

PROJECT: 17BP.7.R.142 REFERENCE: SF-400225

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY GUILFORD
 PROJECT DESCRIPTION BRIDGE NO. 225 OVER I-85
BUSINESS ON SR 1115 (REHOBETH CHURCH
ROAD)
 SITE DESCRIPTION BRIDGE FROM -L- STA. 17+82.09
TO 19+82.09

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-400225	1	15

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

N. YACOBI

INVESTIGATED BY J. CRENSHAW

DRAWN BY C. BENHOFF

CHECKED BY K. BUSSEY

SUBMITTED BY K. BUSSEY

DATE NOVEMBER 2021



Kenneth R. Bussey, Jr. 11/29/2021
 SIGNATURE DATE

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

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

Main content table with columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION, PLASTICITY, COLOR.

**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**

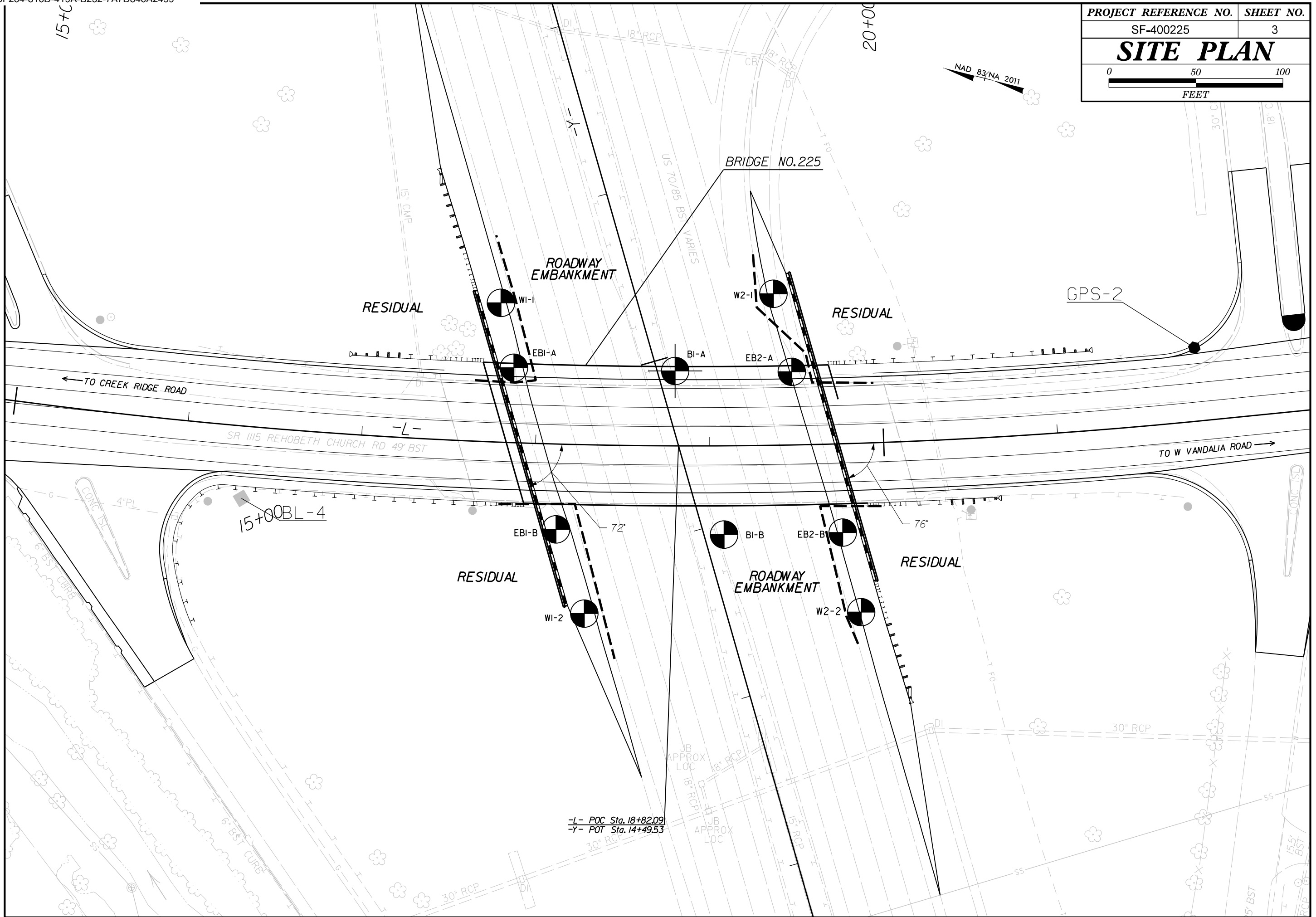
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

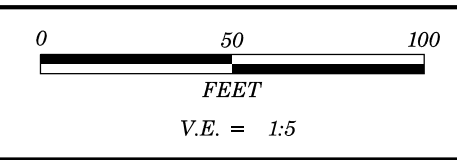
AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

