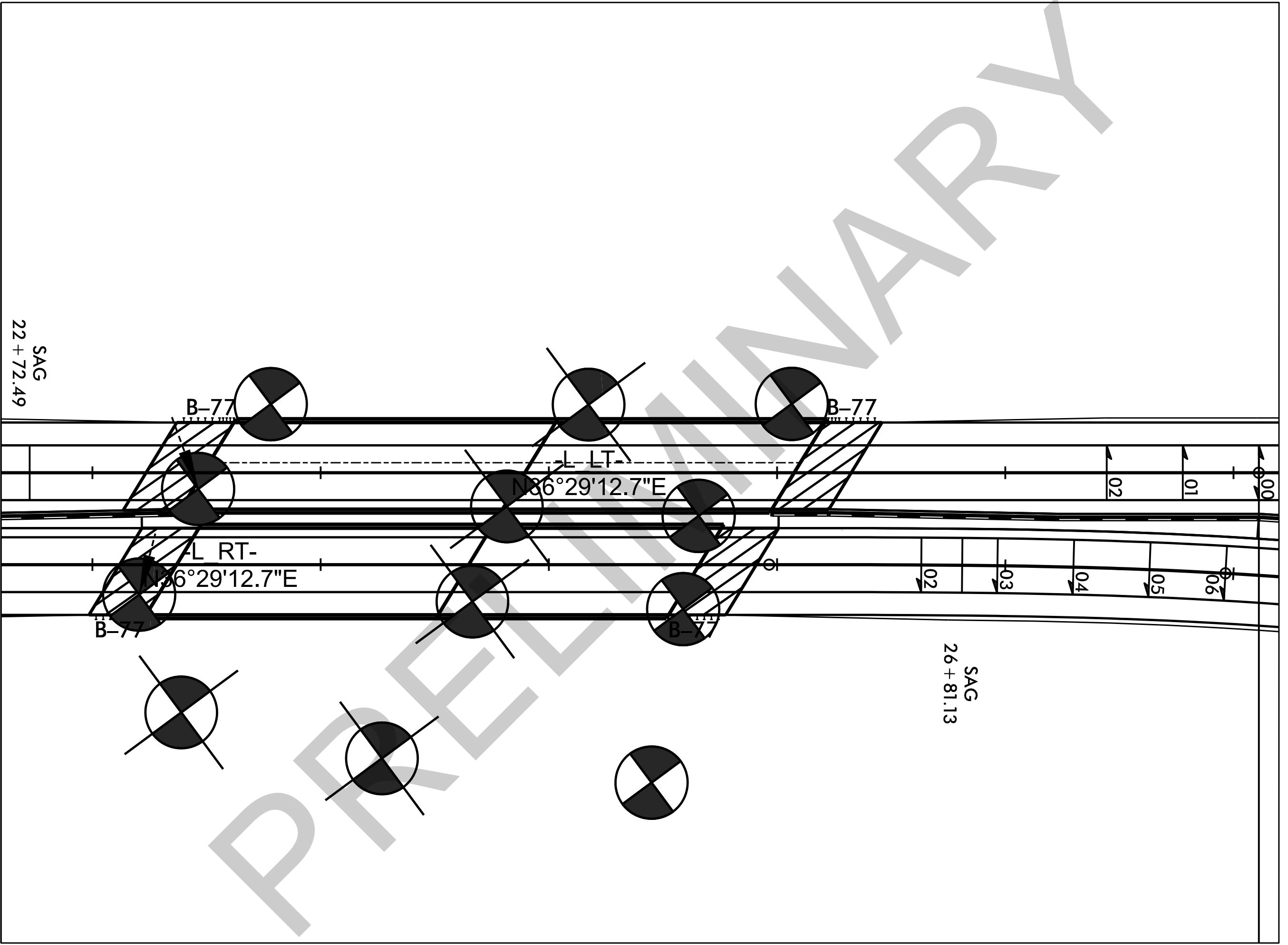


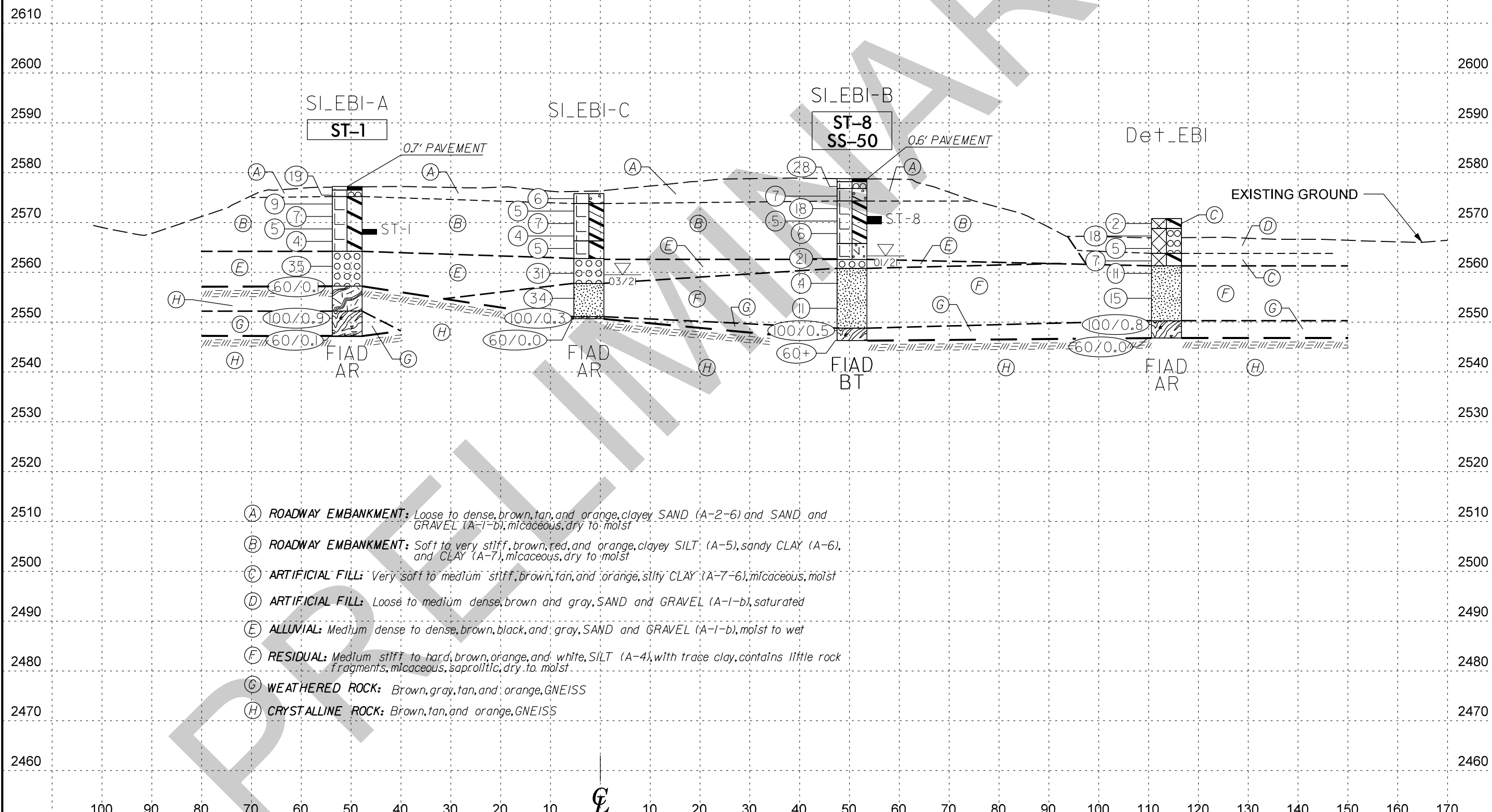
5/29/27/5



PRELIMINARY

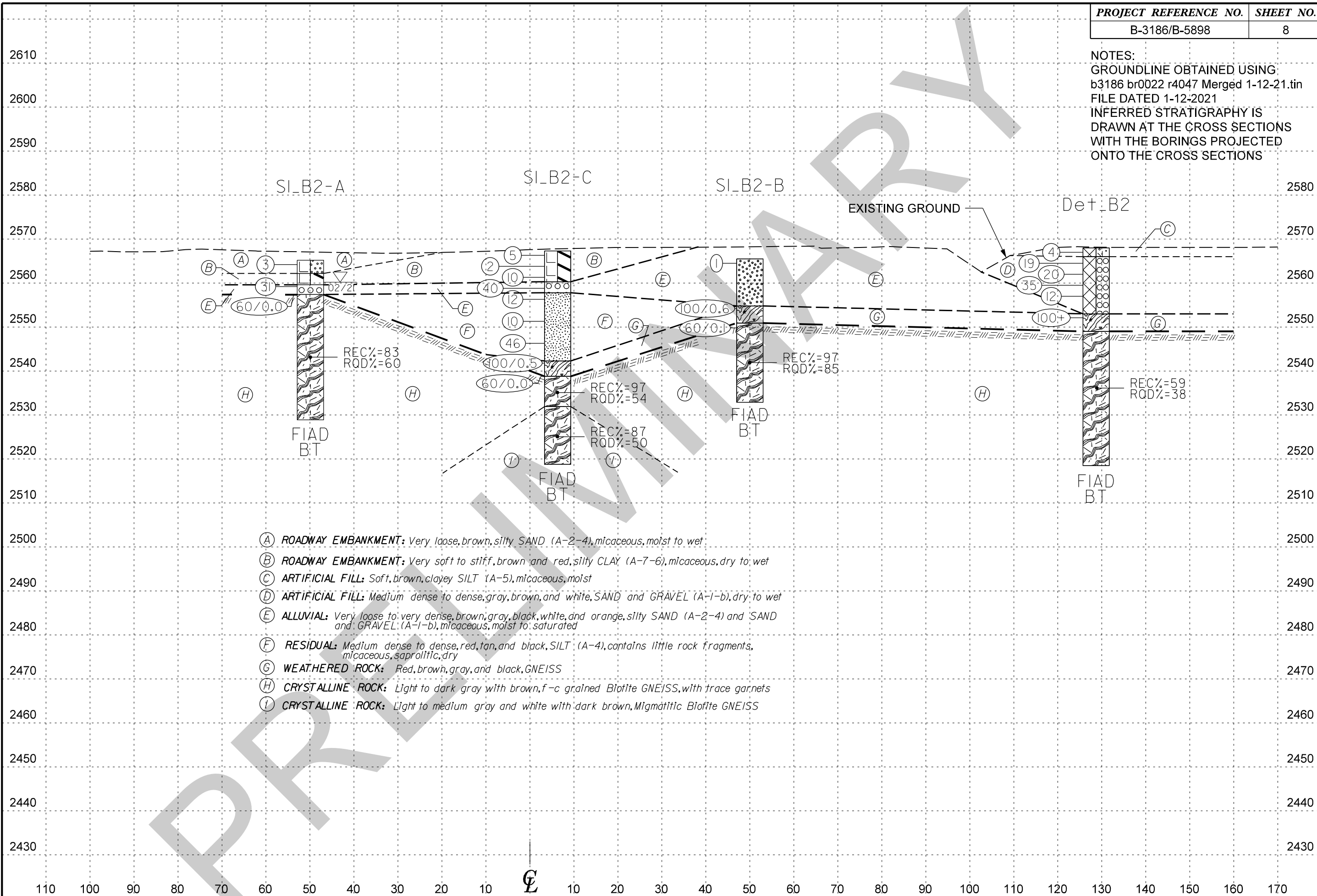
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
ST-1	42' LT	41+84	8.5' - 9.6'	A-7-6 (21)	51	27	7.8	19.6	26.4	46.2	98.9	96.8	75.4	26	-
ST-8	42' RT	41+27	7.5' - 9.1'	A-6 (8)	39	20	29.1	11.0	23.0	36.9	91.4	70.3	55.1	28	-
SS-50	42' RT	41+30	7.5' - 9.0'	A-6 (16)	40	20	14.0	10.3	44.4	31.3	99.7	90.9	80.9	63	-

NOTES:
 GROUNDLINE OBTAINED USING
 b3186 br0022 r4047 Merged 1-12-21.tin
 FILE DATED 1-12-2021
 INFERRED STRATIGRAPHY IS
 DRAWN AT THE CROSS SECTIONS
 WITH THE BORINGS PROJECTED
 ONTO THE CROSS SECTIONS



