

REFERENCE: I-5715

PROJECT: 50128

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY MECKLENBURG
PROJECT DESCRIPTION I-77 AND NC 73 INTERCHANGE,
UPGRADE EXISTING INTERCHANGE TO
SPLIT DIAMOND CONFIGURATION

SITE DESCRIPTION BRIDGE NO.1415 OVER NORTHCROSS
DRIVE (-Y8-) AND I-77 SOUTHBOUND (-L3SB-) ON
I-77 SOUTH CROSSING (-Y1-)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5715	1	14

CAUTION NOTICE

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

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

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

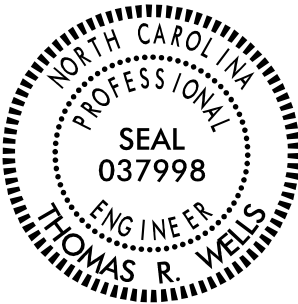
- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR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

PERSONNEL
GRAINGER, P.
GRAHL, D.
TURNAGE, J.
TOOTHMAN, R.
INVESTIGATED BY GRAINGER, P.
DRAWN BY FIELDS, W. D.
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CHECKED BY RIGGS, A.F., JR.
SUBMITTED BY WELLS, T. R.
DATE MARCH 2025

Prepared in the Office of:



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GREENSBORO, NORTH CAROLINA 27410
NC REGISTERED ENGINEERING FIRM: E-0869
NC REGISTERED GEOLOGIC FIRM: C-367



DocuSigned by:
Thomas R. Wells 04/09/2025
F38C777458851EA SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

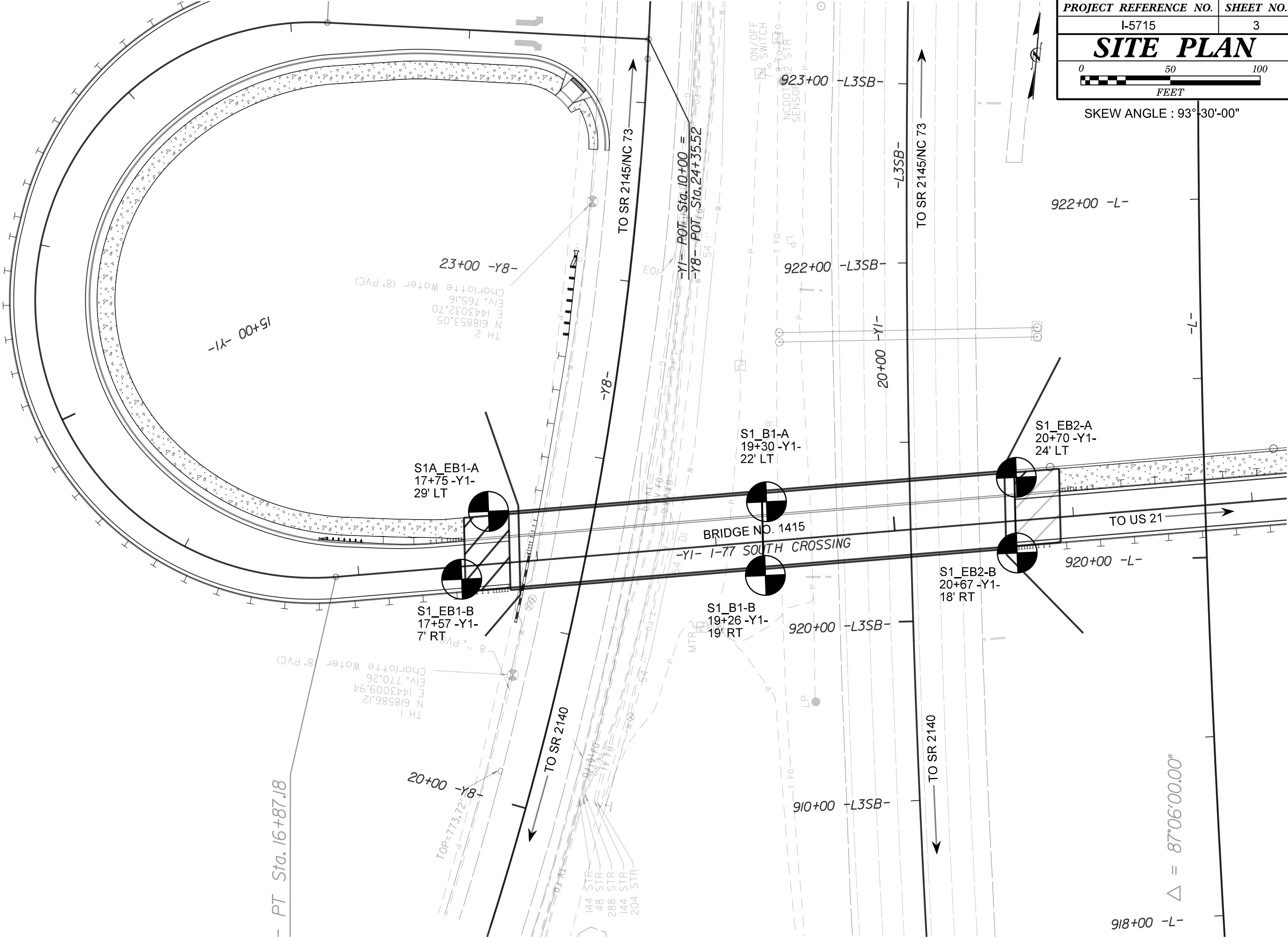
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

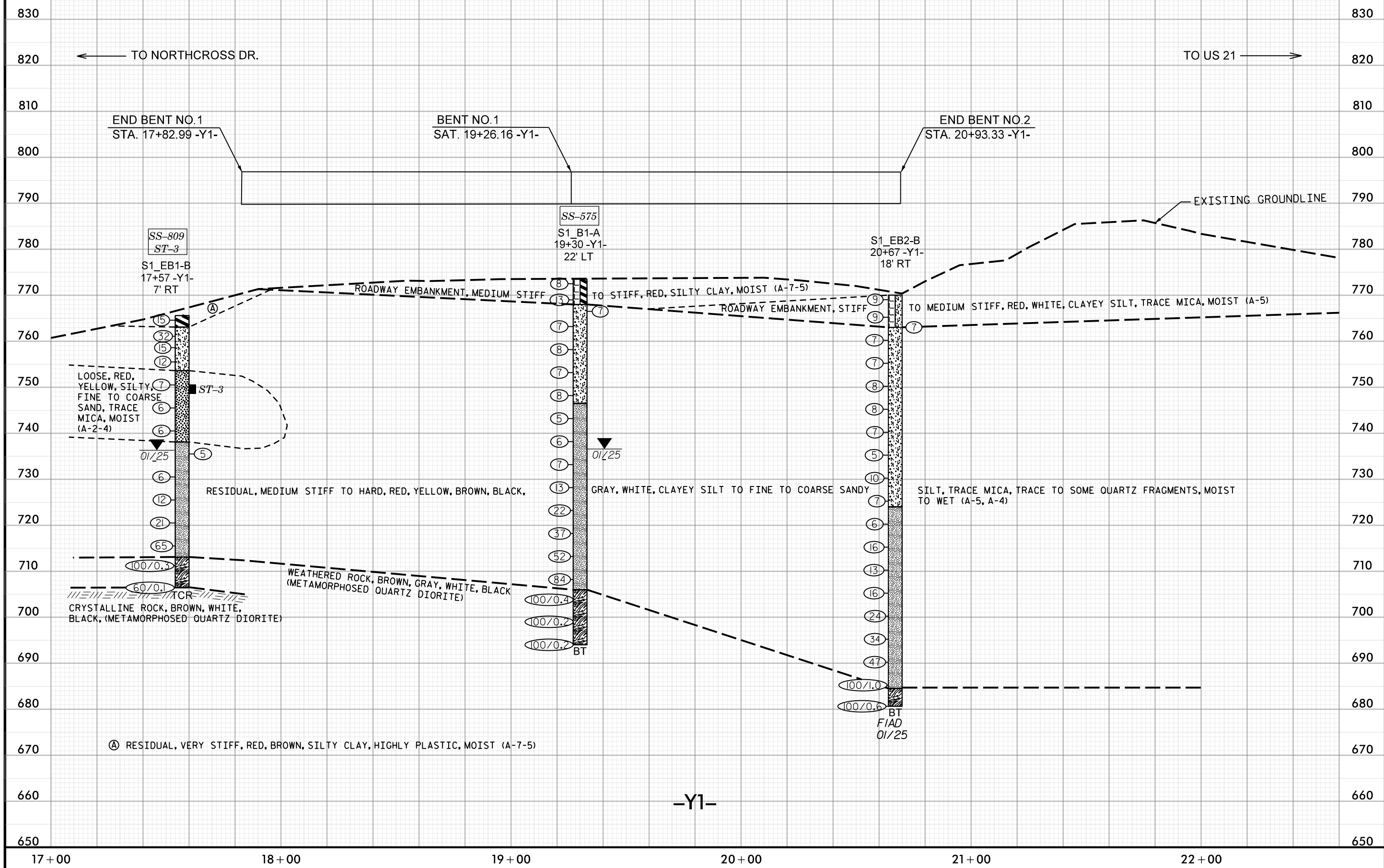
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE 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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										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.										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:										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 DISLOGGED 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 (SROD) - 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.									
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										CRISTALLINE ROCK (CR)									
GENERAL CLASS.		GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS					CRYSTALLINE ROCK (CR)		NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.								FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.												
GROUP CLASS.	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1-A-2 A-3	A-4, A-5 A-6, A-7	NON-CRYSTALLINE ROCK (NCR)		FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.								COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.															
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															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										MISCELLANEOUS SYMBOLS										ROCK HARDNESS																			
PRIMARY SOIL TYPE		COMPACTNESS OR CONSISTENCY		RANGE OF STANDARD PENETRATION RESISTENCE (IN-VALUE)			RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)					ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION				DIP & DIP DIRECTION OF ROCK STRUCTURES				SOIL SYMBOL				TEST BORING				SLOPE INDICATOR INSTALLATION											
GENERAL		VERY LOOSE		< 4			N/A					ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT				AUGER BORING				CONE PENETROMETER TEST				SOUNDING ROD				TEST BORING WITH CORE											
GENERAL		VERY SOFT		2 TO 4			< 0.25					INFERRED SOIL BOUNDARY				MONITORING WELL				PIEZOMETER INSTALLATION				SPT N-VALUE				INFERRED ROCK LINE											
GENERAL		SOFT		4 TO 6			0.25 TO 0.5					INFERRED ROCK LINE				ALLUVIAL SOIL BOUNDARY																							
GENERAL		MEDIUM STIFF		6 TO 8			0.5 TO 1.0																																
GENERAL		STIFF		8 TO 15			1 TO 2																																
GENERAL		VERY STIFF		15 TO 30			2 TO 4																																
GENERAL		HARD		> 30			> 4																																
TEXTURE OR GRAIN SIZE										RECOMMENDATION SYMBOLS										ROCK HARDNESS																			
U.S. STD. SIEVE SIZE OPENING (MM)		4		10		40		60		200		270				UNDERCUT				UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE				UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL				SHALLOW UNDERCUT											
BOULDER (BLDR.)		COBBLE (COB.)		GRAVEL (GR.)		COARSE SAND (CSE, SD.)		FINE SAND (F SD.)		SILT (SL.)		CLAY (CL.)																											
GRAIN SIZE		305 IN.		75		2.0		0.25		0.05		0.005																											
SOIL MOISTURE - CORRELATION OF TERMS										ABBREVIATIONS										ROCK HARDNESS																			
SOIL MOISTURE SCALE (ATTERBERG LIMITS)		FIELD MOISTURE DESCRIPTION		GUIDE FOR FIELD MOISTURE DESCRIPTION						AR - AUGER REFUSAL		MED. - MEDIUM		VST - VANE SHEAR TEST		WEA. - WEATHERED		7 - UNIT WEIGHT		7g - DRY UNIT WEIGHT		SAMPLE ABBREVIATIONS		S - BULK		SS - SPLIT SPOON		ST - SHELBY TUBE		RS - ROCK		RT - RECOMPACTED TRIAXIAL		CBR - CALIFORNIA BEARING RATIO					
LL		LIQUID LIMIT		USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE						BT - BORING TERMINATED		CL. - CLAY		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					
PL		PLASTIC LIMIT		SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE						CSE. - COARSE		DMT - DILATOMETER TEST		DPT - DYNAMIC PENETRATION TEST		e - VOID RATIO		F - FINE		FOSS. - FOSSILIFEROUS		FRAC. - FRACTURED, FRACTURES		FRAGS. - FRAGMENTS		HL. - HIGHLY													
OM		OPTIMUM MOISTURE SHRINKAGE LIMIT		SOLID; AT OR NEAR OPTIMUM MOISTURE																																			
SL				REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE																																			
PLASTICITY										EQUIPMENT USED ON SUBJECT PROJECT										FRACTURE SPACING										BEDDING									
PLASTICITY INDEX (PI)		DRY STRENGTH								DRILL UNITS:		ADVANCING TOOLS:		HAMMER TYPE:		CORE SIZE:		HAND TOOLS:		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.			
NON PLASTIC		0-5		VERY LOW						☐ CME-45C		☐ CLAY BITS		☒ AUTOMATIC ☐ MANUAL		☐ -B		☐ POST HOLE DIGGER																					
SLIGHTLY PLASTIC		6-15		SLIGHT						☐ CME-55		☐ 6" CONTINUOUS FLIGHT AUGER		☐ CORE BIT		☐ -N		☐ HAND AUGER																					
MODERATELY PLASTIC		16-25		MEDIUM						☐ CME-550		☐ 8" HOLLOW AUGERS		☐ TUNG.-CARBIDE INSERTS		☐ TRICONE 2-15/16" TUNG.-CARB.		☐ CASING ☐ W/ ADVANCER																					
HIGHLY PLASTIC		26 OR MORE		HIGH						☐ VANE SHEAR TEST		☐ HARD FACED FINGER BITS		☐ CORE BIT		☐ TRICONE		☐ 3-1/4 HOLLOW STEM AUGERS																					
										☐ PORTABLE HOIST		☐ TUNG.-CARBIDE INSERTS		☐ CORE BIT		☐ TRICONE																							
										☒ CME-55 (TRI0055)		☒ TRICONE 2-15/16" TUNG.-CARB.		☐ CORE BIT		☐ TRICONE																							
										☒ MOBILE B-57 (TER4013)		☒ 3-1/4 HOLLOW STEM AUGERS		☐ CORE BIT		☐ TRICONE																							