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 Very rough, fresh unweathered surfaces	GOOD Rough, slightly weathered, iron stained surfaces	FAIR Smooth, moderately weathered and altered surfaces	POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments	VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings	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 - Very Rough, fresh unweathered surfaces	GOOD - Rough, slightly weathered surfaces	FAIR - Smooth, moderately weathered and altered surfaces	POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments	VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings
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										

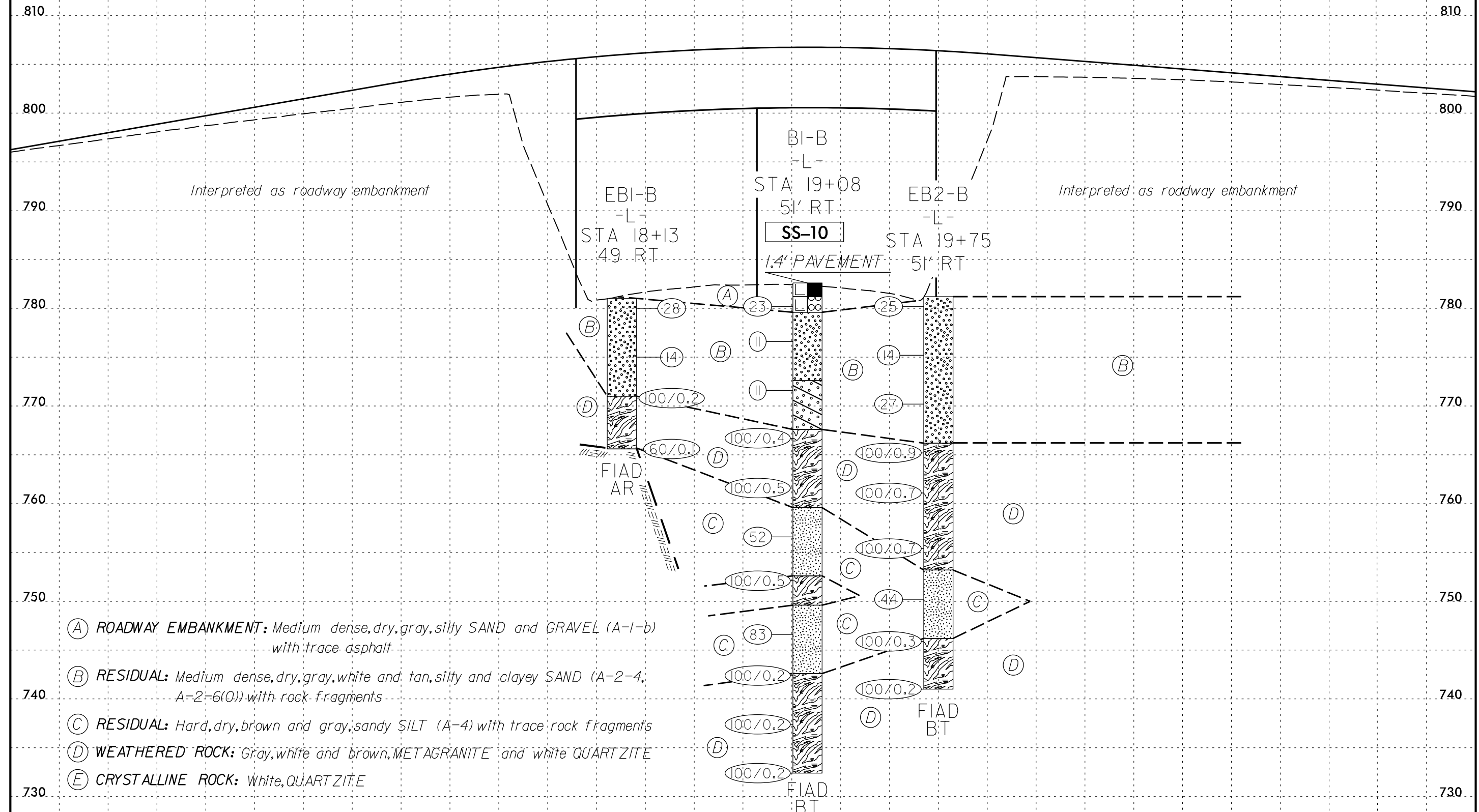
→ Means deformation after tectonic disturbance

PROJECT REFERENCE NO.	SHEET NO.
SF-400225	3
SITE PLAN	
FEET	





PROJECT REFERENCE NO.	SHEET NO.
SF-400225	4
PROFILE THROUGH BORINGS PROJECTED ALONG -L-	

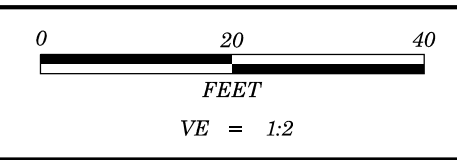


- (A) ROADWAY EMBANKMENT: Medium dense, dry, gray, silty SAND and GRAVEL (A-1-b) with trace asphalt
- (B) RESIDUAL: Medium dense, dry, gray, white and tan, silty and clayey SAND (A-2-4, A-2-6(0)) with rock fragments
- (C) RESIDUAL: Hard, dry, brown and gray, sandy SILT (A-4) with trace rock fragments
- (D) WEATHERED ROCK: Gray, white and brown, METAGRANITE and white QUARTZITE
- (E) CRYSTALLINE ROCK: White, QUARTZITE

