

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

**CONTENTS**

<u>SHEET</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE(S)
5-8	CROSS SECTION(S)
9-15	BORE LOGS
16-17	SOIL TEST RESULTS
18	SITE PHOTOGRAPH (AERIAL)

PROJ. REFERENCE NO. 39010.1.R2 (U-3440) F.A. PROJ. \_\_\_\_\_  
COUNTY CABARRUS  
PROJECT DESCRIPTION NC 3, PROPOSED WEST SIDE BYPASS (U-2009)  
TO SR 1691 (LOOP ROAD) IN KANNAPOLIS  


---

SITE DESCRIPTION DUAL BRIDGES ON NC 3 OVER IRISH BUFFALO  
CREEK REPLACING BRIDGE NO. 36

**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) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 UN-PLACED 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 THIS 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.

**PROJECT: 39010.1.R2**      **ID: U-3440**

PERSONNEL  
**C.C. MURRAY**  


---

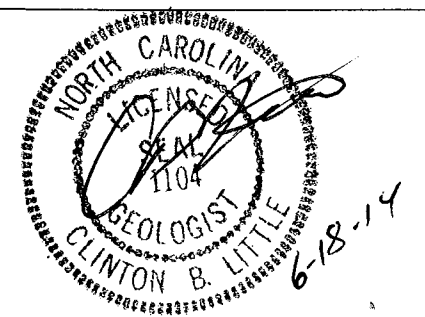
**J.E. ESTEP**  


---

**M.R. MOORE**  


---

INVESTIGATED BY J.P. ROGERS  
CHECKED BY C.B. LITTLE  
SUBMITTED BY C.B. LITTLE  
DATE JUNE 2014



DRAWN BY: J.K. McCLURE

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.



OVERCASH TRUSTEE, EDWARD C.  
DB 1768 PG 86

PROJECT REFERENCE NO.	SHEET
39010.1.R2 (U-3440)	3
<b>SITE PLAN</b>	
SKEW=110°0'00"	



65

-L- POT Sta. 67+61 +/-  
BEGIN BRIDGE

-L- POT Sta. 67+36 +/-  
BEGIN APPROACH SLAB

CAROLINAS CASTLE & COOKE REALTY LLC  
DB 7200 PG 55  
PB 49 PG 95

-L- PC Sta. 70+76.71

WILKINSON, LESTER L.  
DB 5012 PG 119

-L- S 84° 11' 58.7" E

TO SR 1639  
MARION AVE

NC 3 MOORESVILLE RD 24' BST

TO SR 1643  
RAINBOW DR

S 81° 04' 45.4" E  
INV=662.30'

