

REFERENCE: U-3330

PROJECT: 36596

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3330	1	17

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND
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STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY NASH

PROJECT DESCRIPTION US 301 BYPASS FROM  
NC 43-48 (BENVENUE RD) TO SR 1836 (MAY DR.)

SITE DESCRIPTION REPLACE BRIDGE NO. 198 ON -YI-  
(SUNSET AVE) OVER -L- (US 301 BYPASS)

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

CONSULTANT:

GEOSYNTEC

CONSULTANTS

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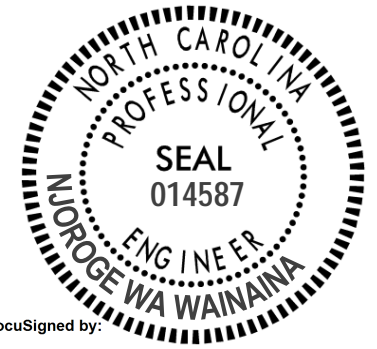
INVESTIGATED BY NJOROGE WAINAINA

DRAWN BY C. TURLINGTON

CHECKED BY WESTON SHIN

SUBMITTED BY NJOROGE WAINAINA

DATE JUNE 2015

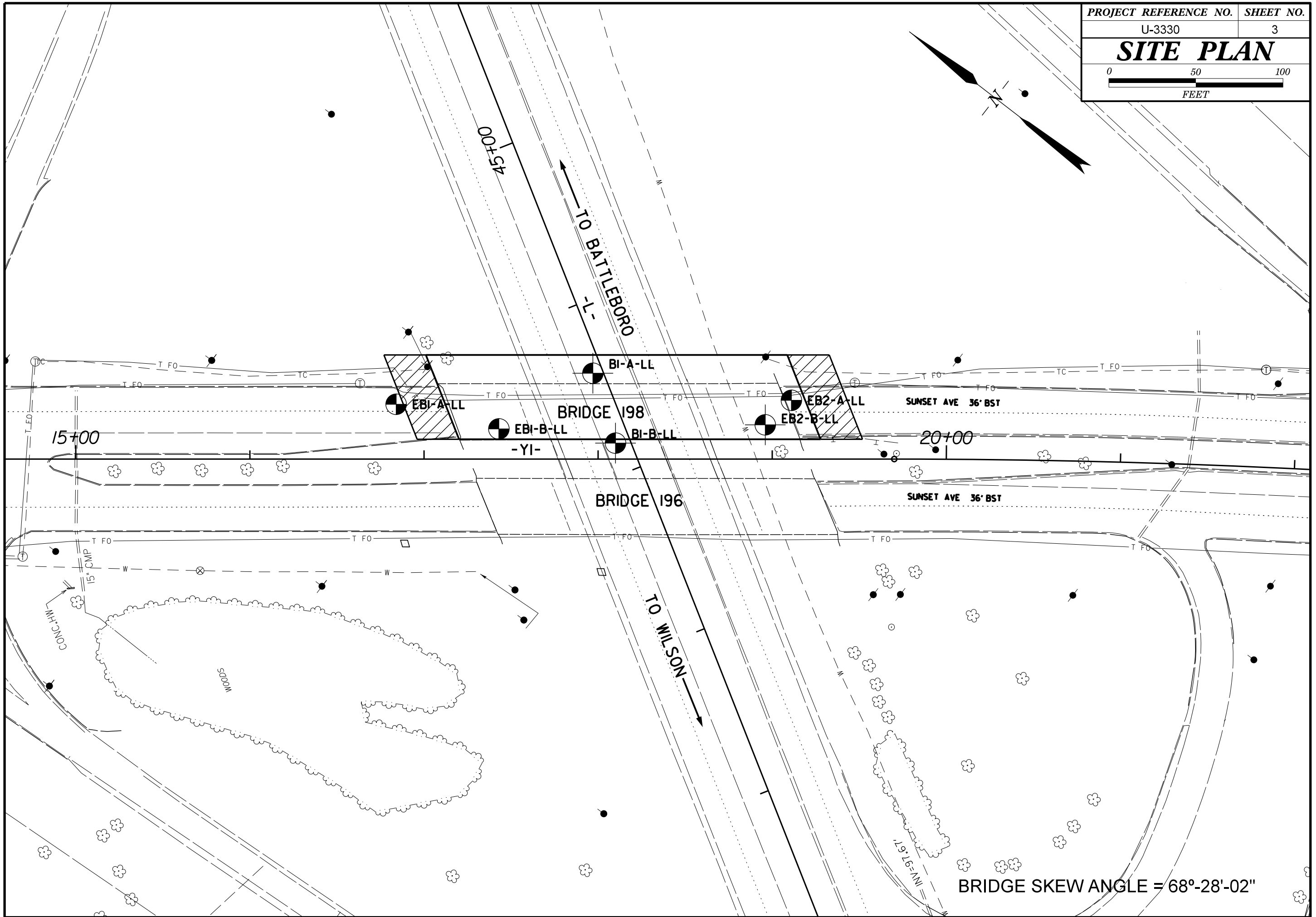
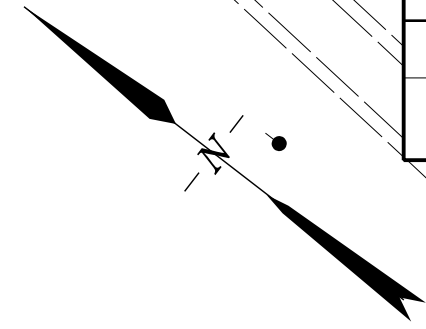


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Njoroge Wainaina 6/10/2015

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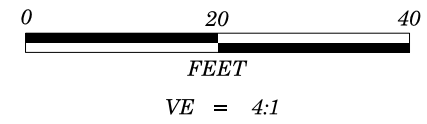
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT  
SUBSURFACE INVESTIGATION  
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																													
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>										<p><b>WELL GRADED</b> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  <b>UNIFORMLY GRADED</b> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.  <b>GAP-GRADED</b> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>										<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>										<p><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.  <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.  <b>ARTESIAN</b> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.  <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.  <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.  <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.  <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.  <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.  <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.  <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL.  <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.  <b>FORMATION (FM.)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.  <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.  <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.  <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.  <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  <b>ROCK QUALITY DESIGNATION (RQD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.  <b>SILL</b> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.  <b>SLICKENISE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.  <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.  <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.  <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																													
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>										<b>ANGULARITY OF GRAINS</b>										<b>WEATHERED ROCK (WR)</b>										<b>CRYSTALLINE ROCK (CR)</b>																																																																																																													
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<b>MINERALOGICAL COMPOSITION</b>										<b>COMPRESSION</b>										<b>NON-CRYSTALLINE ROCK (NCR)</b>										<b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>																																																																																																													
<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p>										<p>SLIGHTLY COMPRESSIBLE LL &lt; 31          MODERATELY COMPRESSIBLE LL = 31 - 50          HIGHLY COMPRESSIBLE LL &gt; 50</p>										<p>FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p>										<p>COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>																																																																																																													
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<b>TEXTURE OR GRAIN SIZE</b>										<b>RECOMMENDATION SYMBOLS</b>										<b>ROCK HARDNESS</b>										<b>ABBREVIATIONS</b>																																																																																																													
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<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>										<p>TIN FILE NAME "u3330.is.tin" WITH FILE DATE 2-9-2015, WAS USED TO GENERATE BORING ELEVATIONS AND CROSS SECTION GROUND LINES.</p> <p>FIAD - FILLED IN AFTER DRILLING.</p>										<p>BENCH MARK: BL-102, EL 97.35</p>																																																																																																													