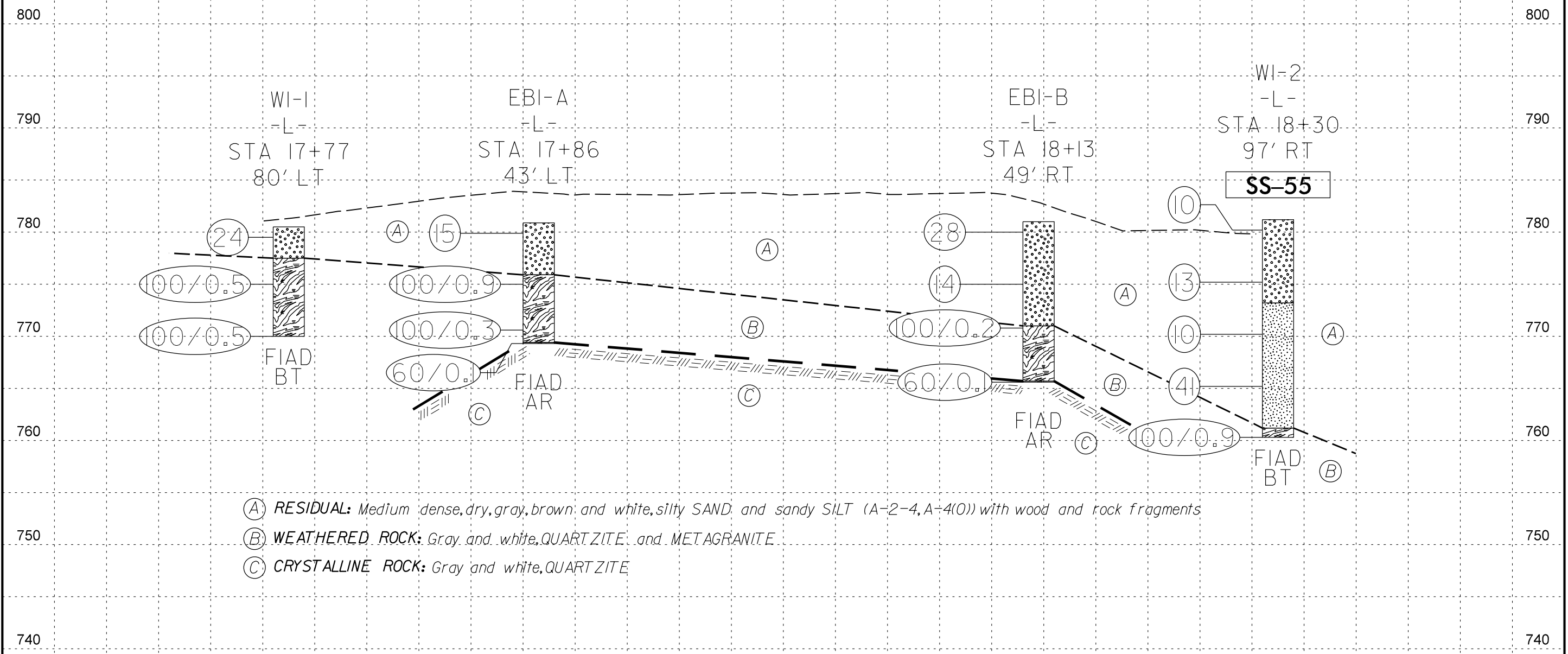
SOIL TEST RESULTS

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-10	51' RT	19+08	10-11.5	A-2-6(0)	29	11	25.4	7.8	12.2	2.7	48.1	26.9	16.4	25	-

NOTES:
INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE WITH THE BORINGS PROJECTED ONTO THE PROFILE



PROJECT REFERENCE NO.	SHEET NO.
SF-400225	5
BRIDGE NO. 225 - END BENT 1 STA. 17+82.09 -L- 72' SKEW	

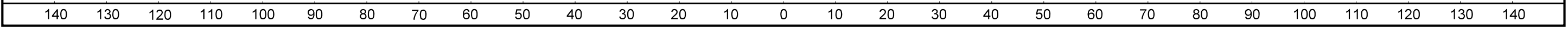


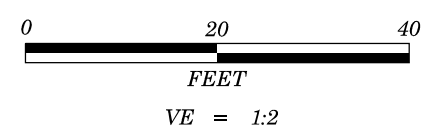
- (A) **RESIDUAL:** Medium dense, dry, gray, brown and white, silty SAND and sandy SILT (A-2-4, A-4(0)) with wood and rock fragments
- (B) **WEATHERED ROCK:** Gray and white, QUARTZITE and METAGRANITE
- (C) **CRYSTALLINE ROCK:** Gray and white, QUARTZITE