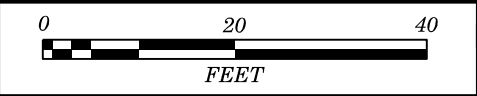
PROJECT REFERENCE NO.	SHEET NO.
I-5715	3
SITE PLAN	
0 50 100 FEET	

SKREW ANGLE : 93° 30'-00"



<i>HORIZONTAL</i>  <i>FEET</i>		<i>VERTICAL</i>  <i>FEET</i>		PROJECT REFERENCE NO. I-5715	SHEET NO. 4
VE = 2				CENTERLINE PROFILE ALONG (-YI-) AT BRIDGE NO.1415 OVER NORTHCROSS DRIVE (-Y8-) AND I-77 SOUTHBOUND (-L3SB-)	





PROJ. REFERENCE NO.	SHEET NO.
I-5715	5

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

NOTE:
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED
ON TO THE CROSS SECTION GROUNDLINE TAKEN FROM
THE PROVIDED PROJECT TIN FILE (i5715_ls_tin.tin) DATE 12/18/2024.
SKEW ANGLE : 93°-30'-00"

CROSS SECTION THROUGH END BENT NO. 1 AT STA. 17 + 82.99 -Y1-

℄

SS-809
ST-3

S1A_EB1-A
17+75 -Y1-
29' LT

S1_EB1-B
17+57 -Y1-
7' RT

EXISTING GROUND

ROADWAY EMBANKMENT, MEDIUM DENSE, RED,
BROWN, SILTY FINE TO COARSE SAND, TRACE
GRAVEL, TRACE ASPHALT FRAGMENTS, TRACE OF
ORGANIC MATTER, MOIST (A-2-4)

VERY STIFF, RED, BROWN, SILTY CLAY,
MOIST, HIGHLY PLASTIC (A-7-5)

RESIDUAL, STIFF TO HARD, RED, YELLOW,

FINE TO

COARSE SANDY AND CLAYEY SILT, TRACE MICA, MOIST (A-4, A-5)

LOOSE TO MEDIUM DENSE, YELLOW, RED, BROWN,

WHITE, GRAY,

SILTY FINE TO COARSE SAND, TRACE MICA, MOIST TO WET (A-2-4)

07/19

01/25

MEDIUM STIFF TO HARD, BROWN, YELLOW, WHITE,
FINE TO COARSE SANDY SILT, TRACE MICA, TRACE
QUARTZ FRAGMENTS, MOIST (A-4)

WEATHERED ROCK (BROWN, WHITE, BLACK

100/0.9

60/0.0

AR

100/0.3

60/0.1

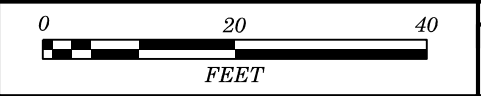
TCR

METAMORPHOSED QUARTZ DIORITE)

CRYSTALLINE ROCK (BROWN, WHITE, BLACK, METAMORPHOSED QUARTZ DIORITE)

17 + 82.99
-Y1-

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



PROJ. REFERENCE NO.	SHEET NO.
I-5715	6

NOTE:
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED
ON TO THE CROSS SECTION GROUNDLINE TAKEN FROM
THE PROVIDED PROJECT TIN FILE (i5715_ls_tin.tin) DATE 12/18/2024.
SKEW ANGLE : 93°-30'-00"

CROSS SECTION THROUGH BENT NO. 1 AT STA. 19+26.16 -Y1-

CL

SS-575

S1_B1-A
19+30 -Y1-
22' LT

S1_B1-B
19+26 -Y1-
19' RT

EXISTING GROUND

ROADWAY EMBANKMENT

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

RESIDUAL, MEDIUM STIFF TO HARD, RED,
SILT, TRACE MICA, TRACE TO SOME

YELLOW, BROWN,
QUARTZ

BLACK, WHITE, GRAY, CLAYEY SILT TO COARSE TO FINE SANDY
FRAGMENTS, MOIST TO WET, (A-5, A-4)

01/25

01/25

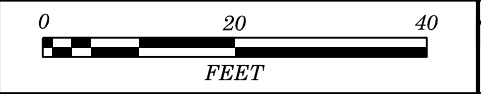
WEATHERED ROCK, BROWN, WHITE,
BLACK (METAMORPHOSED QUARTZ
DIORITE)

BT

BT

19+26.16

-Y/-



PROJ. REFERENCE NO.	SHEET NO.
I-5715	7

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

NOTE:
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED
ON TO THE CROSS SECTION GROUNDLINE TAKEN FROM
THE PROVIDED PROJECT TIN FILE (i5715_Is_tin.tin) DATE 12/18/2024.
SKEW ANGLE : 93°-30'-00"

CROSS SECTION THROUGH END BENT NO. 2 AT STA. 20 + 69.33 -Y1-

℄

S1_EB2-A
20+70 -Y1-
24' LT

S1_EB2-B
20+67 -Y1-
18' RT

EXISTING GROUND

ROADWAY EMBANKMENT,

MEDIUM STIFF TO STIFF, RED, BROWN, WHITE,
CLAYEY SILT, TRACE MICA, MOIST (A-5)

RESIDUAL, MEDIUM STIFF TO HARD, RED, WHITE, BLACK,
TRACE TO SOME QUARTZ FRAGMENTS, MOIST TO WET

01/25
YELLOW, GRAY,
(A-5, A-4)

BROWN, CLAYEY AND FINE TO COARSE SANDY SILT, TRACE MICA,

WEATHERED ROCK, BROWN, WHITE, GRAY
(METAMORPHOSED QUARTZ DIORITE)

BT

BT

FIAD
01/25

20 + 69.33

-Y1-

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

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50128.1.FS1		TIP I-5715		COUNTY MECKLENBURG		GEOLOGIST GRAHL, D.								
SITE DESCRIPTION Bridge No. 1415 over Northcross Drive (-Y8-) and I-77 Southbound (-L3SB-) on I-77 South Crossing (-Y1-)								GROUND WTR (ft)						
BORING NO. S1A_EB1-A		STATION 17+75		OFFSET 29 ft LT		ALIGNMENT -Y1-		0 HR.	23.0					
COLLAR ELEV. 765.9 ft		TOTAL DEPTH 58.5 ft		NORTHING 618,676		EASTING 1,442,989		24 HR.	26.1					
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 87% 03/21/2019				DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER TOOTHMAN, R.		START DATE 07/10/19		COMP. DATE 07/10/19		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)
770														
765	765.9	0.0	5	5	8								765.9	GROUND SURFACE 0.0
760	762.4	3.5	4	8	10								763.4	ROADWAY EMBANKMENT 2.5
755	757.4	8.5	3	5	7									
750	752.4	13.5	3	4	3								753.4	RESIDUAL 12.5
745	747.4	18.5	3	3	4									
740	742.4	23.5	2	3	3									
735	737.4	28.5	1	2	3									
730	732.4	33.5	1	2	2									
725	727.4	38.5	5	7	10									
720	722.4	43.5	8	11	14									
715	717.4	48.5	8	12	16									
710	712.4	53.5	30	70/0.4						100/0.9			712.9	WEATHERED ROCK 53.0
	707.4	58.5	60/0.0							60/0.0			707.4	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 707.4 ft ON CRYSTALLINE ROCK (METAMORPHOSED QUARTZ DIORITE) 58.5

WBS 50128.1.FS1		TIP I-5715		COUNTY MECKLENBURG		GEOLOGIST GRAINGER, P.							
SITE DESCRIPTION Bridge No. 1415 over Northcross Drive (-Y8-) and I-77 Southbound (-L3SB-) on I-77 South Crossing (-Y1-)							GROUND WTR (ft)						
BORING NO. S1_EB1-B		STATION 17+57		OFFSET 7 ft RT		ALIGNMENT -Y1-		0 HR.	N/A				
COLLAR ELEV. 766.6 ft		TOTAL DEPTH 59.2 ft		NORTHING 618,637		EASTING 1,442,977		24 HR.	29.3				
DRILL RIG/HAMMER EFF./DATE TER4013 Mobile B-57 88% 11/12/2024				DRILL METHOD Mud Rotary			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.		START DATE 01/08/25		COMP. DATE 01/09/25		SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
770													
765	766.6	0.0	5	6	9	15					SS-809	19%	766.6 GROUND SURFACE 0.0
	763.1	3.5	11	16	16		32					M	764.1 RESIDUAL 2.5
760	760.6	6.0	4	6	9							M	HARD TO STIFF, RED, YELLOW, CLAYEY SILT, TRACE MICA, MOIST (A-5)
	757.5	9.1	3	5	7	15						M	
755						12						M	
	752.5	14.1	2	3	4							M	754.6 LOOSE, RED, YELLOW, SILTY, FINE TO COARSE SAND, TRACE MICA, MOIST (A-2-4) 12.0
750						7						M 17%	
	747.5	19.1	3	3	3							M	
745						6						M	
	742.5	24.1	2	3	3							M	
740						6						M	
	737.5	29.1	1	2	3							M	739.1 MEDIUM STIFF TO HARD, BROWN, YELLOW, WHITE, FINE TO COARSE SANDY SILT, TRACE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-4) 27.5
735						5						M	
	732.5	34.1	1	3	3							M	
730						6						M	
	727.5	39.1	3	4	8		12					M	
725												M	
	722.5	44.1	6	7	14			21				W	
720												W	
	717.5	49.1	23	26	39				65				
715													
	712.5	54.1	100/0.3							100/0.3			714.1 WEATHERED ROCK 52.5
710													BROWN, WHITE, BLACK (METAMORPHOSED QUARTZ DIORITE)
	707.5	59.1	60/0.1							60/0.1			707.5 CRYSTALLINE ROCK 59.1
													707.4 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 707.4 ft IN CRYSTALLINE ROCK (METAMORPHOSED QUARTZ DIORITE) 59.2
													Other Samples: ST-3 (15.0 - 17.0)

NCDOT BORE DOUBLE I5715_GEO_STRUC.GPJ NC_DOT.GDT 4/3/25

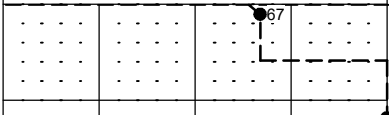
GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50128.1.FS1				TIP I-5715				COUNTY MECKLENBURG				GEOLOGIST GRAINGER, P.					
SITE DESCRIPTION Bridge No. 1415 over Northcross Drive (-Y8-) and I-77 Southbound (-L3SB-) on I-77 South Crossing (-Y1-)												GROUND WTR (ft)					
BORING NO. S1_B1-B				STATION 19+26				OFFSET 19 ft RT				ALIGNMENT -Y1-				0 HR. N/A	
COLLAR ELEV. 774.2 ft				TOTAL DEPTH 70.0 ft				NORTHING 618,653				EASTING 1,443,146				24 HR. 36.0	
DRILL RIG/HAMMER EFF./DATE TER4013 Mobile B-57 88% 11/12/2024								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.				START DATE 01/08/25				COMP. DATE 01/08/25				SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
775	774.2	0.0												774.2	0.0		
			4	7	8												
770	770.7	3.5	7	10	9												
	768.2	6.0	2	4	5												
765	765.0	9.2	2	4	4												
760	760.0	14.2	2	3	5												
755	755.0	19.2	2	4	5												
750	750.0	24.2	2	4	4												
745	745.0	29.2	2	3	5												
740	740.0	34.2	4	5	8												
735	735.0	39.2	6	8	13												
730	730.0	44.2	5	10	14												
725	725.0	49.2	14	23	29												
720	720.0	54.2	19	30	43												
715	715.0	59.2	52	48/0.3													
710	710.0	64.2	55	45/0.2													
705	705.0	69.2	40	60/0.3													
														</			

