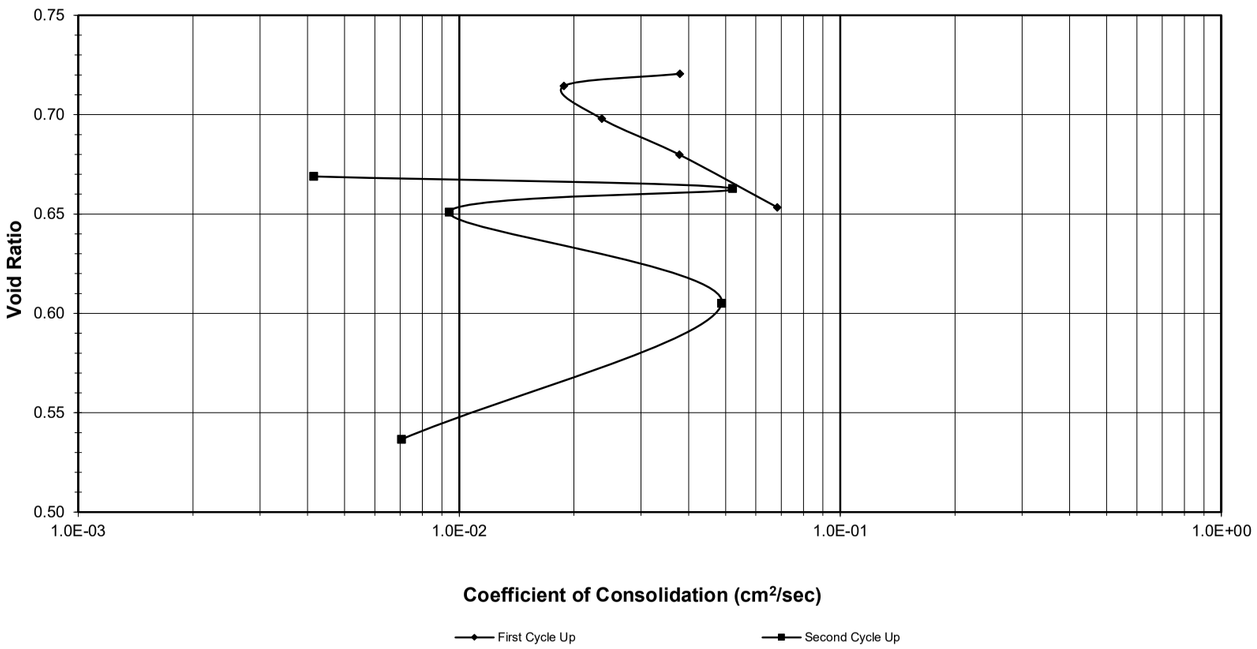
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Reference	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-07-0411 *Date* 3/3/2022 *Input Checked By* GEM *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 6 *Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT*

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ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Reference	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED
Consolidometer No. R470
1 Division = 0.0001 (in.)

Sample Properties	**Initial**	**Final**
Water Content		
Tare Number	719	479
Wt. Tare & WS (g)	401.49	248.19
Wt. Tare & DS (g)	346.12	223.40
Wt. Water (g)	55.37	24.79
Wt. Tare (g)	91.40	98.94
Wt. DS (g)	254.72	124.46
Water Content (%)	21.74	19.92
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.000	0.923
Sample Volume (cc)	80.44	74.26
Wt. Wet Sample + Ring (g)	366.40	364.12
Wt. of Ring (g)	214.12	214.12
Wt. of Wet Sample (g)	152.28	150.00
Wet Density (pcf)	118.13	126.05
Wet Density (g/cc)	1.89	2.02
Water Content (%)	21.74	19.92
Wt. of Dry Sample (g)	125.09	125.09
Dry Density (pcf)	97.04	105.12
Dry Density (g/cc)	1.56	1.68
Void Ratio	0.7234	0.5909
Saturation (%)	80.53	90.34
Specific Gravity	*2.68*	*Assumed*

C_v Test Data Summary

Load Increment	**Dial Reading @ t_{50}**	**Machine Deflection**	**Corrected Dial Reading @ t_{50}**	**Sample Height @ t_{50}**	**Time t_{50}**	**C_v**
(tsf)	(div)	(div)	(div)	(cm)	(min.)	**(cm²/sec)**
0 - 0.25	30.9	45.2	-14.3	2.544	**0.14**	**0.03793**
0.25 - 0.5	90.9	64.6	26.3	2.533	**0.28**	**0.01881**
0.5 - 1.0	178.5	90.0	88.5	2.518	**0.22**	**0.02365**
1.0 - 2.0	305.8	122.6	183.2	2.493	**0.14**	**0.03780**
2.0 - 4.0	453.2	157.2	296.0	2.465	**0.07**	**0.06831**
4.0 - 1.0	NA	118.9	NA	NA	**NA**	**NA**
1.0 - 0.25	NA	82.3	NA	NA	**NA**	**NA**
0.25 - 0.5	NA	89.8	NA	NA	**NA**	**NA**
0.5 - 1.0	407.1	104.4	302.6	2.463	**1.20**	**0.00415**
1.0 - 2.0	453.1	127.9	325.2	2.457	**0.10**	**0.05218**
2.0 - 4.0	542.4	158.5	383.9	2.443	**0.52**	**0.00942**
4.0 - 8.0	689.7	195.7	493.9	2.415	**0.10**	**0.04883**
8.0 - 16.0	1120.7	244.2	876.4	2.317	**0.63**	**0.00705**
16.0 - 4.0	NA	180.9	NA	NA	**NA**	**NA**
4.0 - 1.0	NA	135.2	NA	NA	**NA**	**NA**
1.0 - 0.25	NA	99.0	NA	NA	**NA**	**NA**

Tested By 129-07-0411 *Date* 3/3/2022 *Input Checked By* GEM *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 6 *Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT*

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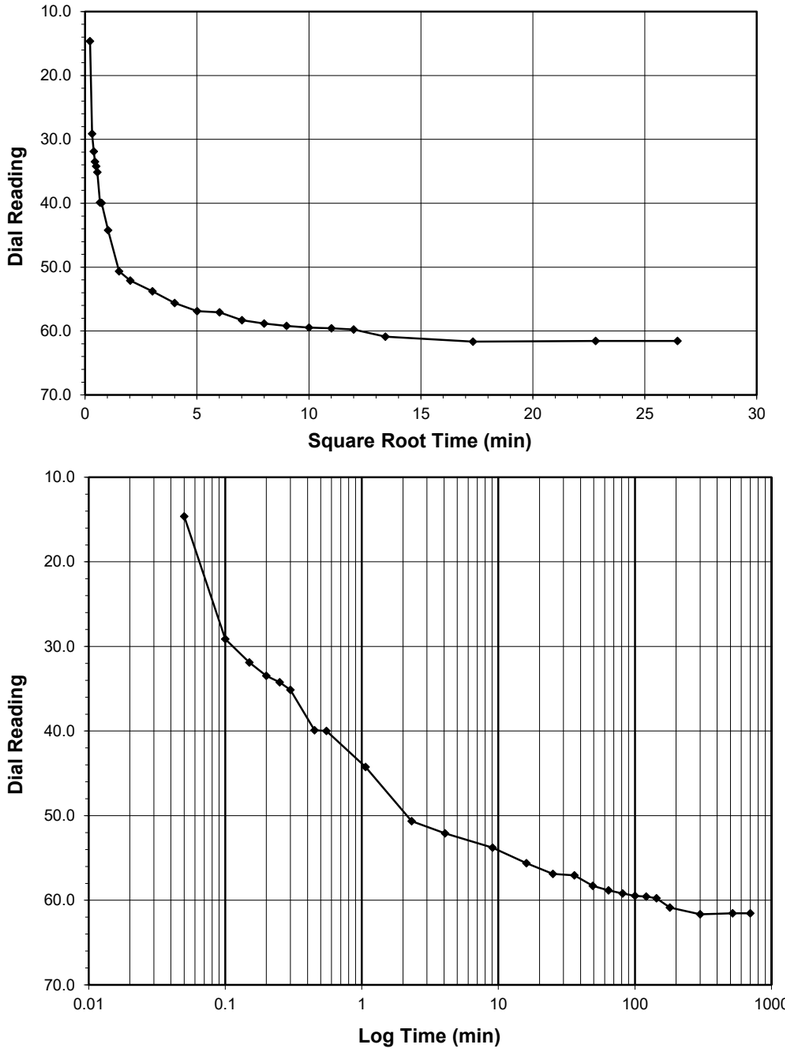
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.0-0.25**
Final Reading	**(div)**	**61.5**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/3/2022
Start Time		9:50:27