SOIL TEST RESULTS

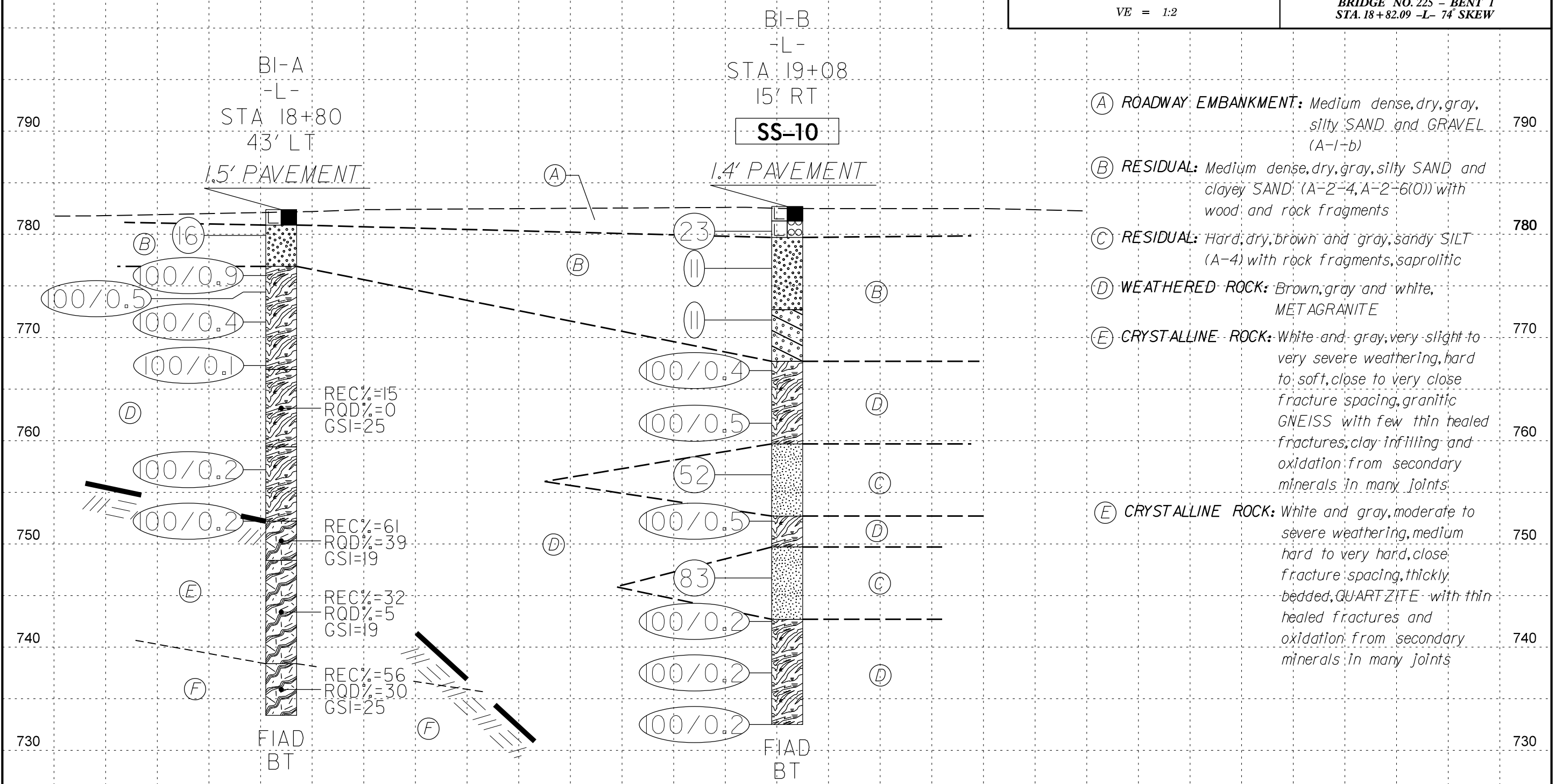
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-55	97' RT	18+30	10-11.5	A-4(0)	26	3	33.3	22.5	26.0	9.7	91.5	68.7	40.1	25	-

NOTES:
 GROUNDLINE OBTAINED USING
 400225_Is_tin.tin FILE DATED 4-19-2021
 INFERRED STRATIGRAPHY IS DRAWN AT THE
 CROSS SECTIONS WITH THE BORINGS
 PROJECTED ONTO THE CROSS SECTIONS





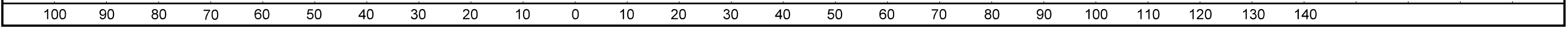
PROJECT REFERENCE NO.	SHEET NO.
SF-400225	6
BRIDGE NO. 225 - BENT 1	
STA. 18+82.09 -L- 74' SKEW	