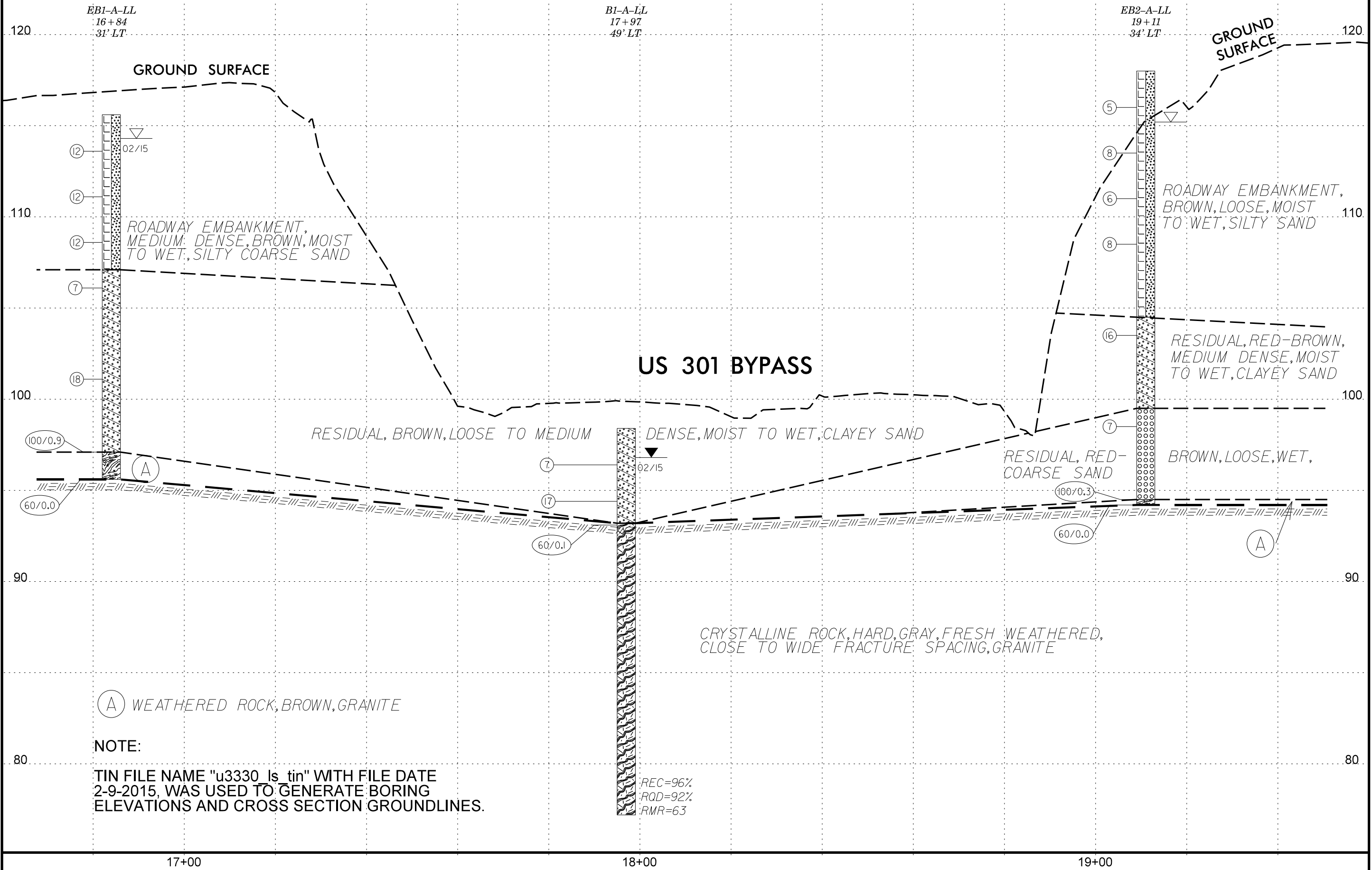


BRIDGE SKEW ANGLE = 68°-28'-02"

# WESTBOUND



PROJECT REFERENCE NO.	SHEET NO.
36596 (U-3330)	4
BORINGS PROJECTED ALONG -YI- PROFILE	



EB1-A-LL  
16+84  
31' LT

B1-A-LL  
17+97  
49' LT

EB2-A-LL  
19+11  
34' LT

GROUND SURFACE

GROUND SURFACE

ROADWAY EMBANKMENT,  
MEDIUM DENSE, BROWN, MOIST  
TO WET, SILTY COARSE SAND

ROADWAY EMBANKMENT,  
BROWN, LOOSE, MOIST  
TO WET, SILTY SAND

US 301 BYPASS

RESIDUAL, BROWN, LOOSE TO MEDIUM

DENSE, MOIST TO WET, CLAYEY SAND

RESIDUAL, RED-  
COARSE SAND

RESIDUAL, RED-BROWN,  
MEDIUM DENSE, MOIST  
TO WET, CLAYEY SAND

BROWN, LOOSE, WET,

CRYSTALLINE ROCK, HARD, GRAY, FRESH WEATHERED,  
CLOSE TO WIDE FRACTURE SPACING, GRANITE

(A) WEATHERED ROCK, BROWN, GRANITE

NOTE:

TIN FILE NAME "u3330\_ls\_tin" WITH FILE DATE  
2-9-2015, WAS USED TO GENERATE BORING  
ELEVATIONS AND CROSS SECTION GROUND LINES.