Elapsed Time (min)	Dial Reading (div)
Initial	**0.0**
0.05	14.6
0.10	29.1
0.15	31.9
0.20	33.5
0.25	34.2
0.30	35.1
0.45	39.9
0.55	40.0
1.07	44.2
2.32	50.6
4.07	52.1
9.07	53.8
16.07	55.6
25.07	56.9
36.07	57.1
49.07	58.3
64.07	58.8
81.07	59.2
100.07	59.5
121.07	59.6
144.07	59.8
180.07	60.9
300.07	61.7
520.07	61.6
700.07	61.5

Tested By *129-07-0411* *Date* 3/3/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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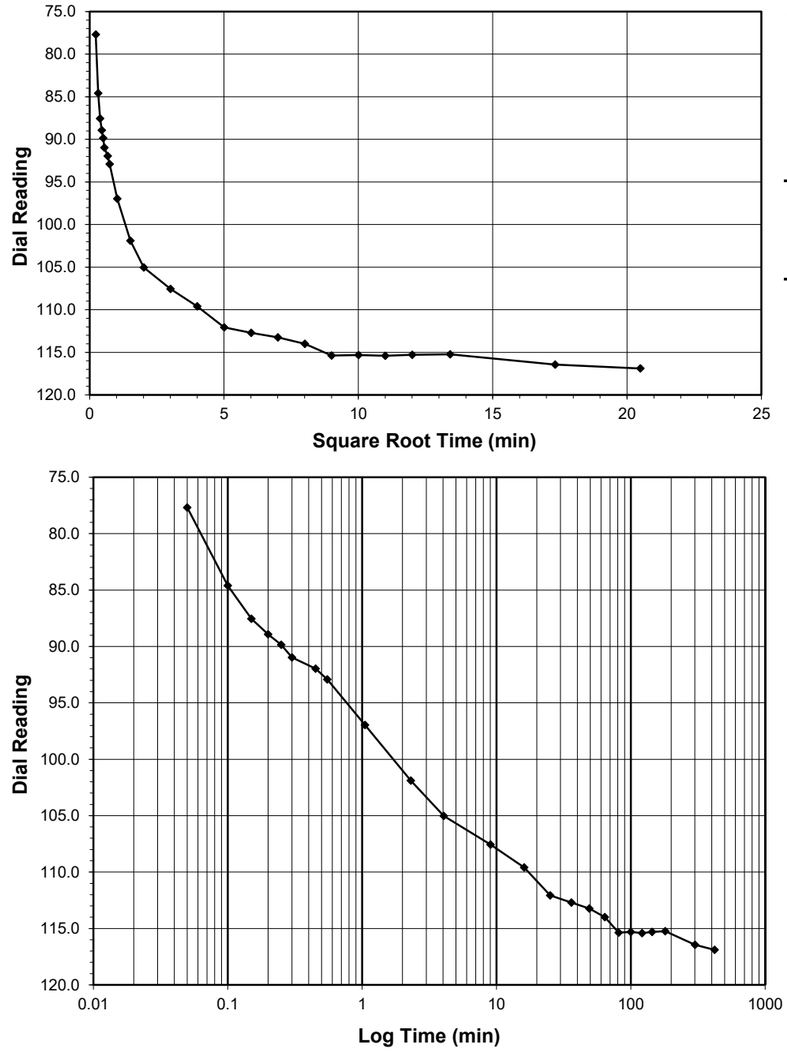
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**116.9**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/3/2022
Start Time		21:50:44

Elapsed Time (min)	Dial Reading (div)
Initial	**61.5**
0.05	77.7
0.10	84.6
0.15	87.5
0.20	88.9
0.25	89.9
0.30	91.0
0.45	92.0
0.55	92.9
1.05	97.0
2.30	101.9
4.05	105.0
9.05	107.6
16.05	109.6
25.07	112.1
36.07	112.7
49.07	113.2
64.07	114.0
81.07	115.4
100.07	115.3
121.07	115.4
144.07	115.3
180.07	115.2
300.07	116.4
420.00	116.9

Tested By *129-07-0411* *Date* 3/3/2022 *Checked By* *GEM* *Date* 3/15/2022

page 1 of 1

DCN: CT-24E Date: 5/3/12 Revision: 3

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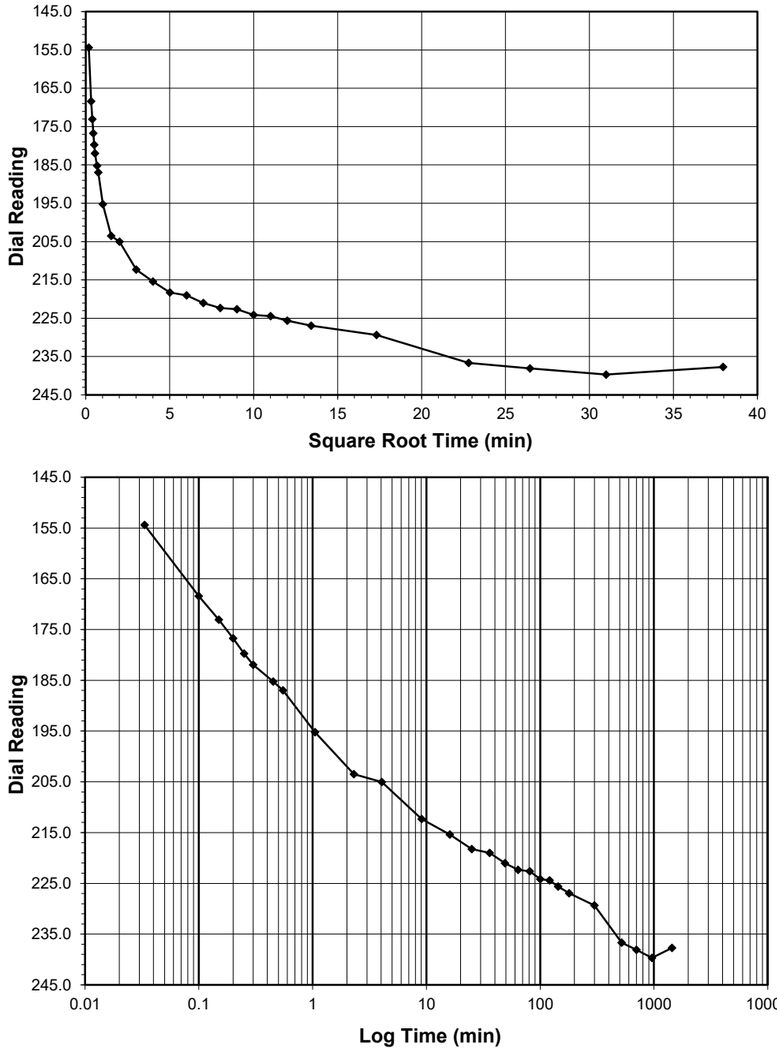
AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1.0**
Final Reading	**(div)**	**237.7**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/4/2022
Start Time		4:50:44

