

REFERENCE: B-6046

PROJECT: 48409

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY STANLY
PROJECT DESCRIPTION REPLACE BRIDGE NO. 102 ON
SR 1917 (BETHLEHEM CHURCH ROAD) OVER
LONG CREEK

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-6046	1	19

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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

CG2 EXPLORATION

C. ODOM

M. BREWER

J.K. STICKNEY

INVESTIGATED BY J.E. BEVERLY

CAROLINAS
DRAWN BY GEOTECHNICAL GROUP

CHECKED BY C.R. LAVENDER, III

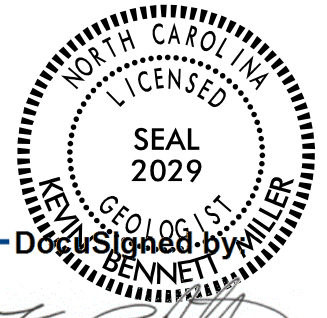
SUBMITTED BY K. B. MILLER

DATE APRIL 2022

Prepared in the Office of:



**CAROLINAS
GEOTECHNICAL
GROUP**
2400 CROWNPOINT EXECUTIVE DRIVE
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DocuSigned by:
Kevin Bennett

957A789AED704CB 05/02/2022
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

Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Each column contains detailed technical information, classification schemes, and symbols used in geotechnical engineering.

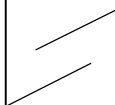
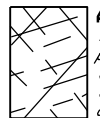
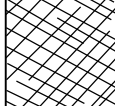
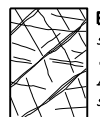





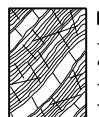


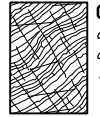

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

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

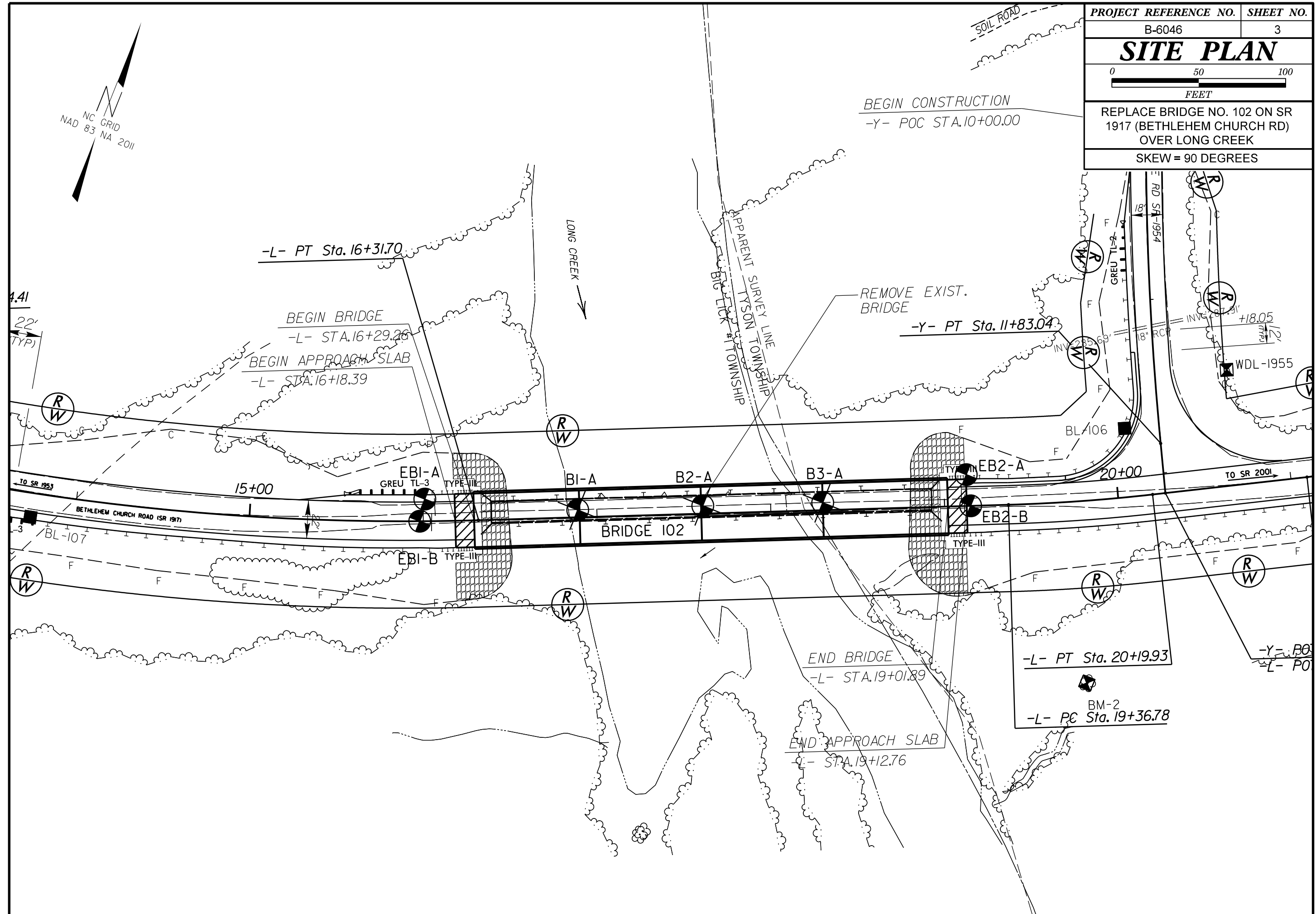
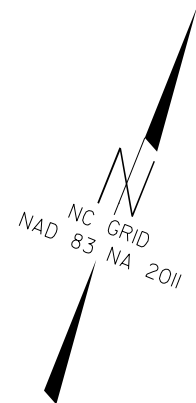
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