NC DOT BORE DOUBLE I5715 GEO_STRUC.GPJ NC DOT.GDT 4/3/25

NCNDOT BORE DOUBLE I5715_GEO_STRUC.GPJ NC_DOT.GDT 4/3/25

WBS 50128.1.FS1			TIP I-5715			COUNTY MECKLENBURG			GEOLOGIST GRAINGER, P.				
SITE DESCRIPTION Bridge No. 1415 over Northcross Drive (-Y8-) and I-77 Southbound (-L3SB-) on I-77 South Crossing (-Y1-)									GROUND WTR (ft)				
BORING NO. S1_EB2-A			STATION 20+70			OFFSET 24 ft LT			ALIGNMENT -Y1-			0 HR. N/A	
COLLAR ELEV. 769.6 ft			TOTAL DEPTH 85.5 ft			NORTHING 618,719			EASTING 1,443,281			24 HR. 30.7	
DRILL RIG/HAMMER EFF./DATE TER4013 Mobile B-57 88% 11/12/2024						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic				
DRILLER TURNAGE, J. R.			START DATE 01/21/25			COMP. DATE 01/24/25			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100		MOI	
690						Match Line							
			17	29	38						W		687.1 82.5
685	685.5	84.1	21	49	51/0.4	100/0.9							684.1 85.5
WEATHERED ROCK BROWN, WHITE, AND GRAY (METAMORPHOSED QUARTZ DIORITE) Boring Terminated at Elevation 684.1 ft IN WEATHERED ROCK (METAMORPHOSED QUARTZ DIORITE)													

NCDOT BORE DOUBLE I5715 GEO_STRUC.GPJ NC_DOT.GDT 4/3/25

WBS 50128.1.FS1				TIP I-5715				COUNTY MECKLENBURG				GEOLOGIST GRAINGER, P.							
SITE DESCRIPTION Bridge No. 1415 over Northcross Drive (-Y8-) and I-77 Southbound (-L3SB-) on I-77 South Crossing (-Y1-)												GROUND WTR (ft)							
BORING NO. S1_EB2-B				STATION 20+67				OFFSET 18 ft RT				ALIGNMENT -Y1-				0 HR. N/A			
COLLAR ELEV. 770.0 ft				TOTAL DEPTH 89.4 ft				NORTHING 618,677				EASTING 1,443,285				24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER4013 Mobile B-57 88% 11/12/2024								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic							
DRILLER TURNAGE, J. R.				START DATE 01/24/25				COMP. DATE 01/30/25				SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.		LOG	SOIL AND ROCK DESCRIPTION					
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					MOI				
690						Match Line													
	686.2	83.8																	

LABORATORY TESTING SUMMARY

PROJECT NUMBER: 50128.1.FS1

TIP: I-5715

COUNTY: Mecklenburg

DESCRIPTION:	I-77 and the NC 73 Interchange: Bridge No. 1415 over Northcross Drive (-Y8-) and I-77 Southbound (-L3SB-) on I-77 South Crossing (-Y1-)
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[illegible]

NP - NON-PLASTIC

Mitra Grabski
Certified Lab Technician Signature

114-01-1203
Certification Number

SITE PHOTOGRAPHS

BRIDGE NO.1415 OVER NORCROSS DRIVE -Y8- AND
I-77 SOUTHBOUND -L3SB- ON I-77 SOUTH CROSSING -Y1-

PROJECT REFERENCE NO.	SHEET NO.
I-5715	14



EAST OF END BENT NO. 2 LOOKING WEST



SOUTH OF BENT NO. 1 LOOKING NORTH

REFERENCE: I-5715

PROJECT: 50128

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5 - 6	CROSS SECTIONS
7 - 9	BORE LOGS
10	SOIL TEST RESULTS
11 - 15	CONSOLIDATION TEST RESULTS
16	SITE PHOTOGRAPHS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY MECKLENBURG
PROJECT DESCRIPTION I-77 AND NC 73 INTERCHANGE,
UPGRADE EXISTING INTERCHANGE TO
SPLIT DIAMOND CONFIGURATION

SITE DESCRIPTION BRIDGE NO.1416 OVER I-77
NORTHBOUND (-L3NB-) ON I-77 SOUTH CROSSING
(-YI-)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5715	1	16

CAUTION NOTICE

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

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

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

- NOTES:
- 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.
 - 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

DRISCOLL, C.

IKER, Z.

GRAINGER, P.

TOOTHMAN, R.

INVESTIGATED BY GRAINGER, P.

DRAWN BY FIELDS, W. D.

ALMULLA, H.

CHECKED BY RIGGS, A.F., JR.

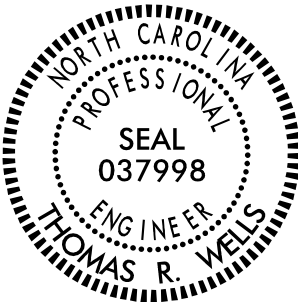
SUBMITTED BY WELLS, T. R.

DATE APRIL 2025

Prepared in the Office of:



7327-G W. FRIENDLY AVE.
GREENSBORO, NORTH CAROLINA 27410
NC REGISTERED ENGINEERING FIRM: E-0869
NC REGISTERED GEOLOGIC FIRM: C-367



DocuSigned by:

Thomas R. Wells 04/09/2025

F38C777458854EA SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

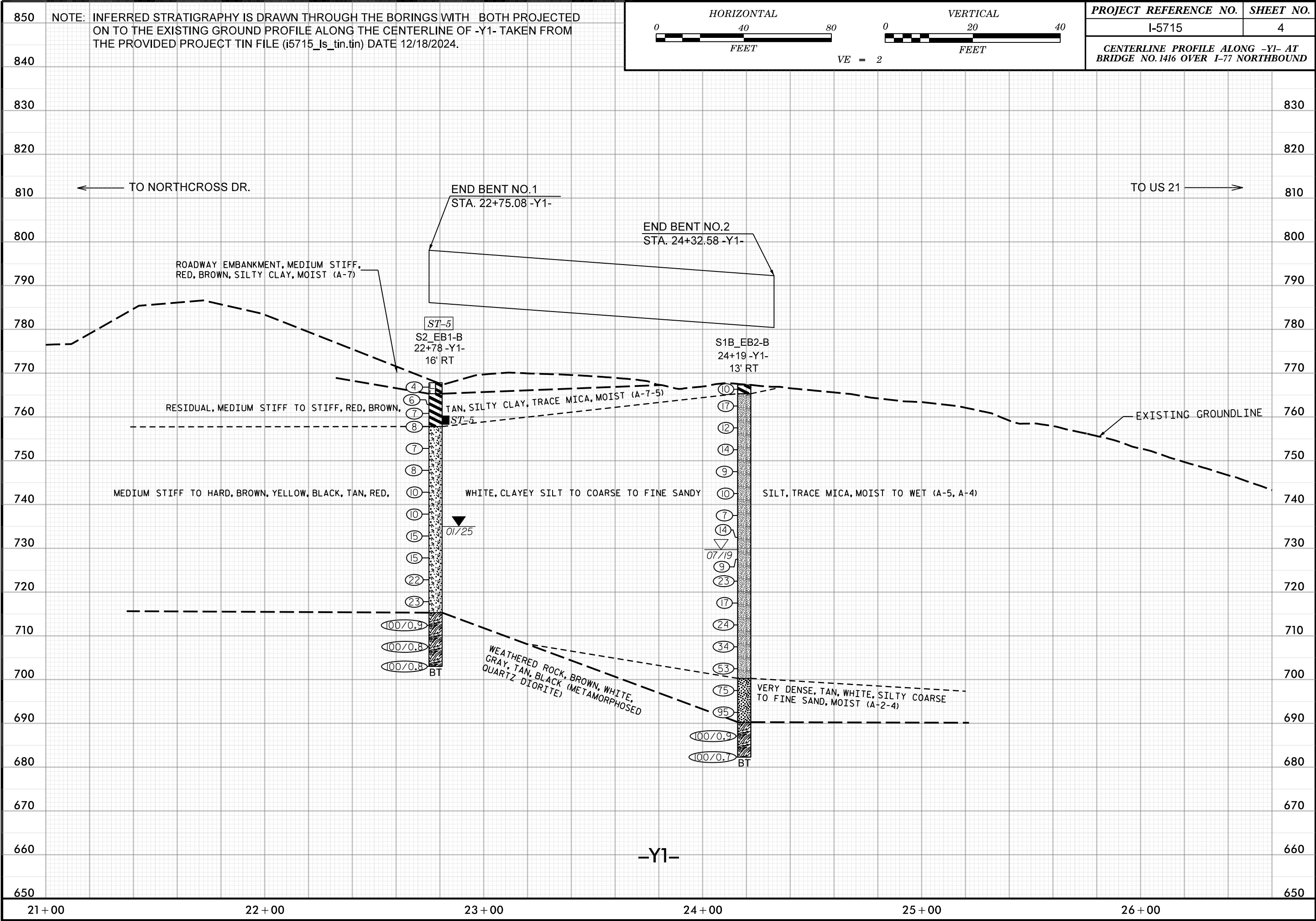
DIVISION OF HIGHWAYS

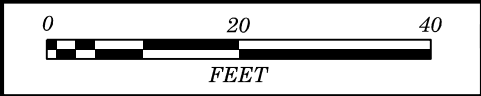
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																			
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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										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.										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:										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 DISLOOGED 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 (ROD) - 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 (SROD) - 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.																			
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										CRISTALLINE ROCK (CR)																			
GENERAL CLASS.		GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS					FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.																																
GROUP CLASS.	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1-A-2 A-3	A-4, A-5 A-6, A-7	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.																																			
SYMBOL														COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.																																			
% 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										MISCELLANEOUS SYMBOLS										ROCK HARDNESS										FRACTURE SPACING																			
PRIMARY SOIL TYPE		COMPACTNESS OR CONSISTENCY		RANGE OF STANDARD PENETRATION RESISTENCE (IN-VALUE)				RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)				ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION										DIP & DIP DIRECTION OF ROCK STRUCTURES										SLOPE INDICATOR INSTALLATION																	
GENERAL		VERY LOOSE		< 4				N/A				SOIL SYMBOL										TEST BORING										CONE PENETROMETER TEST																	
GENERAL		LOOSE		4 TO 10								ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT										AUGER BORING										CORE BORING																	
GENERAL		MEDIUM DENSE		10 TO 30								INFERRED SOIL BOUNDARY										CORE BORING										MONITORING WELL																	
GENERAL		DENSE		30 TO 50								INFERRED ROCK LINE										MONITORING WELL										PIEZOMETER INSTALLATION																	
GENERAL		VERY DENSE		> 50								ALLUVIAL SOIL BOUNDARY										PIEZOMETER INSTALLATION										SPT N-VALUE																	
GENERAL		SOFT		2 TO 4				< 0.25																																									
GENERAL		MEDIUM STIFF		4 TO 8				0.25 TO 0.5																																									
GENERAL		STIFF		8 TO 15				0.5 TO 1.0																																									
GENERAL		VERY STIFF		15 TO 30				1 TO 2																																									
GENERAL		HARD		> 30				2 TO 4																																									
GENERAL								> 4																																									
TEXTURE OR GRAIN SIZE										RECOMMENDATION SYMBOLS										ROCK HARDNESS										BEDDING																			
U.S. STD. SIEVE SIZE		4		10		40		60		200		270		UNCLASIFIED EXCAVATION - UNSUITABLE WASTE										UNCLASIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL																									
OPENING (MM)		4.76		2.00		0.42		0.25		0.075		0.053		UNCLASIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK																																			
BOULDER (BLDR.)		COBBLE (COB.)		GRAVEL (GR.)		COARSE SAND (CSE, SD.)		FINE SAND (F SD.)		SILT (SL.)		CLAY (CL.)																																					
GRAIN SIZE		305 IN.		75 IN.		2.0		0.25		0.05		0.005																																					
SOIL MOISTURE - CORRELATION OF TERMS										ABBREVIATIONS										ROCK HARDNESS										BEDDING																			
SOIL MOISTURE SCALE (ATTERBERG LIMITS)		FIELD MOISTURE DESCRIPTION		GUIDE FOR FIELD MOISTURE DESCRIPTION						AR - AUGER REFUSAL										MED. - MEDIUM										VST - VANE SHEAR TEST																			
CL. - CLAY										BT - BORING TERMINATED										MICA - MICACEOUS										WEA. - WEATHERED																			
CPT - CONE PENETRATION TEST										MOD. - MODERATELY										MOD. - MODERATELY										7 - UNIT WEIGHT																			
CSE. - COARSE										NP - NON PLASTIC										ORG. - ORGANIC										7 _a - DRY UNIT WEIGHT																			
DPT - DILATOMETER TEST										PMT - PRESSUREMETER TEST										SAP. - SAPROLITIC										SAMPLE ABBREVIATIONS																			
DPT - DYNAMIC PENETRATION TEST										SD. - SAND, SANDY										S - BULK																													
e - VOID RATIO										SL. - SILT, SILTY										SS - SPLIT SPOON																													
F - FINE										SLI. - SLIGHTLY										ST - SHELBY TUBE																													
FOSS. - FOSSILIFEROUS										TCR - TRICONE REFUSAL										RS - ROCK																													
FRAC. - FRACTURED, FRACTURES										w - MOISTURE CONTENT										RT - RECOMPACTED TRIAXIAL																													
FRAGS. - FRAGMENTS										V - VERY										CBR - CALIFORNIA BEARING RATIO																													
HL. - HIGHLY																																																	
PLASTICITY										EQUIPMENT USED ON SUBJECT PROJECT										ROCK HARDNESS										BEDDING																			
PLASTICITY INDEX (PI)		DRY STRENGTH								DRILL UNITS:										ADVANCING TOOLS:										HAMMER TYPE:																			
NON PLASTIC		0-5		VERY LOW						☐ CME-45C										☐ CLAY BITS										☒ AUTOMATIC ☐ MANUAL																			
SLIGHTLY PLASTIC		6-15		SLIGHT						☐ CME-55										☐ 6" CONTINUOUS FLIGHT AUGER										CORE SIZE:																			
MODERATELY PLASTIC		16-25		MEDIUM						☐ CME-550										☐ 8" HOLLOW AUGERS										☐ -B ☐ -H																			
HIGHLY PLASTIC		26 OR MORE		HIGH						☐ VANE SHEAR TEST										☐ HARD FACED FINGER BITS										☐ -N																			
										☐ PORTABLE HOIST										☐ TUNG.-CARBIDE INSERTS																													
										☐ MOBILE B-57 (TER4013)										☐ CASING ☐ W/ ADVANCER																													
										☒ DIEDRICH D50 (HFC0279)										☒ TRICONE 2 1/2% TUNG.-CARB.										HAND TOOLS:																			
																				☐ CORE BIT										☐ POST HOLE DIGGER																			
																				☒ 3-1/4" HOLLOW STEM AUGERS										☐ SOUNDRING ROD																			
																														☐ VANE SHEAR TEST																			
																				</																													