Elapsed Time (min)	Dial Reading (div)
Initial	**116.9**
0.03	154.4
0.10	168.4
0.15	173.1
0.20	176.7
0.25	179.8
0.30	182.0
0.45	185.3
0.55	187.0
1.05	195.2
2.30	203.5
4.05	205.0
9.07	212.3
16.07	215.4
25.07	218.3
36.07	219.0
49.07	221.0
64.07	222.3
81.07	222.6
100.07	224.2
121.07	224.4
144.07	225.6
180.07	227.0
300.07	229.3
520.07	236.7
700.07	238.1
960.07	239.7
1440.07	237.7

Tested By *129-07-0411* *Date* 3/4/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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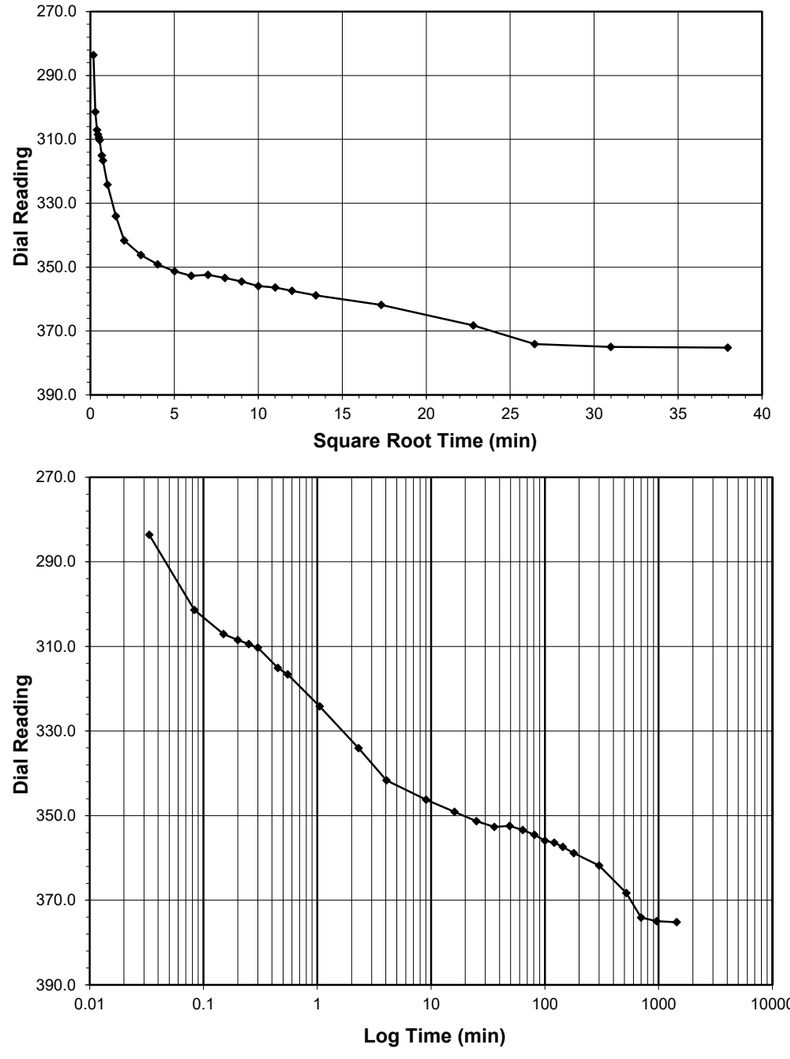
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-2.0**
Final Reading	**(div)**	**375.2**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/5/2022
Start Time		4:51:07

Elapsed Time (min)	Dial Reading (div)
Initial	**237.7**
0.03	283.6
0.08	301.4
0.15	307.1
0.20	308.5
0.25	309.4
0.30	310.3
0.45	315.1
0.55	316.6
1.05	324.2
2.30	334.0
4.05	341.7
9.05	346.2
16.05	349.1
25.05	351.3
36.05	352.7
49.05	352.4
64.05	353.4
81.05	354.5
100.07	355.9
121.07	356.4
144.07	357.4
180.07	358.9
300.07	361.8
520.07	368.3
700.07	374.1
960.07	374.9
1440.07	375.2

Tested By *129-07-0411* *Date* 3/5/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT

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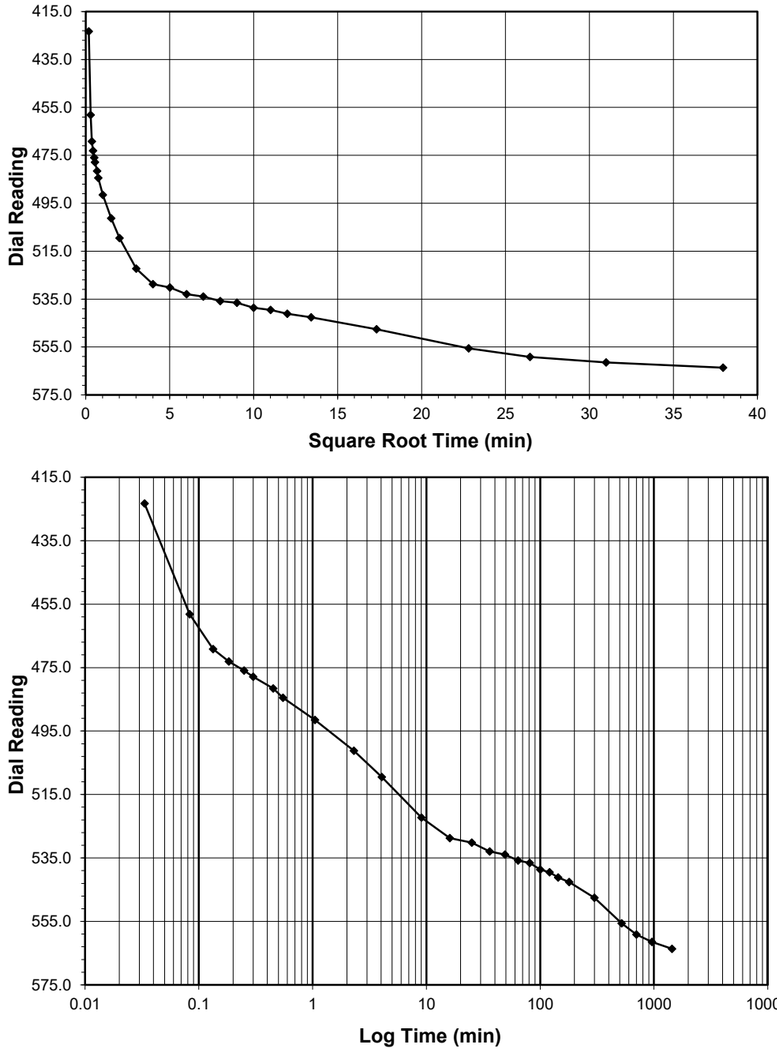
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2.0-4.0**
Final Reading	**(div)**	**563.6**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/6/2022
Start Time		4:51:26

Elapsed Time (min)	Dial Reading (div)
Initial	**375.2**
0.03	423.3
0.08	458.2
0.13	469.2
0.18	473.1
0.25	475.9
0.30	477.9
0.45	481.6
0.55	484.5
1.05	491.5
2.30	501.2
4.05	509.5
9.05	522.3
16.05	528.8
25.05	530.2
36.05	532.9
49.05	534.0
64.05	535.8
81.05	536.5
100.07	538.7
121.07	539.5
144.07	541.1
180.07	542.6
300.07	547.6
520.07	555.6
700.07	559.2
960.07	561.4
1440.07	563.6

Tested By *129-07-0411* *Date* 3/6/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT