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

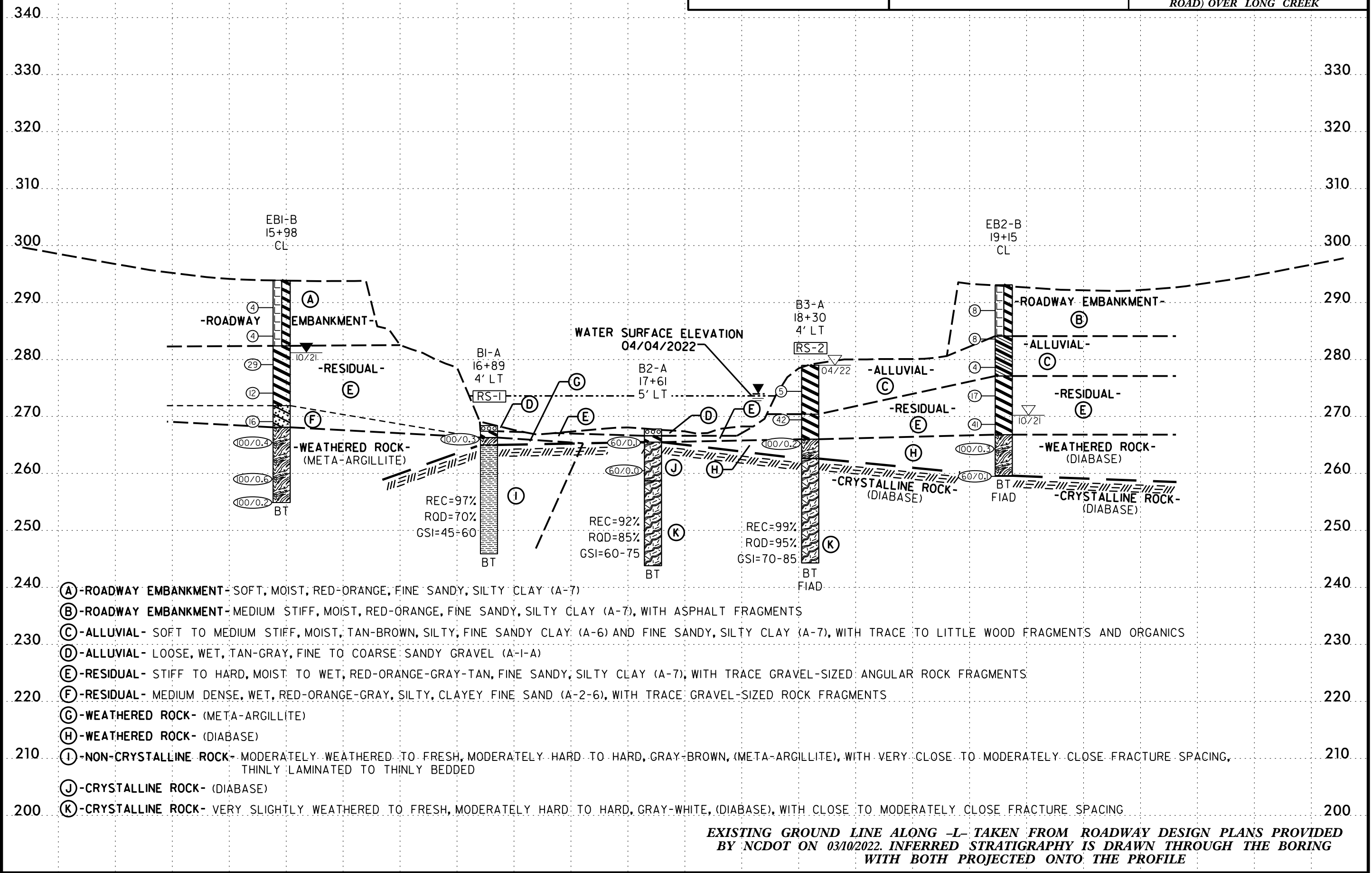
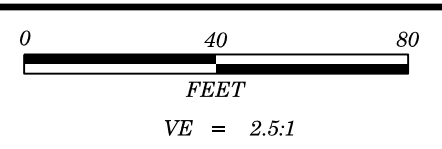
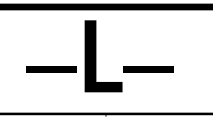
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)		SURFACE CONDITIONS					GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)		SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)					
From the lithology, structure and surface conditions 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		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					
	BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	80						B. Sandstone with thin inter-layers of siltstone	60					
	VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets		70					C. Sandstone and siltstone in similar amounts	50					
	BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity		60					D. Siltstone or silty shale with sandstone layers	40					
	DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces		50					E. Weak siltstone or clayey shale with sandstone layers	30					
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes		40					F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure	20					
			30					G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers	10					
			20					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											
			N/A											
			N/A											

→ Means deformation after tectonic disturbance

PROJECT REFERENCE NO.	SHEET NO.
B-6046	3
SITE PLAN	
 0 50 100 FEET	
REPLACE BRIDGE NO. 102 ON SR 1917 (BETHLEHEM CHURCH RD) OVER LONG CREEK SKEW = 90 DEGREES	



