

REFERENCE: 17BP.8.R.133

PROJECT: SF-610123

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY MONTGOMERY
PROJECT DESCRIPTION BRIDGE 610123 OVER WEST
FORK LITTLE RIVER ON SR 1340 (OKEEWEMEE
ROAD)

INVENTORY

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
2A	SUPPLEMENTAL LEGEND (GSI)
3	PLAN SHEET LAYOUT
3A	INVENTORY LETTER
4	PLAN SHEET
5	PROFILE SHEET
6-13	CROSS SECTIONS

PLAN & PROFILE

<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>	<u>PROFILE</u>
-L-	10+00 to 22+73	4	5

CROSS SECTIONS

<u>LINE</u>	<u>STATION</u>	<u>SHEETS</u>
-L-	12+75	6
-L-	14+25	7
-L-	14+75 to 15+75	7-10
-L-	16+50 to 17+50	10-13

APPENDICES

<u>APPENDIX</u>	<u>TITLE</u>	<u>SHEETS</u>
A	COVER PAGE	14
	SOIL TEST RESULTS	15

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.133	1	17

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:

- 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.

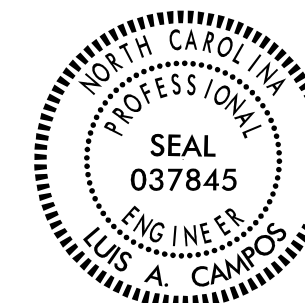
PERSONNEL

A. RODRIGUEZ
T. MILLER
J. MARLOWE

INVESTIGATED BY S&ME, INC.
DRAWN BY N. BRADLEY
CHECKED BY K. HILL
SUBMITTED BY L. CAMPOS
DATE APRIL 2019



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726



DocuSigned by:
Luis Campos 4/30/2019
72276FD8BA38437 SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

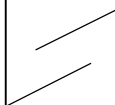
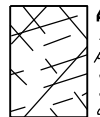
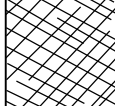
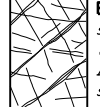



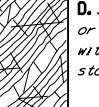

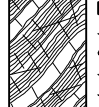


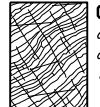

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)	SURFACE CONDITIONS					GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)	SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)				
<p>From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.</p>	VERY GOOD	GOOD	FAIR	POOR	VERY POOR	<p>From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.</p>	VERY GOOD	GOOD	FAIR	POOR	VERY POOR
	<p>Very rough, fresh unweathered surfaces</p> <p>Rough, slightly weathered, iron stained surfaces</p> <p>Smooth, moderately weathered and altered surfaces</p> <p>Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments</p> <p>Slickensided, highly weathered surfaces with soft clay coatings or fillings</p>	<p>Very Rough, fresh unweathered surfaces</p> <p>Rough, slightly weathered surfaces</p> <p>Smooth, moderately weathered and altered surfaces</p> <p>Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments</p> <p>Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings</p>									
STRUCTURE	DECREASING SURFACE QUALITY →					COMPOSITION AND STRUCTURE					
 <p>INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities</p>	90			N/A	N/A	 <p>A. Thick bedded, very blocky sandstone The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability.</p>	70				
 <p>BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets</p>	80	70				 <p>B. Sandstone with thin inter-layers of siltstone</p>	60	50			
 <p>VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets</p>		60	50			 <p>C. Sandstone and siltstone in similar amounts</p>		40			
 <p>BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity</p>			40	30		 <p>D. Siltstone or silty shale with sandstone layers</p>		30			
 <p>DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces</p>				20		 <p>E. Weak siltstone or clayey shale with sandstone layers</p>			20		
 <p>LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes</p>				10		 <p>F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure</p>			10		
						 <p>G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers</p>					 <p>H. Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.</p>
						<p>→ Means deformation after tectonic disturbance</p>					

See Sheet 1A For Index of Sheets

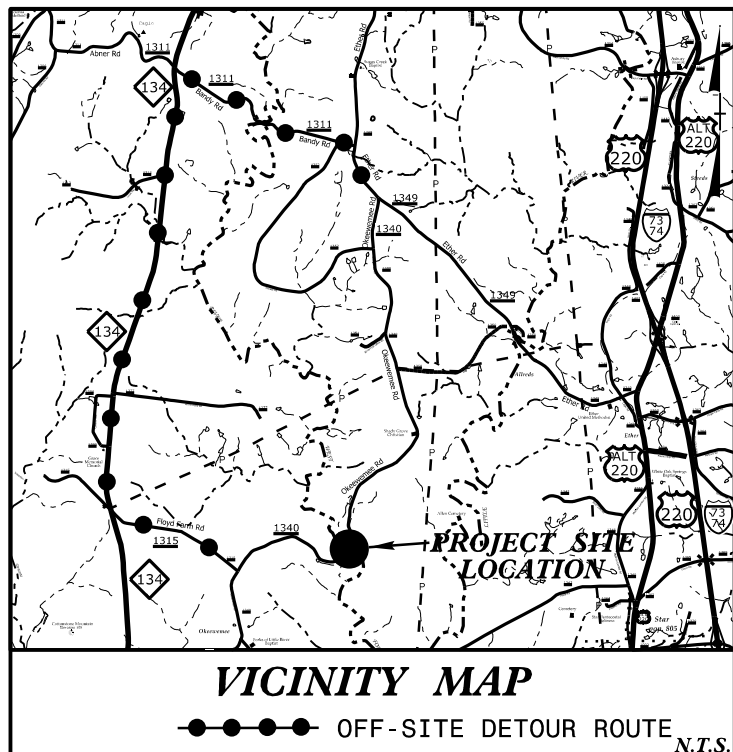
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY

LOCATION: BRIDGE 610123 OVER WEST FORK LITTLE RIVER
ON SR 1340 (OKEEWEMEE ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.133	3	17
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.8.R.133		P.E.	