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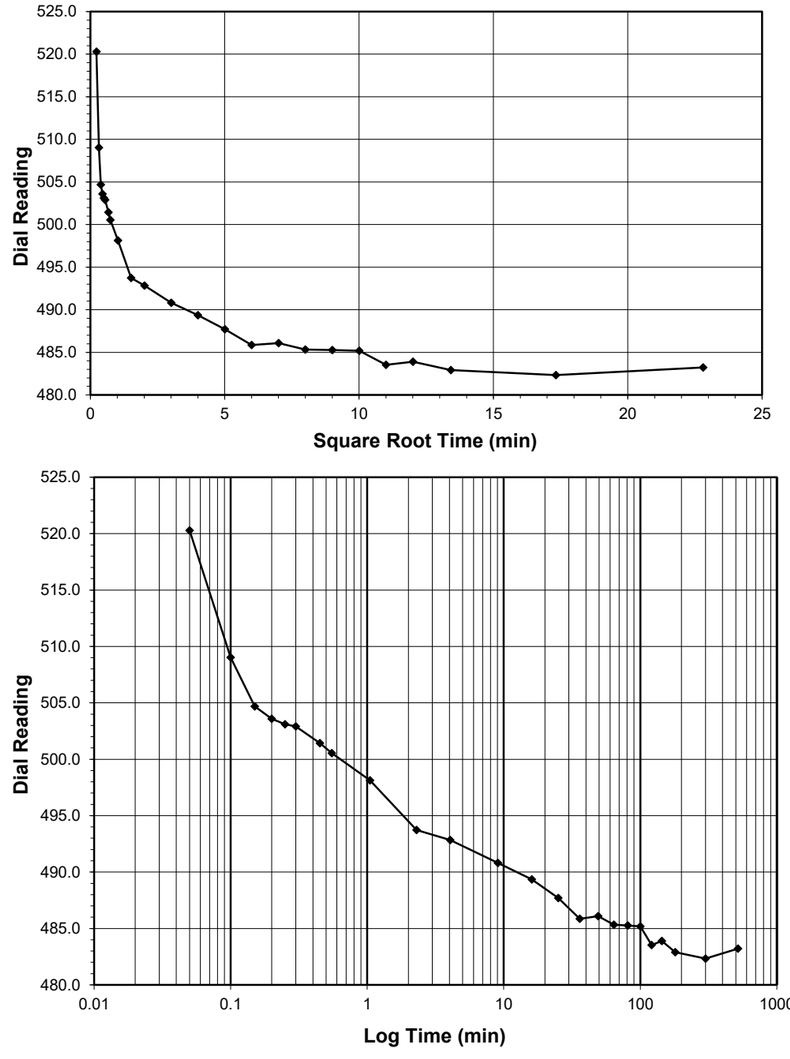
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-1.0**
Final Reading	**(div)**	**483.2**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/7/2022
Start Time		4:51:44

Elapsed Time (min)	Dial Reading (div)
Initial	**563.6**
0.05	520.3
0.10	509.0
0.15	504.7
0.20	503.6
0.25	503.1
0.30	502.9
0.45	501.4
0.55	500.5
1.05	498.1
2.30	493.7
4.05	492.8
9.05	490.8
16.05	489.4
25.05	487.7
36.05	485.9
49.05	486.1
64.05	485.3
81.05	485.3
100.07	485.2
121.07	483.5
144.07	483.9
180.07	482.9
300.07	482.3
520.07	483.2

Tested By *129-07-0411* *Date* 3/7/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT

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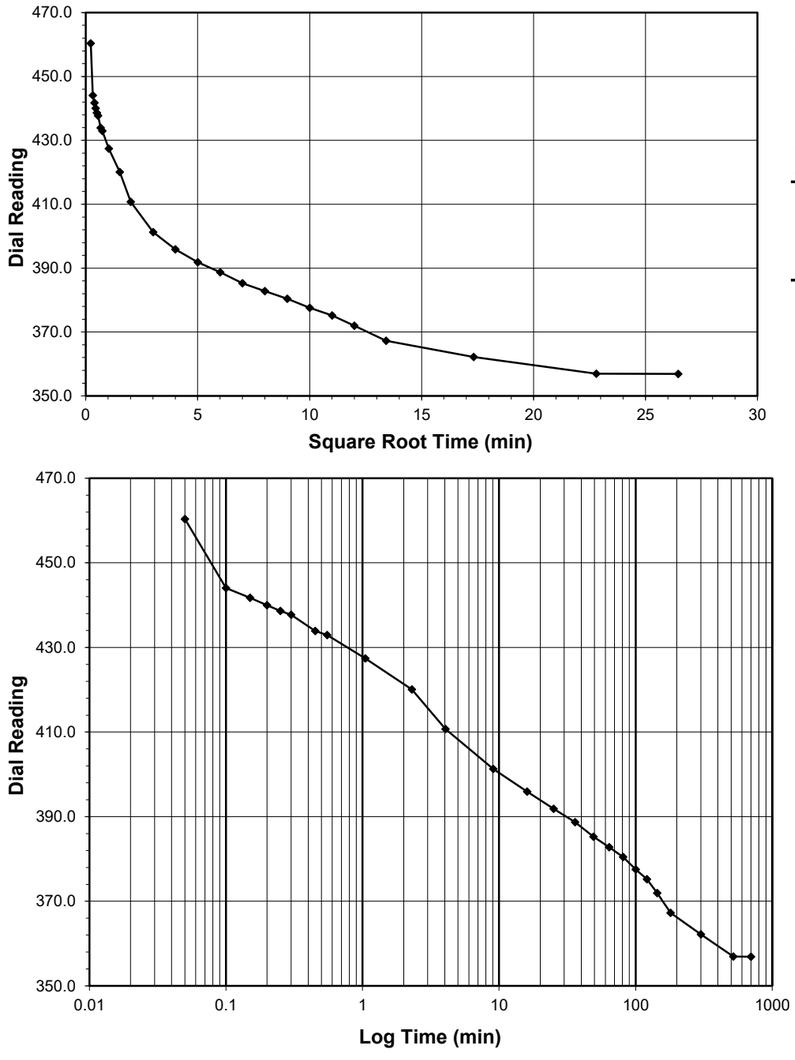
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-0.25**
Final Reading	**(div)**	**356.9**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/7/2022
Start Time		16:52:11

Elapsed Time (min)	Dial Reading (div)
Initial	**483.2**
0.05	460.4
0.10	444.1
0.15	441.7
0.20	440.0
0.25	438.6
0.30	437.7
0.45	433.9
0.55	432.9
1.05	427.4
2.30	420.1
4.05	410.7
9.05	401.3
16.05	395.9
25.05	391.8
36.05	388.7
49.05	385.3
64.05	382.8
81.05	380.4
100.05	377.6
121.05	375.2
144.07	372.0
180.07	367.3
300.07	362.2
520.07	356.9
700.07	356.9