- (A) ROADWAY EMBANKMENT: Loose to dense, brown, tan, and orange, clayey SAND (A-2-6) and SAND and GRAVEL (A-1-b), micaceous, dry to moist
- (B) ROADWAY EMBANKMENT: Soft to very stiff, brown, red, and orange, clayey SILT (A-5), sandy CLAY (A-6), and CLAY (A-7), micaceous, dry to moist
- (C) ARTIFICIAL FILL: Very soft to medium stiff, brown, tan, and orange, silty CLAY (A-7-6), micaceous, moist
- (D) ARTIFICIAL FILL: Loose to medium dense, brown and gray, SAND and GRAVEL (A-1-b), saturated
- (E) ALLUVIAL: Medium dense to dense, brown, black, and gray, SAND and GRAVEL (A-1-b), moist to wet
- (F) RESIDUAL: Medium stiff to hard, brown, orange, and white, SILT (A-4), with trace clay, contains little rock fragments, micaceous, saprolitic, dry to moist
- (G) WEATHERED ROCK: Brown, gray, tan, and orange, GNEISS
- (H) CRYSTALLINE ROCK: Brown, tan, and orange, GNEISS

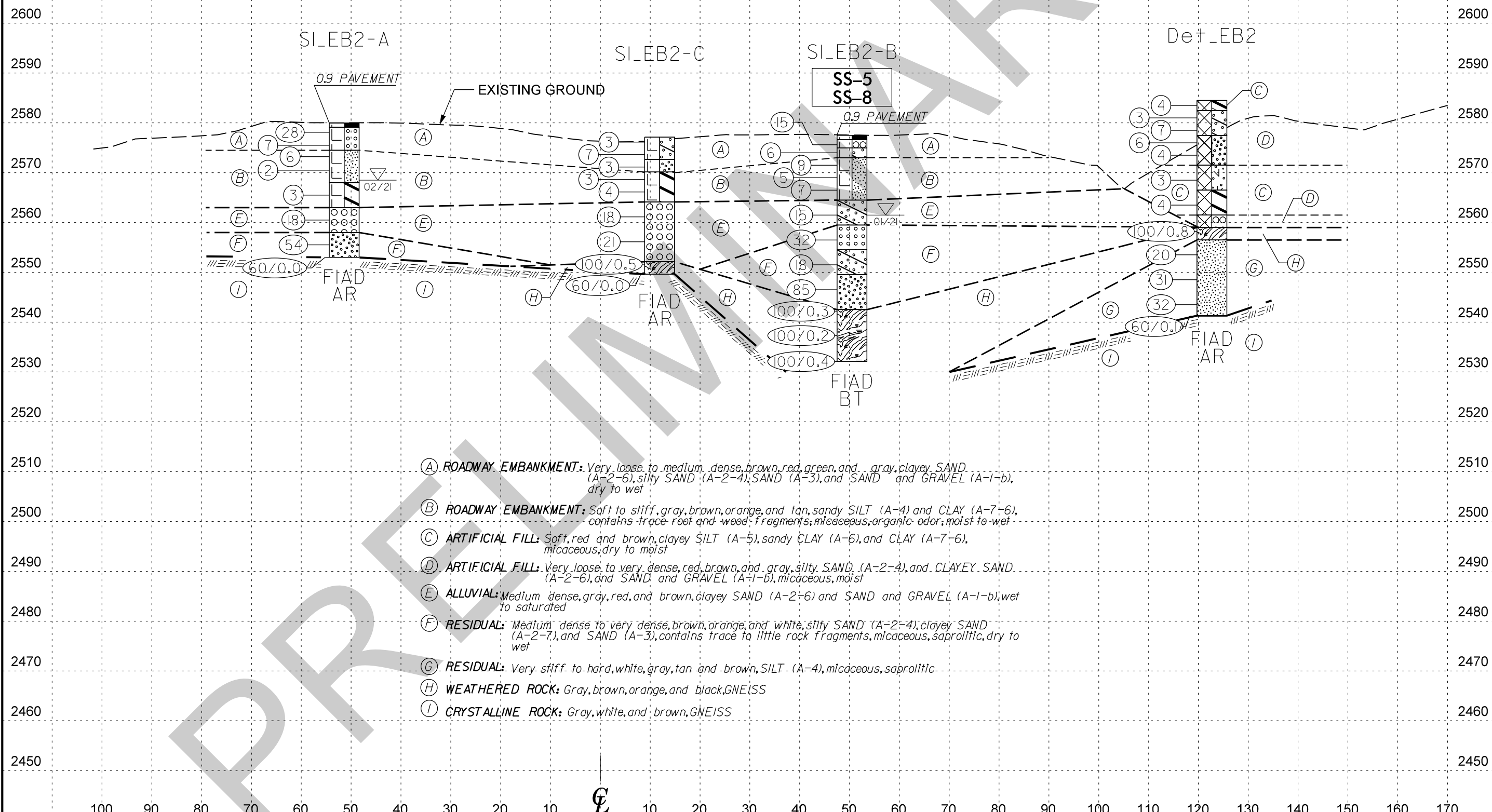
NOTES:
GROUNDLINE OBTAINED USING
b3186 br0022 r4047 Merged 1-12-21.tin
FILE DATED 1-12-2021
INFERRED STRATIGRAPHY IS
DRAWN AT THE CROSS SECTIONS
WITH THE BORINGS PROJECTED
ONTO THE CROSS SECTIONS



- (A) ROADWAY EMBANKMENT: Very loose, brown, silty SAND (A-2-4), micaceous, moist to wet
- (B) ROADWAY EMBANKMENT: Very soft to stiff, brown and red, silty CLAY (A-7-6), micaceous, dry to wet
- (C) ARTIFICIAL FILL: Soft, brown, clayey SILT (A-5), micaceous, moist
- (D) ARTIFICIAL FILL: Medium dense to dense, gray, brown, and white, SAND and GRAVEL (A-1-b), dry to wet
- (E) ALLUVIAL: Very loose to very dense, brown, gray, black, white, and orange, silty SAND (A-2-4) and SAND and GRAVEL (A-1-b), micaceous, moist to saturated
- (F) RESIDUAL: Medium dense to dense, red, tan, and black, SILT (A-4), contains little rock fragments, micaceous, saprolitic, dry
- (G) WEATHERED ROCK: Red, brown, gray, and black, GNEISS
- (H) CRYSTALLINE ROCK: Light to dark gray with brown, f-c grained Biotite GNEISS, with trace garnets
- (I) CRYSTALLINE ROCK: Light to medium gray and white with dark brown, Migmatitic Biotite GNEISS

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
SS-5	43' RT	43+6.3	10.0' - 11.5'	A-4 (1)	34	9	35.7	25.1	22.0	17.2	93.2	71.2	43.3	28	-
SS-8	43' RT	43+6.3	25.0' - 26.5'	A-2-7 (4)	52	30	47.3	29.7	18.3	4.7	91.9	58.9	28.6	18	-

NOTES:
 GROUNDLINE OBTAINED USING
 b3186 br0022 r4047 Merged 1-12-21.tin
 FILE DATED 1-12-2021
 INFERRED STRATIGRAPHY IS
 DRAWN AT THE CROSS SECTIONS
 WITH THE BORINGS PROJECTED
 ONTO THE CROSS SECTIONS



REFERENCE: B-3186/B-5898

PROJECT: 38332/48030

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY HAYWOOD
 PROJECT DESCRIPTION US 23/US 74/US 19 (GREAT SMOKY MOUNTAIN HWY) FROM WEST OF NC 209 (CRABTREE RD.) TO EAST OF RUSS AVE.
 SITE DESCRIPTION BRIDGE NO. 168 ON -YIRT- (US 19) OVER -L-, -L LT- AND -L RT- (US 74 /US 23) BETWEEN US 276 AND NC 209

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-7	CROSS SECTIONS
8-16	BORE LOGS, CORE REPORTS, & CORE PHOTOGRAPHS
17	ROCK TEST RESULTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3186/B-5898	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:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

C. SWAFFORD

R. DUGGER

L. WANSRATH

K. BOONE

INVESTIGATED BY C. SWAFFORD

DRAWN BY T. LYNN

CHECKED BY K. BUSSEY

SUBMITTED BY HDR

DATE NOVEMBER 2021



Kenneth R. Bussey, Jr.
SIGNATURE

9/6/2023
DATE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Main content table with columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, ROCK HARDNESS, FRACTURE SPACING, BEDDING, INDURATION, and ELEVATION. Includes various symbols, scales, and descriptive text for soil and rock types.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

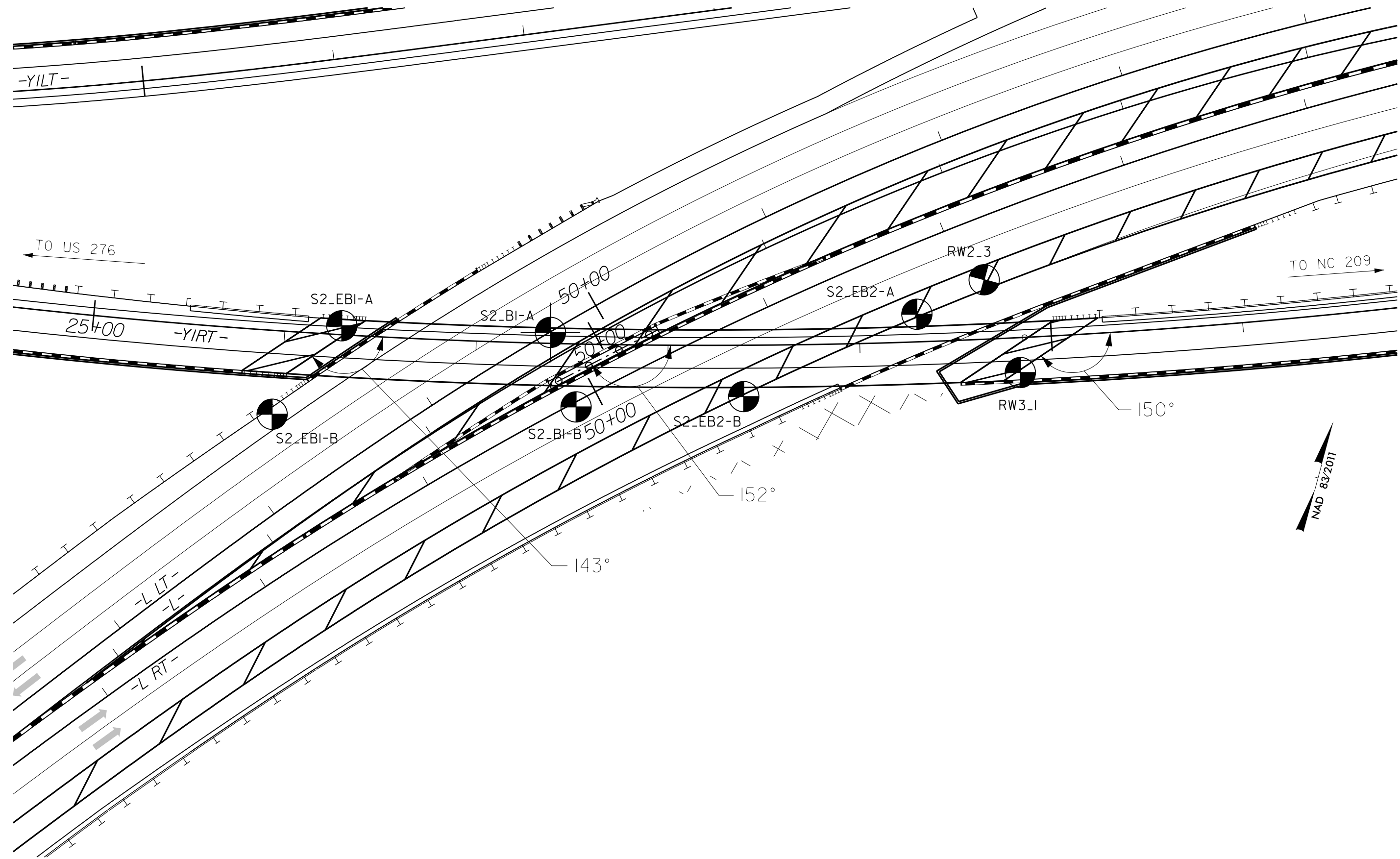
SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

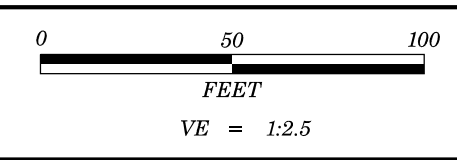
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