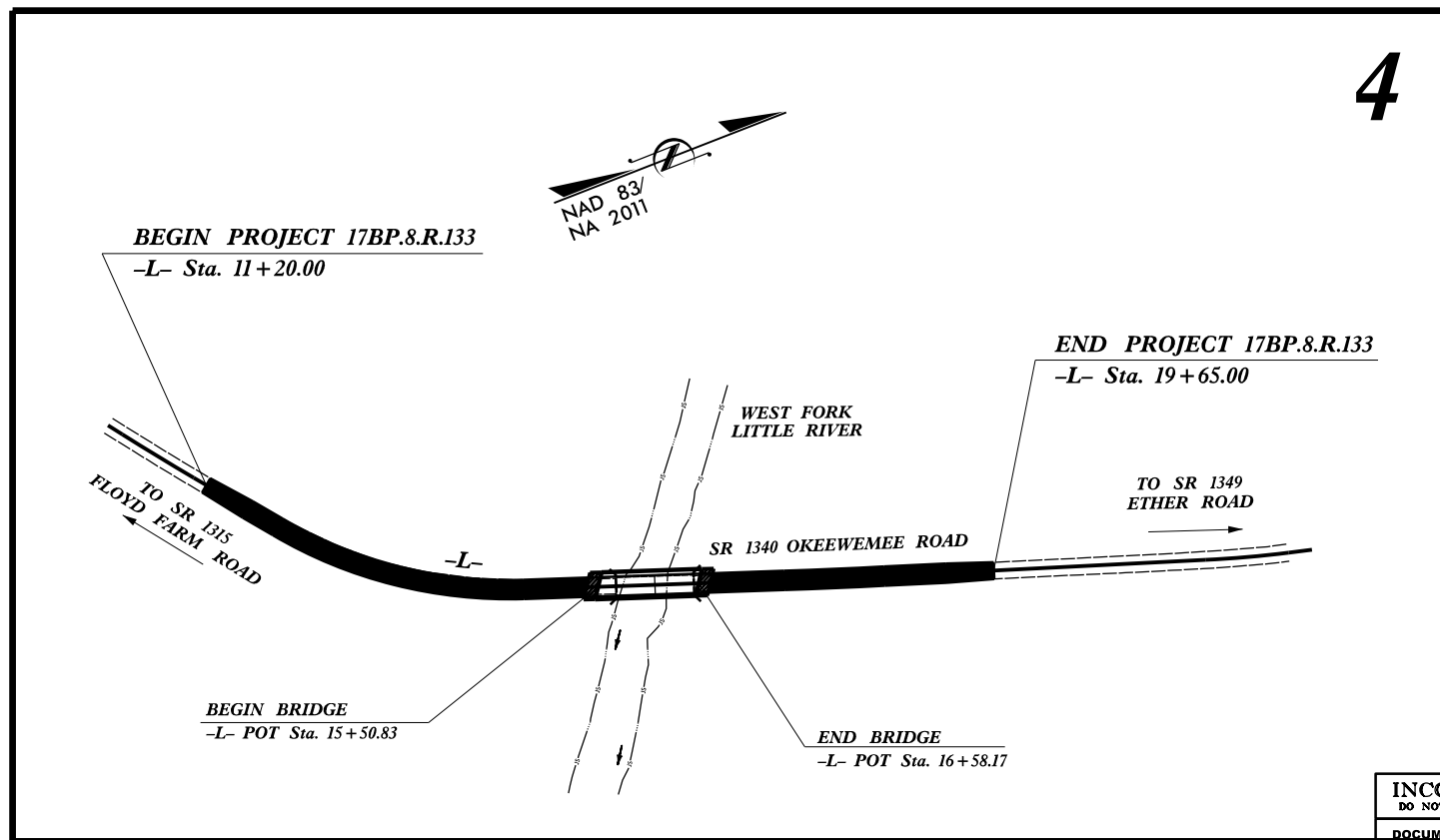
PLANS 09/19/2018

PROJECT: 17BP.8.R.133

CONTRACT:

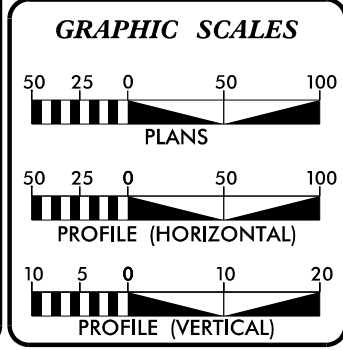
SPEED STUDY BEING COMPLETED TO DETERMINE DESIGN SPEED FOR PROJECT AND POSSIBLE NEED FOR HORIZONTAL AND VERTICAL DESIGN EXCEPTIONS.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO LIMITS ESTABLISHED BY METHOD ____.



4

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



DESIGN DATA

ADT 2015 =	220
ADT 2025 =	440
K =	%
D =	%
T =	6 % *
V =	55 MPH
* TTST =	DUAL
FUNC CLASS =	LOCAL
	SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.8.R.133	=	0.140 mi
LENGTH STRUCTURE PROJECT 17BP.8.R.133	=	0.020 mi
TOTAL LENGTH OF PROJECT 17BP.8.R.133	=	0.160 mi

PLANS PREPARED BY:
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TEL: 919.788.0224 FAX: 919.788.0232
NC LICENSE #P-0189

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER xx, 2018

LETTING DATE:
JUNE xx, 2019

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
DIVISION 8
902 N Sandhills Blvd
Aberdeen, NC 28315

BRIAN A. WILES, PE
PROJECT ENGINEER

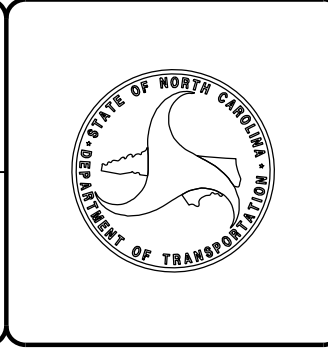
TIM WELCH, PE
NCDOT CONTACT
DIV 8 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



\$\$\$SYTIME\$\$\$\$\$
\$\$\$DGN\$\$\$\$\$
\$\$\$USERNAME\$\$\$\$\$



April 30, 2019

STATE PROJECT: 17BP.8.R.133
 FEDERAL PROJECT: N/A
 COUNTY: Montgomery
 DESCRIPTION: Bridge 610123 over West Fork Little River on SR 1340
 (Okeewemee Road)

SUBJECT: Geotechnical Report – Inventory

Project Description

This project consists of minor widening of Okeewemee Road in Montgomery County, NC. The project begins southwest of Bridge 610123 and extends to the northeast for approximately 845 feet. The roadway length is 0.14 miles. The type of work being performed consists of grading, paving, and widening to accommodate the new bridge over West Fork Little River.