Tested By 129-07-0411 *Date* 3/7/2022 *Checked By* GEM *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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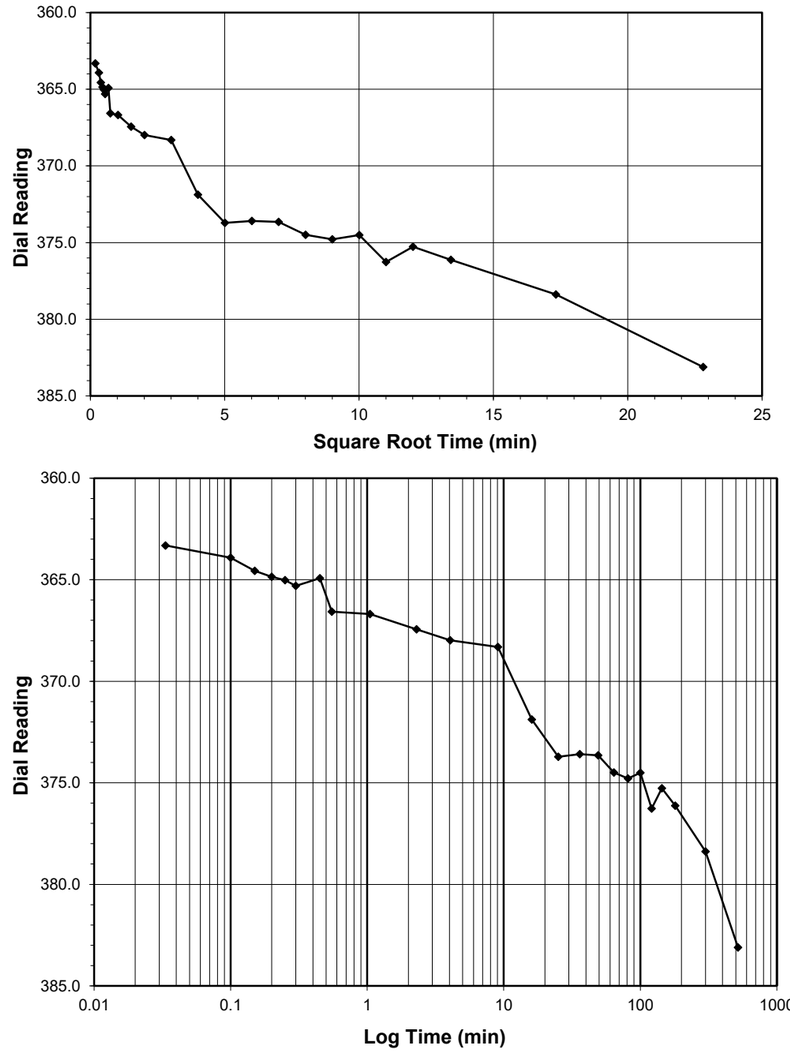
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**383.1**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/8/2022
Start Time		4:52:15

Elapsed Time (min)	Dial Reading (div)
Initial	**356.9**
0.03	363.3
0.10	363.9
0.15	364.6
0.20	364.8
0.25	365.0
0.30	365.3
0.45	364.9
0.55	366.6
1.05	366.7
2.30	367.4
4.05	368.0
9.05	368.3
16.05	371.9
25.07	373.7
36.07	373.6
49.07	373.7
64.07	374.5
81.07	374.8
100.07	374.5
121.07	376.3
144.07	375.3
180.07	376.1
300.07	378.4
520.07	383.1

Tested By 129-07-0411 *Date* 3/8/2022 *Checked By* GEM *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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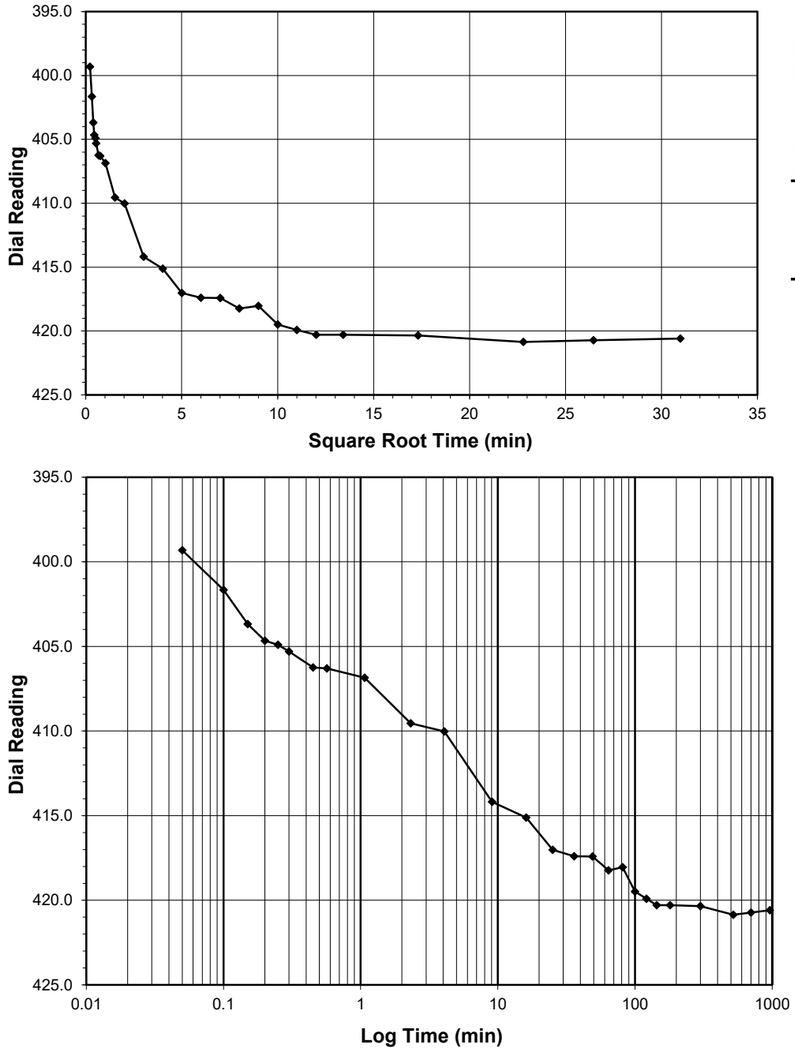
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1.0**
Final Reading	**(div)**	**420.6**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/8/2022
Start Time		13:32:29

Elapsed Time (min)	Dial Reading (div)
Initial	**383.1**
0.05	399.3
0.10	401.7
0.15	403.7
0.20	404.7
0.25	404.9
0.30	405.3
0.45	406.2
0.57	406.3
1.07	406.9
2.32	409.5
4.07	410.0
9.07	414.2
16.07	415.1
25.07	417.0
36.07	417.4
49.07	417.4
64.07	418.2
81.07	418.0
100.07	419.5
121.07	419.9
144.07	420.3
180.07	420.3
300.07	420.3
520.07	420.9
700.07	420.7
960.07	420.6

Tested By *129-07-0411* *Date* 3/8/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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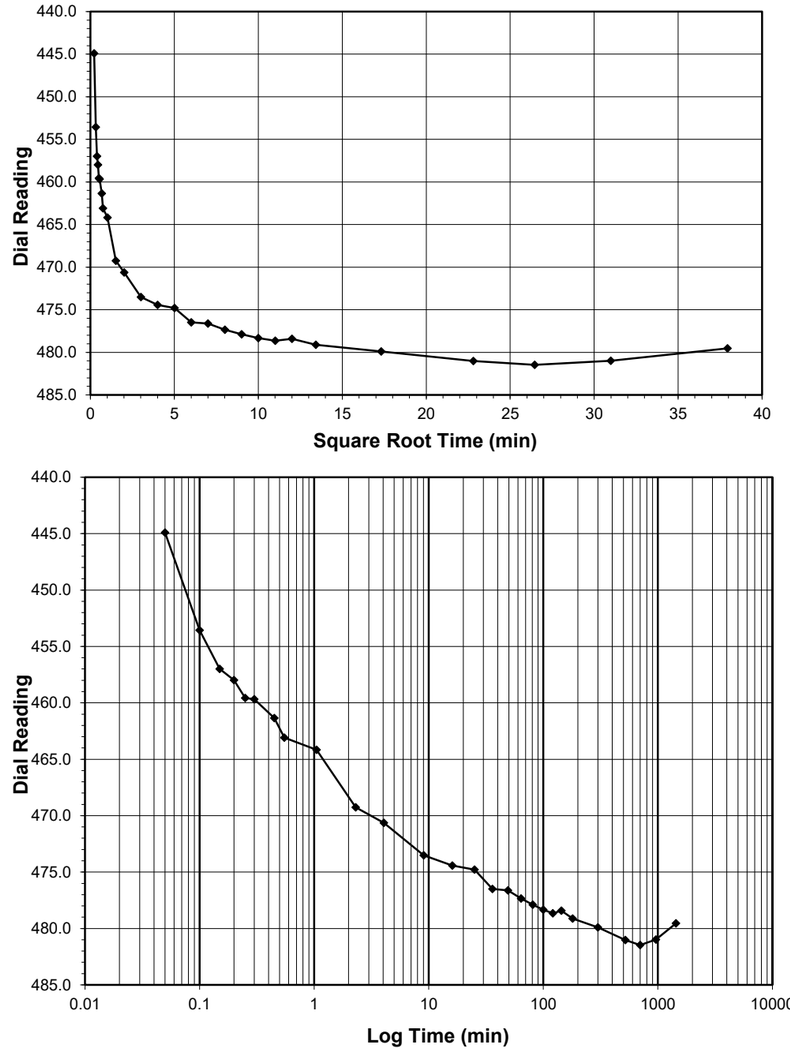
AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-2.0**
Final Reading	**(div)**	**479.5**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/9/2022
Start Time		7:52:41