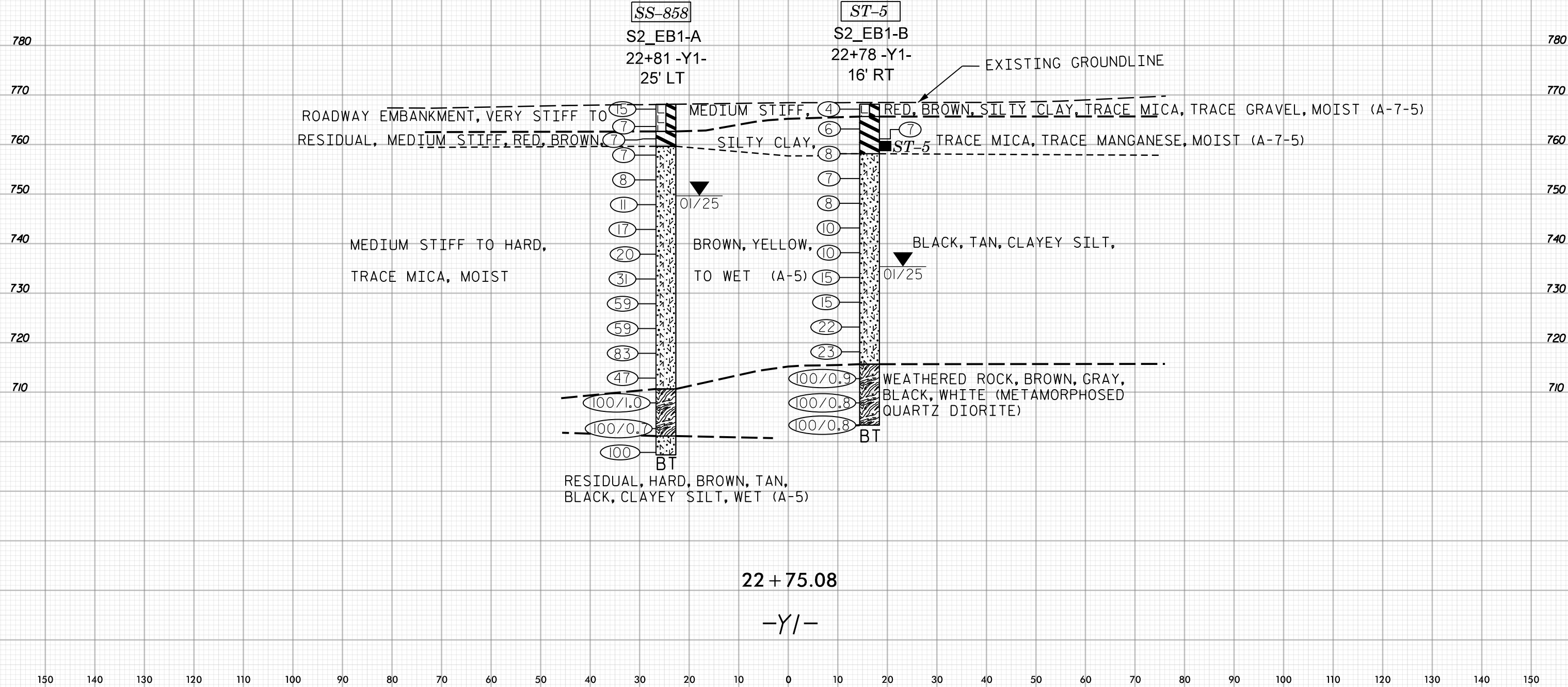
PROJ. REFERENCE NO.	SHEET NO.
I-5715	5

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

NOTE:
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED
ON TO THE CROSS SECTION GROUNDLINE TAKEN FROM
THE PROVIDED PROJECT TIN FILE (i5715_ls_tin.tin) DATE 12/18/2024.
SKEW ANGLE : 92°-57'-16"

CL

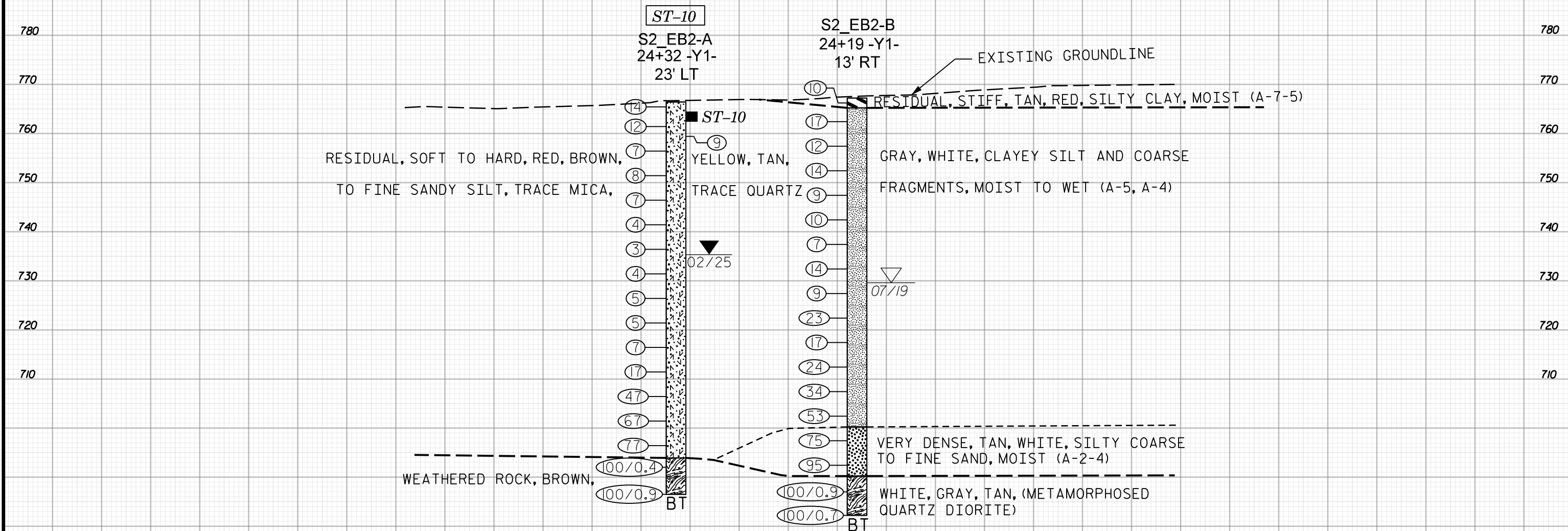
CROSS SECTION THROUGH END BENT NO. 1 AT STA. 22 + 75.08 -Y1-



1501401301201101009080706050403020100102030405060708090100110120130140150

NOTE:
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED
ON TO THE CROSS SECTION GROUNDLINE TAKEN FROM
THE PROVIDED PROJECT TIN FILE (i5715_Is_tin.tin) DATE 12/18/2024.
SKEW ANGLE : 92°-57'-16"

CROSS SECTION THROUGH END BENT NO. 2 AT STA. 24+32.58 -Y1-



24 + 32.58
-Y1-

1501401301201101009080706050403020100102030405060708090100110120130140150

NCDOT BORE DOUBLE I5715_GEO_STRUC.GPJ NC_DOT.GDT 3/30/25

WBS			50128.1.FS1			TIP			I-5715			COUNTY			MECKLENBURG			GEOLOGIST			GRAINGER, P.																							
SITE DESCRIPTION															Bridge No. 1416 over I-77 Northbound (-L3NB-) on I-77 South Crossing (-Y1-)										GROUND WTR (ft)																			
BORING NO.			S2_EB1-B			STATION			22+78			OFFSET			16 ft RT			ALIGNMENT			-Y1-			0 HR.	N/A																			
COLLAR ELEV.			768.2 ft			TOTAL DEPTH			64.8 ft			NORTHING			618,713			EASTING			1,443,493			24 HR.	32.8																			
DRILL RIG/HAMMER EFF./DATE										TER4013 Mobile B-57 88% 11/12/2024										DRILL METHOD					Mud Rotary					HAMMER TYPE					Automatic									
DRILLER					TURNAGE, J. R.					START DATE					01/16/25					COMP. DATE					01/16/25					SURFACE WATER DEPTH										N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT										SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION																									
			0.5ft	0.5ft	0.5ft	0	25		50		75		100																															
770																																												
	768.2	0.0	2	2	2	4										M		768.2 GROUND SURFACE 0.0																										
765																		ROADWAY EMBANKMENT MEDIUM STIFF, RED AND BROWN, SILTY CLAY, MOIST (A-7) 2.5																										
	764.2	4.0	1	3	3	6																																						
	762.2	6.0	2	3	4	7										M																												
760																		RESIDUAL MEDIUM STIFF, RED AND BROWN, SILTY CLAY, TRACE MICA, MOIST (A-7-5)																										
	759.2	9.0	2	3	5	8										M																												
																34%																												
755																		758.2 10.0																										
	754.2	14.0	2	3	4	7										M																												
750																																												
	749.2	19.0	2	3	5	8										M																												
745																																												
	744.2	24.0	2	4	6	10										M																												
740																																												
	739.2	29.0	2	4	6	10										M																												
735																		▼																										
	734.2	34.0	4	6	9	15										W																												
730																																												
	729.2	39.0	4	6	9	15										W																												
725																																												
	724.2	44.0	4	10	12	22										W																												
720																																												
	719.2	49.0	5	8	15	23										W																												
715																		715.7 52.5																										
	714.2	54.0	16	45	55/0.4																																							
710																		WEATHERED ROCK BROWN, GRAY, BLACK (METAMORPHOSED QUARTZ DIORITE)																										
	709.2	59.0	29	63	37/0.3																																							
705																																												
	704.2	64.0	44	56/0.3															703.4 64.8																									
																			Boring Terminated at Elevation 703.4 ft IN WEATHERED ROCK (METAMORPHOSED QUARTZ DIORITE) Other Samples: ST-5 (7.5 - 9.5)																									