Field work was conducted in November of 2018 by S&ME, Inc. Standard Penetration Test borings were performed at select locations along the project. A CME-550X ATV-mounted drill machine with an automatic hammer and a CME-55 truck-mounted drill machine with an automatic hammer were used to perform the SPT borings. Two SPT borings and two auger borings were performed at various offset locations along -L- alignment. Representative samples were collected for visual classification in the field and select samples were submitted for laboratory analysis.

The following alignments were investigated. Subsurface profiles of the following alignments are included in this report.

<u>Line</u>	<u>Station (±)</u>
-L-	11+20 to 19+65

Areas of Special Geotechnical Interest

The following sections encountered soft soils which have the potential to cause subgrade stability problems:

<u>Line</u>	<u>Station(±)</u>
-L-	14+88 to 15+52
-L-	16+69 to 17+38

The following borehole locations were found to contain rock within 7 feet of grade:

<u>Line</u>	<u>Station(±)</u>
-L-	12+86

Physiography and Geology

The project corridor is located within the Carolina Slate Belt in Montgomery County, NC. Topography along the project is gently sloping to moderately sloping. The project corridor is rural.

The area is underlain by roadway embankment, alluvial, and residual soils. Weathered rock and crystalline rock underlay the residual soils.

Soil & Rock Properties

Soils encountered during this investigation are separated into 3 categories: Roadway Embankment, Alluvial, and Residual soils.

Borings L_1300 and L_1475 encountered 6 inches of surficial topsoil.

Roadway Embankment soils generally consist of soft to medium stiff, tan, brown, gray, red, and orange clay (A-7-6), silty clay (A-7-5) and sandy silt (A-4). The PI of the silty clay (A-7-5) tested was 18, and the PI of the sandy silt (A-4) tested was 9.

Alluvial soils generally consist of very soft to medium stiff, tan, orange, brown, and gray silty clay (A-7-5).

Residual soils generally consist of soft to hard, orange sandy clay (A-6) and sandy silt (A-4). The PI of the sandy clay (A-6) tested was 16, and the PI of the sandy silt (A-4) tested was 10.

Weathered rock and crystalline rock were encountered during this investigation. The weathered rock is derived from the underlying metavolcanic-epiclastic bedrock. Weathered rock was first encountered at elevations ranging from 484.7± to 460.2± feet. Crystalline rock was first encountered at elevations ranging from 473.7± to 455.2 feet.

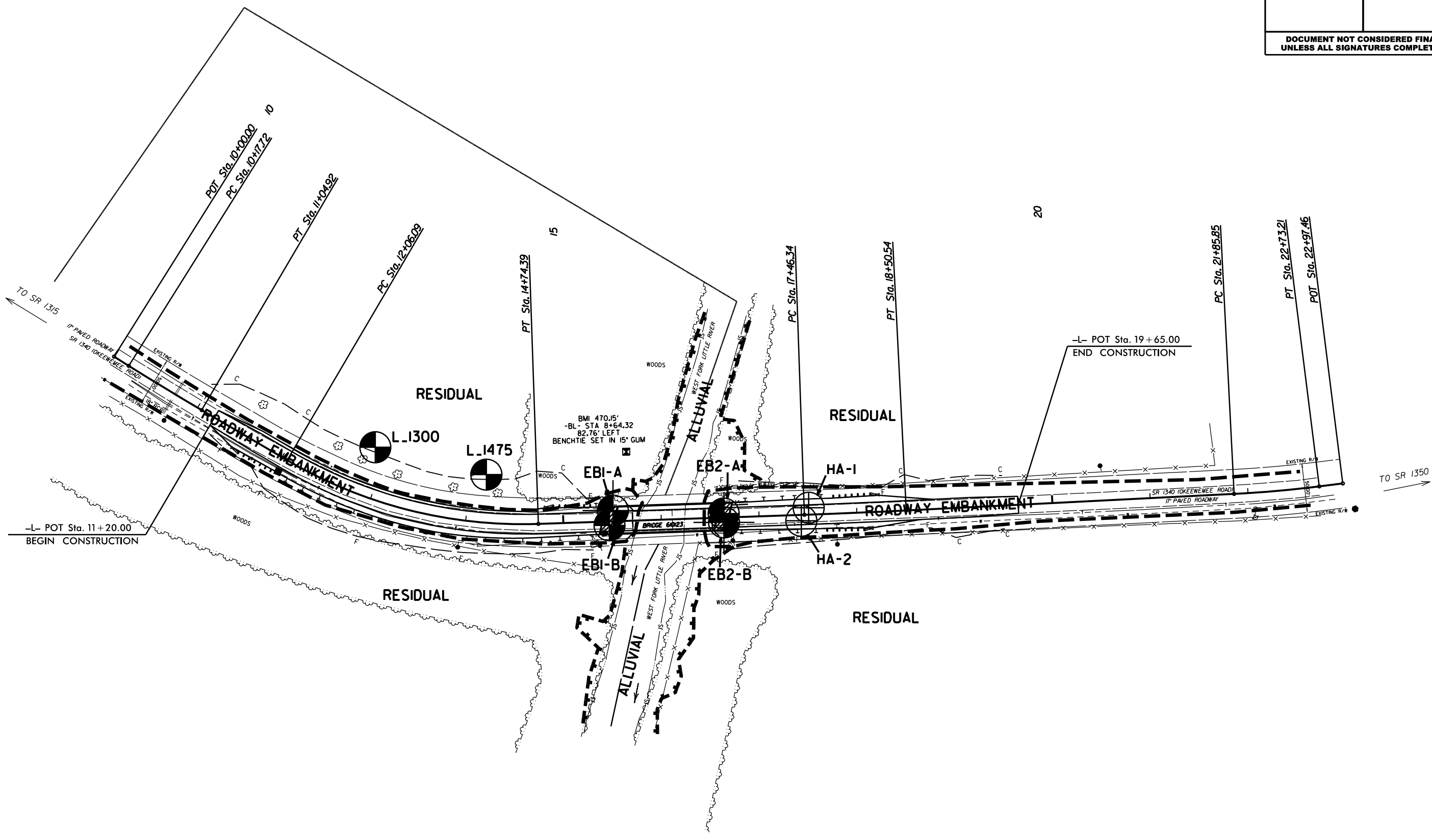
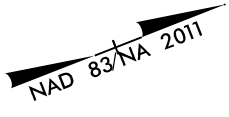
Groundwater