Elapsed Time (min)	Dial Reading (div)
Initial	**420.6**
0.05	444.9
0.10	453.6
0.15	457.0
0.20	458.0
0.25	459.6
0.30	459.7
0.45	461.3
0.55	463.1
1.05	464.2
2.30	469.3
4.05	470.6
9.05	473.5
16.07	474.4
25.07	474.8
36.07	476.5
49.07	476.6
64.07	477.3
81.07	477.9
100.07	478.3
121.07	478.6
144.07	478.4
180.07	479.1
300.07	479.9
520.07	481.0
700.07	481.5
960.07	481.0
1440.00	479.5

Tested By *129-07-0411* *Date* 3/9/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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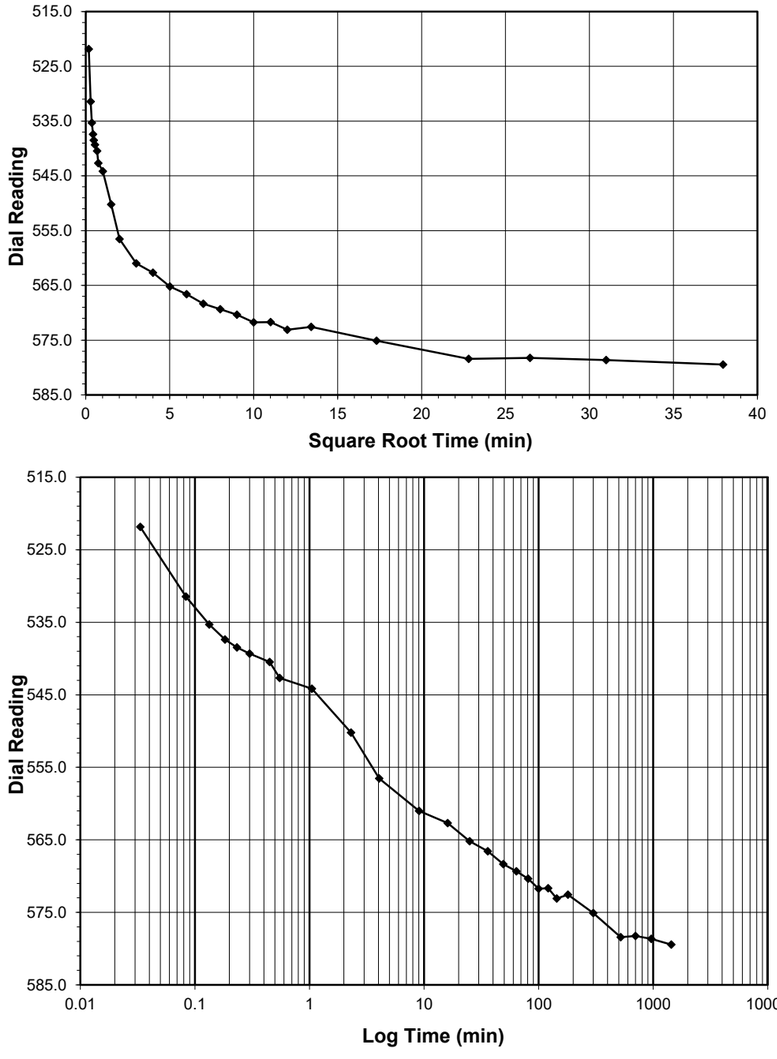
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2.0-4.0**
Final Reading	**(div)**	**579.5**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/10/2022
Start Time		7:52:41

Elapsed Time (min)	Dial Reading (div)
Initial	**479.5**
0.03	521.9
0.08	531.4
0.13	535.3
0.18	537.4
0.23	538.5
0.30	539.3
0.45	540.5
0.55	542.7
1.05	544.2
2.30	550.2
4.05	556.5
9.05	561.0
16.05	562.7
25.05	565.2
36.05	566.6
49.05	568.3
64.05	569.3
81.07	570.4
100.07	571.7
121.07	571.7
144.07	573.1
180.07	572.6
300.07	575.1
520.07	578.4
700.07	578.2
960.07	578.6
1440.07	579.5

Tested By *129-07-0411* *Date* 3/10/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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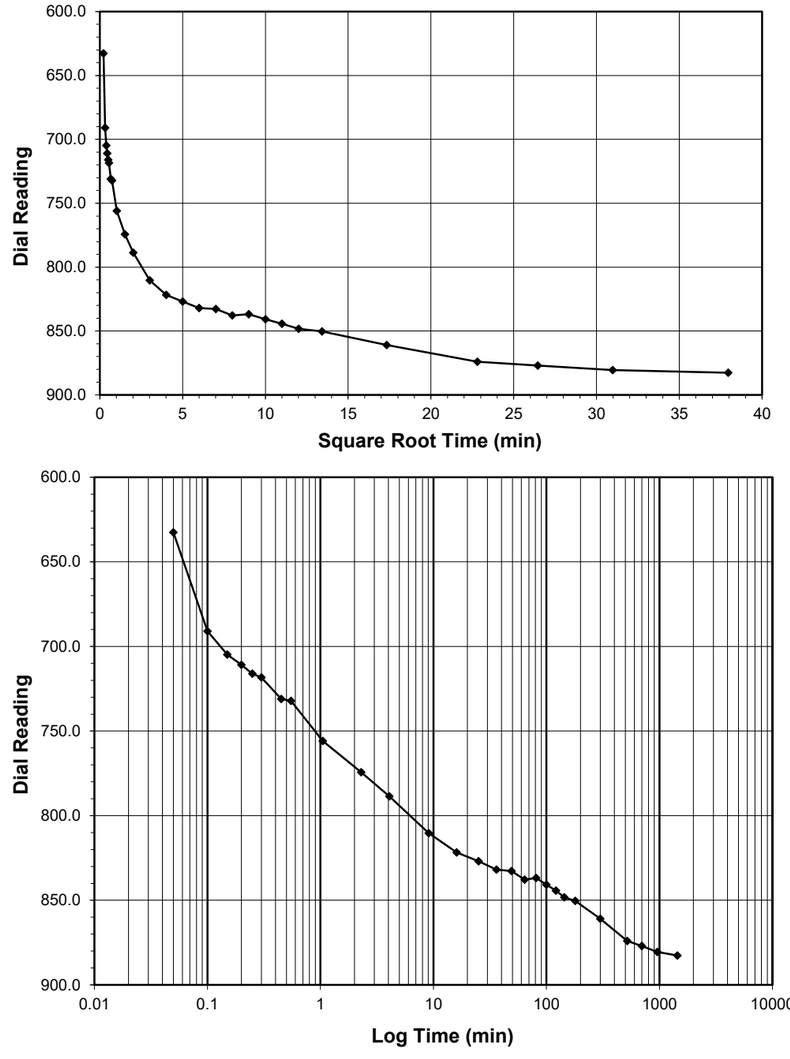
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-8.0**
Final Reading	**(div)**	**882.6**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/11/2022
Start Time		7:53:11