GAS TEST STATION

POWER METER

GAS REGULATOR TEST STATION

PUBLIC SERVICE CO. OF NC INC  
DB 309 PG 158

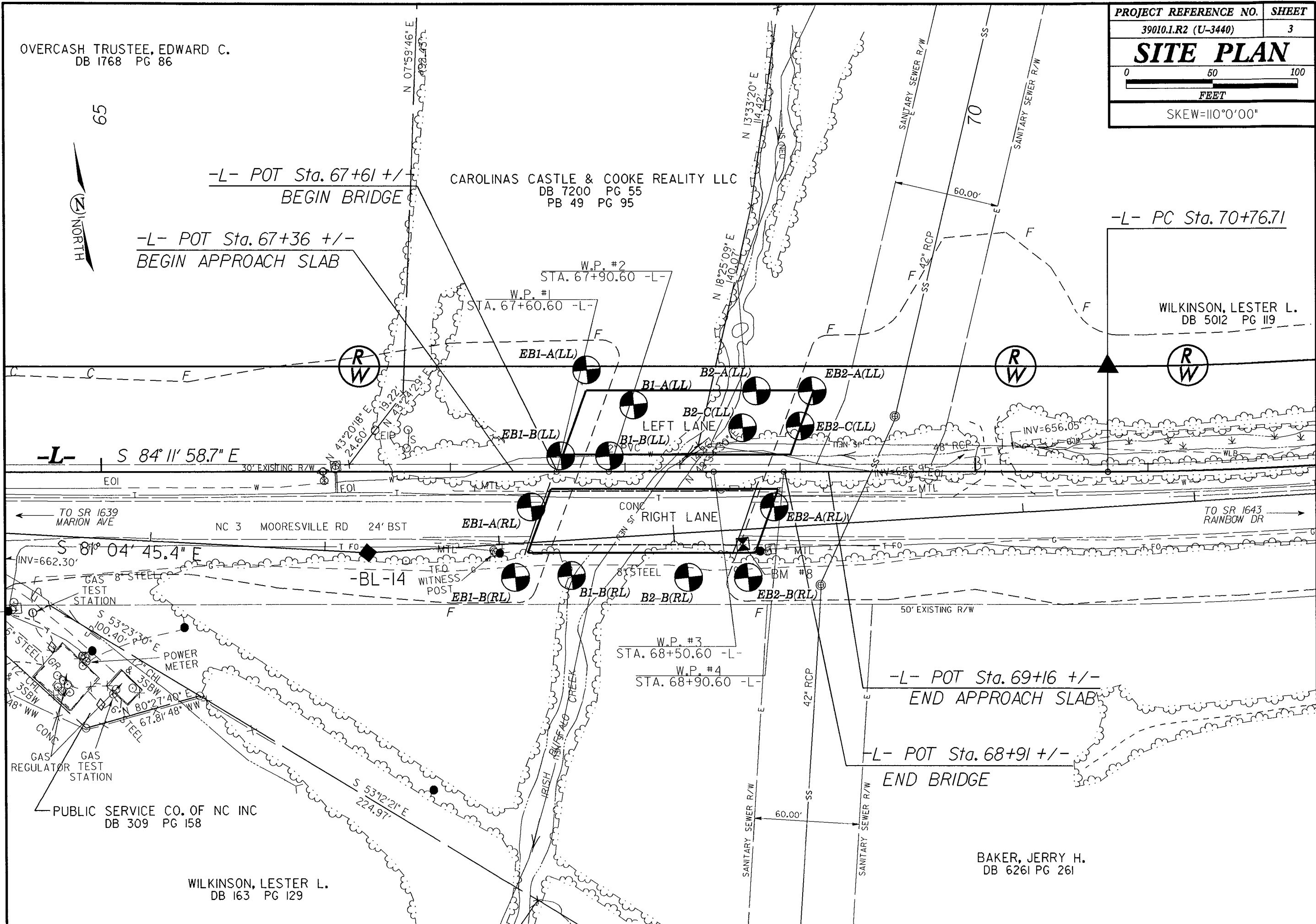
PUBLIC SERVICE CO. OF NC INC  
DB 309 PG 158