Groundwater measurements were taken in November of 2018 during above-average rainfall conditions. Groundwater was encountered at elevations ranging from approximately 460.9 to 455.7 feet at the termination of drilling.

8/17/99
 REVISIONS
 SYSTEMS DESIGN

CH ENGINEERING
 3220 GLEN ROYAL RD. RALEIGH, NC 27617
 TELE 919.788.0224 FAX 919.788.0232
 NC LICENSE #P-0189

PROJECT REFERENCE NO. <u>17BP.8.RJ33</u>	SHEET NO. <u>4</u>
MONTGOMERY COUNTY BRIDGE #123	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



FOR PROFILE, SEE SHEET 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

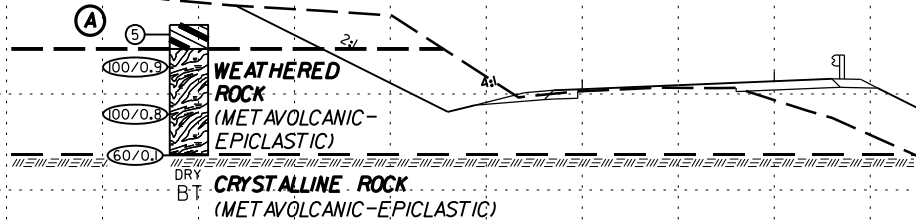
520 520

(A) RESIDUAL
MEDIUM STIFF, MOIST, ORANGE, SANDY CLAY
(A-6), TRACE OF ROCK FRAGMENTS

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS- 100	5' LT	12+86	0.0- 1.5	A- 6	37	16	9	12	40	39	72	68	59.8	ND	ND

L.1300
STA. 12+86
5' LT
SS-100

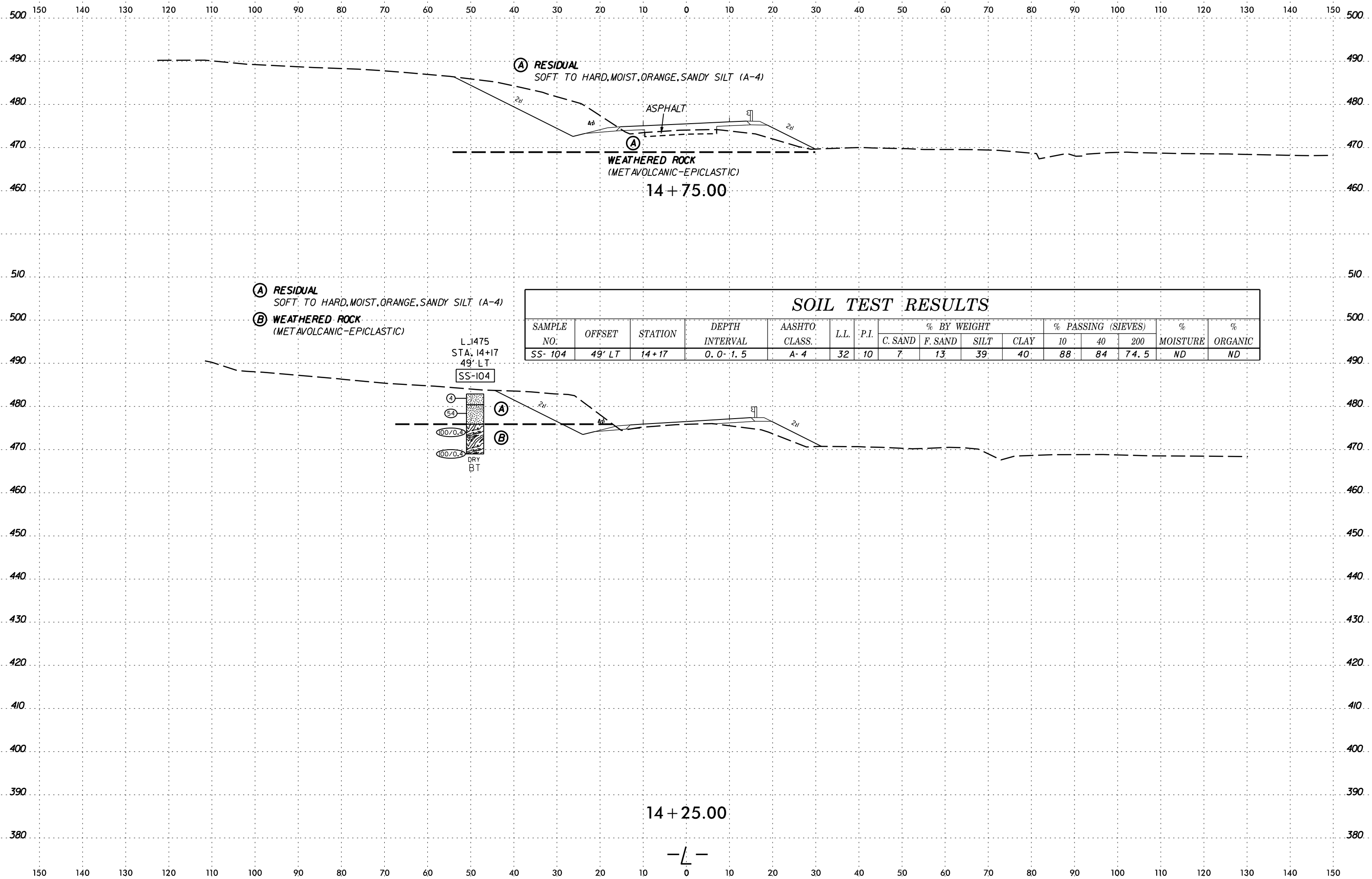


490 490
480 480
470 470
460 460
450 450
440 440
430 430
420 420
410 410
400 400
390 390