Elapsed Time (min)	Dial Reading (div)
Initial	**579.5**
0.05	632.6
0.10	691.0
0.15	704.8
0.20	710.9
0.25	716.0
0.30	718.4
0.45	731.0
0.55	732.2
1.05	755.9
2.30	774.3
4.07	788.6
9.07	810.3
16.07	821.7
25.07	826.9
36.07	831.9
49.07	832.7
64.07	837.8
81.07	836.8
100.07	840.8
121.07	844.3
144.07	848.2
180.07	850.3
300.07	861.0
520.07	874.1
700.07	877.0
960.07	880.5
1440.08	882.6

Tested By *129-07-0411* *Date* 3/11/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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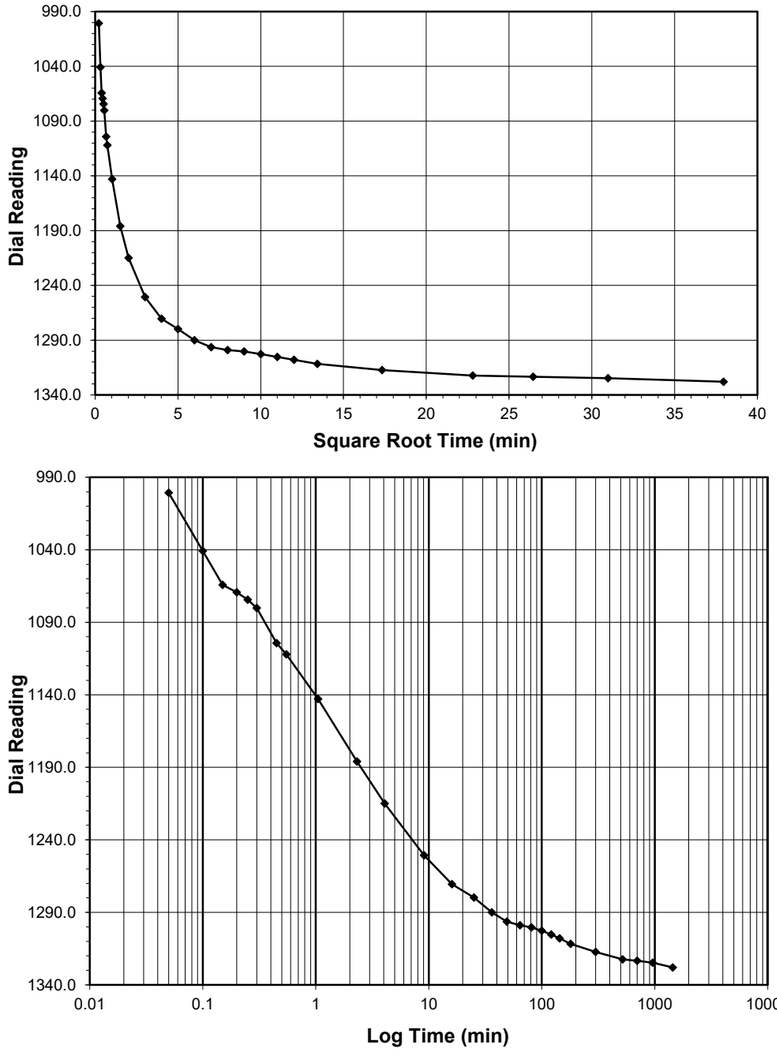
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**8.0-16.0**
Final Reading	**(div)**	**1328.0**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/12/2022
Start Time		7:53:36

Elapsed Time (min)	Dial Reading (div)
Initial	**882.6**
0.05	1000.8
0.10	1040.8
0.15	1064.3
0.20	1069.3
0.25	1074.4
0.30	1080.2
0.45	1104.3
0.55	1112.1
1.05	1142.9
2.32	1186.0
4.07	1215.0
9.07	1250.7
16.07	1270.5
25.07	1279.8
36.07	1290.1
49.07	1296.4
64.07	1298.9
81.07	1300.3
100.07	1302.6
121.07	1305.3
144.07	1307.9
180.07	1311.8
300.07	1317.3
520.07	1322.4
700.07	1323.4
960.07	1324.7
1440.22	1328.0

Tested By *129-07-0411* *Date* 3/12/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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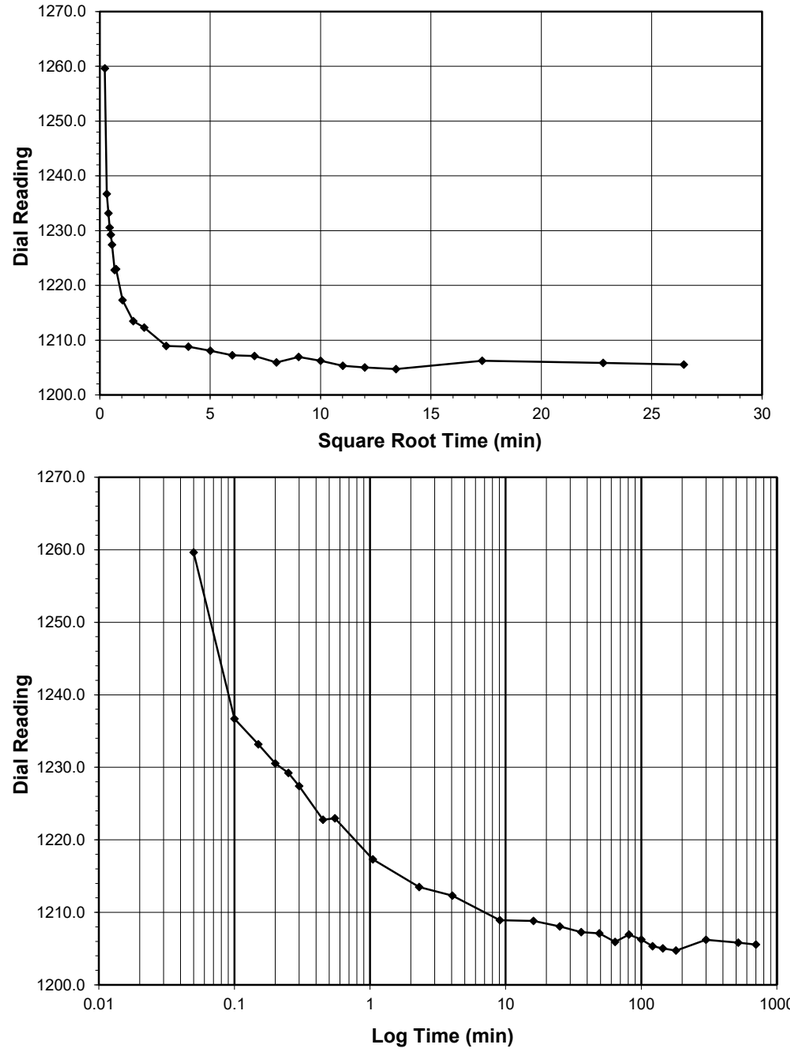
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**16.0-4.0**
Final Reading	**(div)**	**1205.5**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/13/2022
Start Time		7:53:49

Elapsed Time (min)	Dial Reading (div)
Initial	**1328.0**
0.05	1259.6
0.10	1236.7
0.15	1233.2
0.20	1230.5
0.25	1229.2
0.30	1227.4
0.45	1222.8
0.55	1223.0
1.05	1217.3
2.30	1213.5
4.05	1212.3
9.07	1208.9
16.07	1208.8
25.07	1208.1
36.07	1207.3
49.07	1207.1
64.07	1205.9
81.07	1207.0
100.07	1206.2
121.07	1205.3
144.07	1205.0
180.07	1204.7
300.07	1206.2
520.07	1205.8
700.07	1205.5