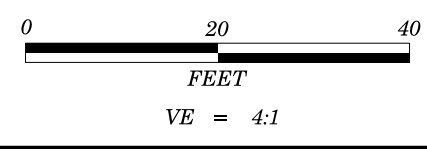
REC=96%  
RQD=92%  
RMR=63

17+00

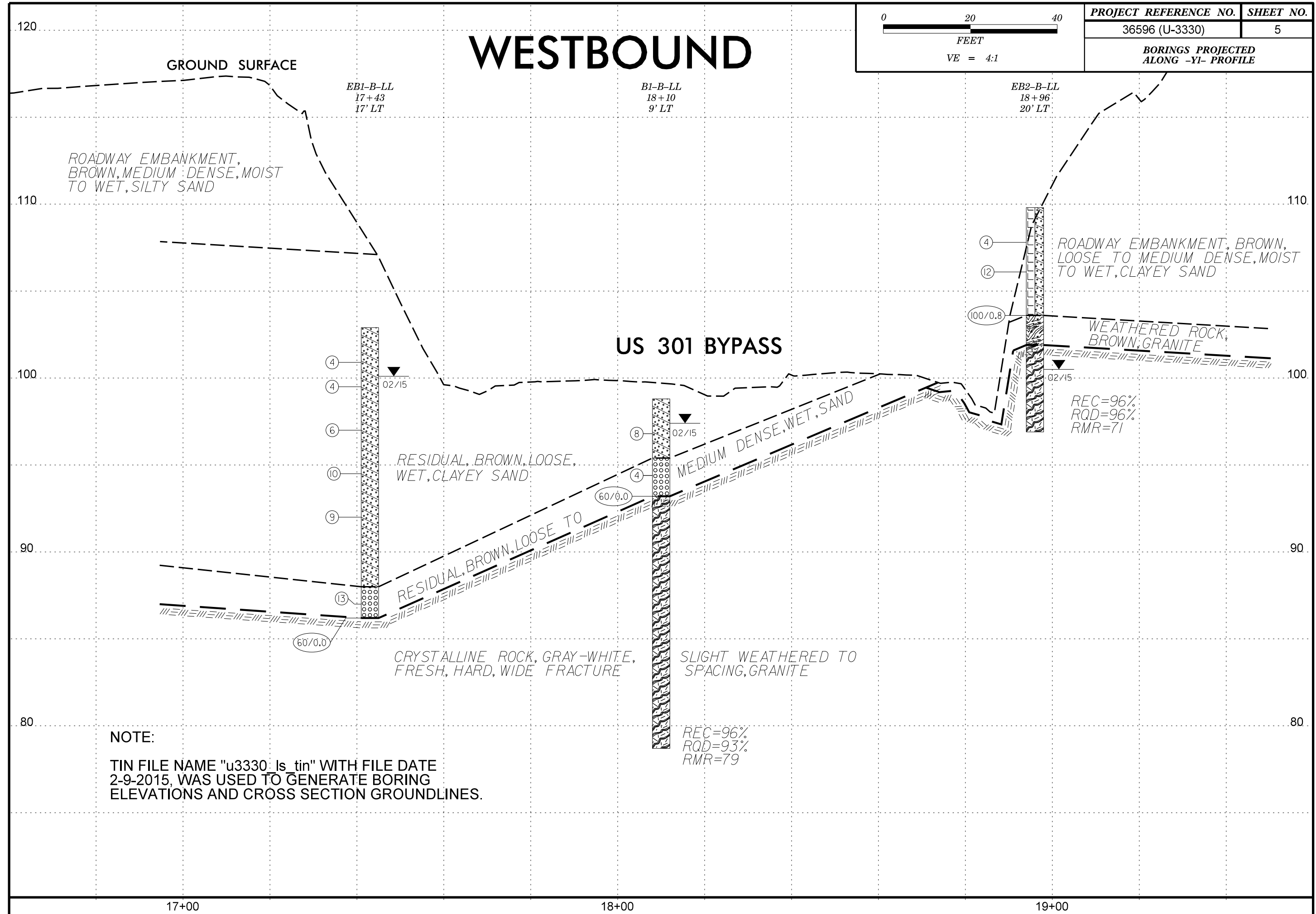
18+00

19+00

# WESTBOUND



PROJECT REFERENCE NO.	SHEET NO.
36596 (U-3330)	5
BORINGS PROJECTED ALONG -YI- PROFILE	



ROADWAY EMBANKMENT,  
BROWN, MEDIUM DENSE, MOIST  
TO WET, SILTY SAND

EB1-B-LL  
17+43  
17' LT

B1-B-LL  
18+10  
9' LT

EB2-B-LL  
18+96  
20' LT

US 310 BYPASS

ROADWAY EMBANKMENT, BROWN,  
LOOSE TO MEDIUM DENSE, MOIST  
TO WET, CLAYEY SAND

WEATHERED ROCK,  
BROWN, GRANITE

RESIDUAL, BROWN, LOOSE,  
WET, CLAYEY SAND

MEDIUM DENSE, WET, SAND

RESIDUAL, BROWN, LOOSE TO  
CRYSTALLINE ROCK, GRAY-WHITE,  
FRESH, HARD, WIDE FRACTURE

SLIGHT WEATHERED TO  