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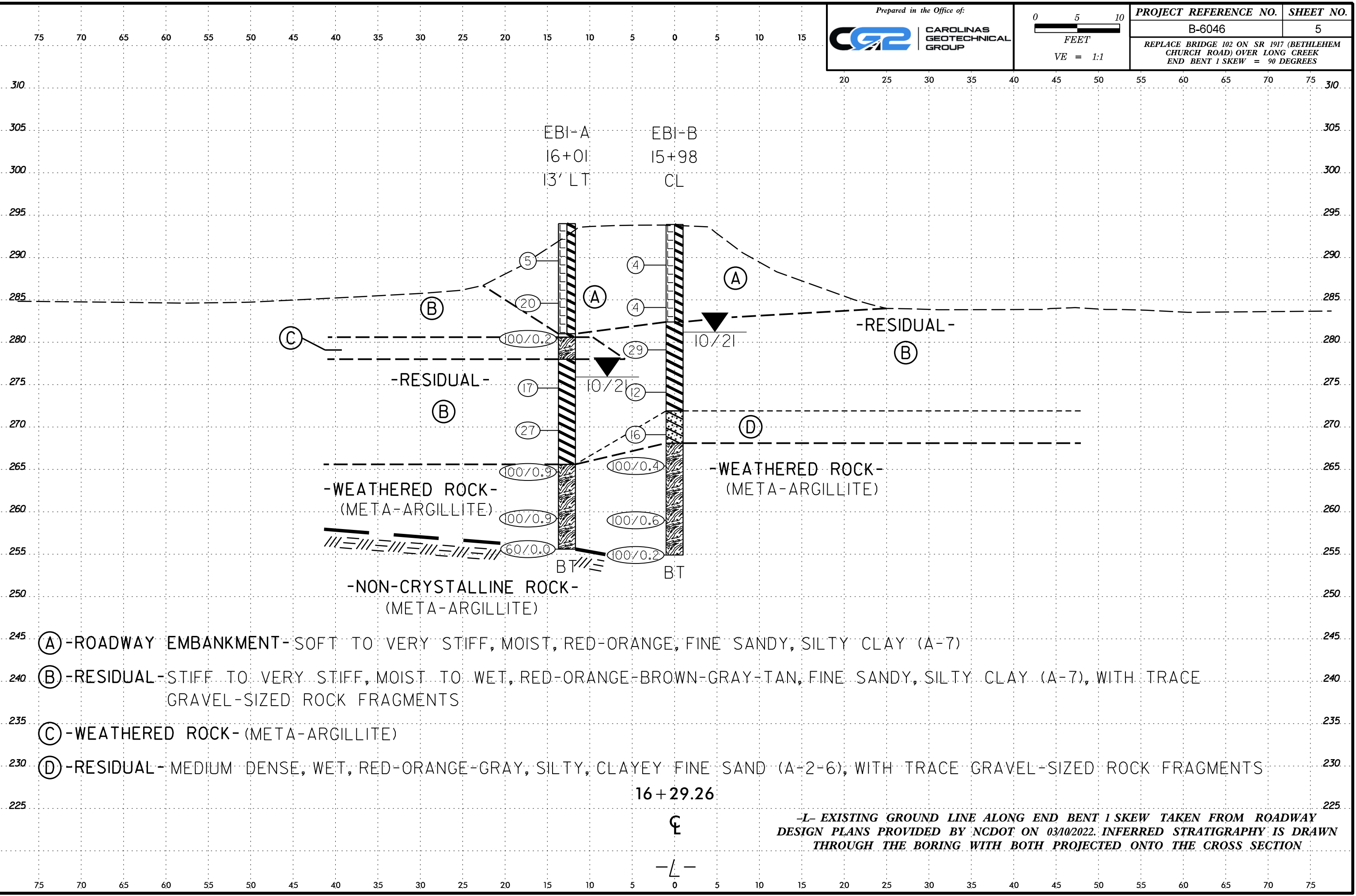


- 240 (A) -ROADWAY EMBANKMENT- SOFT, MOIST, RED-ORANGE, FINE SANDY, SILTY CLAY (A-7)
- 230 (B) -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, RED-ORANGE, FINE SANDY, SILTY CLAY (A-7), WITH ASPHALT FRAGMENTS
- 230 (C) -ALLUVIAL- SOFT TO MEDIUM STIFF, MOIST, TAN-BROWN, SILTY, FINE SANDY CLAY (A-6) AND FINE SANDY, SILTY CLAY (A-7), WITH TRACE TO LITTLE WOOD FRAGMENTS AND ORGANICS
- 230 (D) -ALLUVIAL- LOOSE, WET, TAN-GRAY, FINE TO COARSE SANDY GRAVEL (A-1-A)
- 220 (E) -RESIDUAL- STIFF TO HARD, MOIST TO WET, RED-ORANGE-GRAY-TAN, FINE SANDY, SILTY CLAY (A-7), WITH TRACE GRAVEL-SIZED ANGULAR ROCK FRAGMENTS
- 220 (F) -RESIDUAL- MEDIUM DENSE, WET, RED-ORANGE-GRAY, SILTY, CLAYEY FINE SAND (A-2-6), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS
- 210 (G) -WEATHERED ROCK- (META-ARGILLITE)
- 210 (H) -WEATHERED ROCK- (DIABASE)
- 210 (I) -NON-CRYSTALLINE ROCK- MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD, GRAY-BROWN, (META-ARGILLITE), WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING, THINLY LAMINATED TO THINLY BEDDED
- 210 (J) -CRYSTALLINE ROCK- (DIABASE)
- 200 (K) -CRYSTALLINE ROCK- VERY SLIGHTLY WEATHERED TO FRESH, MODERATELY HARD TO HARD, GRAY-WHITE, (DIABASE), WITH CLOSE TO MODERATELY CLOSE FRACTURE SPACING

EXISTING GROUND LINE ALONG -L- TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY NCDOT ON 03/10/2022. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE PROFILE

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- (A) -ROADWAY EMBANKMENT- SOFT TO VERY STIFF, MOIST, RED-ORANGE, FINE SANDY, SILTY CLAY (A-7)
- (B) -RESIDUAL- STIFF TO VERY STIFF, MOIST TO WET, RED-ORANGE-BROWN-GRAY-TAN, FINE SANDY, SILTY CLAY (A-7), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS
- (C) -WEATHERED ROCK- (META-ARGILLITE)
- (D) -RESIDUAL- MEDIUM DENSE, WET, RED-ORANGE-GRAY, SILTY, CLAYEY FINE SAND (A-2-6), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS