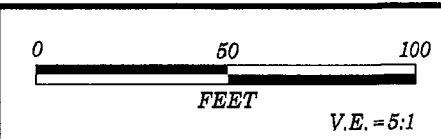
WILKINSON, LESTER L.  
DB 163 PG 129

-L- POT Sta. 69+16 +/-  
END APPROACH SLAB

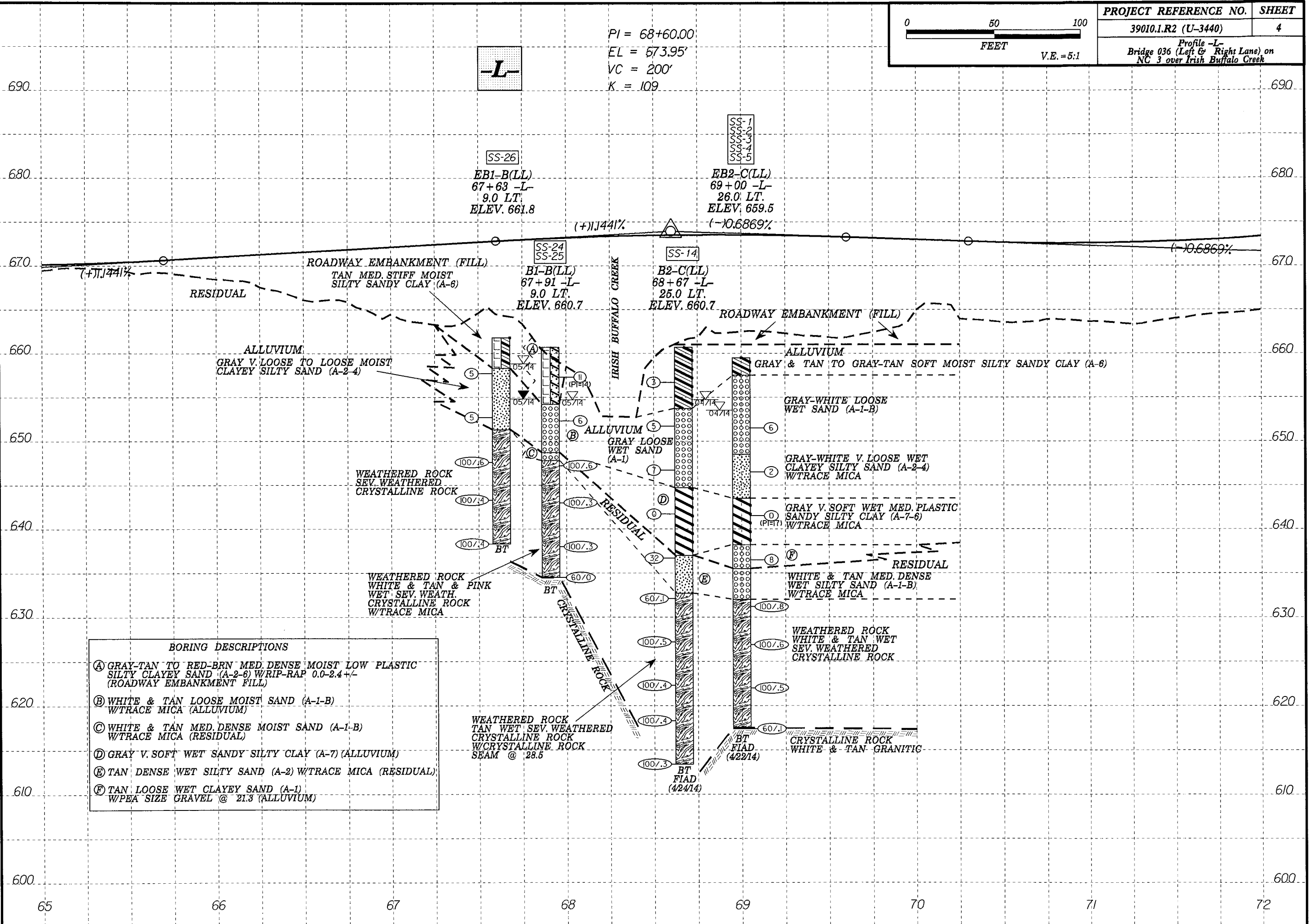
-L- POT Sta. 68+91 +/-  
END BRIDGE

BAKER, JERRY H.  
DB 6261 PG 261

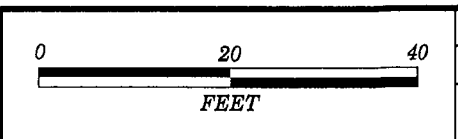




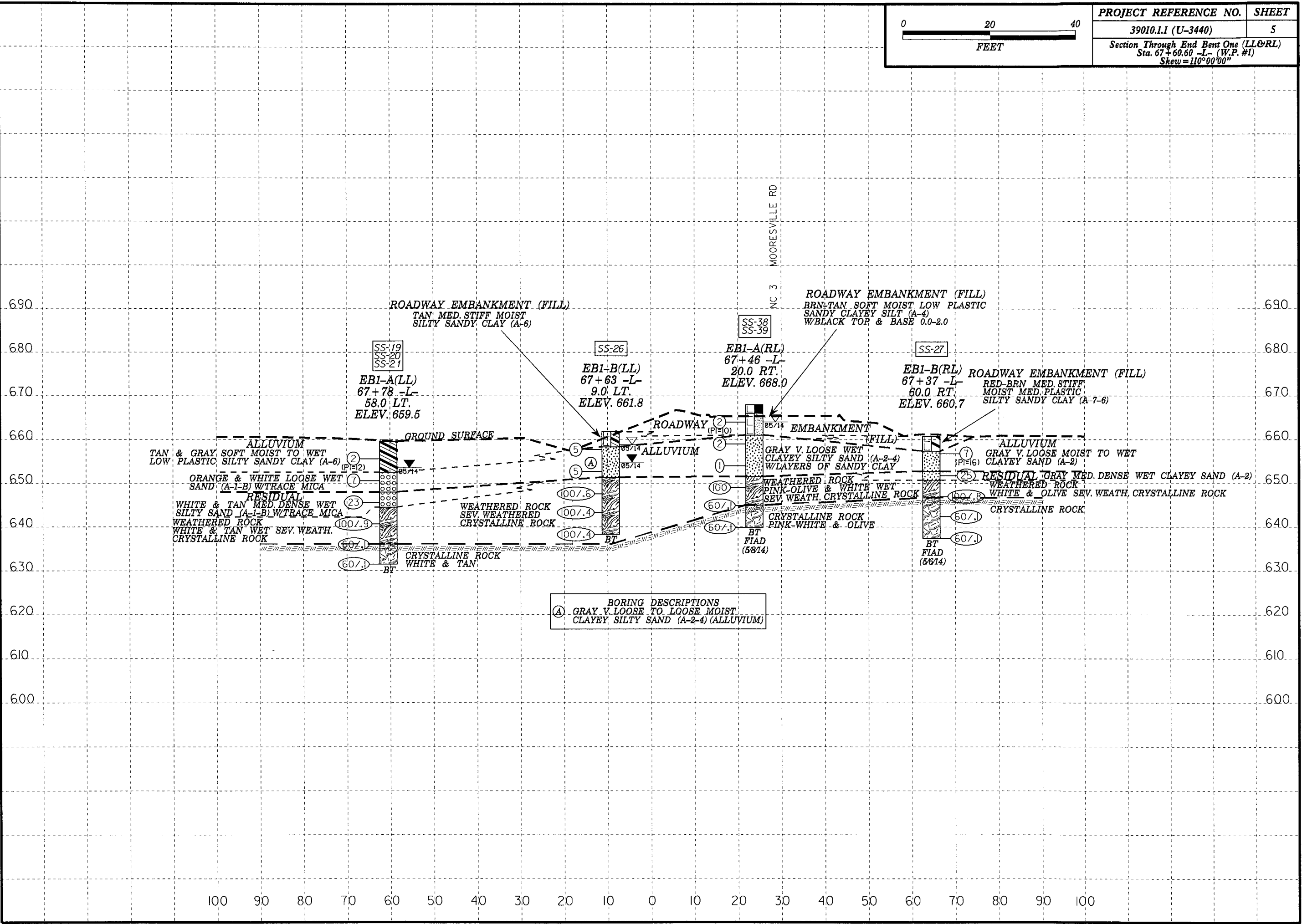
PI = 68+60.00  
 EL = 573.95'  
 VC = 200'  
 K = 109



BORING DESCRIPTIONS	
(A)	GRAY-TAN TO RED-BRN MED. DENSE MOIST LOW PLASTIC SILTY CLAYEY SAND (A-2-8) W/ RIP-RAP 0.0-2.4 +/- (ROADWAY EMBANKMENT FILL)
(B)	WHITE & TAN LOOSE MOIST SAND (A-1-B) W/ TRACE MICA (ALLUVIUM)
(C)	WHITE & TAN MED. DENSE MOIST SAND (A-1-B) W/ TRACE MICA (RESIDUAL)
(D)	GRAY V. SOFT WET SANDY SILTY CLAY (A-7) (ALLUVIUM)
(E)	TAN DENSE WET SILTY SAND (A-2) W/ TRACE MICA (RESIDUAL)
(F)	TAN LOOSE WET CLAYEY SAND (A-1) W/ PEA SIZE GRAVEL @ 21.3 (ALLUVIUM)



<b>PROJECT REFERENCE NO.</b>	<b>SHEET</b>
39010.1.1 (U-3440)	5
Section Through End Bent One (LL&RL) Sta. 67+60.60 -L- (W.P. #1) Skew = 110°00'00"	



ROADWAY EMBANKMENT (FILL)  
TAN, MED. STIFF MOIST  
SILTY SANDY CLAY (A-6)