NCDOT BORE DOUBLE I5715 GEO STRUC.GPJ NC DOT.GDT 3/30/25

WBS				50128.1.FS1				TIP				I-5715				COUNTY				MECKLENBURG				GEOLOGIST				GRAINGER, P.																							
SITE DESCRIPTION																Bridge No. 1416 over I-77 Northbound (-L3NB-) on I-77 South Crossing (-Y1-)																GROUND WTR (ft)																			
BORING NO.				S2_EB2-A				STATION				24+32				OFFSET				23 ft LT				ALIGNMENT				-Y1-				0 HR.		30.9																	
COLLAR ELEV.				766.5 ft				TOTAL DEPTH				79.9 ft				NORTHING				618,777				EASTING				1,443,638				24 HR.		31.1																	
DRILL RIG/HAMMER EFF./DATE												TER4013 Mobile B-57 88% 11/12/2024												DRILL METHOD								Mud Rotary								HAMMER TYPE				Automatic							
DRILLER						TURNAGE, J. R.						START DATE						01/31/25						COMP. DATE						01/31/25						SURFACE WATER DEPTH												N/A			
ELEV (ft)		DRIVE ELEV (ft)		DEPTH (ft)		BLOW COUNT			BLOWS PER FOOT										SAMP. NO.		MOI		LOG		SOIL AND ROCK DESCRIPTION																										
						0.5ft 0.5ft 0.5ft			0 25 50 75 100																																										
690									Match Line																																										
		687.5		79.0		35 65/0.4																			WEATHERED ROCK BROWN, WHITE, GRAY (METAMORPHOSED QUARTZ DIORITE) (continued) Boring Terminated at Elevation 686.6 ft IN WEATHERED ROCK (METAMORPHOSED QUARTZ DIORITE) Other Samples: ST-10 (2.0 - 4.0)																										

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50128.1.FS1			TIP I-5715			COUNTY MECKLENBURG			GEOLOGIST DRISCOLL, C.						
SITE DESCRIPTION Bridge No. 1416 over I-77 Northbound (-L3NB-) on I-77 South Crossing (-Y1-)									GROUND WTR (ft)						
BORING NO. S1B_EB2-B			STATION 24+19			OFFSET 13 ft RT			ALIGNMENT -Y1-			0 HR. 37.6			
COLLAR ELEV. 767.3 ft			TOTAL DEPTH 85.0 ft			NORTHING 618,739			EASTING 1,443,631			24 HR. Dry			
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 82% 02/06/2019						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER KIKER, Z.			START DATE 07/08/19			COMP. DATE 07/08/19			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
770															
	767.3	0.0												767.3	
765			3	4	6							M			
	763.5	3.8	6	8	9							M		765.3	0.0
760															
	758.5	8.8	5	6	6							M			
755															
	753.5	13.8	5	7	7							M			
750															
	748.5	18.8	3	4	5							M			
745															
	743.5	23.8	3	4	6							M			
740															
	738.5	28.8	3	3	4							M			
735															
	733.5	33.8	6	5	9							M			
730															
	728.5	38.8	2	3	6							M			
725															
	723.5	43.8	8	10	13							M			
720															
	718.5	48.8	7	9	8							M			
715															
	713.5	53.8	6	10	14							M			
710															
	708.5	58.8	8	11	23							M			
705															
	703.5	63.8	14	20	33							M			
700															
	698.5	68.8	19	34	41							M		700.3	67.0
695															
	693.5	73.8	26	35	60							M			
690														690.3	77.0

WBS 50128.1.FS1				TIP I-5715				COUNTY MECKLENBURG				GEOLOGIST DRISCOLL, C.			
SITE DESCRIPTION Bridge No. 1416 over I-77 Northbound (-L3NB-) on I-77 South Crossing (-Y1-)												GROUND WTR (ft)			
BORING NO. S1B_EB2-B				STATION 24+19				OFFSET 13 ft RT				ALIGNMENT -Y1-		0 HR.	37.6
COLLAR ELEV. 767.3 ft				TOTAL DEPTH 85.0 ft				NORTHING 618,739				EASTING 1,443,631		24 HR.	Dry
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 82% 02/06/2019								DRILL METHOD H.S. Augers				HAMMER TYPE Automatic			
DRILLER KIKER, Z.				START DATE 07/08/19				COMP. DATE 07/08/19				SURFACE WATER DEPTH N/A			
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
690						Match Line									
	688.5	78.8	15	31	69/0.4	•	•	•	•	•	•	•		WEATHERED ROCK TAN, WHITE (METAMORPHOSED QUARTZ DIORITE) (continued)	
685						•	•	•	•	•	•	100/0.9			
	683.5	83.8	36	60	40/0.2	•	•	•	•	•	•	100/0.7			
													682.3	85.0	
													Boring Terminated at Elevation 682.3 ft IN WEATHERED ROCK (METAMORPHOSED QUARTZ DIORITE)		

NCDOT BORE DOUBLE I5715 GEO_STRUC.GPJ NC_DOT.GDT 3/30/25

LABORATORY TESTING SUMMARY

PROJECT NUMBER: 50128.1.FS1

TIP: I-5715

COUNTY: Mecklenburg

DESCRIPTION: I-77 and the NC 73 Interchange: Bridge No. 1416 over I-77 Northbound (-L3NB-) on I-77 South Crossing (-Y1-)

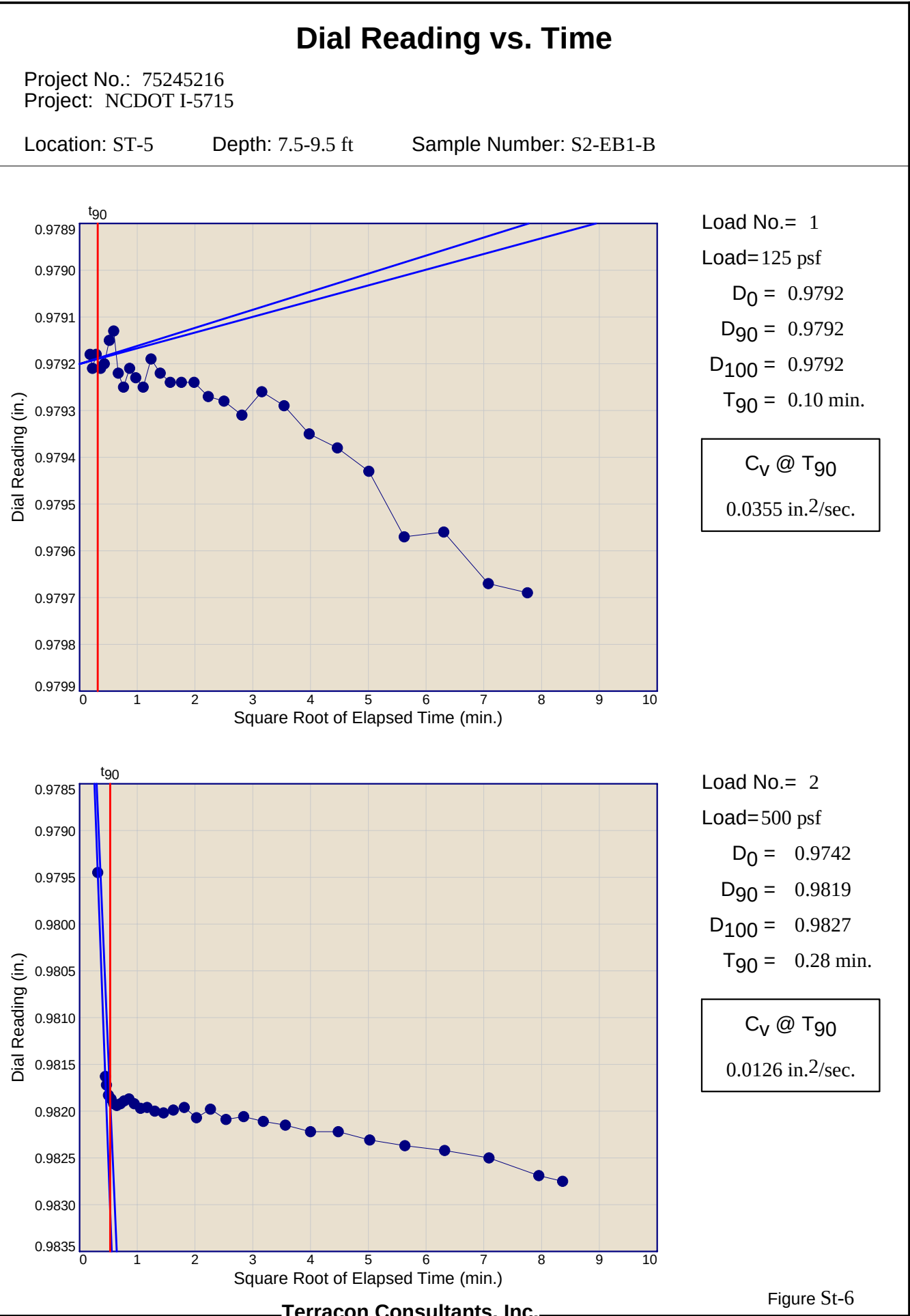
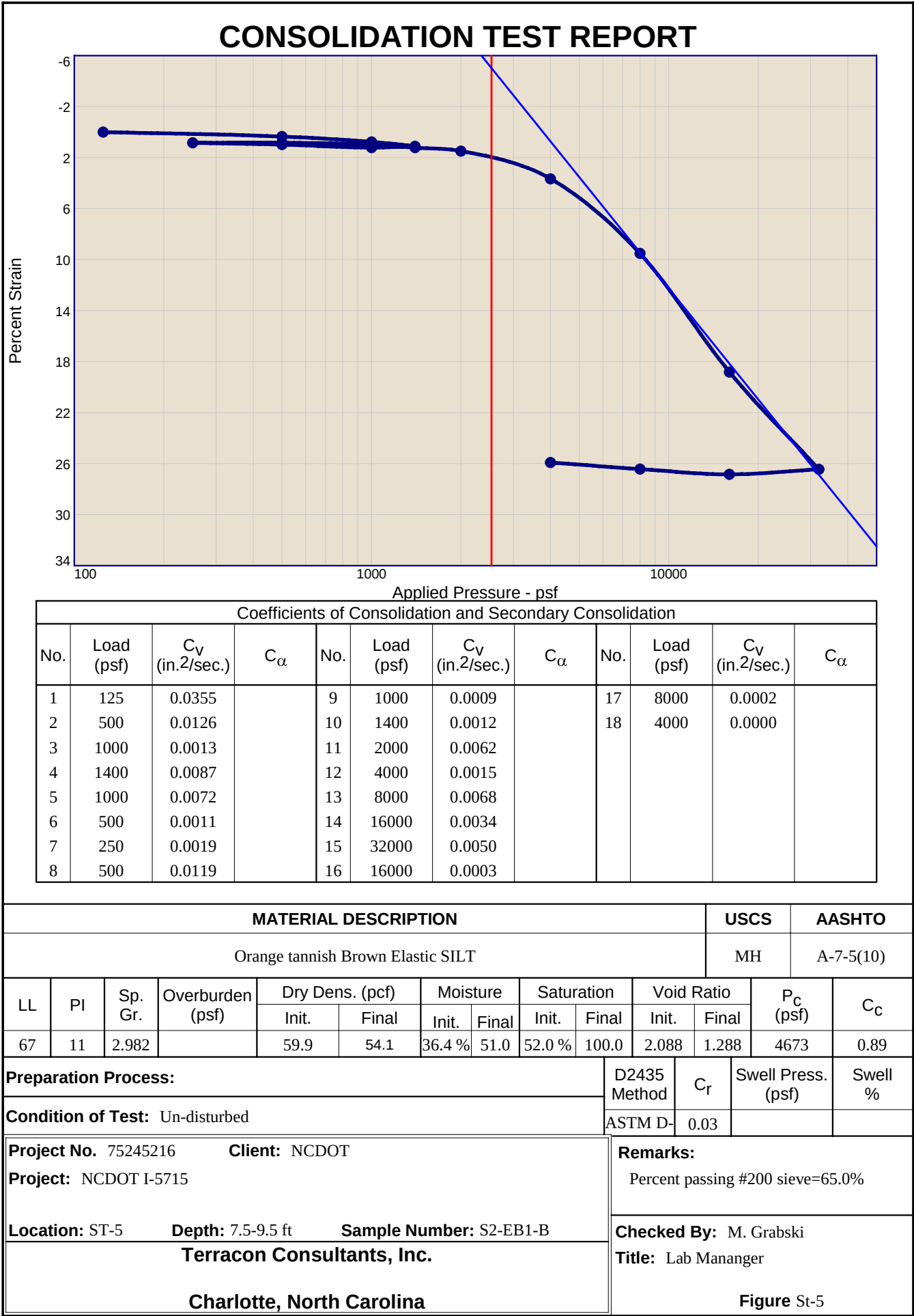
[illegible]