SPACING, GRANITE

REC=96%  
RQD=96%  
RMR=71

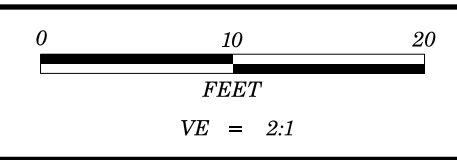
REC=96%  
RQD=93%  
RMR=79

NOTE:  
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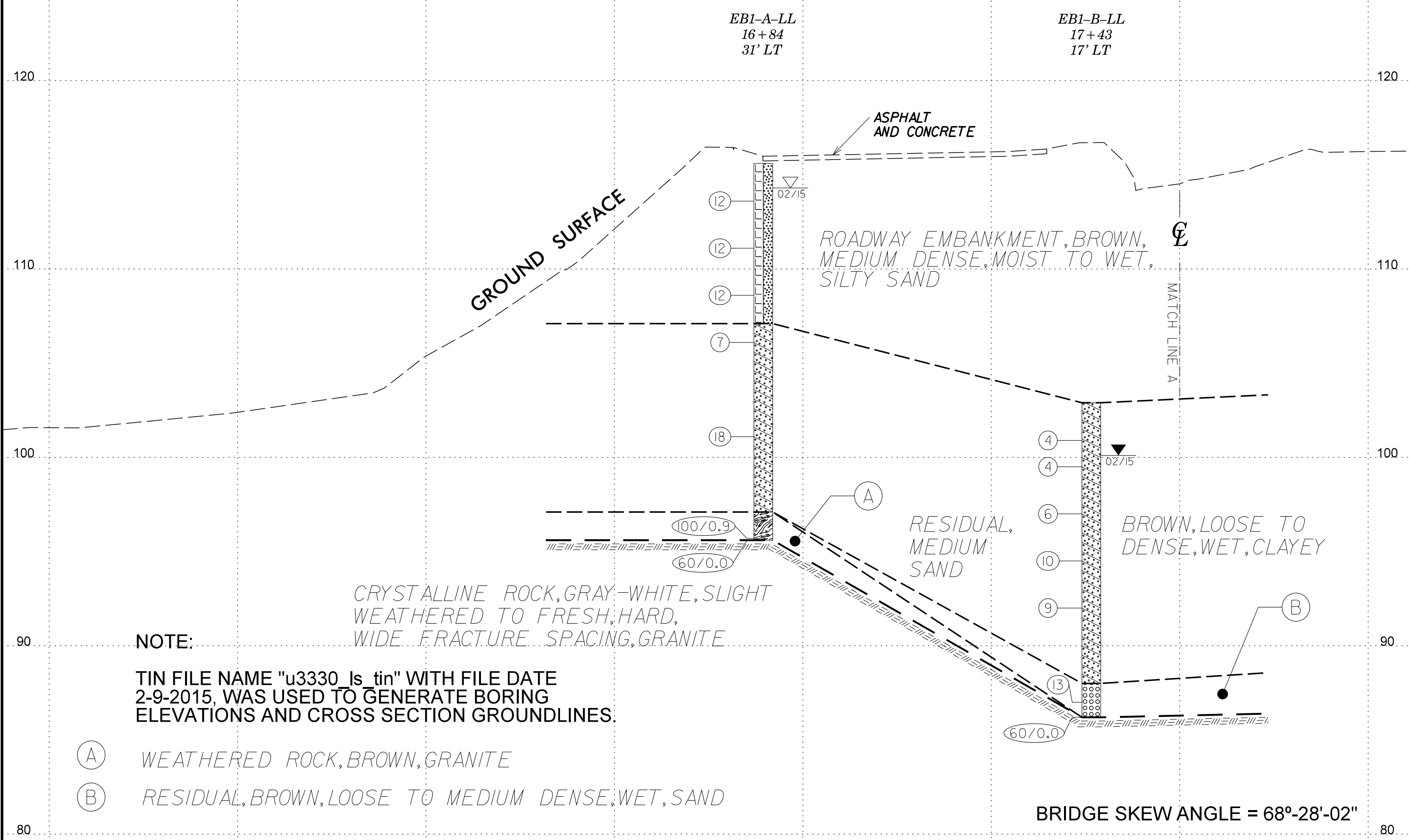
17+00

18+00

19+00



PROJECT REFERENCE NO.	SHEET NO.
36596 (U-3330)	6
CROSS SECTION THROUGH END BENT 1 -WBL-	



**NOTE:**

TIN FILE NAME "u3330 Is tin" WITH FILE DATE 2-9-2015, WAS USED TO GENERATE BORING ELEVATIONS AND CROSS SECTION GROUND LINES.

- (A) WEATHERED ROCK, BROWN, GRANITE
- (B) RESIDUAL, BROWN, LOOSE TO MEDIUM DENSE, WET, SAND

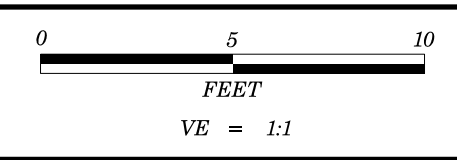
CRYSTALLINE ROCK, GRAY-WHITE, SLIGHT WEATHERED TO FRESH, HARD, WIDE FRACTURE SPACING, GRANITE