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)				
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.		VERY GOOD	GOOD	FAIR	POOR	VERY POOR	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.		VERY GOOD	GOOD	FAIR	POOR	VERY POOR
STRUCTURE		DECREASING SURFACE QUALITY →					COMPOSITION AND STRUCTURE						
	INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	90	N/A	N/A	N/A	N/A	 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.	70	A	A	A	A	A
	BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	80	70	N/A	N/A	N/A	 B. Sandstone with thin inter-layers of siltstone	60	A	B	C	D	E
	VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets	70	60	50	N/A	N/A	 C. Sandstone and siltstone in similar amounts	50	B	C	D	E	E
	BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity	60	50	40	30	N/A	 F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure	40	B	C	D	F	E
	DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces	50	40	30	20	N/A	 G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers	30	B	C	D	F	G
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	40	30	20	10	N/A	 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.	20	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	30	20	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	20	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	10	10	10	10	N/A	 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.	10	B	C	D	F	H

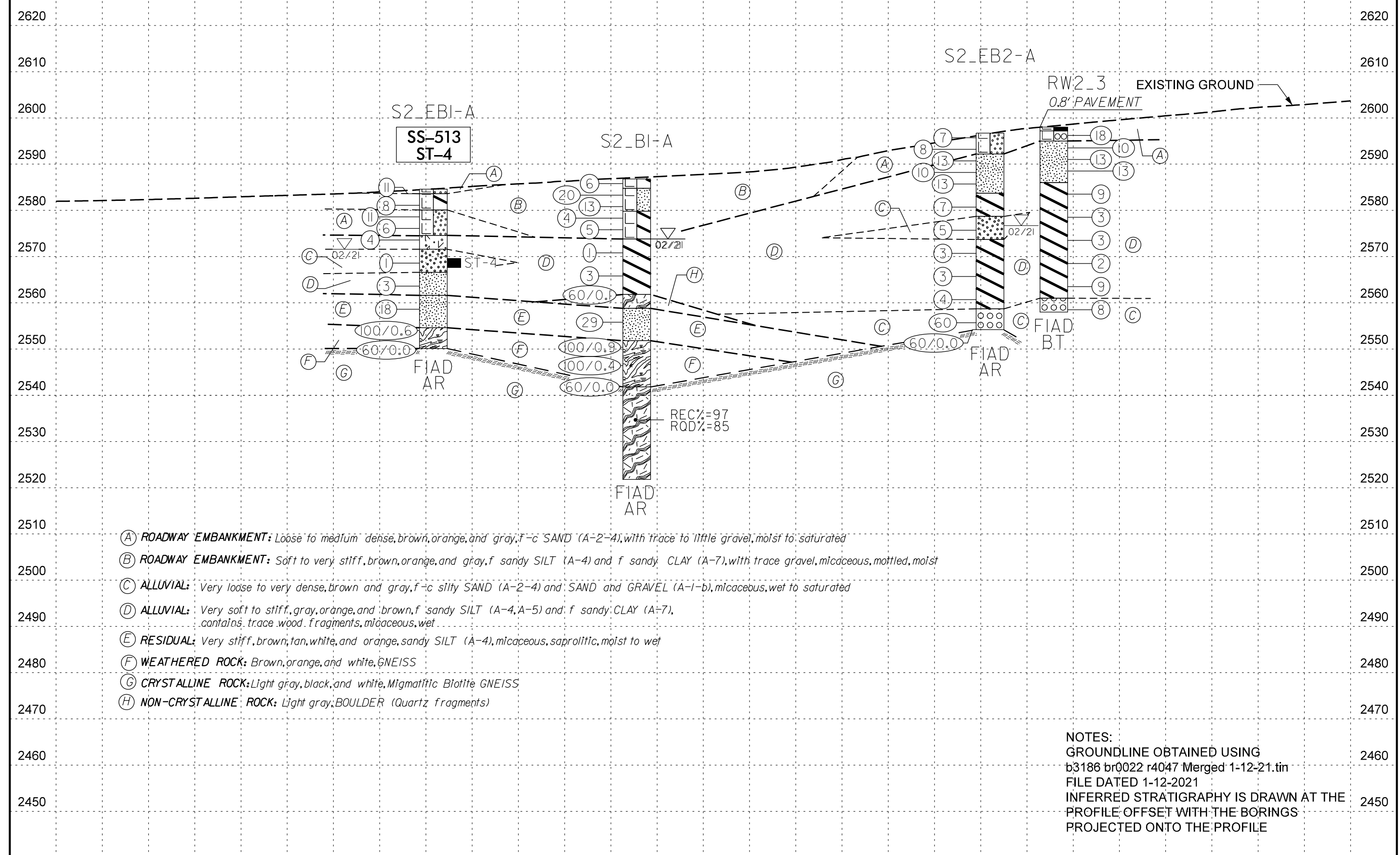
PROJECT REFERENCE NO.	SHEET NO.
B-3186/B-5898	3
SITE PLAN	
0 50 100 FEET	





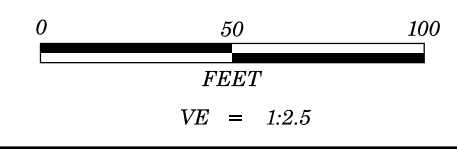
PROJECT REFERENCE NO.	SHEET NO.
B-3816/B-5898	4
BRIDGE NO. 2 PROFILE 8' LT OF -YIRT-	

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-513	5' LT	26+29	10.0' - 11.5'	A-5 (9)	48	10	4.1	32.5	49.9	13.5	100.0	98.0	74.1	51	-
ST-4	5' LT	26+29	15.0' - 17.0'	A-2-4	27	6	41.2	30.8	7.0	21.0	94.4	66.3	31.2	28	-



- (A) ROADWAY EMBANKMENT: Loose to medium dense, brown, orange, and gray, f-c SAND (A-2-4), with trace to little gravel, moist to saturated
- (B) ROADWAY EMBANKMENT: Soft to very stiff, brown, orange, and gray, f sandy SILT (A-4) and f sandy CLAY (A-7), with trace gravel, micaceous, mottled, moist
- (C) ALLUVIAL: Very loose to very dense, brown and gray, f-c silty SAND (A-2-4) and SAND and GRAVEL (A-1-b), micaceous, wet to saturated
- (D) ALLUVIAL: Very soft to stiff, gray, orange, and brown, f sandy SILT (A-4, A-5) and f sandy CLAY (A-7), contains trace wood fragments, micaceous, wet
- (E) RESIDUAL: Very stiff, brown, tan, white, and orange, sandy SILT (A-4), micaceous, saprolitic, moist to wet
- (F) WEATHERED ROCK: Brown, orange, and white, GNEISS
- (G) CRYSTALLINE ROCK: Light gray, black, and white, Migmatitic Blotite GNEISS
- (H) NON-CRYSTALLINE ROCK: Light gray, BOULDER (Quartz fragments)

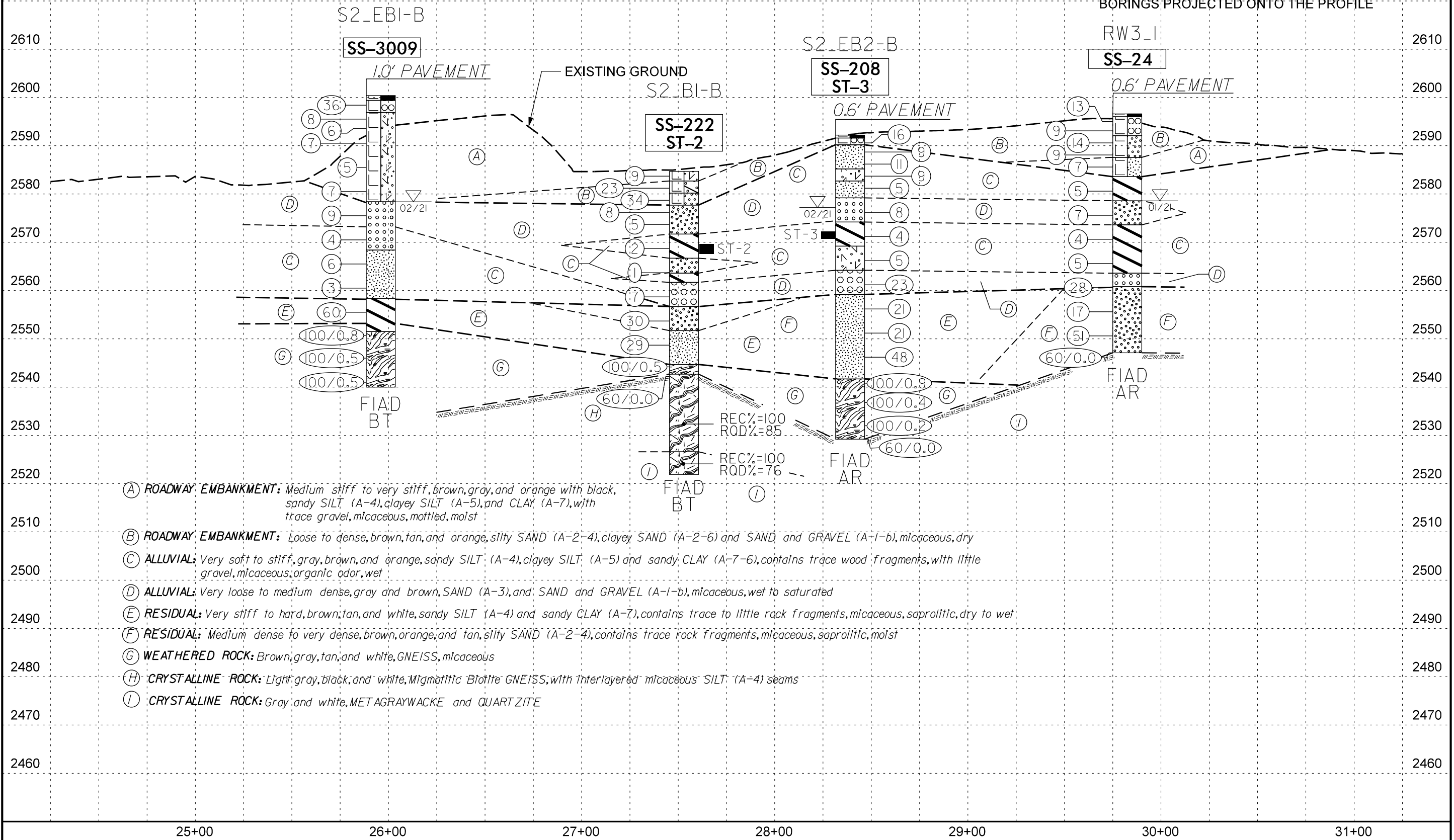
NOTES:
 GROUNDLINE OBTAINED USING
 b3186 br0022 r4047 Merged 1-12-21.tin
 FILE DATED 1-12-2021
 INFERRED STRATIGRAPHY IS DRAWN AT THE
 PROFILE OFFSET WITH THE BORINGS
 PROJECTED ONTO THE PROFILE



PROJECT REFERENCE NO.	SHEET NO.
B-3816/B-5898	5
BRIDGE NO. 2 PROFILE 22' RT OF -YIRT-	

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-3009	44' RT	25+96	38.9' - 40.4'	A-4	37	8	26.8	36.0	25.4	11.8	86.6	72.3	36.7	43	-
SS-222	33' RT	27+53	15.0' - 16.5'	A-5 (13)	51	10	1.1	21.2	59.5	18.2	100.0	99.5	85.8	62	-
ST-2	33' RT	27+53	15.0' - 17.0'	A-7-5 (16)	57	11	1.3	14.3	66.8	17.6	100.0	99.6	87.3	68	-
SS-208	27' RT	28+39	20.0' - 21.5'	A-7-5 (29)	77	21	2.5	13.1	70.9	13.5	100.0	98.9	89.2	73	-
ST-3	27' RT	28+39	20.0' - 21.5'	A-4	NP	NP	6.7	33.0	38.9	21.4	100	97.2	69.0	46	-
SS-24	7' LT	29+84	15.0' - 16.1'	A-7-6 (11)	47	23	20.8	20.5	23.6	35.1	92.0	79.1	58.5	26	-