SS-19  
SS-20  
SS-21  
EB1-A(LL)  
67+78 -L-  
58.0 LT.  
ELEV. 659.5

SS-26  
EB1-B(LL)  
67+63 -L-  
9.0 LT.  
ELEV. 661.8

SS-38  
SS-39  
EB1-A(RL)  
67+46 -L-  
20.0 RT.  
ELEV. 668.0

ROADWAY EMBANKMENT (FILL)  
BRN-TAN SOFT MOIST LOW PLASTIC  
SANDY CLAYEY SILT (A-4)  
W/BLACK TOP & BASE 0.0-2.0

SS-27  
EB1-B(RL)  
67+37 -L-  
60.0 RT.  
ELEV. 660.7

ROADWAY EMBANKMENT (FILL)  
RED-BRN MED. STIFF  
MOIST MED. PLASTIC  
SILTY SANDY CLAY (A-7-6)

GROUND SURFACE  
ALLUVIUM  
TAN & GRAY SOFT MOIST TO WET  
LOW PLASTIC SILTY SANDY CLAY (A-6)  
ORANGE & WHITE LOOSE WET  
SAND (A-1-B) W/TRACE MICA  
RESIDUAL  
WHITE & TAN MED. DENSE WET  
SILTY SAND (A-1-B) W/TRACE MICA  
WEATHERED ROCK  
WHITE & TAN WET SEV. WEATH.  
CRYSTALLINE ROCK

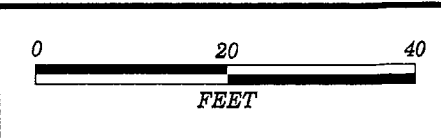
WEATHERED ROCK  
SEV. WEATHERED  
CRYSTALLINE ROCK

EMBANKMENT (FILL)  
GRAY V. LOOSE WET  
CLAYEY SILTY SAND (A-2-4)  
W/LAYERS OF SANDY CLAY  
WEATHERED ROCK  
PINK-OLIVE & WHITE WET  
SEV. WEATH. CRYSTALLINE ROCK  
CRYSTALLINE ROCK  
PINK-WHITE & OLIVE

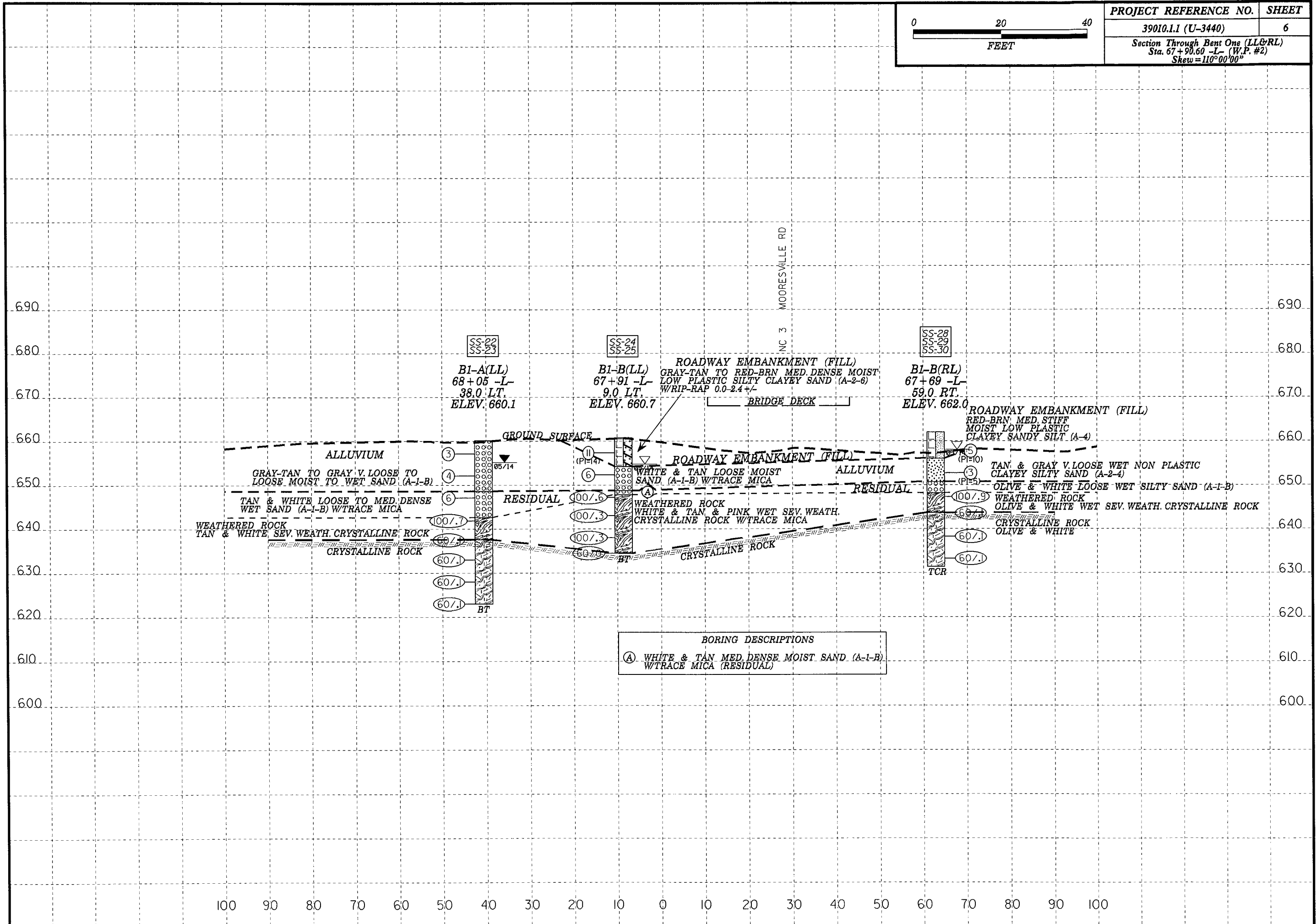
ALLUVIUM  
GRAY V. LOOSE MOIST TO WET  
CLAYEY SAND (A-2)  
RESIDUAL GRAY MED. DENSE WET CLAYEY SAND (A-2)  
WEATHERED ROCK  
WHITE & OLIVE SEV. WEATH. CRYSTALLINE ROCK  
CRYSTALLINE ROCK