ROADWAY EMBANKMENT, BROWN, MEDIUM DENSE, MOIST TO WET, SILTY SAND

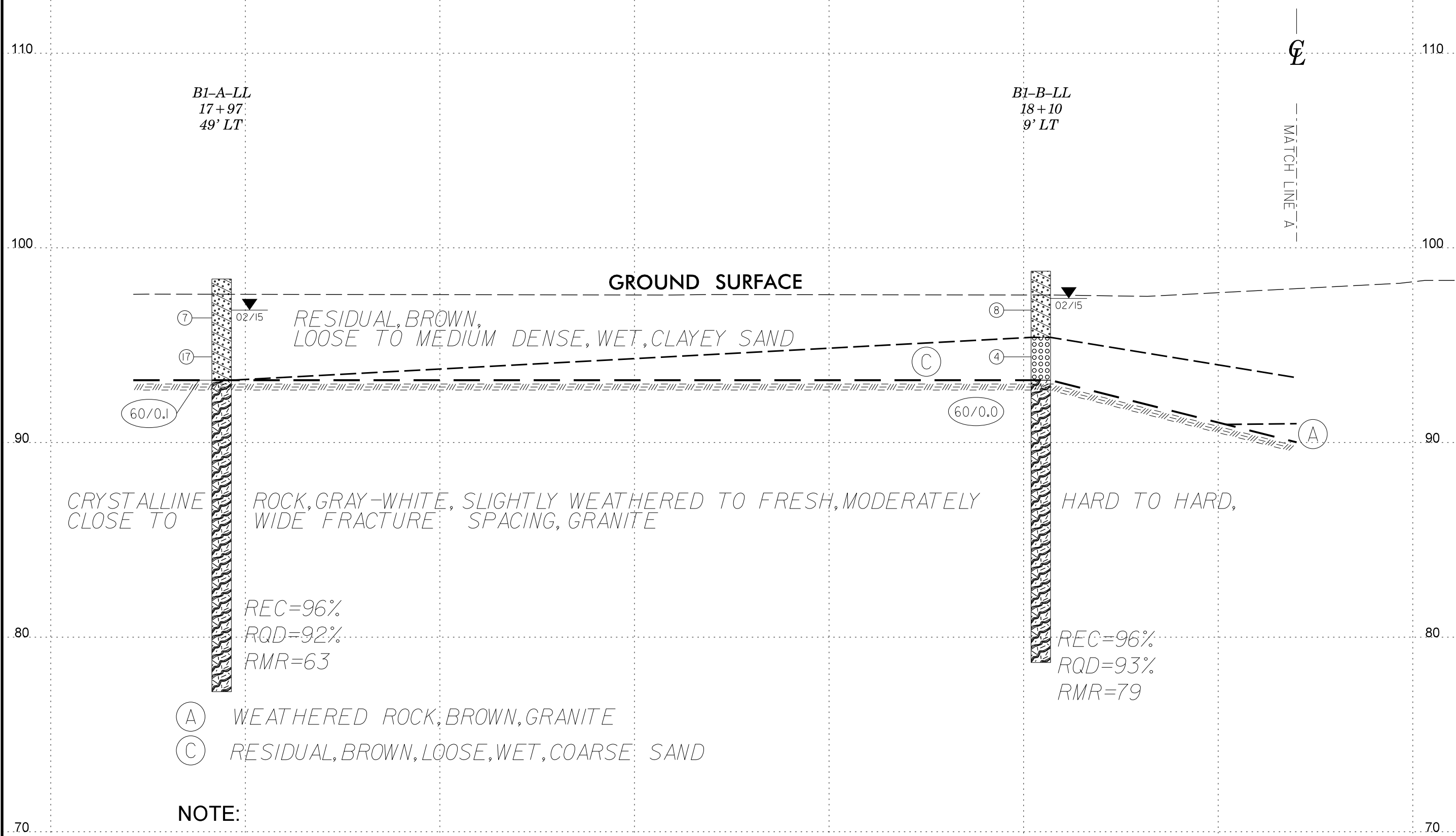
RESIDUAL, MEDIUM SAND

BROWN, LOOSE TO DENSE, WET, CLAYEY

BRIDGE SKEW ANGLE = 68°-28'-02"



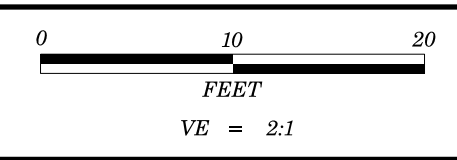
PROJECT REFERENCE NO.	SHEET NO.
36596 (U-3330)	7
CROSS SECTION THROUGH BENT 1 - WBL	



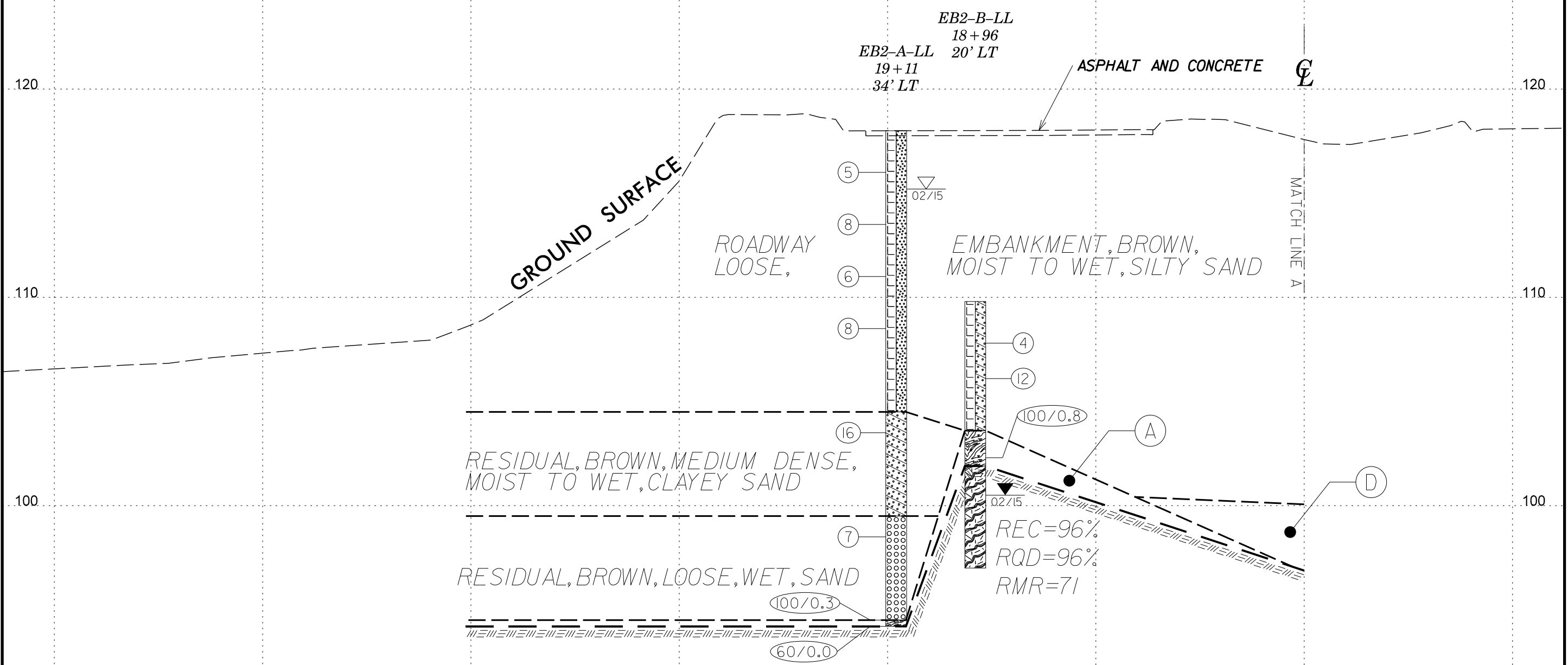
**NOTE:**

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BRIDGE SKEW ANGLE = 68°-28'-02"



PROJECT REFERENCE NO.	SHEET NO.
36596 (U-3330)	8
CROSS SECTION THROUGH END BENT 2 -WBL-	



- (A) WEATHERED ROCK, BROWN, GRANITE
- (D) RESIDUAL, BROWN, LOOSE, WET, SAND

**NOTE:**  
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BRIDGE SKEW ANGLE = 68°-28'-02"





**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 36596.1.2		TIP U-3330		COUNTY NASH		GEOLOGIST ROHIT WARRIER									
SITE DESCRIPTION BRIDGE NO. 198 ON -Y1- (SUNSET AVE) OVER -L- (US 301 BYPASS)							GROUND WTR (ft)								
BORING NO. EB1-A-LL		STATION 16+84		OFFSET 31 ft LT		ALIGNMENT -Y1-									
COLLAR ELEV. 115.6 ft		TOTAL DEPTH 20.0 ft		NORTHING 805,612		EASTING 2,348,043									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER WENDELL WHICHARD		START DATE 02/06/15		COMP. DATE 02/06/15		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					
120															
115	114.6	1.0	5	6	6	12								115.6	GROUND SURFACE
	112.1	3.5	4	5	7										ROADWAY EMBANKMENT MEDIUM DENSE, BROWN, SILTY COARSE SAND
110	109.6	6.0	4	6	6										
	107.1	8.5	3	2	5									107.1	RESIDUAL BROWN, CLAYEY SAND
105	102.1	13.5	5	7	11										
100	97.1	18.5	3	4	96/0.4									97.1	WEATHERED ROCK (GRANITE)
	95.6	20.0	60/0.0											95.6	CRYSTALLINE ROCK (GRANITE) Boring Terminated with Standard Penetration Test Refusal at Elevation 95.6 ft ON CRYSTALLINE ROCK