Mitra Grabski

Certified Lab Technician Signature

114-01-1203

Certification Number



Dial Reading vs. Time

Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B

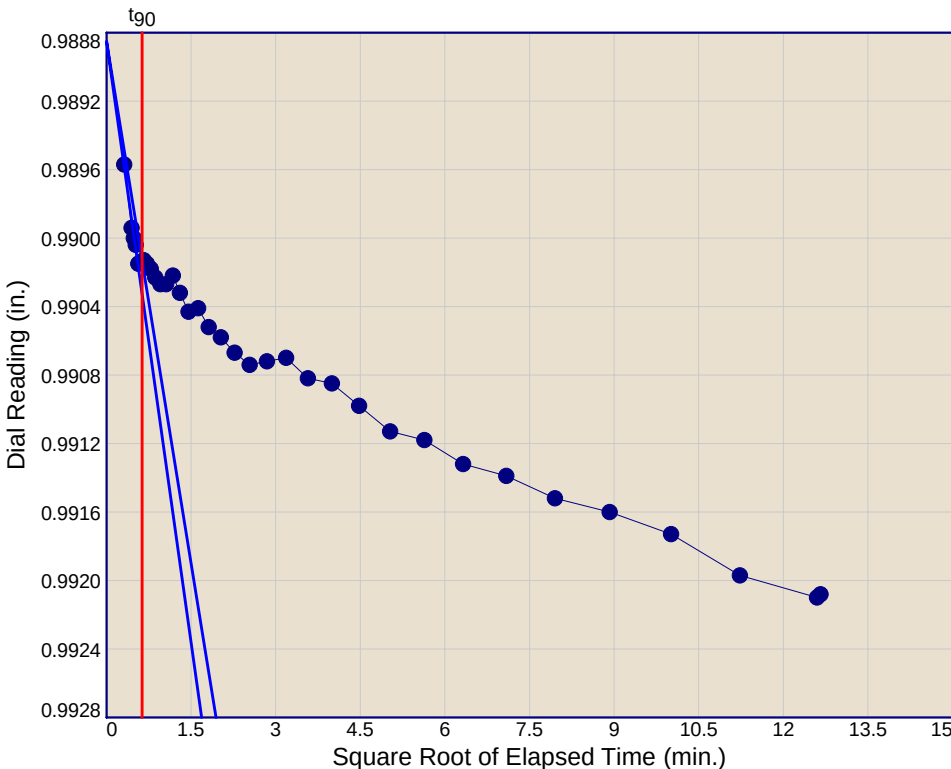
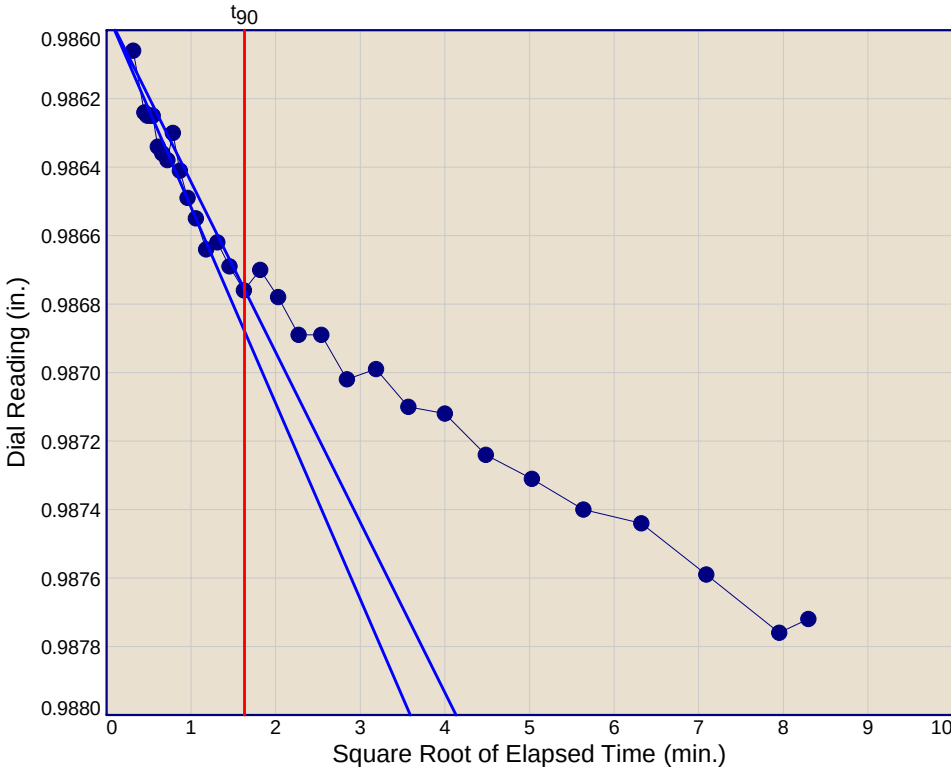


Figure St-7

Dial Reading vs. Time

Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B

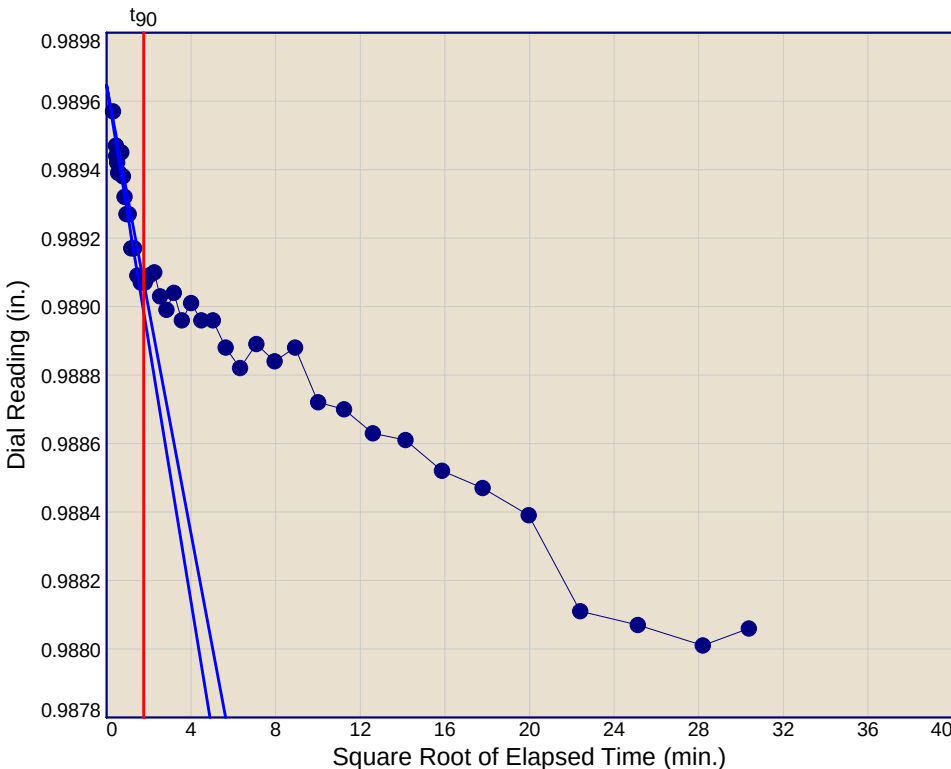
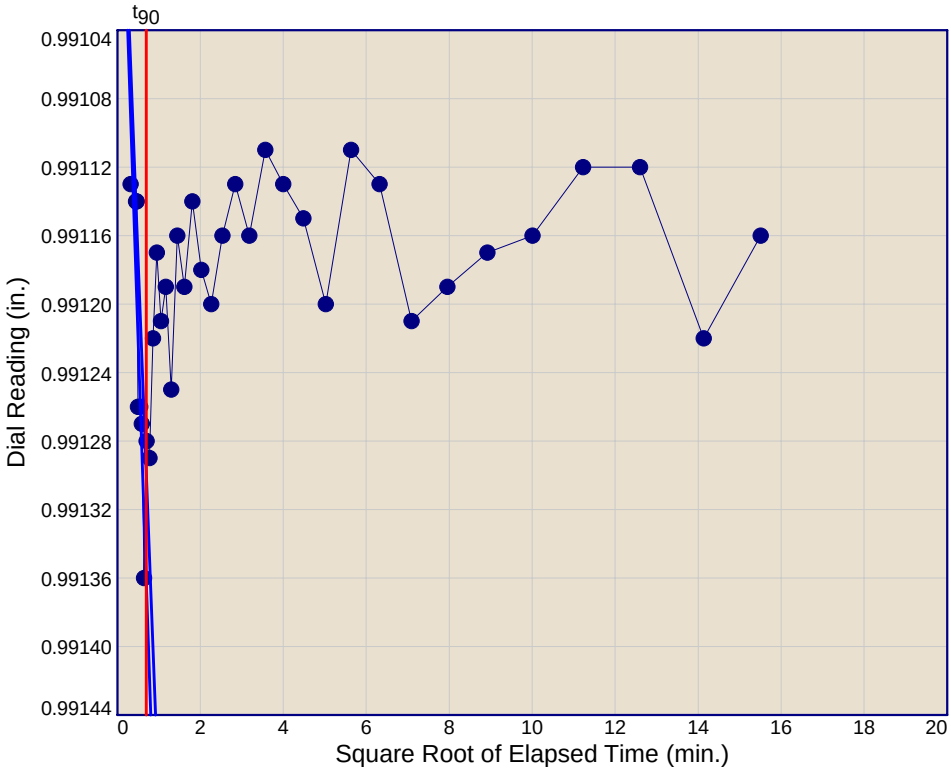


Figure St-8

Dial Reading vs. Time

Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B

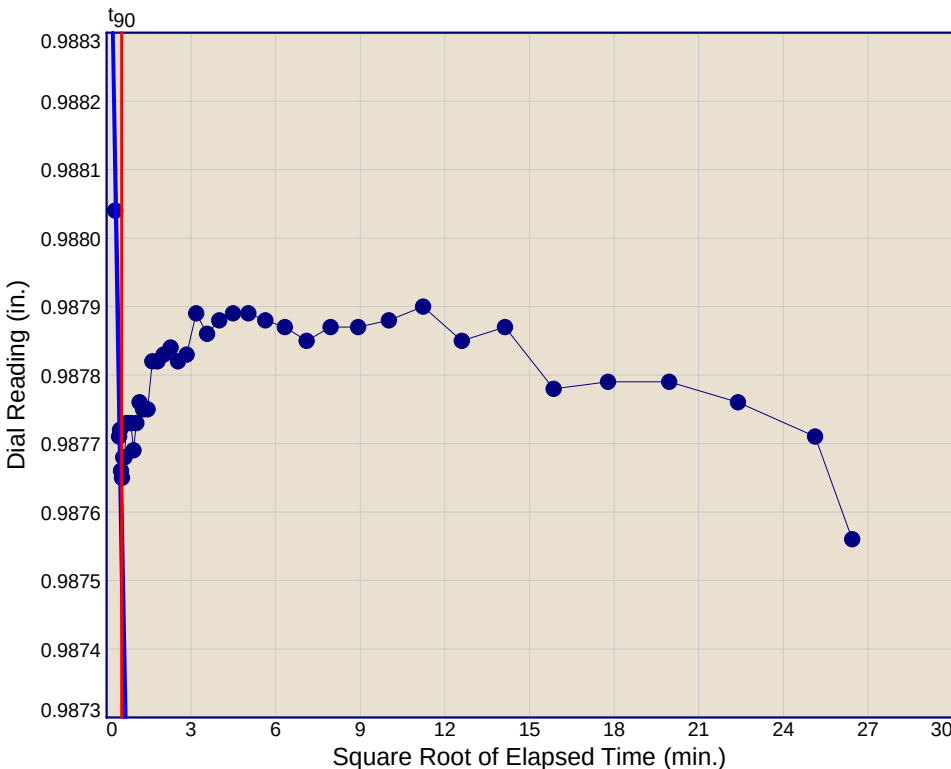
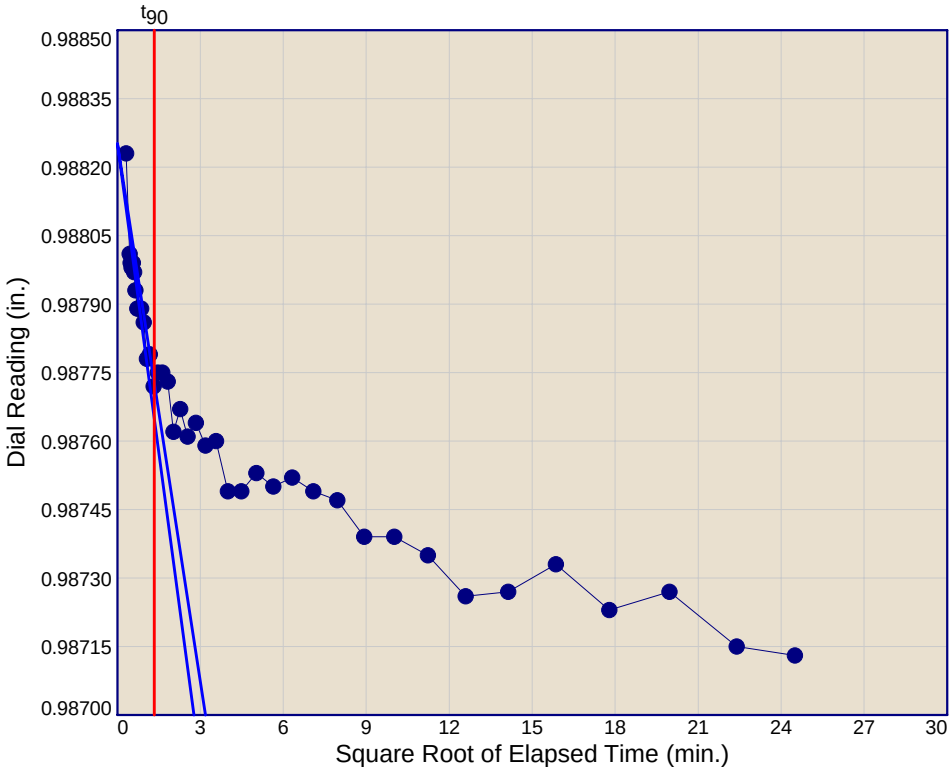