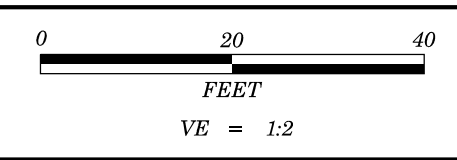


SOIL TEST RESULTS

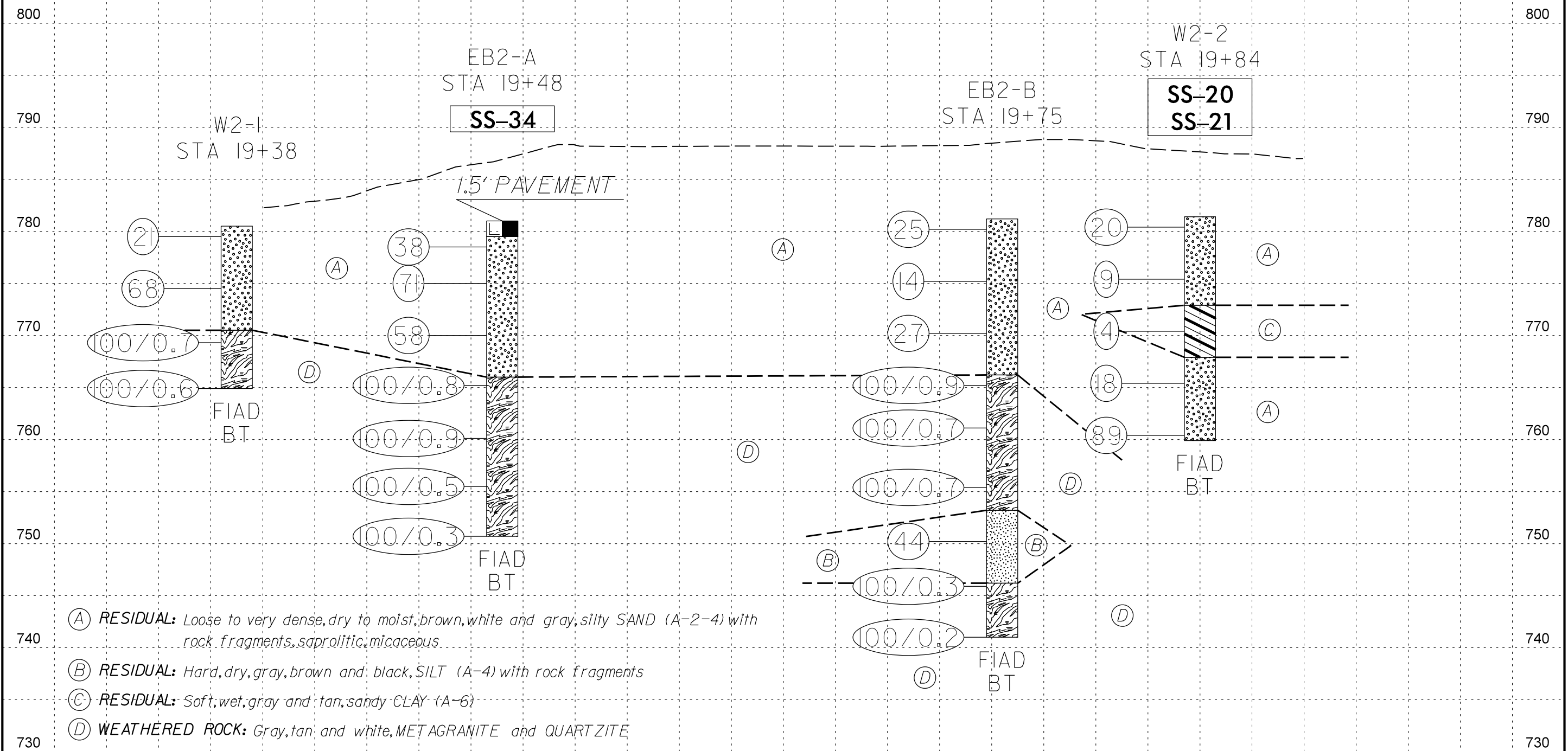
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-10	51' RT	19+08	10-11.5	A-2-6(0)	29	11	52.8	16.2	25.4	5.6	48.1	26.9	16.4	25	-

NOTES:
GROUNDLINE OBTAINED USING
400225_Is_tin.tin FILE DATED 4-19-2021
INFERRED STRATIGRAPHY IS DRAWN AT THE
CROSS SECTIONS WITH THE BORINGS
PROJECTED ONTO THE CROSS SECTIONS





PROJECT REFERENCE NO.	SHEET NO.
SF-400225	7
BRIDGE NO. 225 - END BENT 2 STA. 19+82.09 -L- 76 SKEW	

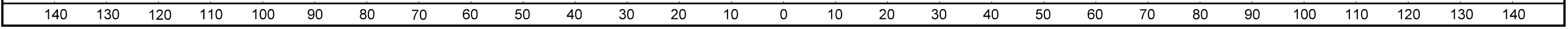


- (A) **RESIDUAL:** Loose to very dense, dry to moist, brown, white and gray, silty SAND (A-2-4) with rock fragments, saprolitic, micaceous
- (B) **RESIDUAL:** Hard, dry, gray, brown and black, SILT (A-4) with rock fragments
- (C) **RESIDUAL:** Soft, wet, gray and tan, sandy CLAY (A-6)
- (D) **WEATHERED ROCK:** Gray, tan and white, METAGRANITE 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-20	97' RT	19+84	10-11.5	A-6(4)	36	12	16.7	30.5	23.0	25.1	95.3	87.1	54.6	27	-
SS-21	97' RT	19+84	15-16.5	A-2-4(0)	32	10	27.1	12.6	17.4	9.2	66.3	44.6	29.7	22	-
SS-34	42' LT	19+48	10-11.5	A-2-4(0)	39	9	40.0	20.4	23.5	5.0	88.9	57.9	32.6	19	-