12 + 75.00

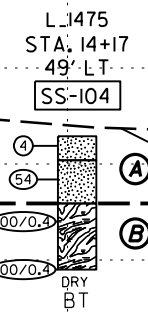
-L-

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



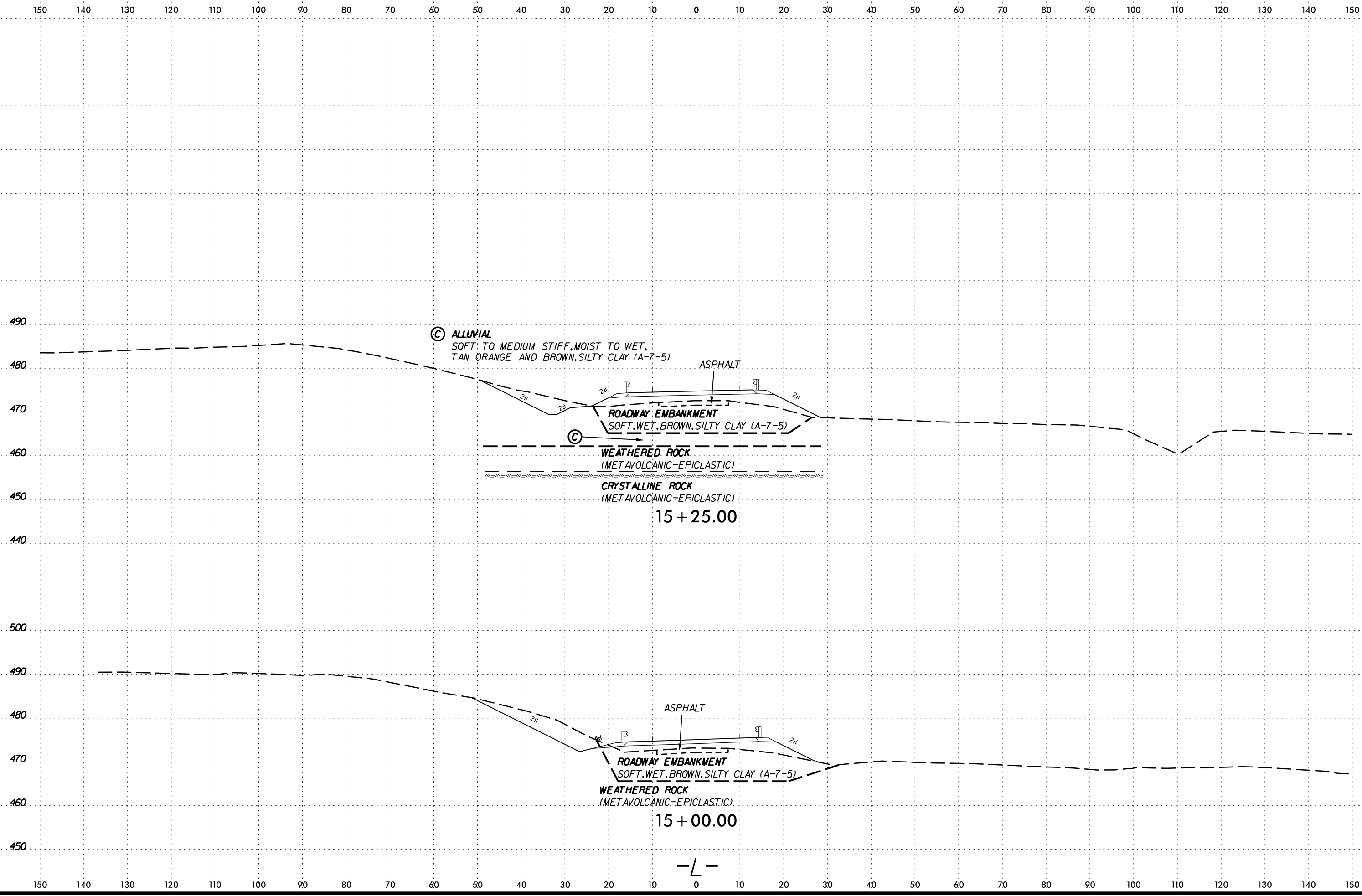
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-104	49' LT	14+17	0.0-1.5	A-4	32	10	7	13	39	40	88	84	74.5	ND	ND

- (A) RESIDUAL
SOFT TO HARD, MOIST, ORANGE, SANDY SILT (A-4)
- (B) WEATHERED ROCK
(METAVOLCANIC-EPICLASTIC)