16 + 29.26

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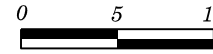
-L- EXISTING GROUND LINE ALONG END BENT 1 SKEW TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY NCDOT ON 03/10/2022. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE CROSS SECTION

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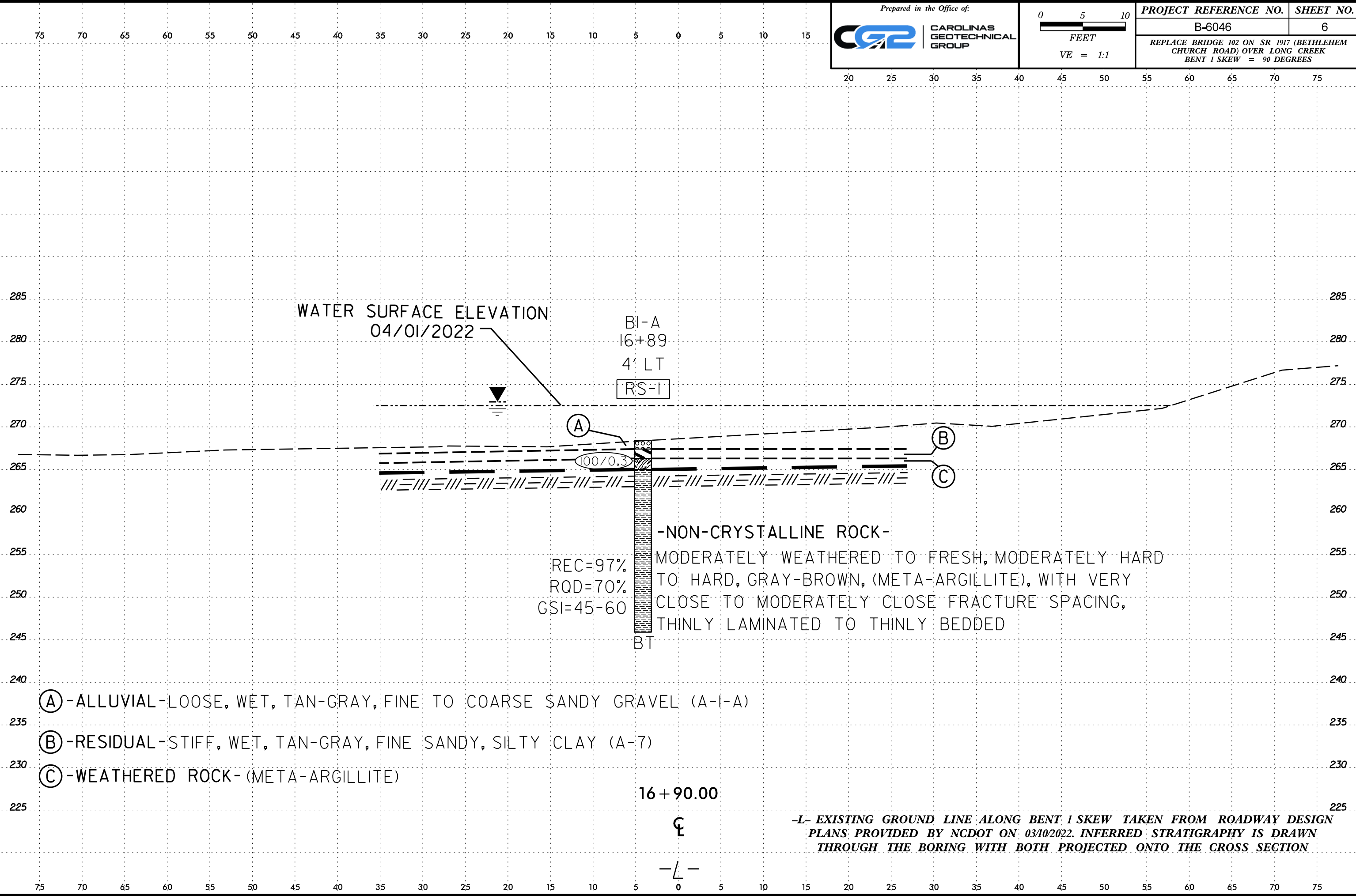


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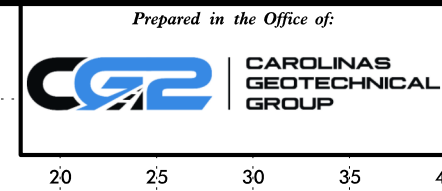


FEET
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PROJECT REFERENCE NO.	SHEET NO.
B-6046	6
REPLACE BRIDGE 102 ON SR 1917 (BETHLEHEM CHURCH ROAD) OVER LONG CREEK BENT 1 SKEW = 90 DEGREES	