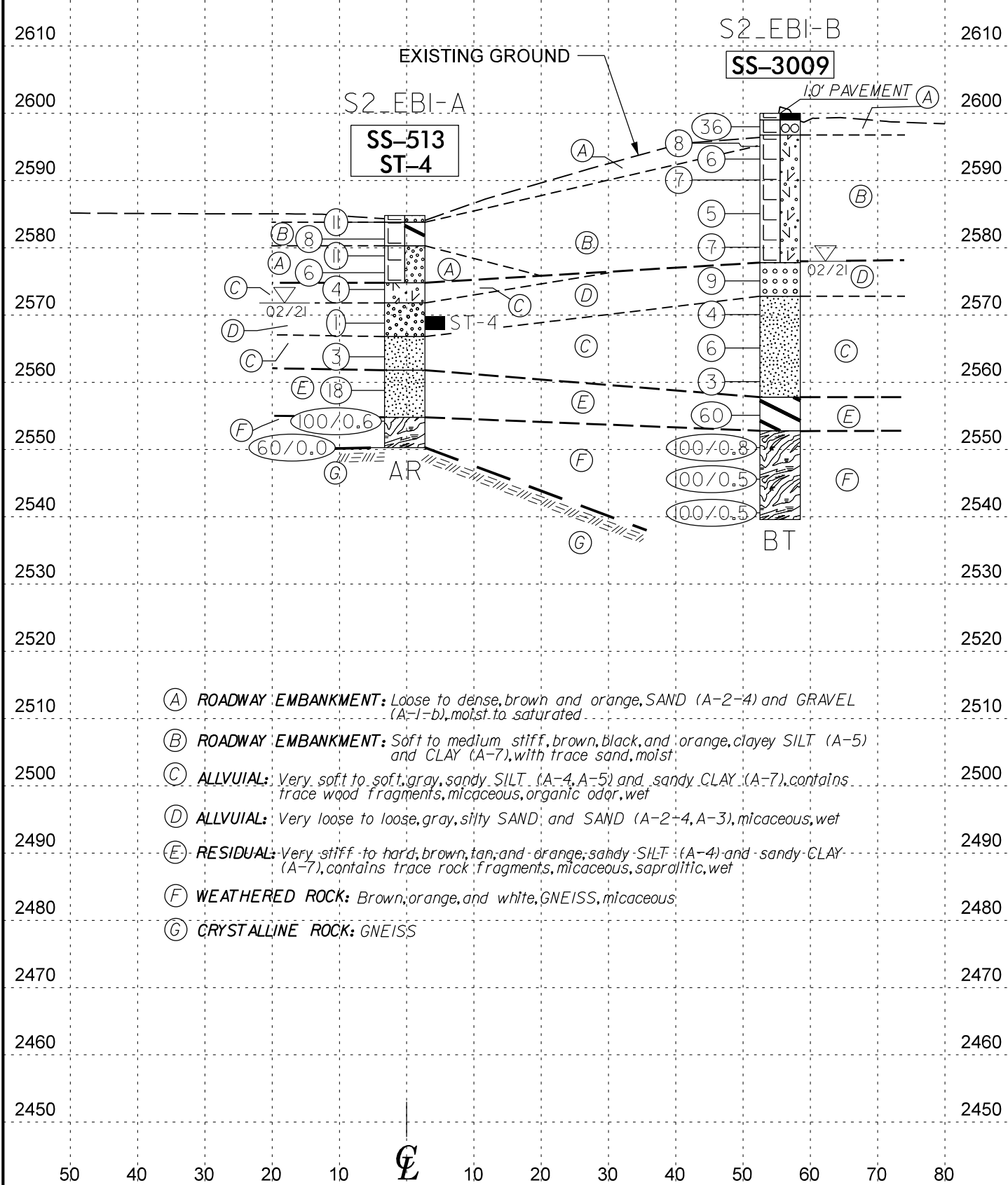
NOTES:
 GROUNDLINE OBTAINED USING b3186 br0022
 r4047 Merged 1-12-21.tin FILE DATED
 1-12-2021. INFERRED STRATIGRAPHY IS
 DRAWN AT THE PROFILE OFFSET WITH THE
 BORINGS PROJECTED ONTO THE PROFILE



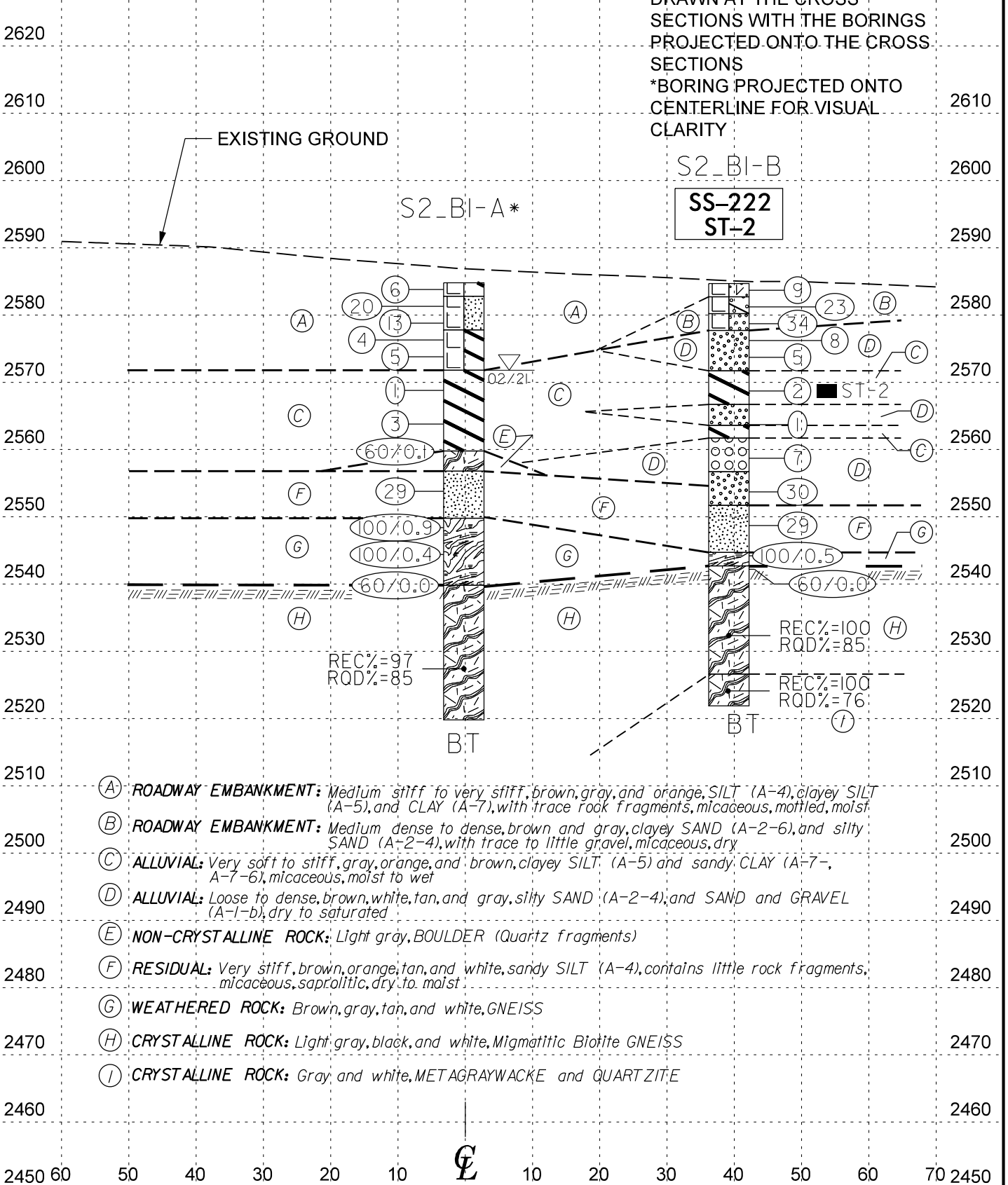
- (A) ROADWAY EMBANKMENT: Medium stiff to very stiff, brown, gray, and orange with black, sandy SILT (A-4), clayey SILT (A-5), and CLAY (A-7), with trace gravel, micaceous, mottled, moist
- (B) ROADWAY EMBANKMENT: Loose to dense, brown, tan, and orange, silty SAND (A-2-4), clayey SAND (A-2-6) and SAND and GRAVEL (A-1-b), micaceous, dry
- (C) ALLUVIAL: Very soft to stiff, gray, brown, and orange, sandy SILT (A-4), clayey SILT (A-5) and sandy CLAY (A-7-6), contains trace wood fragments, with little gravel, micaceous, organic odor, wet
- (D) ALLUVIAL: Very loose to medium dense, gray and brown, SAND (A-3), and SAND and GRAVEL (A-1-b), micaceous, wet to saturated
- (E) RESIDUAL: Very stiff to hard, brown, tan, and white, sandy SILT (A-4) and sandy CLAY (A-7), contains trace to little rock fragments, micaceous, saprolitic, dry to wet
- (F) RESIDUAL: Medium dense to very dense, brown, orange, and tan, silty SAND (A-2-4), contains trace rock fragments, micaceous, saprolitic, moist
- (G) WEATHERED ROCK: Brown, gray, tan, and white, GNEISS, micaceous
- (H) CRYSTALLINE ROCK: Light gray, black, and white, Migmatitic Biotite GNEISS, with interlayered micaceous SILT (A-4) seams
- (I) CRYSTALLINE ROCK: Gray and white, METAGRAYWACKE and QUARTZITE

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-513	5' LT	26+29	10.0' - 11.5'	A-5 (9)	48	10	4.1	32.5	49.9	13.5	100.0	98.0	74.1	51	-
ST-4	5' LT	26+29	15.0' - 17.0'	A-2-4	27	6	41.2	30.8	7.0	21.0	94.4	66.3	31.2	28	-
SS-3009	44' RT	25+96	38.9' - 40.4	A-4	37	8	26.8	36.0	25.4	11.8	86.6	72.3	36.7	43	-
SS-222	33' RT	27+53	15.0' - 16.5'	A-5 (13)	51	10	1.1	21.2	59.5	18.2	100.0	99.5	85.8	62	-
ST-2	33' RT	27+53	15.0' - 17.0'	A-7-5 (16)	57	11	1.3	14.3	66.8	17.6	100.0	99.6	87.3	68	-

NOTES:
 GROUNDLINE OBTAINED USING
 b3186 br0022 r4047 Merged 1-12-21.tin
 FILE DATED 1-12-2021
 INFERRED STRATIGRAPHY IS
 DRAWN AT THE CROSS
 SECTIONS WITH THE BORINGS
 PROJECTED ONTO THE CROSS
 SECTIONS
 *BORING PROJECTED ONTO
 CENTERLINE FOR VISUAL
 CLARITY



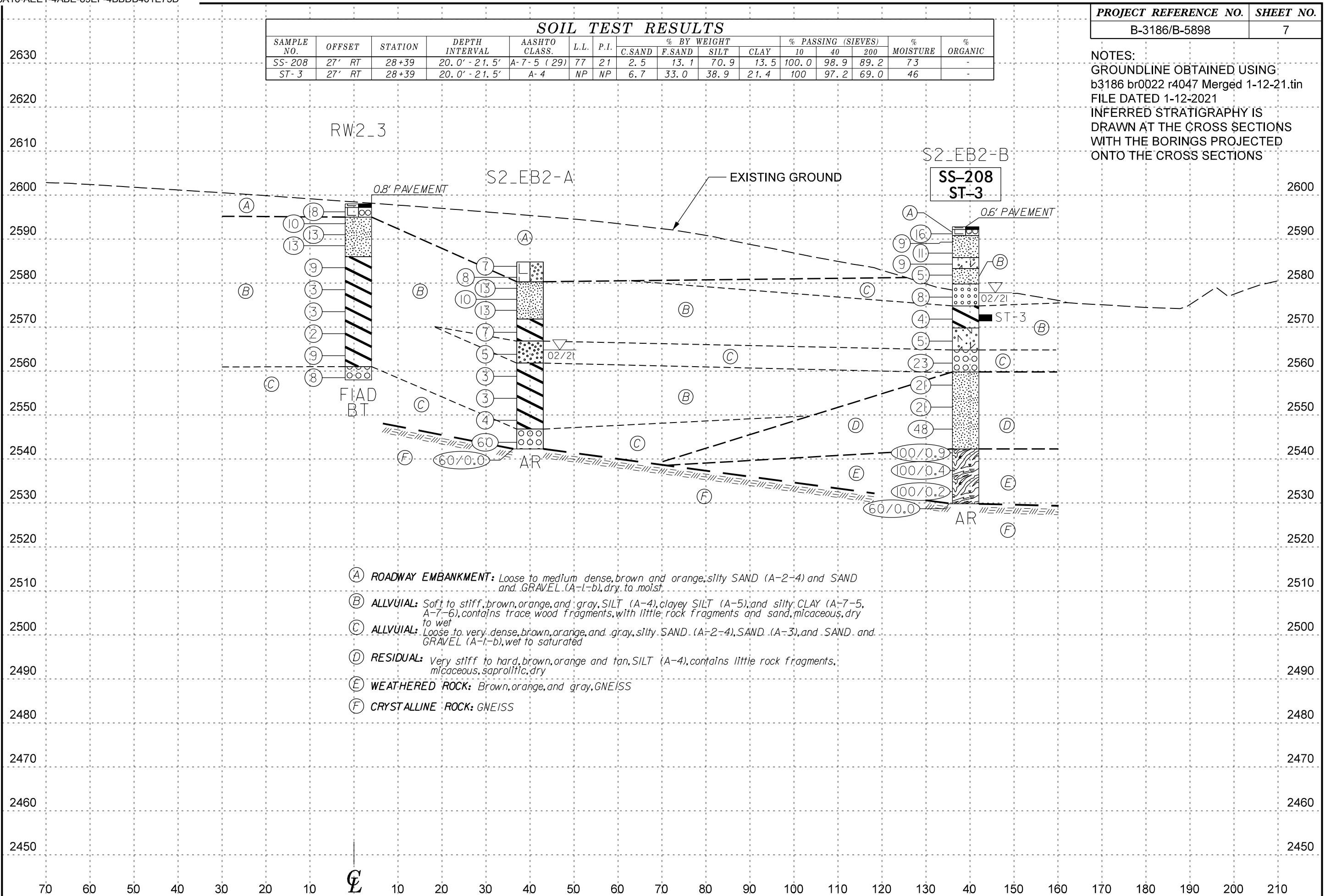
- (A) ROADWAY EMBANKMENT: Loose to dense, brown and orange, SAND (A-2-4) and GRAVEL (A-1-b), moist to saturated
- (B) ROADWAY EMBANKMENT: Soft to medium stiff, brown, black, and orange, clayey SILT (A-5) and CLAY (A-7), with trace sand, moist
- (C) ALLUVIAL: Very soft to soft, gray, sandy SILT (A-4, A-5) and sandy CLAY (A-7), contains trace wood fragments, micaceous, organic odor, wet
- (D) ALLUVIAL: Very loose to loose, gray, silty SAND and SAND (A-2-4, A-3), micaceous, wet
- (E) RESIDUAL: Very stiff to hard, brown, tan, and orange, sandy SILT (A-4) and sandy CLAY (A-7), contains trace rock fragments, micaceous, saprolitic, wet
- (F) WEATHERED ROCK: Brown, orange, and white, GNEISS, micaceous
- (G) CRYSTALLINE ROCK: GNEISS