NOTES:
 GROUNDLINE OBTAINED USING
 400225_Is_tin.tin FILE DATED 4-19-2021
 INFERRED STRATIGRAPHY IS DRAWN AT THE
 CROSS SECTIONS WITH THE BORINGS
 PROJECTED ONTO THE CROSS SECTIONS



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 17+86		OFFSET 43 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 780.9 ft		TOTAL DEPTH 11.6 ft		NORTHING 828,034		EASTING 1,757,884									
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
785															
780	780.9	0.0	10	9	6								D	780.9	0.0
775	775.9	5.0	40	60/0.4										775.9	5.0
770	770.9	10.0	100/0.3											770.9	10.0
	769.4	11.5	60/0.1											769.4	11.5
														769.3	11.6

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 18+13		OFFSET 49 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 781.0 ft		TOTAL DEPTH 15.4 ft		NORTHING 827,988		EASTING 1,757,800									
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
785															
780	781.0	0.0	5	14	14								D	781.0	0.0
775	776.0	5.0	4	7	7								D	776.0	5.0
770	771.0	10.0	100/0.2											771.0	10.0
	765.7	15.3	60/0.1											765.7	15.3
														765.6	15.4

NCDOT BORE DOUBLE GUILFORD BRIDGE 225.GPJ NC_DOT.GDT 11/2/21

GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)									
BORING NO. B1-A		STATION 18+80		OFFSET 43 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 782.3 ft		TOTAL DEPTH 49.0 ft		NORTHING 827,944		EASTING 1,757,905										
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 04/19/21		COMP. DATE 04/20/21		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			ELEV. (ft)	DEPTH (ft)		
785																
780	780.8	1.5	8	8	8											
	777.3	5.0	26	54	46/0.4											
775	774.8	7.5	100/0.5													
	772.3	10.0	42	100/0.4												
770																
	767.3	15.0	100/0.1													
765																
760																
	757.3	25.0	100/0.2													
755																
	752.3	30.0	100/0.2													
750																
745																
740																
735																

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi						
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)					
BORING NO. B1-A		STATION 18+80		OFFSET 43 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 782.3 ft		TOTAL DEPTH 49.0 ft		NORTHING 827,944		EASTING 1,757,905						
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic						
DRILLER L. Wanstrath		START DATE 04/19/21		COMP. DATE 04/20/21		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN 26.3 ft		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		ELEV. (ft)	DEPTH (ft)
766.8												
	766.8	15.5	4.5	1:15 0:44 0:49 1:21	(0.7) 16%	(0.0) 0%		(1.1) 15%	(0.0) 0%			
765												
	762.3	20.0	3.0	3:18 1:12 0:48	(0.4) 13%	(0.0) 0%						
760												
	759.3	23.0										
755												
	752.1	30.2										
750												
	748.3	34.0	3.8	1:35/0.8 1:29 1:47 1:27	(2.3) 61%	(1.5) 39%		(2.3) 61%	(1.5) 39%			
745												
	743.3	39.0	5.0	1:28 1:20 1:46 1:23	(1.2) 24%	(0.0) 0%		(3.2) 32%	(0.5) 5%			
740												
	738.3	44.0	5.0	0:48 1:12 1:01 0:49 0:53	(2.0) 40%	(0.5) 10%						
735												
	733.3	49.0	5.0	0:49 1:01 1:28 1:23 1:30	(2.8) 56%	(1.5) 30%		(2.8) 56%	(1.5) 30%			