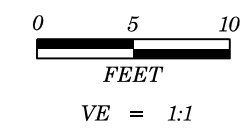


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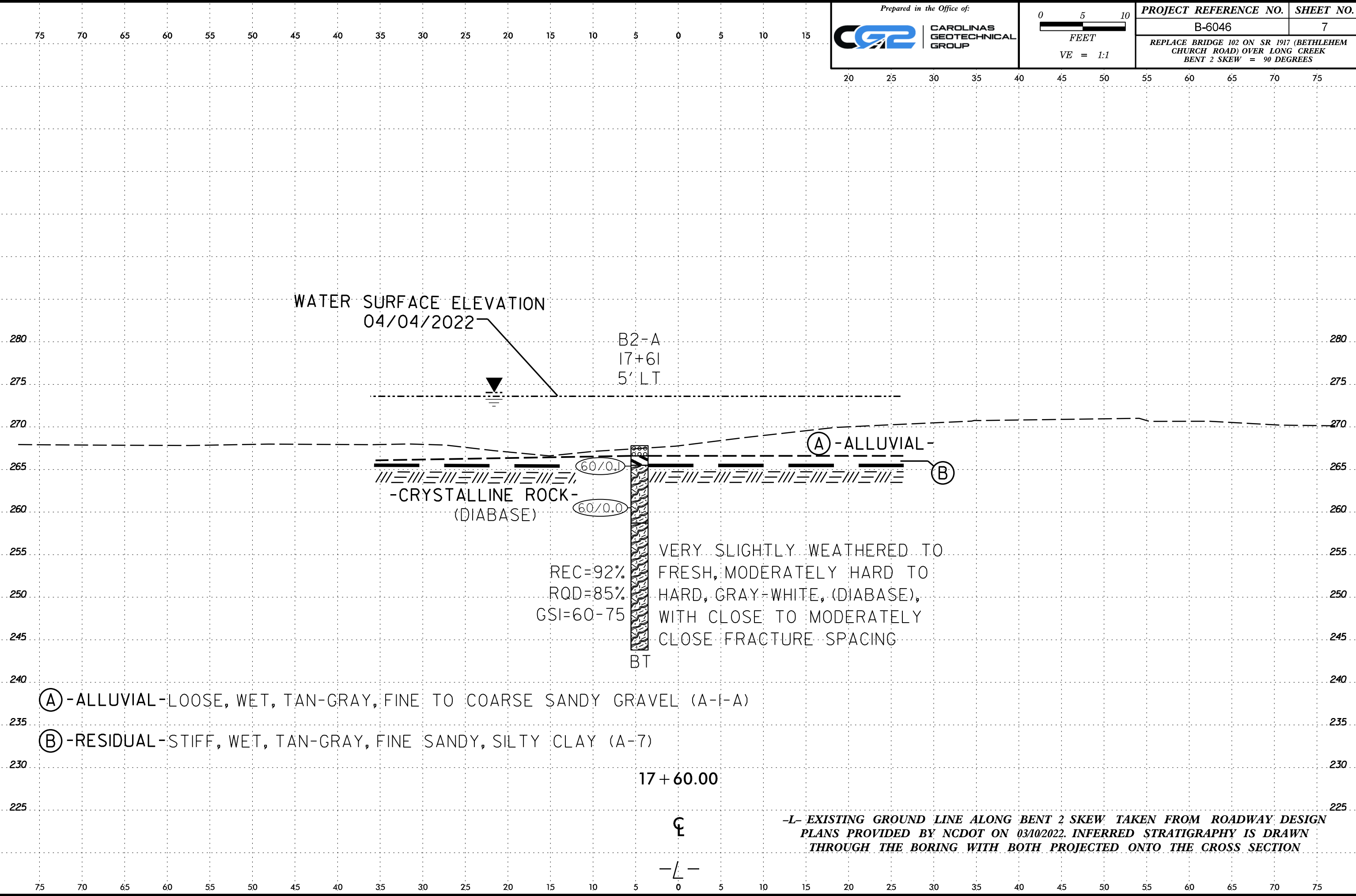


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PROJECT REFERENCE NO.	SHEET NO.
B-6046	7
REPLACE BRIDGE 102 ON SR 1917 (BETHLEHEM CHURCH ROAD) OVER LONG CREEK BENT 2 SKEW = 90 DEGREES	



WATER SURFACE ELEVATION
04/04/2022

B2-A
17+61
5' LT

-CRYSTALLINE ROCK-
(DIABASE)

REC=92%
RQD=85%
GSI=60-75

VERY SLIGHTLY WEATHERED TO
FRESH, MODERATELY HARD TO
HARD, GRAY-WHITE, (DIABASE),
WITH CLOSE TO MODERATELY
CLOSE FRACTURE SPACING