- (A) ROADWAY EMBANKMENT: Medium stiff to very stiff, brown, gray, and orange, SILT (A-4), clayey SILT (A-5), and CLAY (A-7), with trace rock fragments, micaceous, mottled, moist
- (B) ROADWAY EMBANKMENT: Medium dense to dense, brown and gray, clayey SAND (A-2-6), and silty SAND (A-2-4), with trace to little gravel, micaceous, dry
- (C) ALLUVIAL: Very soft to stiff, gray, orange, and brown, clayey SILT (A-5) and sandy CLAY (A-7, A-7-6), micaceous, moist to wet
- (D) ALLUVIAL: Loose to dense, brown, white, tan, and gray, silty SAND (A-2-4), and SAND and GRAVEL (A-1-b), dry to saturated
- (E) NON-CRYSTALLINE ROCK: Light gray, BOULDER (Quartz fragments)
- (F) RESIDUAL: Very stiff, brown, orange, tan, and white, sandy SILT (A-4), contains little rock fragments, micaceous, saprolitic, dry to moist
- (G) WEATHERED ROCK: Brown, gray, tan, and white, GNEISS
- (H) CRYSTALLINE ROCK: Light gray, black, and white, Migmatitic Biotite GNEISS
- (I) CRYSTALLINE ROCK: Gray and white, METAGRAYWACKE and QUARTZITE

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-208	27' RT	28+39	20.0' - 21.5'	A-7-5 (29)	77	21	2.5	13.1	70.9	13.5	100.0	98.9	89.2	73	-
ST-3	27' RT	28+39	20.0' - 21.5'	A-4	NP	NP	6.7	33.0	38.9	21.4	100	97.2	69.0	46	-

NOTES:
 GROUNDLINE OBTAINED USING:
 b3186 br0022 r4047 Merged 1-12-21.tin
 FILE DATED 1-12-2021
 INFERRED STRATIGRAPHY IS
 DRAWN AT THE CROSS SECTIONS
 WITH THE BORINGS PROJECTED
 ONTO THE CROSS SECTIONS



- (A) ROADWAY EMBANKMENT: Loose to medium dense, brown and orange, silty SAND (A-2-4) and SAND and GRAVEL (A-1-b), dry to moist.
- (B) ALLUVIAL: Soft to stiff, brown, orange, and gray, SILT (A-4), clayey SILT (A-5), and silty CLAY (A-7-5, A-7-6), contains trace wood fragments, with little rock fragments and sand, micaceous, dry to wet.
- (C) ALLUVIAL: Loose to very dense, brown, orange, and gray, silty SAND (A-2-4), SAND (A-3), and SAND and GRAVEL (A-1-b), wet to saturated.
- (D) RESIDUAL: Very stiff to hard, brown, orange and tan, SILT (A-4), contains little rock fragments, micaceous, saprolitic, dry.
- (E) WEATHERED ROCK: Brown, orange, and gray, GNEISS.
- (F) CRYSTALLINE ROCK: GNEISS.

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST C. Swafford								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S2_EB1-A		STATION 26+29		OFFSET 5 ft LT		ALIGNMENT -Y1RT-								
COLLAR ELEV. 2,584.6 ft		TOTAL DEPTH 34.5 ft		NORTHING 666,917		EASTING 819,274								
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER L. Wanstrath		START DATE 02/25/21		COMP. DATE 02/25/21		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				
2585	2,584.6	0.0	5	7	4									2,584.6 GROUND SURFACE 0.0
	2,582.1	2.5	3	4	4									2,583.6 ROADWAY EMBANKMENT 1.0
	2,579.6	5.0	6	5	6									2,580.1 Medium dense, brown, f SAND (A-2-4), with trace gravel 4.5
	2,577.1	7.5	3	3	3									2,580.1 Soft, brown and orange, CLAY (A-7) 4.5
	2,574.6	10.0	3	2	2									2,574.6 Loose to medium dense, gray, f-c SAND (A-2-4) 10.0
	2,571.6	12.5												2,574.6 ALLUVIAL 10.0
	2,569.6	15.0	1	WOH	1									2,571.6 Soft, gray, SILT (A-5)(9), micaceous 13.0
	2,566.6	18.0												2,571.6 Very loose, gray, f silty SAND (A-2-4), micaceous 13.0
	2,564.6	20.0	1	1	2									2,566.6 Soft, gray, f sandy SILT (A-4), micaceous 18.0
	2,559.6	25.0	4	7	11									2,561.6 RESIDUAL 23.0
	2,554.6	30.0	90	10/0.1										2,554.6 Very stiff, brown and orange, f sandy SILT (A-4), micaceous, saprolitic 30.0
	2,550.1	34.5	60/0.0											2,550.1 WEATHERED ROCK 30.0
														2,550.1 Boring Terminated with Standard Penetration Test Refusal at Elevation 2,550.1 ft on Crystalline Rock (GNEISS) 34.5
														Other Samples: ST-4 (15.0 - 17.0)

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST C. Swafford								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S2_EB1-B		STATION 25+96		OFFSET 44 ft RT		ALIGNMENT -Y1RT-								
COLLAR ELEV. 2,600.4 ft		TOTAL DEPTH 60.4 ft		NORTHING 666,863		EASTING 819,251								
DRILL RIGHAMMER EFF./DATE GTC3277 CME-75 83%(09/15/2020)				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic								
DRILLER K. Boone		START DATE 02/27/21		COMP. DATE 02/27/21		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				
2605														2,600.4 GROUND SURFACE 0.0
														2,599.4 ROADWAY EMBANKMENT 1.0
														2,596.9 ROADWAY EMBANKMENT 3.5
														2,596.9 Dense, brown, GRAVEL (A-1-b) 3.5
														2,594.6 Medium stiff, orange and brown with black, clayey SILT (A-5), with trace sand 5.8
														2,591.5 ALLUVIAL 8.9
														2,586.5 Soft, gray, SILT (A-5)(9), micaceous 13.9
														2,581.5 Very loose, gray, f silty SAND (A-2-4), micaceous 18.9
														2,576.5 Soft, gray, f sandy SILT (A-4), micaceous 23.9
														2,571.5 RESIDUAL 28.9
														2,571.5 Very stiff, brown and orange, f sandy SILT (A-4), micaceous, saprolitic 28.9
														2,566.5 WEATHERED ROCK 33.9
														2,561.5 Brown, orange, and white, GNEISS 38.9
														2,558.4 ROADWAY EMBANKMENT 42.0
														2,558.4 Hard, tan and brown, sandy CLAY (A-7), contains trace rock fragments, micaceous, saprolitic 42.0
														2,551.5 WEATHERED ROCK 48.9
														2,551.5 Brown, GNEISS, micaceous 48.9
														2,546.5 WEATHERED ROCK 53.9
														2,541.5 Brown, GNEISS, micaceous 58.9
														2,540.0 Boring Terminated at Elevation 2,540.0 ft in Weathered Rock (GNEISS) 60.4

NCDOT BORE DOUBLE B3186_GEO_SITE 2.GPJ NC_DOT.GDT 11/23/21

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

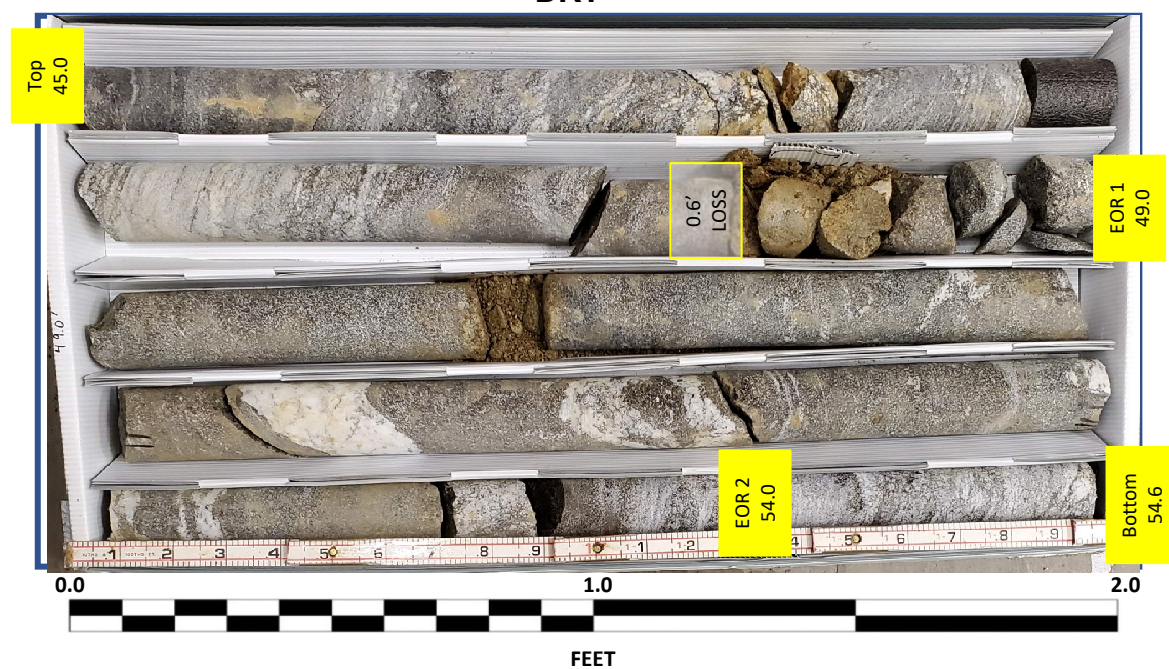
WBS 38332.1.FS1	TIP B-3186 / B-5898	COUNTY HAYWOOD	GEOLOGIST C. Swafford													
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)			GROUND WTR (ft)													
BORING NO. S2_B1-A	STATION 27+39	OFFSET 6 ft LT	ALIGNMENT -Y1RT-													
COLLAR ELEV. 2,586.8 ft	TOTAL DEPTH 65.0 ft	NORTHING 666,942	EASTING 819,380													
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)	DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic													
DRILLER L. Wanstrath	START DATE 02/26/21	COMP. DATE 02/27/21	SURFACE WATER DEPTH N/A													
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2590															2,586.8	0.0
	2,586.8	0.0	3	3	3										2,586.8	0.0
2585	2,584.3	2.5	5	10	10										2,584.8	2.0
	2,581.8	5.0	10	6	7										2,579.8	7.0
2580	2,579.3	7.5	2	1	3										2,573.8	13.0
	2,576.8	10.0	1	2	3										2,573.8	13.0
2575																
	2,571.8	15.0	1	WOH	1											
2570																
	2,566.8	20.0	1	1	2											
2565																
	2,561.8	25.0	60/0.1													
2560																
	2,556.8	30.0	11	13	16											
2555																
	2,551.8	35.0	14	40	60/0.4											
2550																
	2,546.8	40.0	100/0.4													
2545																
	2,541.8	45.0	60/0.0													
2540																
2535																
2530																
2525																