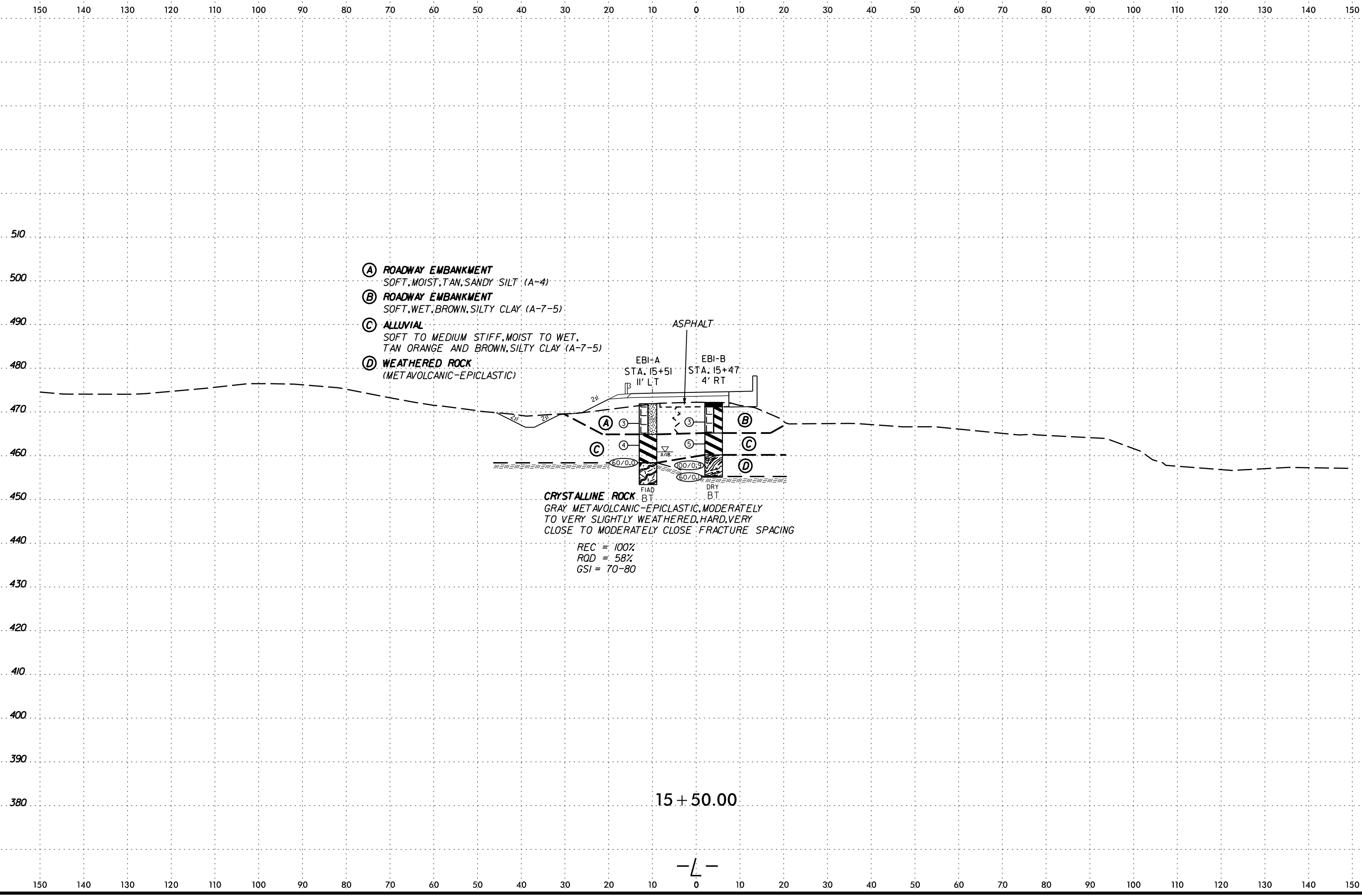


14 + 25.00

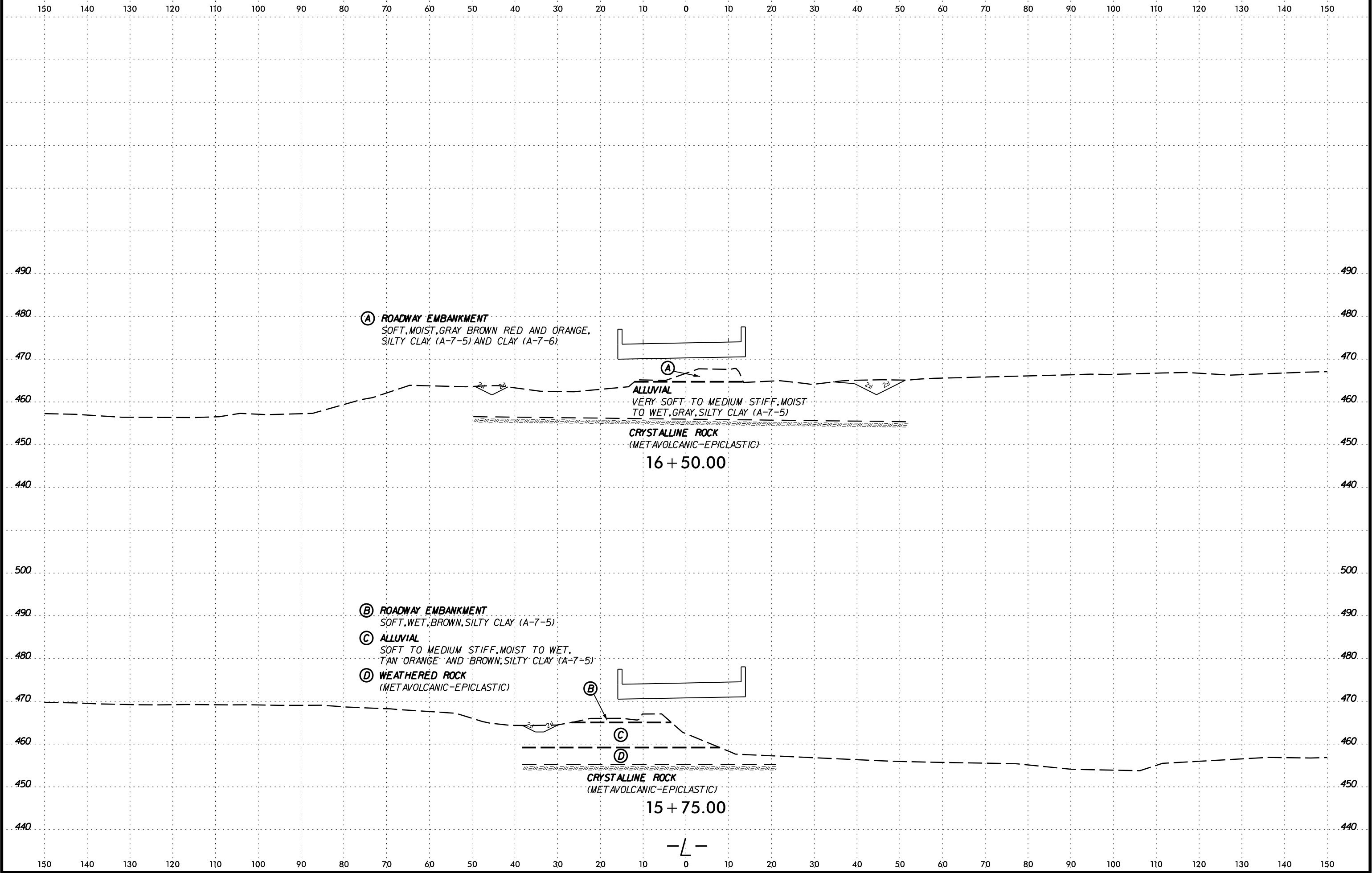
-L-



SYNTHETIC CONCRETE CURB



SYNTHETIC CONCRETE CURB



(A) ROADWAY EMBANKMENT
SOFT, MOIST, GRAY BROWN RED AND ORANGE,
SILTY CLAY (A-7-5); AND CLAY (A-7-6)

(A) ALLUVIAL
VERY SOFT TO MEDIUM STIFF, MOIST
TO WET, GRAY, SILTY CLAY (A-7-5)