BT

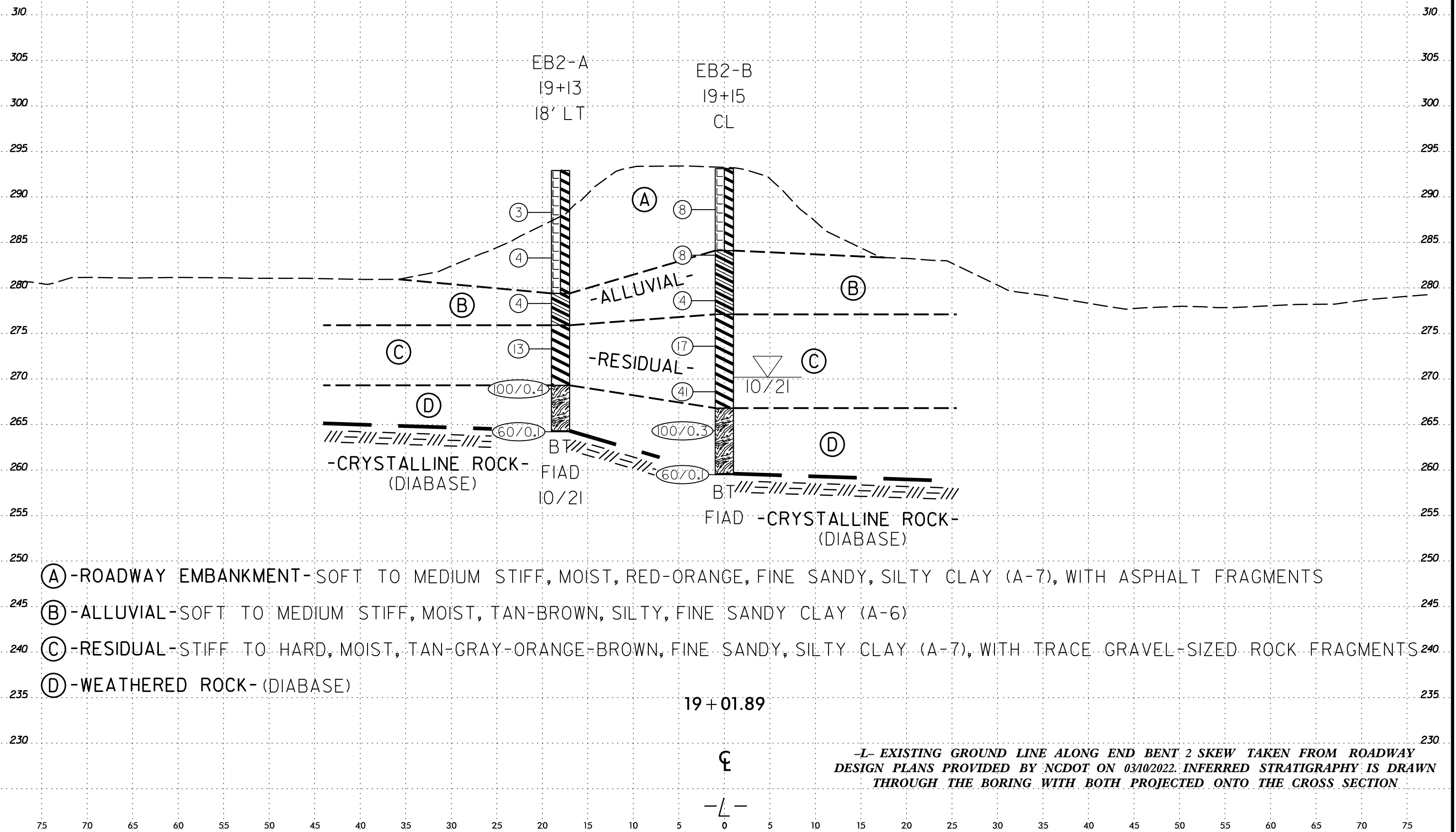
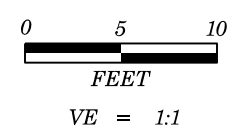
(A) -ALLUVIAL- LOOSE, WET, TAN-GRAY, FINE TO COARSE SANDY GRAVEL (A-I-A)

(B) -RESIDUAL- STIFF, WET, TAN-GRAY, FINE SANDY, SILTY CLAY (A-7)

17 + 60.00

-L- EXISTING GROUND LINE ALONG BENT 2 SKEW TAKEN FROM ROADWAY DESIGN
PLANS PROVIDED BY NCDOT ON 03/10/2022. INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORING WITH BOTH PROJECTED ONTO THE CROSS SECTION

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- (A) -ROADWAY EMBANKMENT-SOFT TO MEDIUM STIFF, MOIST, RED-ORANGE, FINE SANDY, SILTY CLAY (A-7), WITH ASPHALT FRAGMENTS
- (B) -ALLUVIAL-SOFT TO MEDIUM STIFF, MOIST, TAN-BROWN, SILTY, FINE SANDY CLAY (A-6)
- (C) -RESIDUAL-STIFF TO HARD, MOIST, TAN-GRAY-ORANGE-BROWN, FINE SANDY, SILTY CLAY (A-7), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS
- (D) -WEATHERED ROCK-(DIABASE)

-L- EXISTING GROUND LINE ALONG END BENT 2 SKEW TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY NCDOT ON 03/10/2022. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE CROSS SECTION

GEOTECHNICAL BORING REPORT

BORE LOG

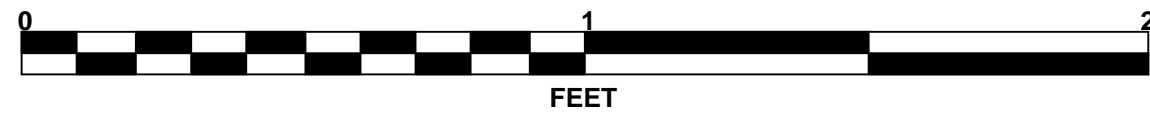
WBS 48409.1.1		TIP B-6046		COUNTY STANLY		GEOLOGIST Stickney, J. K.											
SITE DESCRIPTION Replace Bridge No. 102 on SR 1917 (Bethlehem Church Road) over Long Creek							GROUND WTR (ft)										
BORING NO. EB1-A		STATION 16+01		OFFSET 13 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 294.0 ft		TOTAL DEPTH 38.4 ft		NORTHING 538,723		EASTING 1,623,876											
DRILL RIGHAMMER EFF./DATE CG29022 Mobile B-29 81% 03/12/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic											
DRILLER M. Brewer		START DATE 10/27/21		COMP. DATE 10/27/21		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							
295														294.0	0.0	GROUND SURFACE	
290	290.6	3.4	3	2	3								M			ROADWAY EMBANKMENT Medium Stiff to Very Stiff, Red-Orange, Fine Sandy, Silty CLAY (A-7)	
285	285.6	8.4	10	9	11								M				
280	280.6	13.4	100/0.2										M				
275	275.6	18.4	8	8	9								W			RESIDUAL Very Stiff, Orange-Tan-Brown, Fine Sandy, Silty CLAY (A-7), with trace gravel-sized rock fragments	
270	270.6	23.4	12	8	19								W			RESIDUAL Very Stiff, Orange-Tan-Brown, Fine Sandy, Silty CLAY (A-7), with trace gravel-sized rock fragments	
265	265.6	28.4	47	53/0.4												WEATHERED ROCK Gray-Brown, (META-ARGILLITE)	
260	260.6	33.4	47	30	70/0.4												
	255.6	38.4	60/0.0														Boring Terminated with Standard Penetration Test Refusal at Elevation 255.6 ft On Non-Crystalline Rock (META-ARGILLITE)
															Notes: Intermittent Layers of Hard and Soft Drilling between 28.4-38.4 ft below existing grade.		