NCDOT BORE DOUBLE U3330\_GEO\_BRDG0196&0198\_BH.GPJ NC\_DOT.GDT 6/9/15



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

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BORING NO. EB1-B-LL		STATION 17+43		OFFSET 17 ft LT		ALIGNMENT -Y1-									
COLLAR ELEV. 102.9 ft		TOTAL DEPTH 16.7 ft		NORTHING 805,557		EASTING 2,348,067									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER WENDELL WHICHARD		START DATE 02/05/15		COMP. DATE 02/05/15		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					
105															
	101.9	1.0	3	2	2									102.9	GROUND SURFACE
100	100.5	2.4	2	2	2										RESIDUAL CLAYEY SAND
	98.0	4.9	2	3	3										
95	95.5	7.4	3	4	6										
	93.0	9.9	2	4	5										
90	88.0	14.9	6	4	9									88.0	DENSE, BROWN-RED, SAND
	86.2	16.7	60/0.0											86.2	CRYSTALLINE ROCK (GRANITE) Boring Terminated with Standard Penetration Test Refusal at Elevation 86.2 ft ON CRYSTALLINE ROCK

NCDOT BORE DOUBLE U3330\_GEO\_BRDG0196&0198\_BH.GPJ NC\_DOT.GDT 6/9/15





**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

<b>WBS</b> 36596.1.2	<b>TIP</b> U-3330	<b>COUNTY</b> NASH	<b>GEOLOGIST</b> ROHIT WARRIER
<b>SITE DESCRIPTION</b> BRIDGE NO. 198 ON -Y1- (SUNSET AVE) OVER -L- (US 301 BYPASS)			<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> EB2-A-LL	<b>STATION</b> 19+11	<b>OFFSET</b> 34 ft LT	<b>ALIGNMENT</b> -Y1-
<b>COLLAR ELEV.</b> 118.0 ft	<b>TOTAL DEPTH</b> 23.8 ft	<b>NORTHING</b> 805,433	<b>EASTING</b> 2,348,182
<b>DRILL RIG/HAMMER EFF./DATE</b> TRI0055 CME-55 68% 02/20/2015		<b>DRILL METHOD</b> Mud Rotary	<b>HAMMER TYPE</b> Automatic
<b>DRILLER</b> WENDELL WHICHARD	<b>START DATE</b> 02/06/15	<b>COMP. DATE</b> 02/06/15	<b>SURFACE WATER DEPTH</b> 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						
120														118.0	GROUND SURFACE	0.0
	117.0	1.0	5	2	3	5	5	5	5	5		5			ROADWAY EMBANKMENT	
115	114.5	3.5	2	4	4	5	5	5	5	5		8			BROWN, SILTY SAND	
	112.0	6.0	3	2	4	5	5	5	5	5		6				
110	109.5	8.5	2	3	5	5	5	5	5	5		8				
	104.5	13.5	4	7	9	5	5	5	5	5		16		104.5	RESIDUAL	13.5
105															RED-BROWN, CLAYEY SAND	
100	99.5	18.5	3	3	4	5	5	5	5	5		7		99.5	RED-BROWN, COARSE SAND	18.5
	94.5	23.5												94.5		
95	94.2	23.8	100/0.3			100/0.3								94.2	WEATHERED ROCK (GRANITE)	23.8
			60/0.0												CRYSTALLINE ROCK (GRANITE)	
															Boring Terminated with Standard Penetration Test Refusal at Elevation 94.2 ft ON CRYSTALLINE ROCK	

NCDOT BORE DOUBLE U3330\_GEO\_BRDG0196&0198\_BH.GPJ NC\_DOT\_GDT @/9/15



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 36596.1.2	TIP U-3330	COUNTY NASH	GEOLOGIST ROHIT WARRIER
SITE DESCRIPTION BRIDGE NO. 198 ON -Y1- (SUNSET AVE) OVER -L- (US 301 BYPASS)			GROUND WTR (ft)
BORING NO. EB2-B-LL	STATION 18+96	OFFSET 20 ft LT	ALIGNMENT -Y1-
COLLAR ELEV. 109.8 ft	TOTAL DEPTH 12.8 ft	NORTHING 805,437	EASTING 2,348,162
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER WENDELL WHICHARD	START DATE 02/05/15	COMP. DATE 02/05/15	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					
110													109.8	GROUND SURFACE	0.0
	108.8	1.0	3	2	2									ROADWAY EMBANKMENT	
	107.1	2.7	4	5	7									BROWN, SILTY SAND	
105															
	103.6	6.2	2	3	97/0.3									WEATHERED ROCK (GRANITE)	6.2
														CRYSTALLINE ROCK (GRANITE)	7.9
100														HARD, GRAY AND WHITE, WITH FRESH WEATHERING, WITH WIDE TO VERY WIDE FRACTURE SPACING, GRANITE	12.8
														REC = 96% RQD = 96%	
														RMR = 71	
														Boring Terminated at Elevation 97.0 ft ON CRYSTALLINE ROCK	

NCDOT BORE DOUBLE U3330\_GEO\_BRDG0196&0198\_BH.GPJ NC\_DOT.GDT 6/9/15



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**CORE BORING REPORT**

WBS 36596.1.2	TIP U-3330	COUNTY NASH	GEOLOGIST ROHIT WARRIER
SITE DESCRIPTION BRIDGE NO. 198 ON -Y1- (SUNSET AVE) OVER -L- (US 301 BYPASS)			GROUND WTR (ft)
BORING NO. EB2-B-LL	STATION 18+96	OFFSET 20 ft LT	ALIGNMENT -Y1-
COLLAR ELEV. 109.8 ft	TOTAL DEPTH 12.8 ft	NORTHING 805,437	EASTING 2,348,162
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER WENDELL WHICHARD	START DATE 02/05/15	COMP. DATE 02/05/15	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. (%)	RQD (%)		REC. (%)	RQD (%)			
101.9											Begin Coring @ 7.9 ft	
100	101.9	7.9	5.0	5:30/1.0	(4.8)	(4.8)		(4.8)	(4.8)		CRYSTALLINE ROCK (GRANITE)	7.9
				4:37/1.0	96%	96%		98%	98%		HARD, GRAY AND WHITE, WITH FRESH WEATHERING, WITH WIDE TO VERY WIDE FRACTURE SPACING, GRANITE	
				4:20/1.0								
				4:46/1.0								
				5:44/1.0								
	96.9	12.9									RMR = 71	
											Boring Terminated at Elevation 97.0 ft ON CRYSTALLINE ROCK	