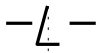
CRYSTALLINE ROCK
(METAVOLCANIC-EPICLASTIC)
16 + 50.00

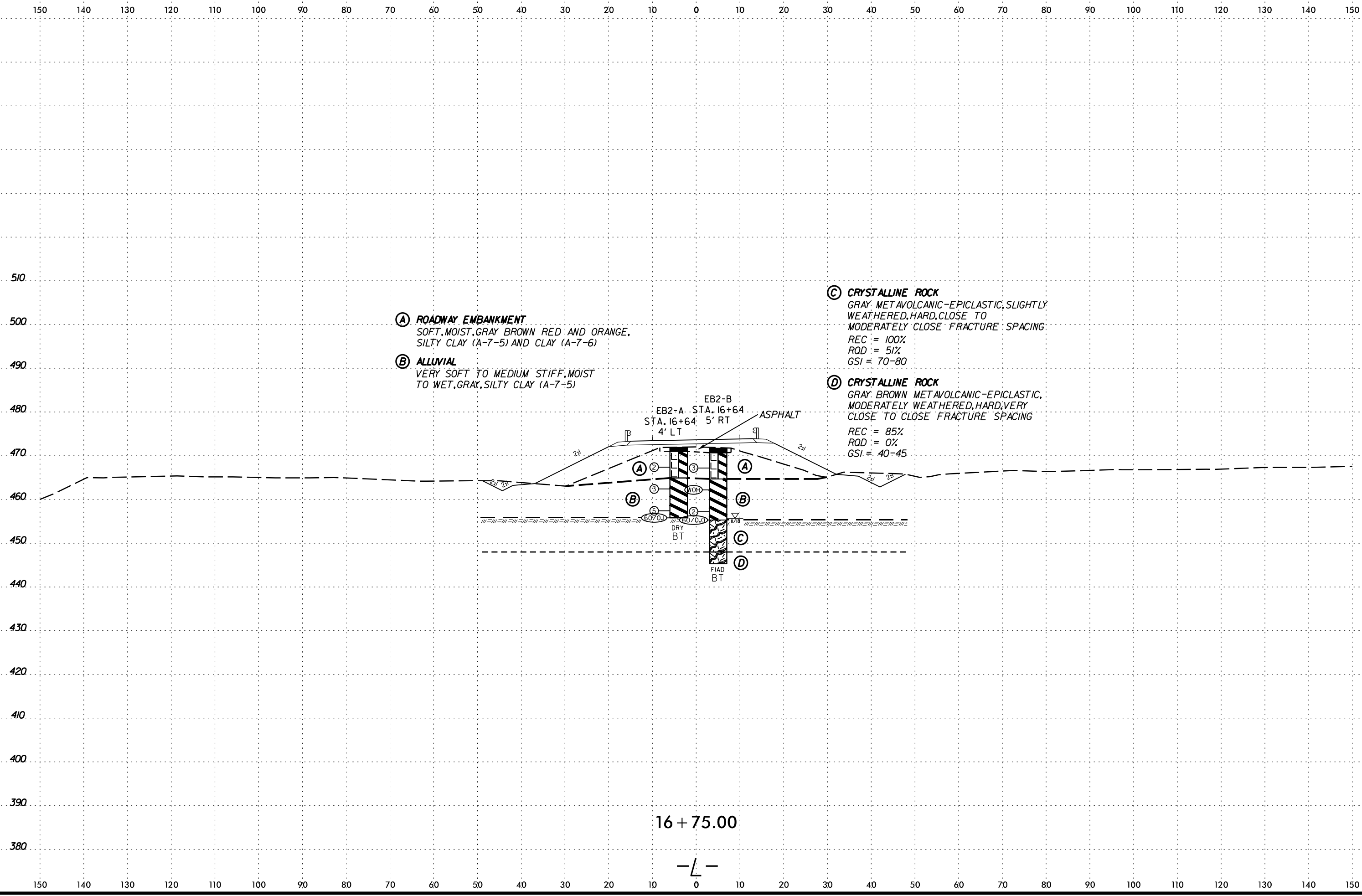
(B) ROADWAY EMBANKMENT
SOFT, WET, BROWN, SILTY CLAY (A-7-5)

(C) ALLUVIAL
SOFT TO MEDIUM STIFF, MOIST TO WET,
TAN ORANGE AND BROWN, SILTY CLAY (A-7-5)

(D) WEATHERED ROCK
(METAVOLCANIC-EPICLASTIC)