WBS 48409.1.1		TIP B-6046		COUNTY STANLY		GEOLOGIST Stickney, J. K.											
SITE DESCRIPTION Replace Bridge No. 102 on SR 1917 (Bethlehem Church Road) over Long Creek							GROUND WTR (ft)										
BORING NO. EB1-B		STATION 15+98		OFFSET CL		ALIGNMENT -L-											
COLLAR ELEV. 293.9 ft		TOTAL DEPTH 39.0 ft		NORTHING 538,710		EASTING 1,623,878											
DRILL RIGHAMMER EFF./DATE CG29022 Mobile B-29 81% 03/12/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic											
DRILLER M. Brewer		START DATE 10/27/21		COMP. DATE 10/27/21		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							
295														293.9	0.0	GROUND SURFACE	
290	290.1	3.8	1	2	2								M			ROADWAY EMBANKMENT Soft, Red-Orange, Fine Sandy, Silty CLAY (A-7)	
285	285.1	8.8	1	2	2								M				
280	280.1	13.8	8	12	17								M			RESIDUAL Stiff to Very Stiff, Red-Orange-Gray, Fine Sandy, Silty CLAY (A-7), with trace gravel-sized rock fragments	
275	275.1	18.8	5	6	6								W				
270	270.1	23.8	6	6	10								W			Medium Dense, Red-Orange-Gray, Silty, Clayey Fine SAND (A-2-6), with trace gravel-sized rock fragments	
265	265.8	28.1	100/0.4													WEATHERED ROCK Gray-Brown, (META-ARGILLITE)	
260	260.1	33.8	6	42	58/0.1												
255	255.1	38.8	100/0.2														Boring Terminated at Elevation 254.9 ft In Weathered Rock (META-ARGILLITE)
															Notes: Intermittent Layers of Hard and Soft Drilling between 25.8-38.8 ft below existing grade.		

NCDOT BORE DOUBLE B-6046_GEO_BRDG102_STANLY.GPJ_NC_DOT.GDT 4/15/22



Bridge No. 102 on SR 1917 (Bethlehem Church Road) over
Long Creek
Rock Core Photographs
Boring: B1-A
3.4 to 22.5 Feet



GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 48409.1.1		TIP B-6046		COUNTY STANLY		GEOLOGIST Stickney, J. K.							
SITE DESCRIPTION Replace Bridge No. 102 on SR 1917 (Bethlehem Church Road) over Long Creek							GROUND WTR (ft)						
BORING NO. B2-A		STATION 17+61		OFFSET 5 ft LT		ALIGNMENT -L-							
COLLAR ELEV. 267.8 ft		TOTAL DEPTH 24.0 ft		NORTHING 538,779		EASTING 1,624,026							
DRILL RIG/HAMMER EFF/DATE CG20446 Diedrich D50 76%/06/14/2021			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic							
DRILLER C. Odom		START DATE 04/04/22		COMP. DATE 04/04/22		SURFACE WATER DEPTH 5.8ft							
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				
275													
270													
265	265.5	2.3											
260	260.5	7.3	60/0.1										
255													
250													
245													

WATER SURFACE (04/04/22) -----

GROUND SURFACE 267.8 0.0

ALLUVIAL 266.6 1.2

Loose, Tan-Gray, Fine to Coarse Sandy GRAVEL (A-1-a) 265.5 2.3

RESIDUAL Stiff, Tan-Gray, Fine Sandy, Silty CLAY (A-7)

CRYSTALLINE ROCK Gray, (DIABASE) 258.7 9.1

Gray-White (DIABASE)

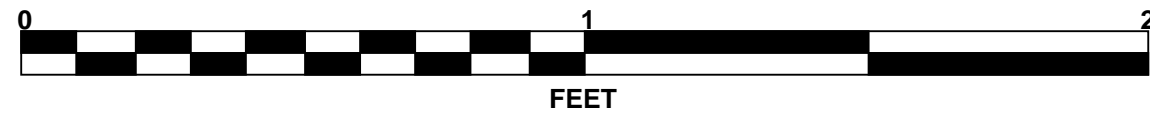
REC=92% RQD=85% GSI=60-75

Boring Terminated at Elevation 243.8 ft In Crystalline Rock (DIABASE) 243.8 24.0

WBS 48409.1.1		TIP B-6046		COUNTY STANLY		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION Replace Bridge No. 102 on SR 1917 (Bethlehem Church Road) over Long Creek							GROUND WTR (ft)					
BORING NO. B2-A		STATION 17+61		OFFSET 5 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 267.8 ft		TOTAL DEPTH 24.0 ft		NORTHING 538,779		EASTING 1,624,026						
DRILL RIG/HAMMER EFF/DATE CG20446 Diedrich D50 76%/06/14/2021			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic						
DRILLER C. Odom		START DATE 04/04/22		COMP. DATE 04/04/22		SURFACE WATER DEPTH 5.8ft						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN 14.9 ft		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
258.67	258.7	9.1	4.9		(3.7) 76%	(2.8) 57%		(13.7) 92%	(12.6) 85%		Begin Coring @ 9.1 ft	
255	253.8	14.0	5.0		(5.0) 100%	(4.8) 96%					Very Slightly Weathered to Fresh, Moderately Hard to Hard, Gray-White (DIABASE), with Close to Moderately Close Fracture Spacing	9.1
250	248.8	19.0	5.0		(5.0) 100%	(5.0) 100%						
245	243.8	24.0									Boring Terminated at Elevation 243.8 ft In Crystalline Rock (DIABASE)	24.0