WBS 38332.1.FS1	TIP B-3186 / B-5898	COUNTY HAYWOOD	GEOLOGIST C. Swafford									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)			GROUND WTR (ft)									
BORING NO. S2_B1-A	STATION 27+39	OFFSET 6 ft LT	ALIGNMENT -Y1RT-									
COLLAR ELEV. 2,586.8 ft	TOTAL DEPTH 65.0 ft	NORTHING 666,942	EASTING 819,380									
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)	DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic									
DRILLER L. Wanstrath	START DATE 02/26/21	COMP. DATE 02/27/21	SURFACE WATER DEPTH N/A									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC (ft) %	RQD (ft) %		REC (ft) %	RQD (ft) %			
2541.8												
2540	2,541.8	45.0	4.0	2:07 1:47 2:06 2:00	(3.4) 85%	(2.6) 65%		(19.4) 97%	(17.0) 85%		Begin Coring @ 45.0 ft CRYSTALLINE ROCK Light gray, black and white, Migmatitic Biotite GNEISS, slight weathering, hard, very close to close fracture spacing Very severe weathering, highly micaceous; 0.6' core loss at 48.0' Slight weathering, close fracture spacing at 49.0'	45.0
	2,537.8	49.0	5.0	1:39 4:00 1:44 2:36 2:03	(5.0) 100%	(4.3) 86%						
2535												
	2,532.8	54.0										
			5.0	1:53 2:05 2:16 2:20 2:22	(5.0) 100%	(4.8) 96%	RS-14				RS-14 54.6' - 55.2' GSI= 75 - 85 Qu= 16,778 psi	
2530												
	2,527.8	59.0										
			5.0	1:46 2:15 2:24 1:55 1:54	(5.0) 100%	(4.3) 86%						
2525												
	2,522.8	64.0	1.0	2:10	(1.0) 100%	(1.0) 100%					Boring Terminated at Elevation 2,521.8 ft in Crystalline Rock (Migmatitic Biotite GNEISS)	65.0
	2,521.8	65.0									NOTES 0.5' topsoil	

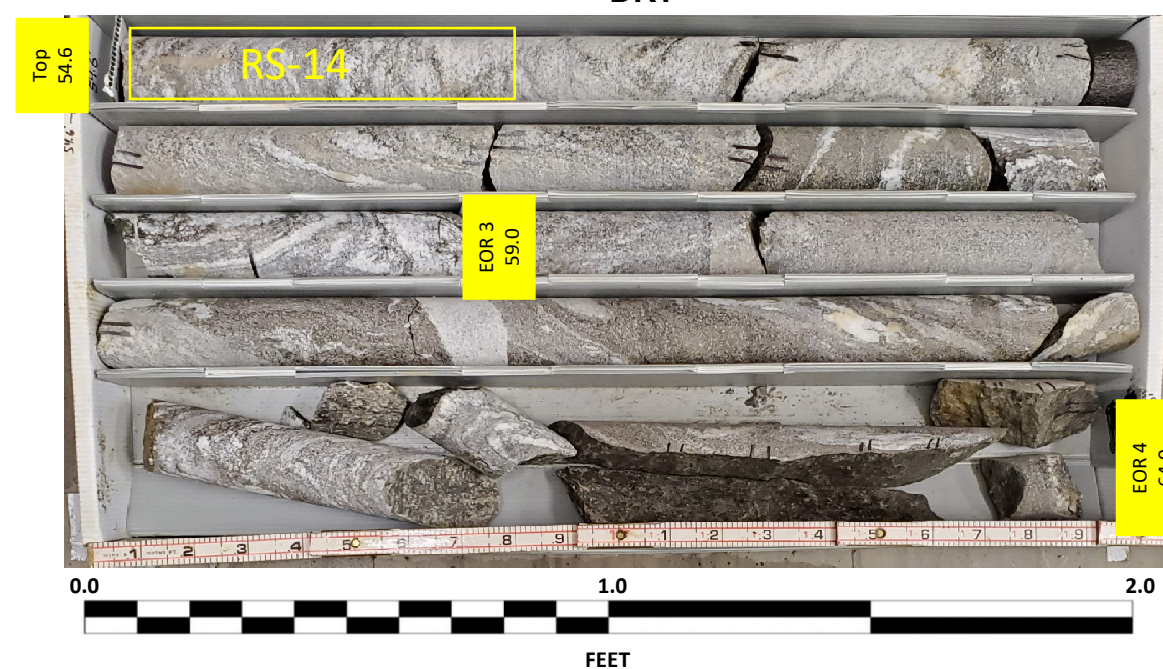
NCDOT BORE DOUBLE B3186_GEO_SITE 2.GPJ NC_DOT.GDT 11/23/21

CORE PHOTOGRAPHIC RECORD
38330.1.FS1 (B-3186/B-5898)
US 23/ US 74 Great Smokey Mountain Highway

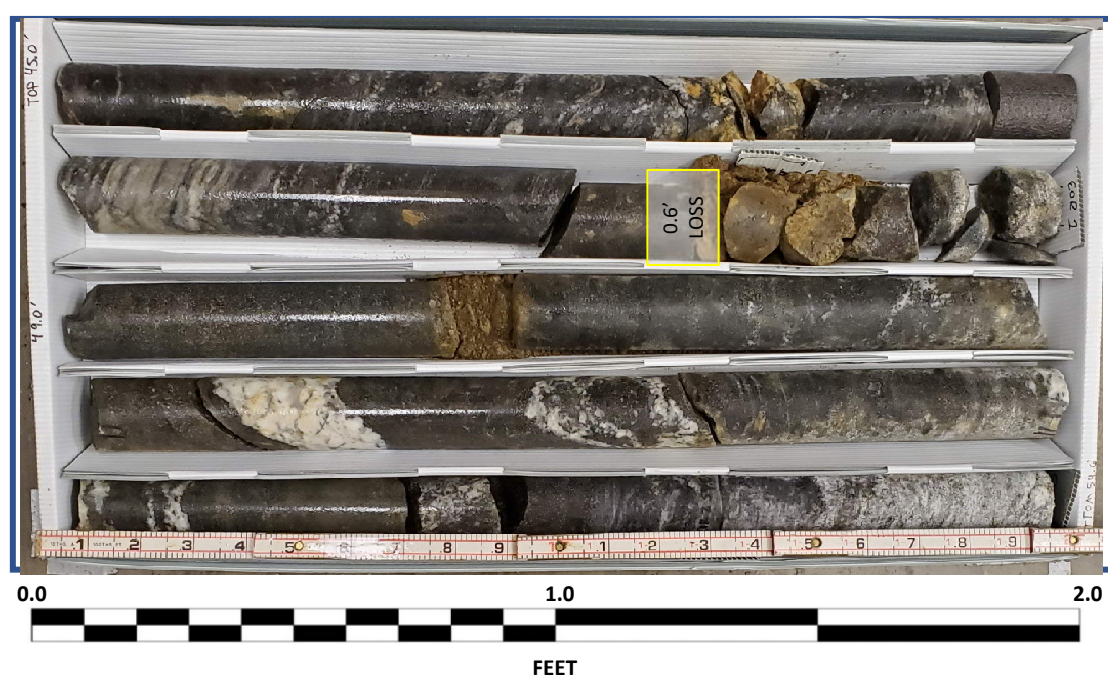
S2_B1-A
Box 1 of 3: 45.0 – 54.6 FEET
DRY



S2_B1-A
Box 2 of 3: 54.6 – 64.0 FEET
DRY



S2_B1-A
Box 1 of 3: 45.0 – 54.6 FEET
WET

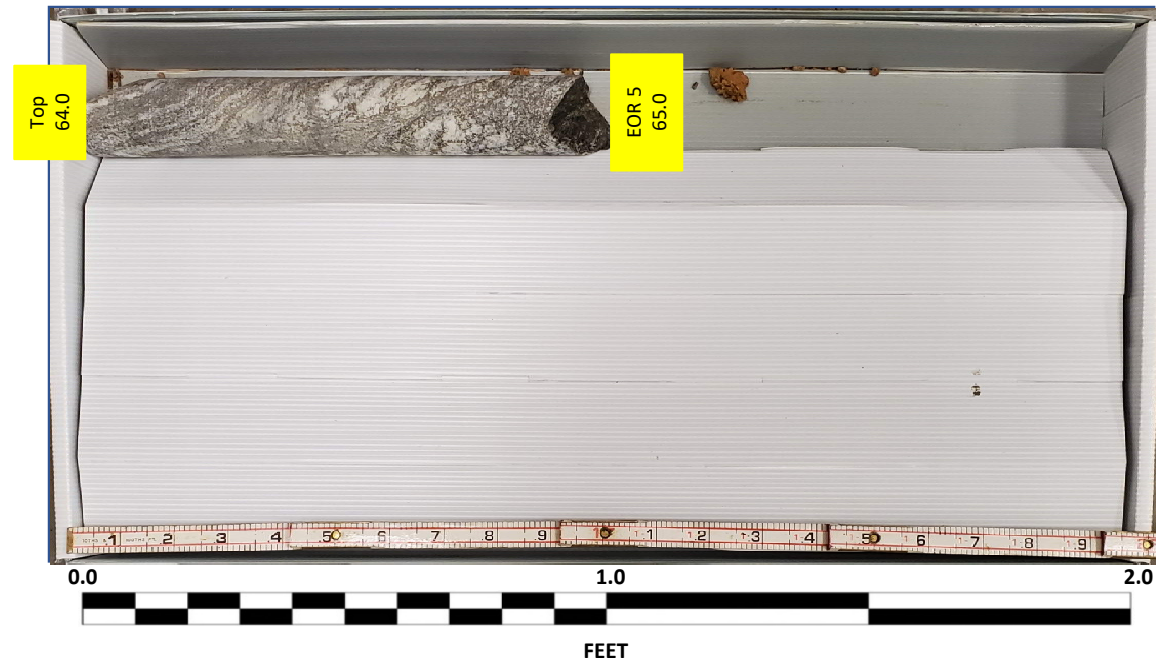


S2_B1-A
Box 2 of 3: 54.6 – 64.0 FEET
WET

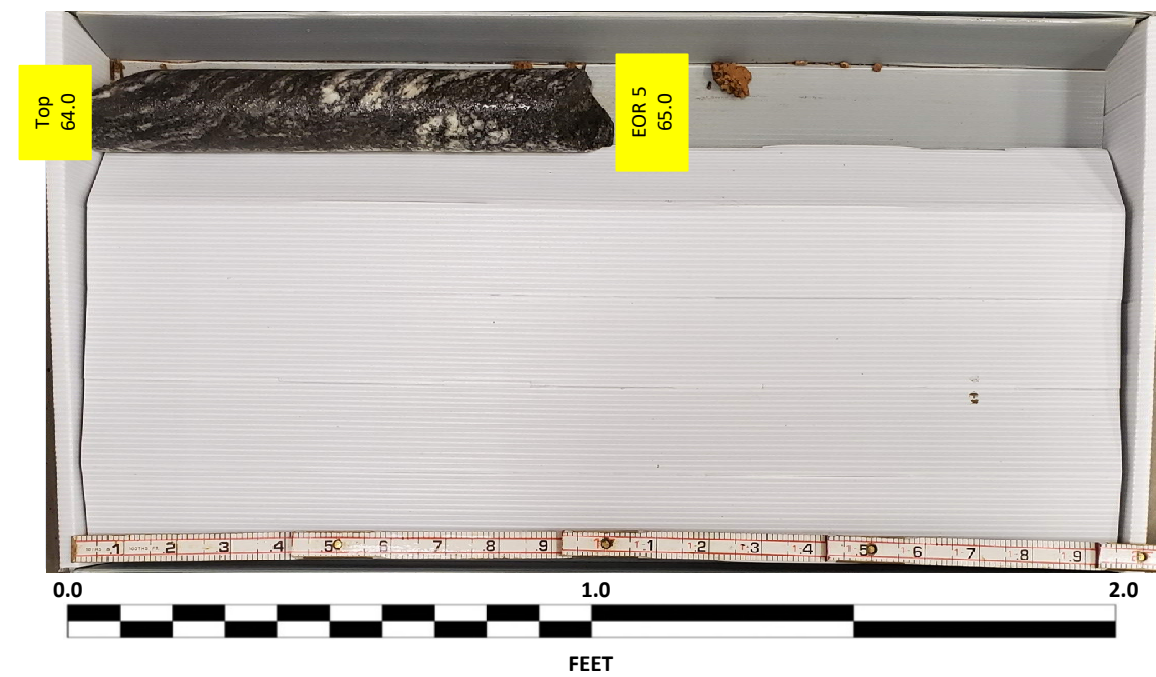


CORE PHOTOGRAPHIC RECORD
38330.1.FS1 (B-3186/B-5898)
US 23/ US 74 Great Smokey Mountain Highway