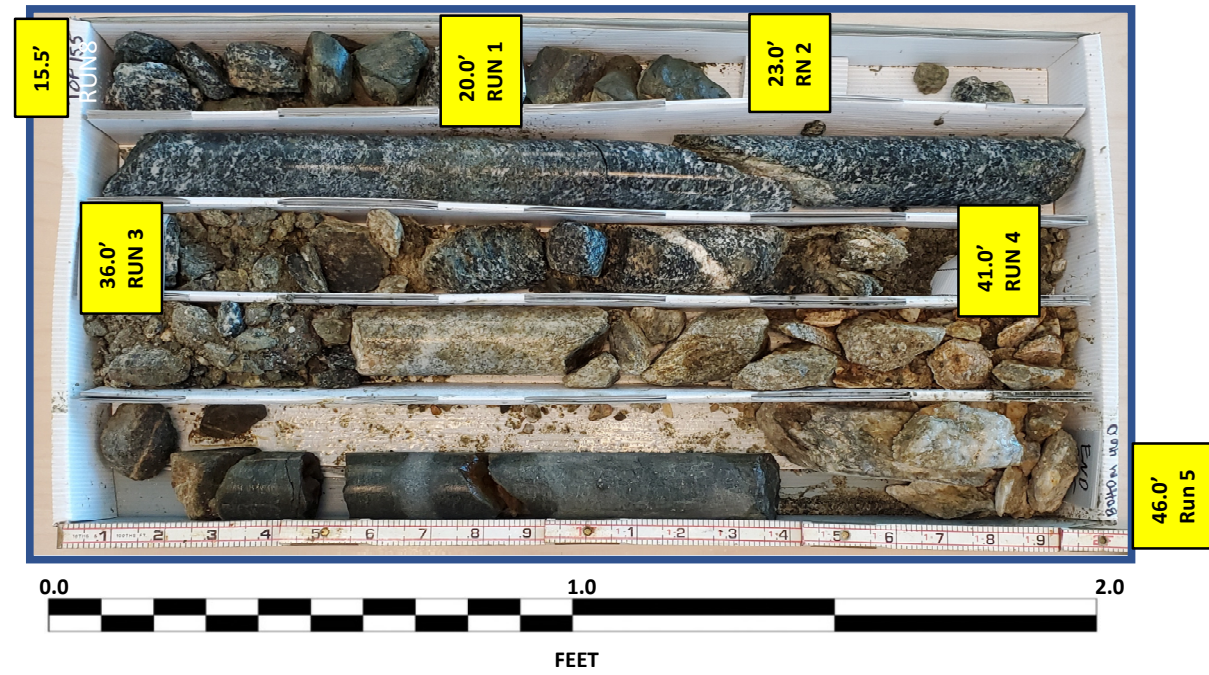
NCDOT BORE DOUBLE GUILFORD BRIDGE 225.GPJ NC_DOT.GDT 11/30/21

CORE PHOTOGRAPHIC RECORD

17BP.7.R.142 (225)

Bridge Number 225 Over I-85 Business on SR 1115 (Rehobeth Church Road)

B1-A
Box 1 of 2: 15.5 – 46.0 FEET
WET



B1-A
Box 2 of 2: 46.0 – 51.0 FEET
WET



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)									
BORING NO. B1-B		STATION 19+08		OFFSET 51 ft RT		ALIGNMENT -L-	0 HR. Dry									
COLLAR ELEV. 782.6 ft		TOTAL DEPTH 50.2 ft		NORTHING 827,894		EASTING 1,757,821	24 HR. FIAD									
DRILL RIG/HAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 04/20/21		COMP. DATE 04/21/21		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			ELEV. (ft)	DEPTH (ft)		
785														782.6	GROUND SURFACE	0.0
	781.2	1.4	47	16	7								D	781.2	1.4' Pavement	1.4
780														779.6	ROADWAY EMBANKMENT Medium dense, gray, silty SAND & GRAVEL (A-1-b), and asphalt	3.0
	777.6	5.0	4	4	7								D		RESIDUAL Medium dense, gray, silty SAND (A-2-4), with clay and rock fragments	
775														772.6		10.0
	772.6	10.0	4	4	7								SS-10 25%	772.6	Medium dense, gray, clayey SAND (A-2-6(0)), contains rock fragments	10.0
770														767.6		15.0
	767.6	15.0	34	100/0.4										767.6	WEATHERED ROCK Brown, gray, and white, METAGRANITE	15.0
765														762.6		20.0
	762.6	20.0	38	100/0.5										759.6		23.0
760														757.6	RESIDUAL Hard, brown and gray, sandy SILT (A-4), contains rock fragments, saprolitic	
	757.6	25.0	15	25	27								D	752.6		30.0
755														752.6	WEATHERED ROCK Gray, METAGRANITE	30.0
	752.6	30.0	100/0.5											749.6		33.0
750														749.6	RESIDUAL Hard, brown and gray, sandy SILT (A-4), contains rock fragments, saprolitic	
	747.6	35.0	46	46	37								D	742.6		40.0
745														742.6	WEATHERED ROCK Gray, METAGRANITE	40.0
	742.6	40.0	100/0.2											737.6		45.0
740														737.6		45.0
	737.6	45.0	100/0.2											732.6		50.0
735														732.6		50.0
	732.6	50.0	100/0.2												Boring Terminated at Elevation 732.4 ft in Weathered Rock (METAGRANITE)	

NCDOT BORE DOUBLE GUILFORD BRIDGE 225.GPJ NC_DOT.GDT 11/30/21

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 19+48		OFFSET 42 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 781.0 ft		TOTAL DEPTH 30.3 ft		NORTHING 827,879		EASTING 1,757,921										
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
785																
780	779.5	1.5	11	20	18									781.0	0.0	GROUND SURFACE
														779.5	1.5	1.5' Pavement
																RESIDUAL Dense to very dense, brown and gray, silty SAND (A-2-4(0)), contains rock fragments, saprolitic
775	776.0	5.0	25	35	36											
770	771.0	10.0	16	30	28											
765	766.0	15.0	30	70/0.3												
760	761.0	20.0	48	52/0.4												
755	756.0	25.0	100/0.5													
	751.0	30.0	100/0.3											750.7	30.3	Boring Terminated at Elevation 750.7 ft in Weathered Rock (METAGRANITE)