Tested By *129-07-0411* *Date* 3/13/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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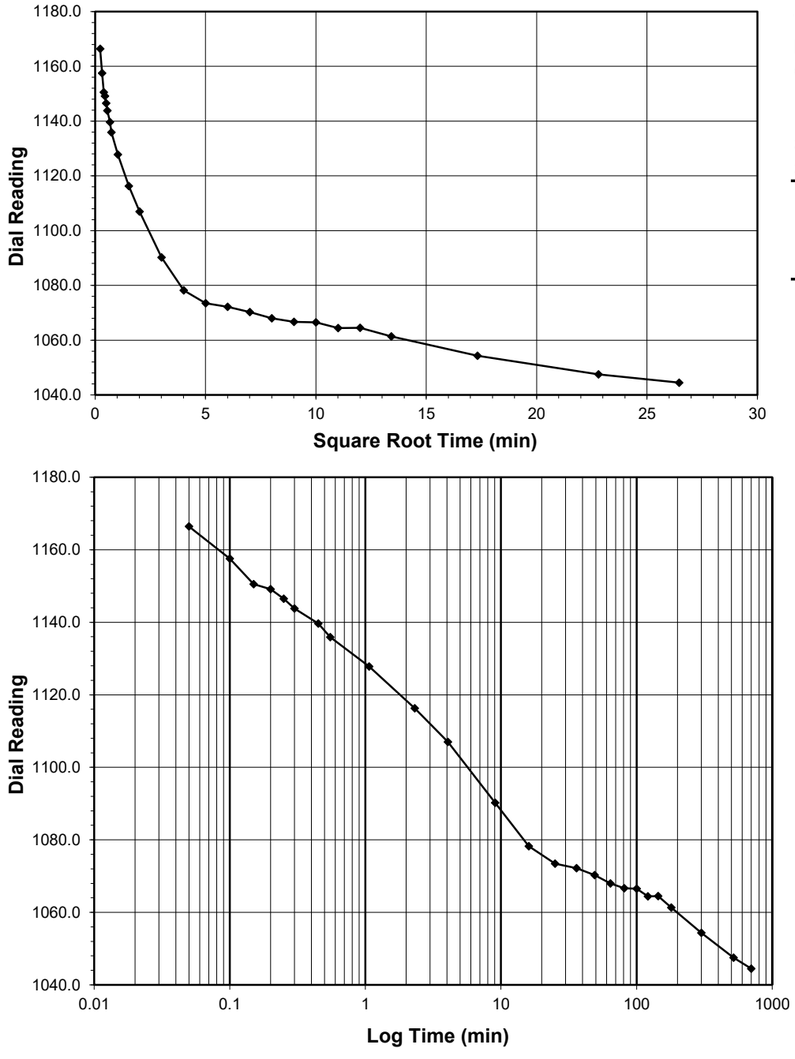
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-1.0**
Final Reading	**(div)**	**1044.5**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/13/2022
Start Time		19:54:01

Elapsed Time (min)	Dial Reading (div)
Initial	**1205.5**
0.05	1166.4
0.10	1157.5
0.15	1150.5
0.20	1149.1
0.25	1146.5
0.30	1143.8
0.45	1139.7
0.55	1135.9
1.07	1127.8
2.32	1116.3
4.07	1107.0
9.07	1090.2
16.07	1078.2
25.07	1073.4
36.07	1072.2
49.07	1070.3
64.07	1068.0
81.07	1066.7
100.07	1066.5
121.07	1064.4
144.07	1064.5
180.07	1061.3
300.07	1054.3
520.07	1047.5
700.07	1044.5

Tested By *129-07-0411* *Date* 3/13/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

Z:\#1 RALEIGH\2022 Projects\Wood, PLC\2022-047 - B5721-Replace Bridge No. 124\[2022-047-001-001 DOT GEOJAC-16TSF1 Cv.xlsm]FINAL PLOT

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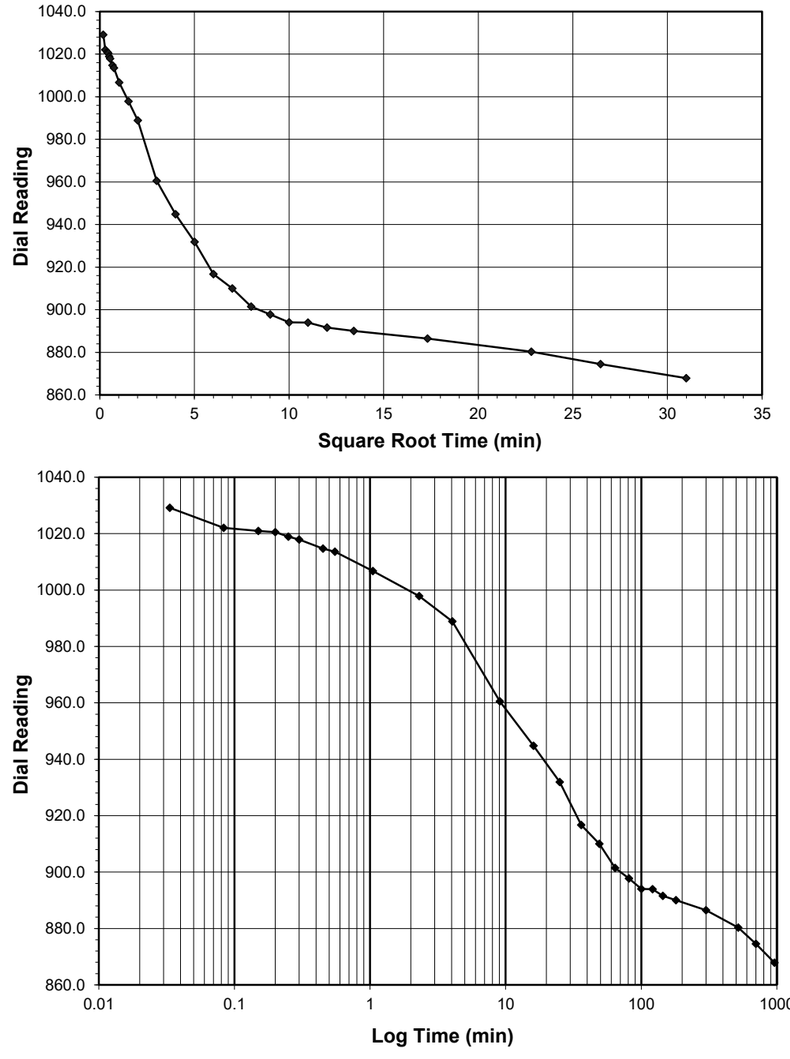
ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client	Wood, PLC	Boring No.	EB1-A	Station: 20+21 -L-
Client Project	B5721-Replace Bridge No. 124	Depth (ft)	3.0-5.0	Offset: 22' LT
Project No.	R-2022-047-001	Sample No.	ST-1	
Lab ID	R-2022-047-001-001	Visual Description	Brown Lean Clay with Sand	

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-0.25**
Final Reading	**(div)**	**867.9**
Consolidometer No.		**R470**
1 Division	(in)	0.0001
Start Date		3/14/2022
Start Time		7:54:07

Elapsed Time (min)	Dial Reading (div)
Initial	**1044.5**
0.03	1029.2
0.08	1022.0
0.15	1021.0
0.20	1020.5
0.25	1018.9
0.30	1017.9
0.45	1014.7
0.55	1013.6
1.05	1006.7
2.30	997.8
4.05	988.9
9.05	960.5
16.05	944.8
25.05	931.9
36.05	916.7
49.05	910.0
64.05	901.5
81.05	897.7
100.05	894.0
121.07	893.9
144.07	891.6
180.07	890.0
300.07	886.5
520.07	880.3
700.07	874.5
960.07	867.9

Tested By *129-07-0411* *Date* 3/14/2022 *Checked By* *GEM* *Date* 3/15/2022

DCN: CT-24E Date: 5/3/12 Revision: 3

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SITE PHOTOGRAPH