S2_B1-A
Box 3 of 3: 64.0 – 65.0 FEET
DRY



S2_B1-A
Box 3 of 3: 64.0 – 65.0 FEET
WET



GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

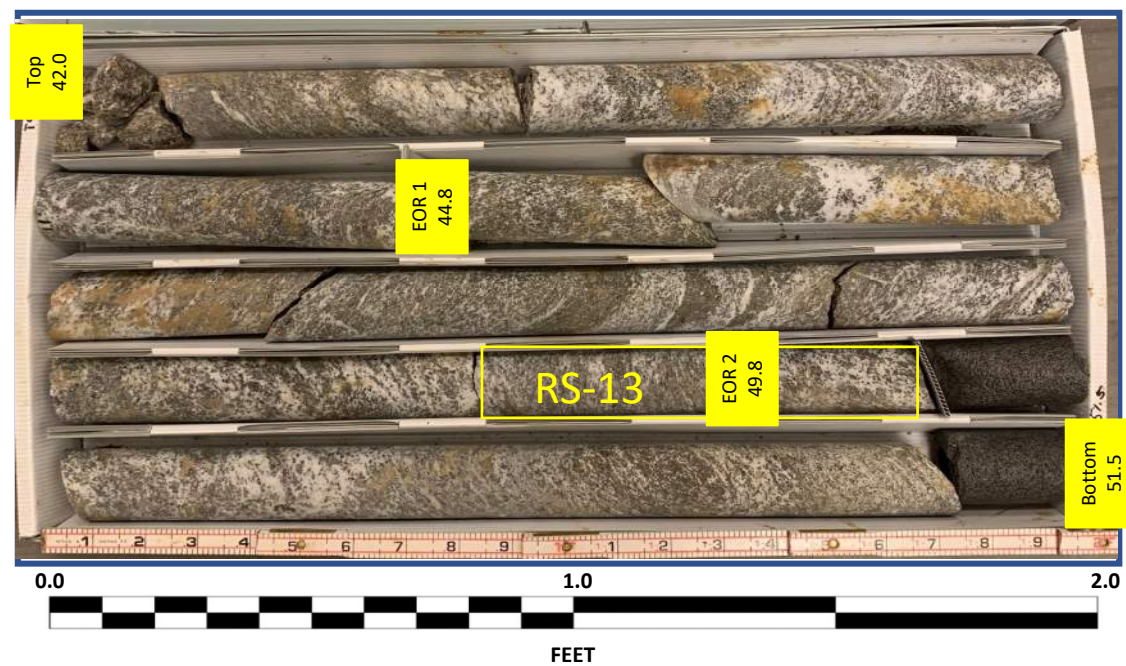
WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST R. Dugger								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S2_B1-B		STATION 27+53		OFFSET 33 ft RT		ALIGNMENT -Y1RT-								
COLLAR ELEV. 2,584.7 ft		TOTAL DEPTH 62.8 ft		NORTHING 666,908		EASTING 819,403								
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)		DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 02/10/21		COMP. DATE 02/27/21		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2585	2,584.7	0.0	2	4	5							M	GROUND SURFACE	0.0
	2,582.2	2.5	7	12	11							D	ROADWAY EMBANKMENT Stiff, brown and orange, clayey SILT (A-5), micaceous	2.9
2580	2,579.7	5.0	18	18	16							D	Medium dense, brown, clayey SAND (A-2-6) with trace gravel	4.5
	2,577.2	7.5	4	4	4							D	Dense, brown and gray, silty SAND (A-2-4) with little gravel, micaceous	7.0
2575	2,574.7	10.0	2	2	3							M	ALLUVIAL Loose, brown and gray, silty SAND (A-2-4), micaceous	
2570	2,569.7	15.0	1	1	1							M	Very soft, gray, silty CLAY (A-7-5)(16) and SILT (A-5)(13), micaceous	13.0
	2,566.7	18.0										SS-222		
2565	2,564.7	20.0	WOH	WOH	1							W	Very loose, brown and gray, silty SAND (A-2-4)	21.1
2560	2,559.7	25.0	7	5	2							Sat.	Very soft, brown and gray, CLAY (A-7-6)	23.0
	2,556.7	28.0										D	Loose, gray, SAND and GRAVEL (A-1-b)	28.0
2555	2,554.7	30.0	9	16	14							D	RESIDUAL Medium dense to dense, brown, white, and tan, silty SAND (A-2-4) with little rock fragments	30.0
2550	2,549.7	35.0	15	15	14							D	Very stiff, brown, orange, and tan, sandy SILT (A-4) with little rock fragments, micaceous, saprolitic	33.0
2545	2,544.7	40.0	100/0.5										WEATHERED ROCK	40.0
	2,542.2	42.5	60/0.0										Brown, gray, and white, GNEISS	42.0
2540													CRYSTALLINE ROCK No Recovery, begin rock coring at 42.0' Light to dark gray and white with trace pink, Migmatitic Biotite GNEISS	
2535												RS-13		
2530														
2525													Grey and white, METAGRAYWACKE and QUARTZITE	58.1
													Boring Terminated at Elevation 2,521.9 ft in Crystalline Rock (METAGRAYWACKE and QUARTZITE)	62.8
													NOTES 15.0- 17.0': ST-2 lab classified as (A-7-5)(16) in offset hole ~3' upstation 15.0 - 16.5': SS-222 lab classified as (A-5)(13) Other Samples: ST-2 (15.0 - 17.0)	

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST R. Dugger				
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)			
BORING NO. S2_B1-B		STATION 27+53		OFFSET 33 ft RT		ALIGNMENT -Y1RT-				
COLLAR ELEV. 2,584.7 ft		TOTAL DEPTH 62.8 ft		NORTHING 666,908		EASTING 819,403				
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)		DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic						
DRILLER L. Wanstrath		START DATE 02/10/21		COMP. DATE 02/27/21		SURFACE WATER DEPTH N/A				
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN		STRATA	LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)				
2542.7	2,542.7	42.0	2.8	0:36/0.8 1:43/1.0 2:21/1.0	(2.8)	(2.6)	(16.1)	(13.7)	Begin Coring @ 42.0 ft	42.0
2540	2,539.9	44.8	5.0	1:41/1.0 1:30/1.0 1:39/1.0 1:29/1.0 2:20/1.0	(5.0)	(5.0)	100%	85%	CRYSTALLINE ROCK Light to dark grey and white with trace pink, Migmatitic Biotite GNEISS, with trace garnet porphyroblasts, slight to very slight weathering, hard, moderately close to close fracture spacing	
2535	2,534.9	49.8	5.0	1:55/1.0 1:52/1.0 1:45/1.0 2:14/1.0 2:20/1.0	(5.0)	(2.8)	100%	56%	RS-13 49.5' - 50.2' GSI= 75 - 85 Qu= 17,889 psi	
2530	2,529.9	54.8	5.0	1:44/1.0 2:04/1.0 2:22/1.0 2:38/1.0 2:46/1.0	(5.0)	(4.5)	100%	90%	Moderately severe to severe weathering, very close fracture spacing (80-90° joint), with trace epidote along fracture plane Very slight to slight weathering, wide fracture spacing	
2525	2,524.9	59.8	3.0	3:16/1.0 3:15/1.0 2:30/1.0	(3.0)	(2.4)	(4.5)	(3.4)	Grey and white, METAGRAYWACKE and QUARTZITE (eye fold), slight weathering, hard, close to moderately close fracture spacing, with few healed fractures (variable orientations), foliations oriented 55-65°	58.1
	2,521.9	62.8							Boring Terminated at Elevation 2,521.9 ft in Crystalline Rock (METAGRAYWACKE and QUARTZITE)	62.8
									NOTES 15.0- 17.0': ST-2 lab classified as (A-7-5)(16) in offset hole ~3' upstation 15.0 - 16.5': SS-222 lab classified as (A-5)(13) Other Samples: ST-2 (15.0 - 17.0)	

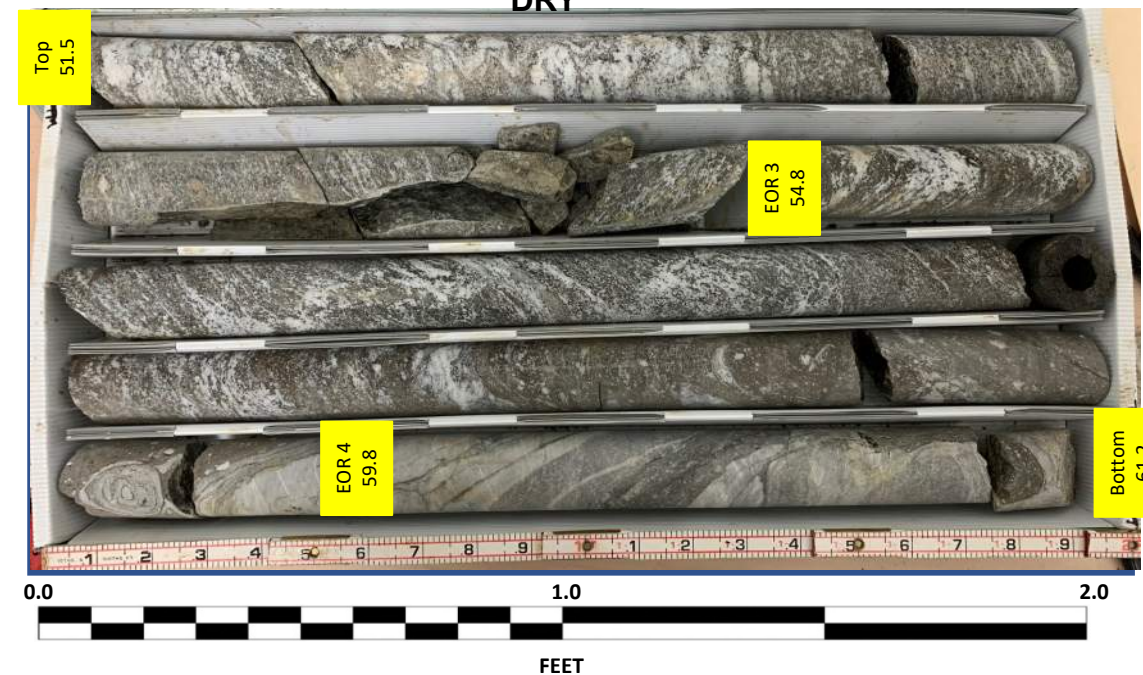
NCDOT BORE DOUBLE B3186_GEO_SITE 2.GPJ NC_DOT.GDT 11/23/21

CORE PHOTOGRAPHIC RECORD
38330.1.FS1 (B-3186/B-5898)
US 23/ US 74 Great Smokey Mountain Highway

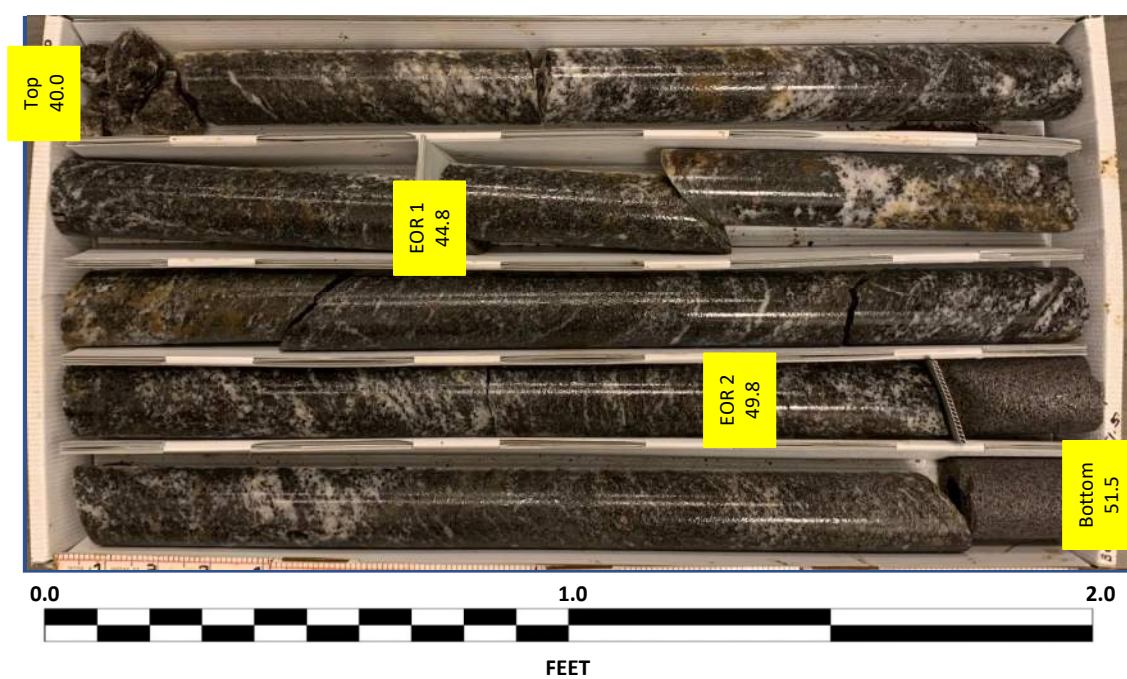
S2_B1-B
Box 1 of 3: 42.0 – 51.5 FEET
DRY