NCDOT CORE DOUBLE U3330\_GEO\_BRDG0196&0198\_BH.GPJ NC\_DOT.GDT 6/9/15

# ROCK TEST RESULTS

SHEET 14  
36596.1.2 (U-3330)  
BRIDGE NO. 198 ON -YI- (SUNSET AVE) OVER  
-L- (US 301 BYPASS)

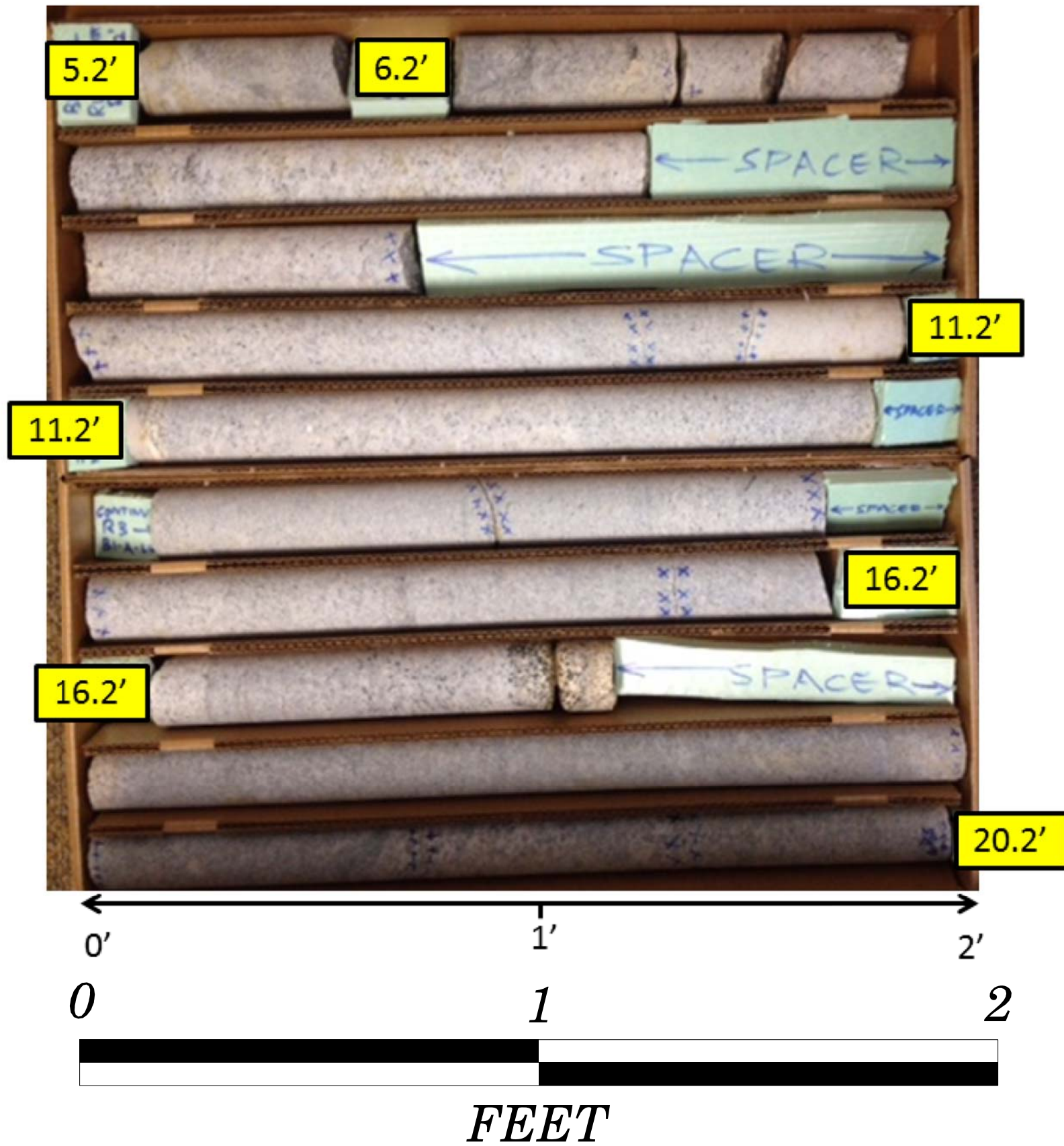
*B1-B-LL*

<i>ROCK TEST RESULTS</i>					
<i>SAMPLE NO.</i>	<i>OFFSET</i>	<i>STATION</i>	<i>DEPTH INTERVAL</i>	<i>ROCK TYPE</i>	<i>UNCONFINED COMP. STRENGTH, KSI</i>
<i>RS-1</i>	<i>9' LT</i>	<i>18+10</i>	<i>11.1-11.95</i>	<i>GRANITE</i>	<i>23.49</i>