CRYSTALLINE ROCK
(METAVOLCANIC-EPICLASTIC)
15 + 75.00





(A) ROADWAY EMBANKMENT
 SOFT, MOIST, GRAY BROWN RED AND ORANGE,
 SILTY CLAY (A-7-5) AND CLAY (A-7-6)

(B) ALLUVIAL
 VERY SOFT TO MEDIUM STIFF, MOIST
 TO WET, GRAY, SILTY CLAY (A-7-5)

(C) CRYSTALLINE ROCK
 GRAY METAVOLCANIC-EPICLASTIC, SLIGHTLY
 WEATHERED, HARD, CLOSE TO
 MODERATELY CLOSE FRACTURE SPACING
 REC = 100%
 RQD = 51%
 GSI = 70-80

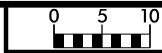
(D) CRYSTALLINE ROCK
 GRAY BROWN METAVOLCANIC-EPICLASTIC,
 MODERATELY WEATHERED, HARD, VERY
 CLOSE TO CLOSE FRACTURE SPACING
 REC = 85%
 RQD = 0%
 GSI = 40-45

16 + 75.00

-L-

SYNTHETIC CONCRETE CURB

6/23/16



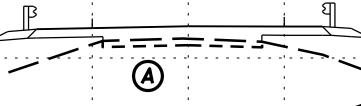
PROJ. REFERENCE NO.
17BP.8.R.133

SHEET NO.
12

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

490
480
470
460
450
440

(A) ROADWAY EMBANKMENT
SOFT, MOIST, GRAY BROWN RED AND ORANGE,
SILTY CLAY (A-7-5) AND CLAY (A-7-6)



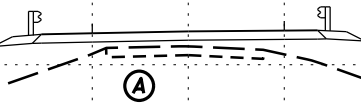
ALLUVIAL
VERY SOFT TO MEDIUM STIFF, MOIST
TO WET, GRAY, SILTY CLAY (A-7-5)

CRYSTALLINE ROCK
(METAVOLCANIC-EPICLASTIC)

17 + 25.00

490
480
470
460
450
440

(A) ROADWAY EMBANKMENT
SOFT, MOIST, GRAY BROWN RED AND ORANGE,
SILTY CLAY (A-7-5) AND CLAY (A-7-6)



ALLUVIAL
VERY SOFT TO MEDIUM STIFF, MOIST
TO WET, GRAY, SILTY CLAY (A-7-5)

CRYSTALLINE ROCK
(METAVOLCANIC-EPICLASTIC)

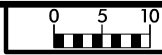
17 + 00.00

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

SECTION CONNECTION TO SHEET 11

-L-

6/23/16



PROJ. REFERENCE NO.
17BP.8.R.133

SHEET NO.
13

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

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-14	7' LT	17+51	1.0-2.0	A-4	31	9	4	12	49	35	99	97	88.9	ND	ND
S-7	6' RT	17+43	0.0-1.0	A-7-5	62	18	2	7	32	59	100	99	93.4	ND	ND

510

510

500

500

490

490

480

480

470

470

460

460

450

450

440

440

430

430

420

420

410

410

400

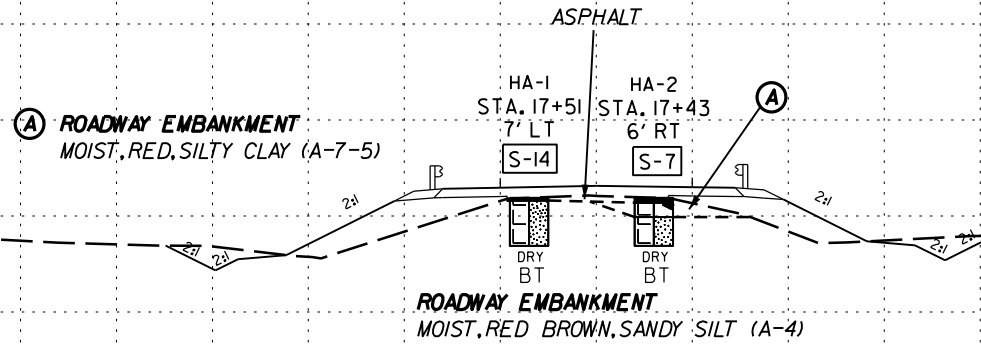
400

390

390

380

380



17 + 50.00

-L-

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

SCHEMATIC CONNECTIONS TO SHEET 12 AND SHEET 14

APPENDIX A



SUMMARY OF LABORATORY TEST DATA
Soil Classification and Gradation

S&ME, Inc. Charlotte, 9751 Southern Pine Blvd, Charlotte NC, 28273

S&ME Project #:	6235-18-011 Phase 01	Date Report:	12/8/2018
State Project No.:	N/A	County:	Montgomery
Federal ID No.:	N/A	WBS No.:	17BP.8.R.133
Project Name:	Bridge No. 610123 over West Fork Little River on SR 1340 (-L-)		
Client Name:	CH Engineering, PLLC	Client Address:	3220 Glen Royal Road, Raleigh, NC 27617

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification	Total % Passing				Total Mortar Fraction (%)				LL	PL	PI	Organic Content %	Moist. %
						Sieve #				Coarse Sand	Fine Sand	Silt	Clay					
						10	40	60	200									
S-7	17+43	6 ft RT	-L-	0 - 1	A-7-5 (24)	100	99	98	93.4	2	7	32	59	62	44	18	ND	ND
S-14	17+51	7 ft LT	-L-	1 - 2	A-4 (8)	99	97	95	88.9	4	12	49	35	31	22	9	ND	ND
SS-100	12+86	51 ft LT	-L-	0 - 1.5	A-6 (7)	72	68	66	59.8	9	12	40	39	37	21	16	ND	ND
SS-104	14+17	49 ft LT	-L-	0 - 1.5	A-4 (6)	88	84	82	74.5	7	13	39	40	32	22	10	ND	ND

References / Comments / Deviations: ND=Not Determined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

<u>Karen Warner</u>		<u>#118-06-0305</u>	<u>Luis Campos</u>	<u>Project Manager</u>
Technician Name:	Signature	Certification #	Technical Responsibility:	Position

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.