Figure St-9

Dial Reading vs. Time

Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B

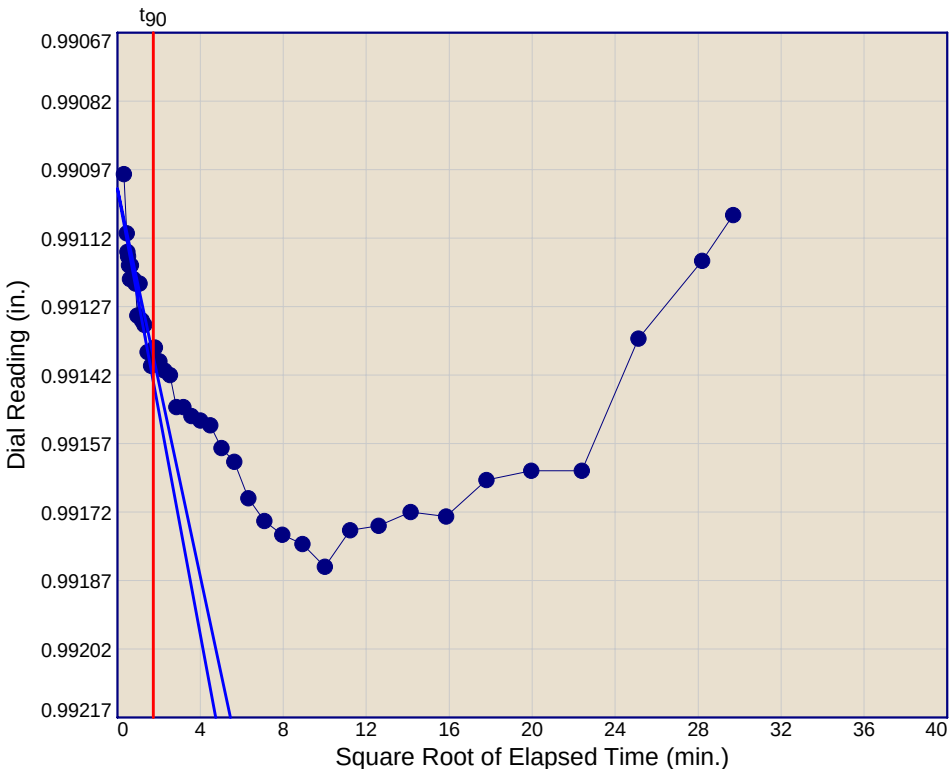
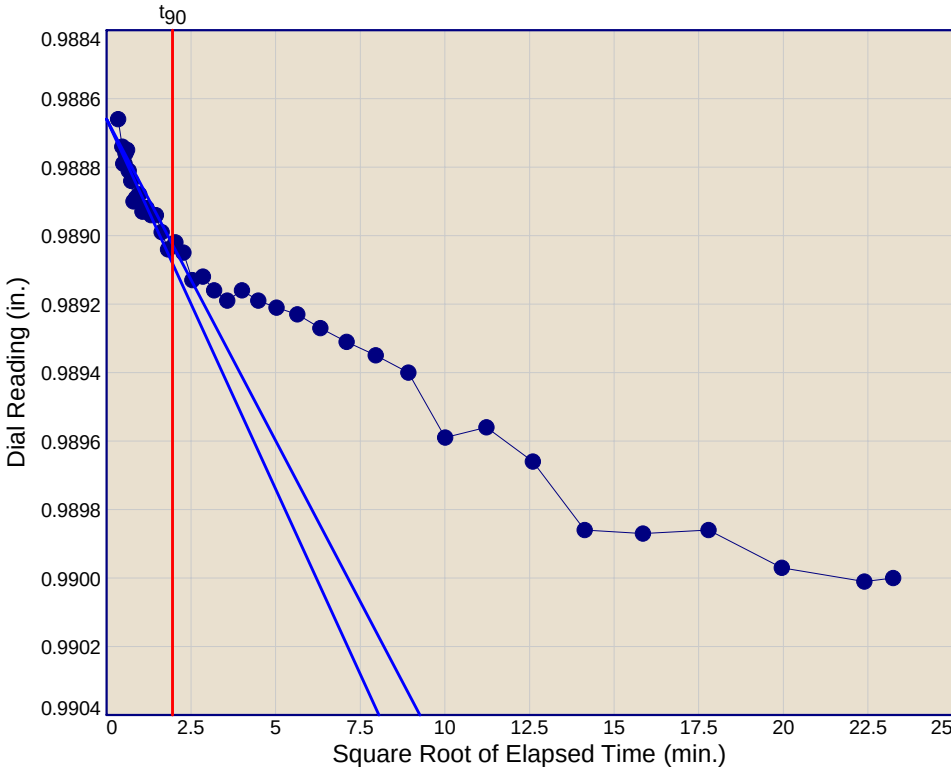
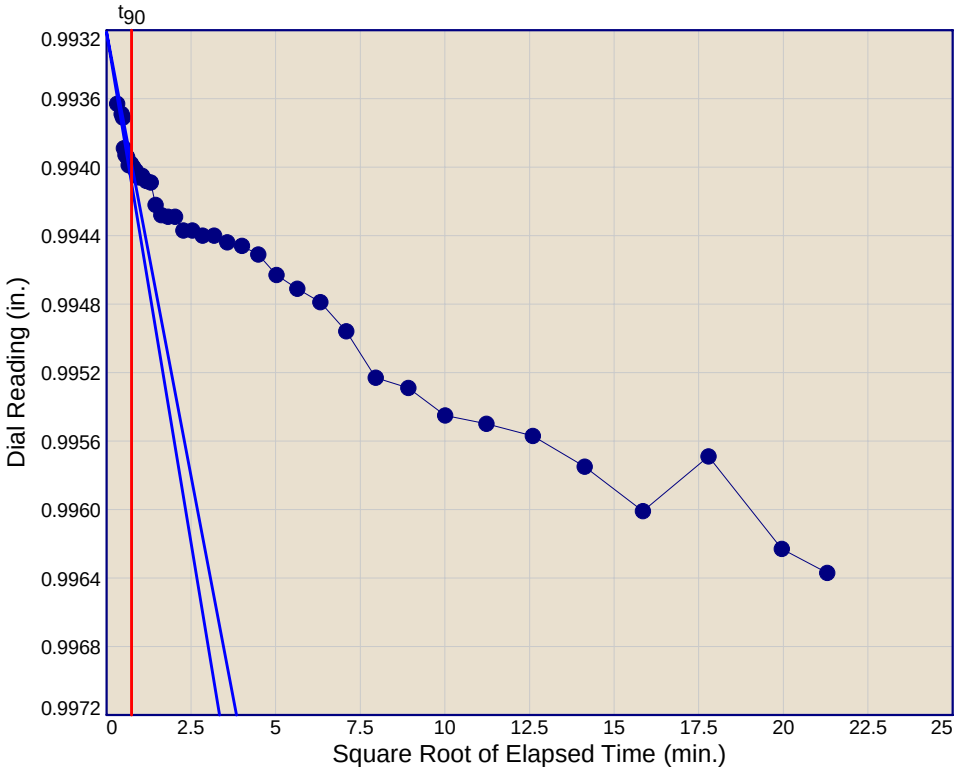


Figure St-10

Dial Reading vs. Time

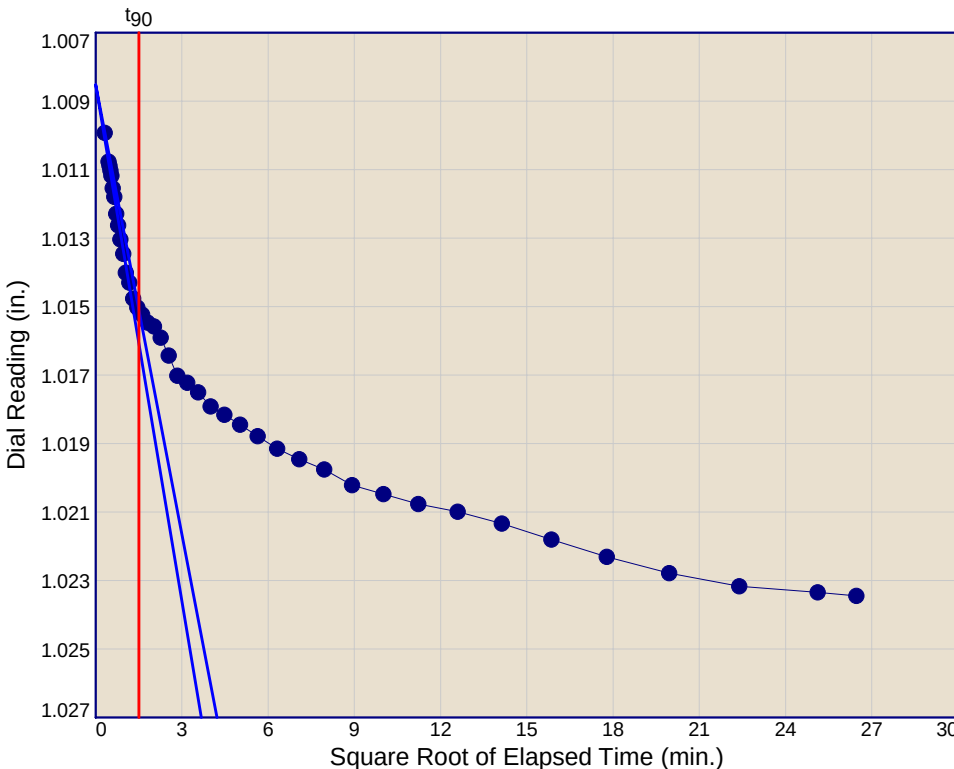
Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B



Load No.= 11
Load=2000 psf
 $D_0 = 0.9932$
 $D_{90} = 0.9940$
 $D_{100} = 0.9941$
 $T_{90} = 0.56$ min.

$C_v @ T_{90}$
0.0062 in.²/sec.



Load No.= 12
Load=4000 psf
 $D_0 = 1.0085$
 $D_{90} = 1.0151$
 $D_{100} = 1.0158$
 $T_{90} = 2.26$ min.

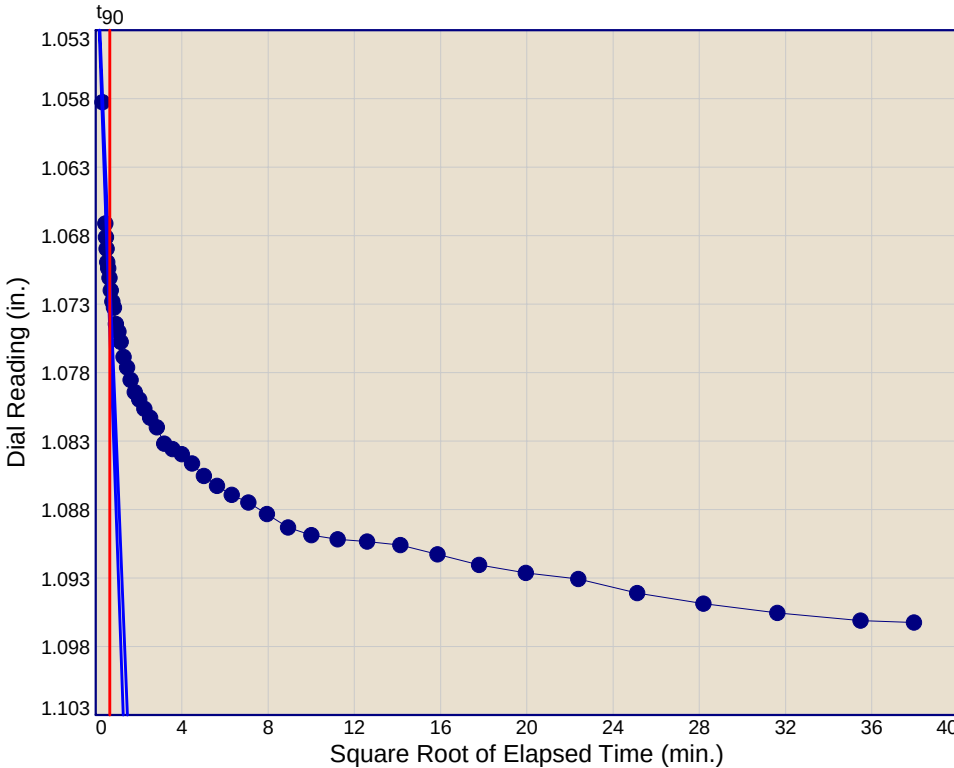
$C_v @ T_{90}$
0.0015 in.²/sec.