# CORE PHOTOGRAPHS

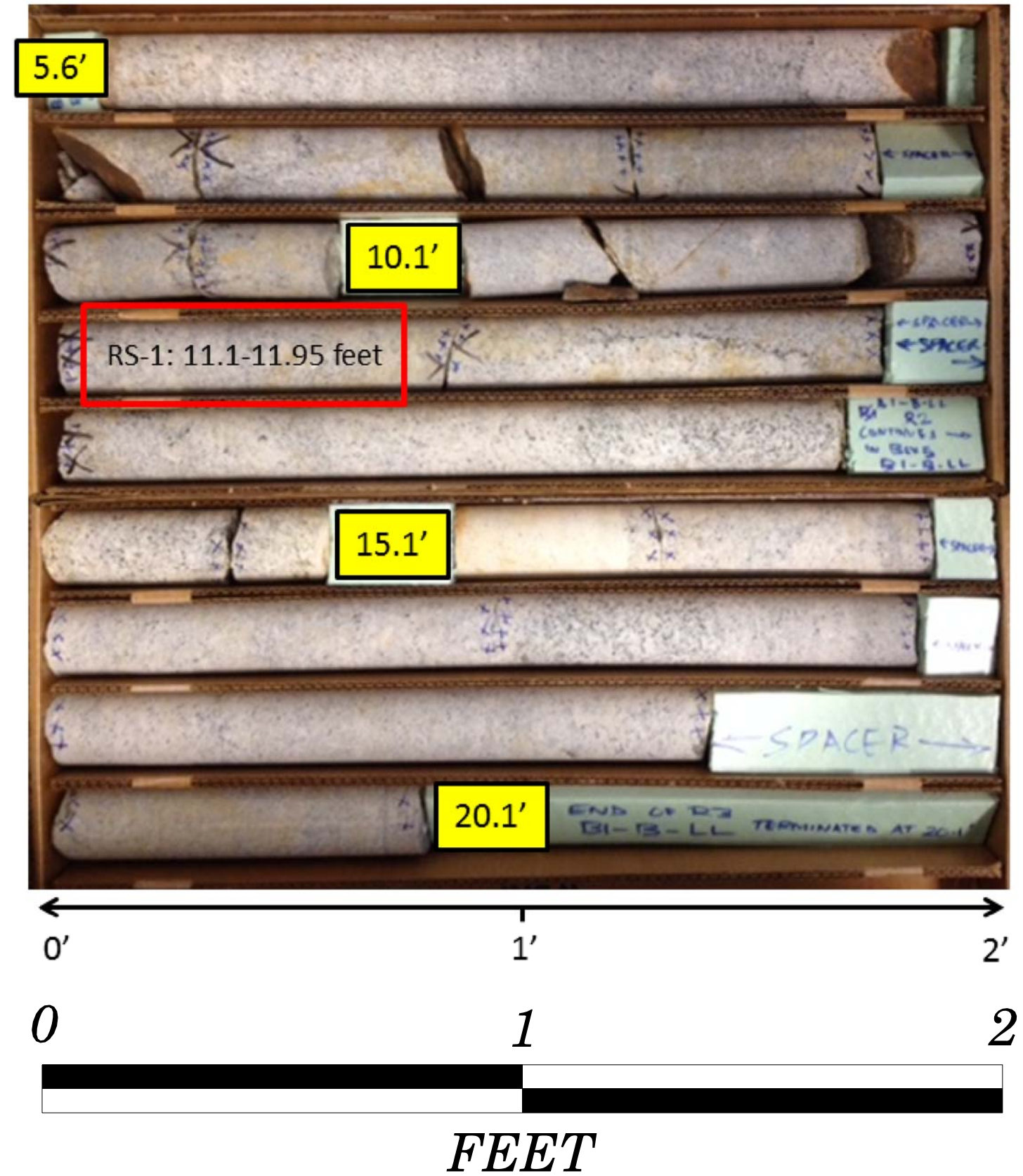
### B1-A-LL

Boxes 1 & 2: 5.2-20.2 feet



### B1-B-LL

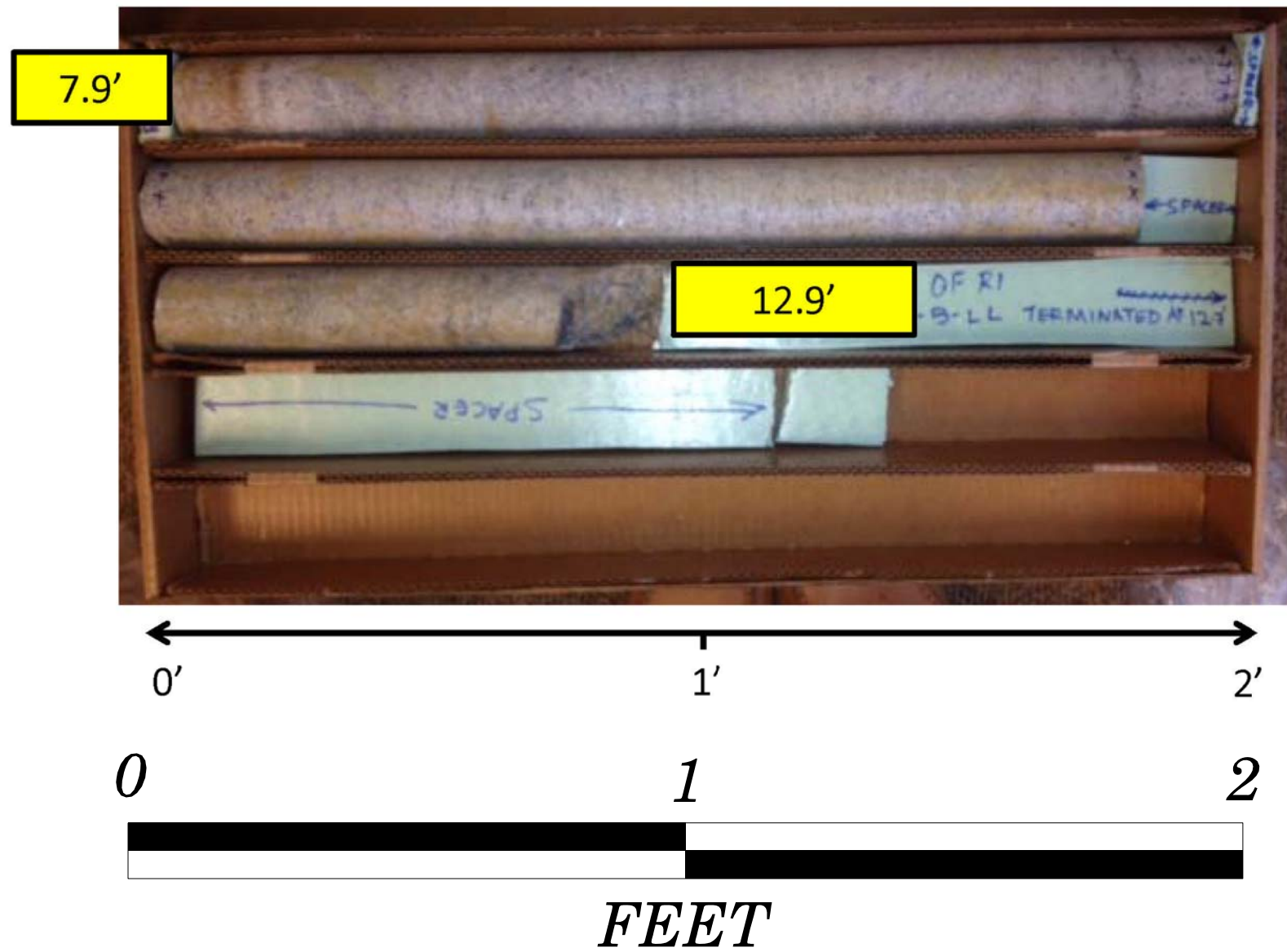
Boxes 1 & 2: 5.6-20.1 feet



# CORE PHOTOGRAPHS

SHEET 16  
36596.1.2 (U-3330)  
BRIDGE NO. 198 ON -YI- (SUNSET AVE) OVER  
-L- (US 301 BYPASS)

EB2-B-LL  
Box 1: 7.9-12.9 feet





**SITE PHOTOGRAPH  
(LOOKING FROM EAST)**

**SHEET 17  
36596.1.2 (U-3330)  
BRIDGE NO. 198 ON -YI- (SUNSET AVE) OVER  
-L- (US 301 BYPASS)**