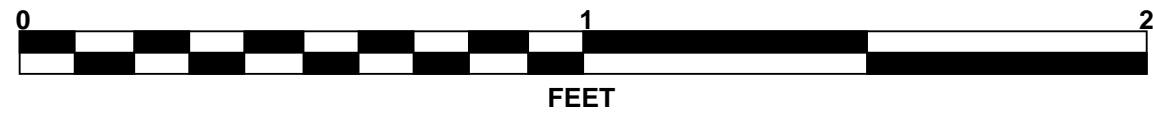


Bridge No. 102 on SR 1917 (Bethlehem Church Road) over
Long Creek
Rock Core Photographs
Boring: B2-A
9.1 to 24.0 Feet





Bridge No. 102 on SR 1917 (Bethlehem Church Road) over
Long Creek
Rock Core Photographs
Boring: B3-A
16.4 to 35.1 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 48409.1.1		TIP B-6046		COUNTY STANLY		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Replace Bridge No. 102 on SR 1917 (Bethlehem Church Road) over Long Creek							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 19+13		OFFSET 18 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 292.9 ft		TOTAL DEPTH 28.7 ft		NORTHING 538,852		EASTING 1,624,160										
DRILL RIG/HAMMER EFF./DATE CG29022 Mobile B-29 81% 03/12/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER M. Brewer		START DATE 10/28/21		COMP. DATE 10/28/21		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						
295														292.9	GROUND SURFACE	0.0
290	289.3	3.6	2	1	2								M	ROADWAY EMBANKMENT Soft, Red-Orange, Fine Sandy, Silty CLAY (A-7)		
285	284.3	8.6	2	2	2								M			
280	279.3	13.6	1	1	3								M	ALLUVIAL Soft, Tan-Brown, Silty, Fine Sandy CLAY (A-6)	13.5	
275	274.3	18.6	4	6	7								M	RESIDUAL Stiff, Tan-Brown, Fine Sandy, Silty CLAY (A-7)	17.0	
270	269.3	23.6	100/0.4										M	WEATHERED ROCK Brown-Gray, (DIABASE)	23.6	
265	264.3	28.6	60/0.1										M	CRYSTALLINE ROCK Gray, (DIABASE) Boring Terminated with Standard Penetration Test Refusal at Elevation 264.2 ft In Crystalline Rock (DIABASE)	28.6	

WBS 48409.1.1		TIP B-6046		COUNTY STANLY		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Replace Bridge No. 102 on SR 1917 (Bethlehem Church Road) over Long Creek							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 19+15		OFFSET CL		ALIGNMENT -L-										
COLLAR ELEV. 293.1 ft		TOTAL DEPTH 33.6 ft		NORTHING 538,836		EASTING 1,624,169										
DRILL RIG/HAMMER EFF./DATE CG29022 Mobile B-29 81% 03/12/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER M. Brewer		START DATE 10/28/21		COMP. DATE 10/28/21		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						
295														293.1	GROUND SURFACE	0.0
290	289.6	3.5	4	3	5								M	ROADWAY EMBANKMENT Medium Stiff, Red-Orange, Fine Sandy, Silty CLAY (A-7), with asphalt fragments		
285	284.6	8.5	2	4	4								M			
280	279.6	13.5	1	2	2								M	ALLUVIAL Soft to Medium Stiff, Tan-Brown, Silty, Fine Sandy CLAY (A-6)	9.0	
275	274.6	18.5	5	7	10								M	RESIDUAL Very Stiff to Hard, Tan-Gray-Orange, Fine Sandy, Silty CLAY (A-7), with trace gravel-sized rock fragments	16.0	
270	269.6	23.5	15	22	19								M	WEATHERED ROCK Brown-Gray, (DIABASE)	26.3	
265	264.6	28.5	100/0.3										M	CRYSTALLINE ROCK Gray, (DIABASE) Boring Terminated with Standard Penetration Test Refusal at Elevation 259.5 ft In Crystalline Rock (DIABASE)	28.5	
260	259.6	33.5	60/0.1										M	CRYSTALLINE ROCK (DIABASE) Boring Terminated with Standard Penetration Test Refusal at Elevation 259.5 ft In Crystalline Rock (DIABASE)	33.5	

Notes:
Intermittent Layers of Hard and Soft Drilling between 30.5-31.3 ft below existing grade.

NCDOT BORE DOUBLE B-6046_GEO_BRDG102_STANLY.GPJ_NC_DOT.GDT 4/15/22

LAB RESULTS

<i>ROCK TEST RESULTS</i>							
<i>SAMPLE NO.</i>	<i>BORING</i>	<i>STATION</i>	<i>OFFSET</i>	<i>DEPTH INTERVAL</i>	<i>ROCK TYPE</i>	<i>UNIT WEIGHT (PCF)</i>	<i>UNCONFINED COMPRESSIVE STRENGTH</i>
<i>RS-1</i>	<i>B1-A</i>	<i>16+89 -L-</i>	<i>4' LT</i>	<i>4.8 - 5.4'</i>	<i>META-ARGILLITE</i>	<i>161.8</i>	<i>7,530 psi /1,084 ksf</i>
<i>RS-2</i>	<i>B3-A</i>	<i>18+30 -L-</i>	<i>4' LT</i>	<i>22.9 - 23.5'</i>	<i>DIABASE</i>	<i>181.9</i>	<i>9,570 psi /1,378 ksf</i>

LAB TESTING PERFORMED BY NCDOT LAB CERT NO. 117-1104

SITE PHOTOS



Photo #1: North side of existing bridge looking south/southwest (downstation)



Photo #2: North side of existing bridge looking south/southwest (downstation)



Photo #3: End Bent 1 looking north/northeast (upstation)