Figure St-11

Dial Reading vs. Time

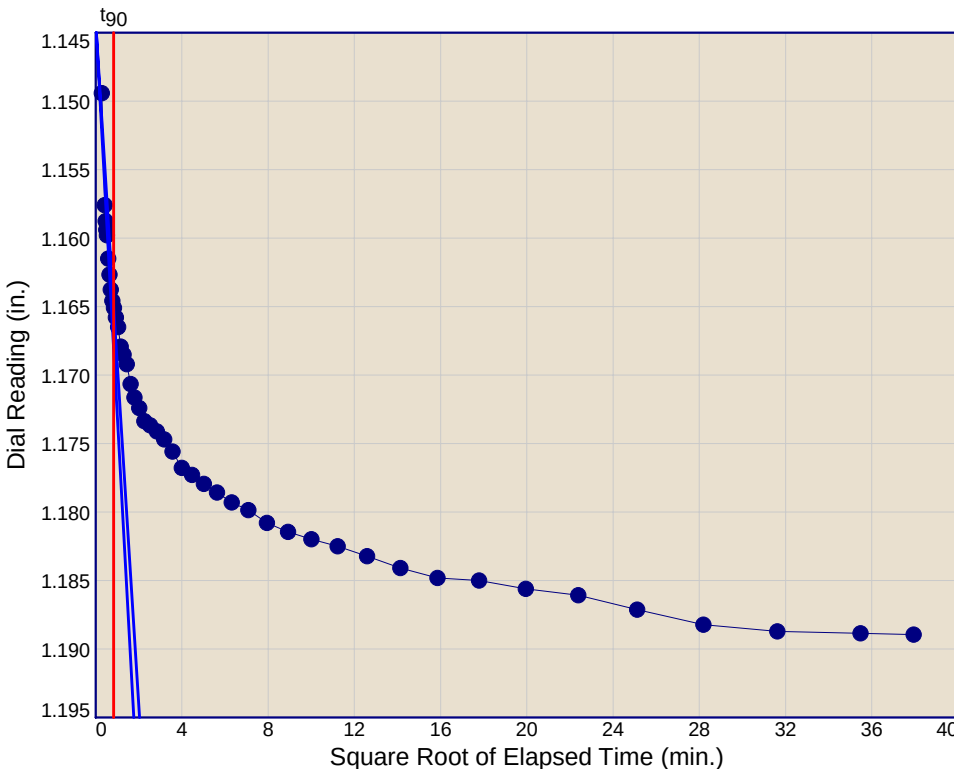
Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B



Load No.= 13
Load=8000 psf
 $D_0 = 1.0454$
 $D_{90} = 1.0714$
 $D_{100} = 1.0743$
 $T_{90} = 0.44$ min.

$C_v @ T_{90}$
0.0068 in.²/sec.



Load No.= 14
Load=16000 psf
 $D_0 = 1.1440$
 $D_{90} = 1.1650$
 $D_{100} = 1.1673$
 $T_{90} = 0.71$ min.

$C_v @ T_{90}$
0.0034 in.²/sec.

Figure St-12

Dial Reading vs. Time

Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B

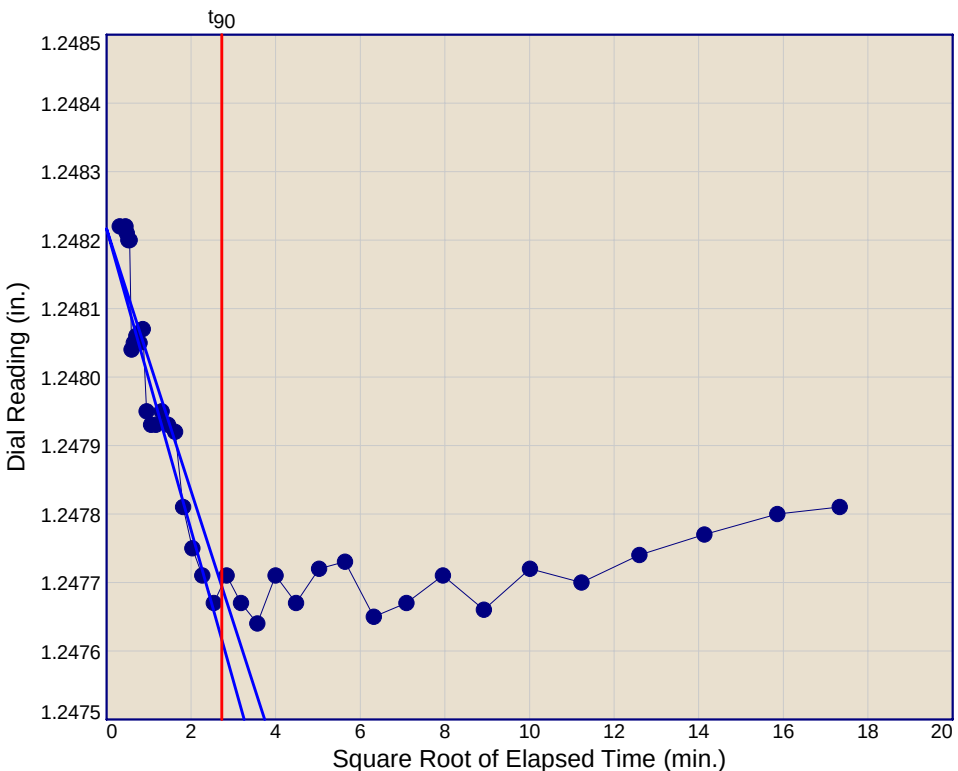
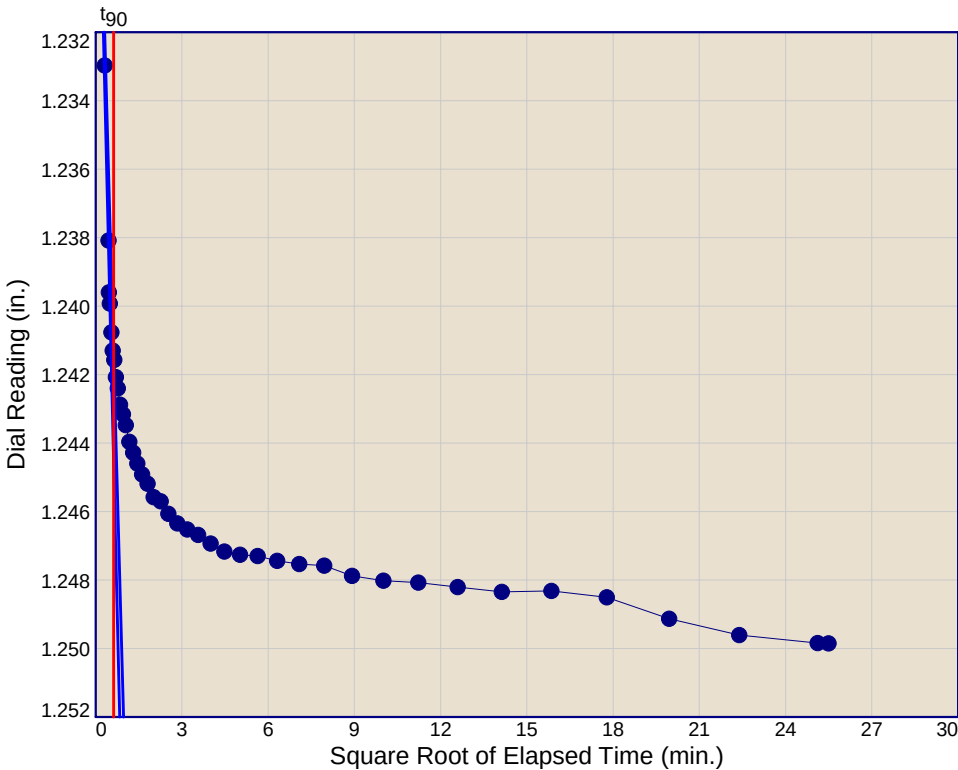


Figure St-13

Dial Reading vs. Time

Project No.: 75245216
Project: NCDOT I-5715

Location: ST-5 Depth: 7.5-9.5 ft Sample Number: S2-EB1-B

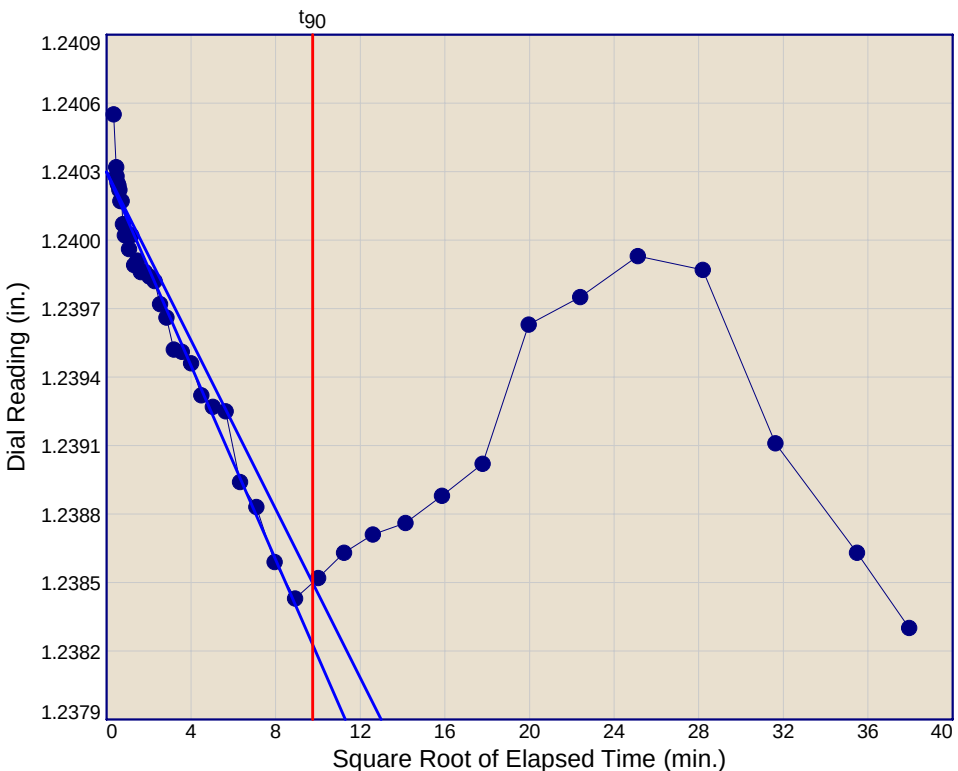
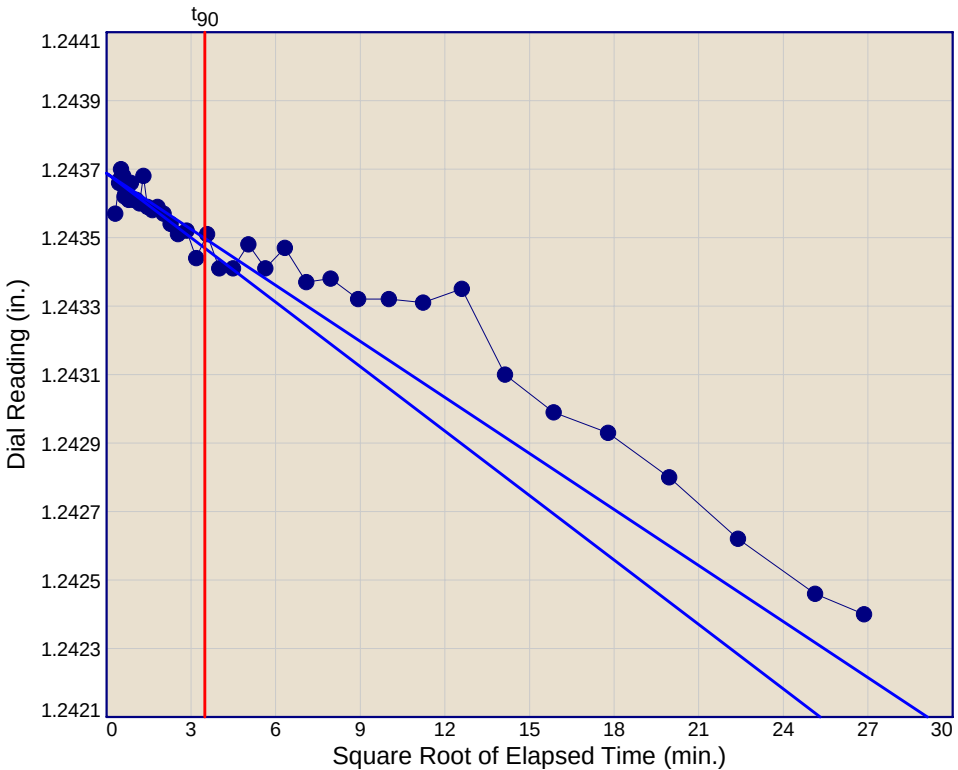


Figure St-14

SITE PHOTOGRAPHS

BRIDGE NO.1416 OVER I-77 NORTHBOUND
-L3NB- ON I-77 SOUTH CROSSING -Y1-

PROJECT REFERENCE NO.	SHEET NO.
I-5715	16



WEST OF END BENT NO. 1 LOOKING EAST



NORTHWEST OF END BENT NO. 1 LOOKING SOUTHEAST