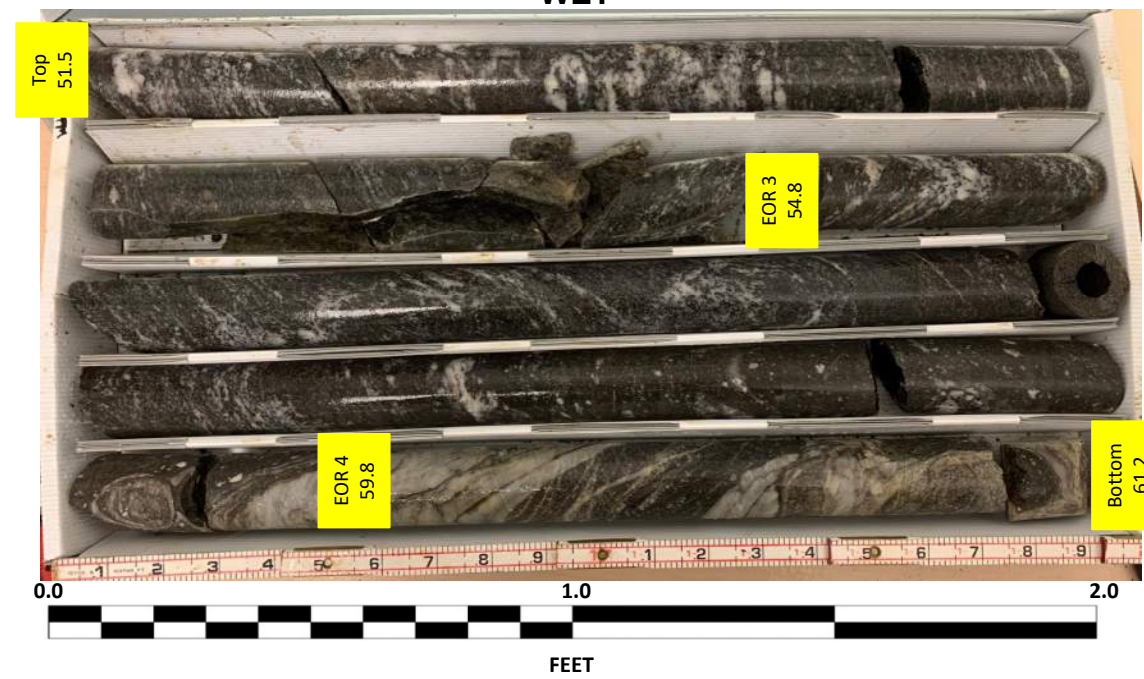
S2_B1-B
Box 2 of 3: 51.5 – 61.2 FEET
DRY



S2_B1-B
Box 1 of 3: 42.0 – 51.5 FEET
WET



S2_B1-B
Box 2 of 3: 51.5 – 61.2 FEET
WET

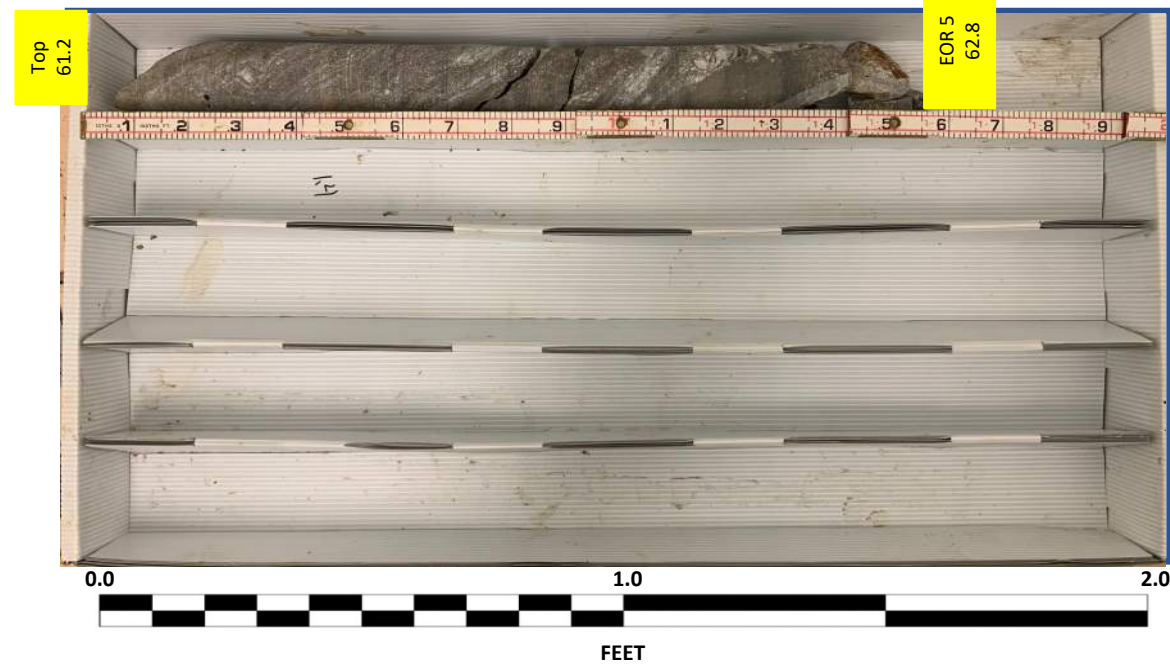


CORE PHOTOGRAPHIC RECORD

38330.1.FS1 (B-3186/B-5898)

US 23/ US 74 Great Smokey Mountain Highway

S2_B1-B
Box 3 of 3: 61.2 – 62.8 FEET
DRY



S2_B1-B
Box 3 of 3: 61.2 – 62.8 FEET
WET



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S2_EB2-A		STATION 29+30		OFFSET 14 ft LT		ALIGNMENT -Y1RT-									
COLLAR ELEV. 2,596.7 ft		TOTAL DEPTH 42.5 ft		NORTHING 667,001		EASTING 819,562									
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 02/10/21		COMP. DATE 02/10/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2600															
2595	2,596.7	0.0	2	3	4									2,596.7	0.0
	2,594.2	2.5	3	4	4									2,592.2	4.5
	2,591.7	5.0	3	6	7										
2590	2,589.2	7.5	4	4	6										
	2,586.7	10.0	7	6	7										
2585	2,581.7	15.0	3	3	4										
	2,576.7	20.0	3	3	2										
2575	2,571.7	25.0	1	1	2										
	2,566.7	30.0	1	1	2										
2565	2,561.7	35.0	1	2	2										
	2,556.7	40.0	9	25	35										
2555	2,554.2	42.5													
		60/0.0													60/0.0

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S2_EB2-B		STATION 28+39		OFFSET 27 ft RT		ALIGNMENT -Y1RT-									
COLLAR ELEV. 2,592.2 ft		TOTAL DEPTH 63.0 ft		NORTHING 666,936		EASTING 819,486									
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 02/09/21		COMP. DATE 02/09/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2595															
	2,592.2	0.0												2,592.2	0.0
	2,591.6	0.6												2,591.6	0.6
2590	2,589.7	2.5	12	10	6										
	2,587.2	5.0	3	5	4										
	2,584.7	7.5	2	4	5										
2585	2,582.2	10.0	2	2	3										
	2,577.2	15.0	2	4	4										
2575	2,572.2	20.0	1	2	2										
	2,567.2	25.0	2	2	3										
2565	2,562.2	30.0	13	12	11										
	2,557.2	35.0	5	9	12										
2555	2,552.2	40.0	11	10	11										
	2,547.2	45.0	12	13	35										
2545	2,542.2	50.0	37	48	52/0.4										
	2,537.2	55.0													
2535	2,532.2	60.0													
	2,529.2	63.0													
		60/0.0													60/0.0

NCDOT BORE DOUBLE B3186_GEO_SITE 2.GPJ NC_DOT.GDT 11/23/21

NOTES
 ST-3 was classified as gray, sandy SILT (A-4)

Other Samples:
 ST-3 (20.0 - 21.5)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST N. Yacobi	
SITE DESCRIPTION Retaining Wall No. 2 from -L_RT- STA 51+63 to 53+56							GROUND WTR (ft)
BORING NO. RW2_3		STATION 54+92		OFFSET 28 ft RT		ALIGNMENT -RW2-	
COLLAR ELEV. 2,598.0 ft		TOTAL DEPTH 40.0 ft		NORTHING 667,028		EASTING 819,591	
DRILL RIGHAMMER EFF./DATE GTC3277 CME-75 83%(09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER K. Boone		START DATE 02/10/21		COMP. DATE 02/10/21		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2600															
	2,597.2	0.8		9	12	6									
2595	2,594.5	3.5		5	5	5									
	2,592.0	6.0		5	6	7									
2590	2,589.5	8.5		7	6	7									
	2,586.0	12.0													
2585	2,584.5	13.5		4	4	5									
	2,579.5	18.5		2	1	2									
2580	2,574.5	23.5		1	1	2									
	2,569.5	28.5		1	1	1									
2575	2,564.5	33.5		0	4	5									
	2,559.5	38.5		0	3	5									
2560															

WBS 38332.1.FS1		TIP B-3186 / B-5898		COUNTY HAYWOOD		GEOLOGIST R. Dugger	
SITE DESCRIPTION Retaining Wall No. 3 from -Y1RT- STA 29+35 to 40+54							GROUND WTR (ft)
BORING NO. RW3_1		STATION 29+84		OFFSET 7 ft LT		ALIGNMENT -RW3-	
COLLAR ELEV. 2,596.6 ft		TOTAL DEPTH 49.5 ft		NORTHING 666,986		EASTING 819,622	
DRILL RIGHAMMER EFF./DATE GTC9083 CME-550X 80%(11/24/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER L. Wanstrath		START DATE 01/28/21		COMP. DATE 01/28/21		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2600															
	2,596.6	0.6		8	7	6									
2595	2,594.1	2.5		3	4	5									
	2,591.6	5.0		7	7	7									
2590	2,589.1	7.5		6	5	4									
	2,586.6	10.0		3	3	4									
2585	2,581.6	15.0		3	2	3									
	2,576.6	20.0		3	3	4									
2580	2,571.6	25.0		1	2	2									
	2,566.6	30.0		WOH	2	3									
2575	2,561.6	35.0		4	15	13									
	2,556.6	40.0		5	7	10									
2570	2,551.6	45.0		18	19	32									
	2,547.1	49.5		60/0.0											

NCDOT BORE DOUBLE B3186_GEO_RWAL_GPJ_NC_DOT.GDT 11/23/21



REPORT ON SAMPLES OF: Rock For Quality

PROJECT: B-3186 / B-5898
 DATE SAMPLED: 05/11/2021
 SAMPLED FROM: Test Borings
 SUBMITTED BY: HDR

COUNTY: Haywood
 RECEIVED: 5/11/2021
 REPORTED: 5/12/2021
 BY / CERT NO: Kevin E. Walker

BORING NO	SAMPLE NO	DEPTH (FT)	ROCK TYPE	LENGTH (IN)	DIAMETER (IN)	UNIT WEIGHT (PCF)	UNCONFINED COMPRESSIVE STRENGTH (PSI)
S2_B1-A	RS-13	49.5-50.2	Migmatitic Biotite Gneiss	4.20	1.86	177.20	17,889
S2_B1-B	RS-14	54.6-55.2	Migmatitic Biotite Gneiss	4.22	1.86	171.90	16,778