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 19+75		OFFSET 51 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 781.2 ft		TOTAL DEPTH 40.2 ft		NORTHING 827,828		EASTING 1,757,839										
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
785																
780	781.2	0.0	10	10	15									781.2	0.0	GROUND SURFACE
																RESIDUAL Medium dense, gray, white and tan, silty SAND (A-2-4), contains rock fragments, micaceous
775	776.2	5.0	3	5	9											
770	771.2	10.0	17	13	14											
765	766.2	15.0	38	45	55/0.4									766.2	15.0	WEATHERED ROCK Gray, METAGRANITE
760	761.2	20.0	70	30/0.2												
755	756.2	25.0	73	27/0.2												
750	751.2	30.0	31	23	21											
745	746.2	35.0	100/0.3													
	741.2	40.0	100/0.2											741.0	40.2	Boring Terminated at Elevation 741.0 ft in Weathered Rock (METAGRANITE)

NCDOT BORE DOUBLE GUILFORD BRIDGE 225.GPJ NC_DOT.GDT 11/30/21

GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.7.R.142			TIP SF-400225			COUNTY GUILFORD			GEOLOGIST N. Yacobi							
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)								GROUND WTR (ft)								
BORING NO. W1-1		STATION 17+77		OFFSET 80 ft LT		ALIGNMENT -L-		0 HR. Dry								
COLLAR ELEV. 780.5 ft		TOTAL DEPTH 10.5 ft		NORTHING 828,050		EASTING 1,757,919		24 HR. FIAD								
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER L. Wanstrath			START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
785																
780	780.5	0.0	11	12	12										780.5	GROUND SURFACE 0.0
															777.5	RESIDUAL Medium dense, gray, silty SAND (A-2-4), contains rock fragments WEATHERED ROCK Gray, METAGRANITE 3.0
775	775.5	5.0	100/0.5												770.0	10.5
770	770.5	10.0	100/0.5												770.0	Boring Terminated at Elevation 770.0 ft in Weathered Rock (METAGRANITE)

WBS 17BP.7.R.142			TIP SF-400225			COUNTY GUILFORD			GEOLOGIST N. Yacobi							
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)								GROUND WTR (ft)								
BORING NO. W1-2		STATION 18+30		OFFSET 97 ft RT		ALIGNMENT -L-		0 HR. Dry								
COLLAR ELEV. 781.2 ft		TOTAL DEPTH 20.9 ft		NORTHING 827,960		EASTING 1,757,757		24 HR. FIAD								
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER L. Wanstrath			START DATE 04/22/21		COMP. DATE 04/23/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
785																
780	781.2	0.0	5	5	5										781.2	GROUND SURFACE 0.0
															777.2	RESIDUAL Medium dense, gray and brown, silty SAND (A-2-4) 3.0
775	776.2	5.0	4	5	8										773.2	8.0
															770.0	Stiff to hard, dark gray and green, sandy SILT (A-4(0)), contains wood fragments
770	771.2	10.0	4	4	6						SS-55	25%		770.0		
															766.2	15.0
765	766.2	15.0	15	19	22										761.2	
															761.2	20.0
															760.3	WEATHERED ROCK Gray and brown, METAGRANITE Boring Terminated at Elevation 760.3 ft in Weathered Rock (METAGRANITE) 20.9

NCDOT BORE DOUBLE GUILFORD BRIDGE 225.GPJ NC_DOT.GDT 11/2/21

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)								
BORING NO. W2-1		STATION 19+38		OFFSET 87 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 780.5 ft		TOTAL DEPTH 15.6 ft		NORTHING 827,900		EASTING 1,757,962									
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
785															
780	780.5	0.0	4	6	15									780.5	0.0
775	775.5	5.0	12	23	45									770.5	10.0
770	770.5	10.0	28	57	43/0.2									770.5	10.0
765	765.5	15.0	65	35/0.1										764.9	15.6
Boring Terminated at Elevation 764.9 ft in Weathered Rock (QUARTZITE)															

WBS 17BP.7.R.142		TIP SF-400225		COUNTY GUILFORD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Bridge No. 225 over I-85 Business on SR 1115 (Rehobeth Church Road)							GROUND WTR (ft)								
BORING NO. W2-2		STATION 19+84		OFFSET 97 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 781.4 ft		TOTAL DEPTH 21.5 ft		NORTHING 827,806		EASTING 1,757,797									
DRILL RIGHAMMER EFF./DATE GT18255 CME-55 95% 07/24/2019				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 04/22/21		COMP. DATE 04/22/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
785															
780	781.4	0.0	8	6	14									781.4	0.0
775	776.4	5.0	4	4	5									772.9	8.5
770	771.4	10.0	2	2	2									767.9	13.5
765	766.4	15.0	6	7	11									759.9	21.5
760	761.4	20.0	29	41	48									759.9	21.5
Boring Terminated at Elevation 759.9 ft in Silty SAND (RESIDUAL)															

NCDOT BORE DOUBLE GUILFORD BRIDGE 225.GPJ NC_DOT.GDT 11/30/21