④ BORING DESCRIPTIONS  
GRAY V. LOOSE TO LOOSE MOIST  
CLAYEY SILTY SAND (A-2-4) (ALLUVIUM)

100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100



PROJECT REFERENCE NO.	SHEET
39010.1.1 (U-3440)	6
Section Through Bent One (LL&RL) Sta. 67+90.60 -L- (W.P. #2) Skew = 110°00'00"	



SS-22  
SS-23

B1-A(LL)  
68+05 -L-  
38.0 LT.  
ELEV. 660.1

SS-24  
SS-25

B1-B(LL)  
67+91 -L-  
9.0 LT.  
ELEV. 660.7

SS-28  
SS-29  
SS-30

B1-B(RL)  
67+69 -L-  
59.0 RT.  
ELEV. 662.0

ROADWAY EMBANKMENT (FILL)  
GRAY-TAN TO RED-BRN MED. DENSE MOIST  
LOW PLASTIC SILTY CLAYEY SAND (A-2-6)  
W/RIP-RAP 0.0-2.4 +/-

BRIDGE DECK

ROADWAY EMBANKMENT (FILL)  
RED-BRN MED. STIFF  
MOIST LOW PLASTIC  
CLAYEY SANDY SILT (A-4)

GROUND SURFACE

ALLUVIUM  
GRAY-TAN TO GRAY V. LOOSE TO  
LOOSE MOIST TO WET SAND (A-1-B)

TAN & WHITE LOOSE TO MED. DENSE  
WET SAND (A-1-B) W/TRACE MICA

WEATHERED ROCK  
TAN & WHITE SEV. WEATH. CRYSTALLINE ROCK

RESIDUAL

WEATHERED ROCK  
WHITE & TAN & PINK WET SEV. WEATH.  
CRYSTALLINE ROCK W/TRACE MICA

CRYSTALLINE ROCK

ALLUVIUM

TAN & GRAY V. LOOSE WET NON PLASTIC  
CLAYEY SILTY SAND (A-2-4)

OLIVE & WHITE LOOSE WET SILTY SAND (A-1-B)

WEATHERED ROCK  
OLIVE & WHITE WET SEV. WEATH. CRYSTALLINE ROCK

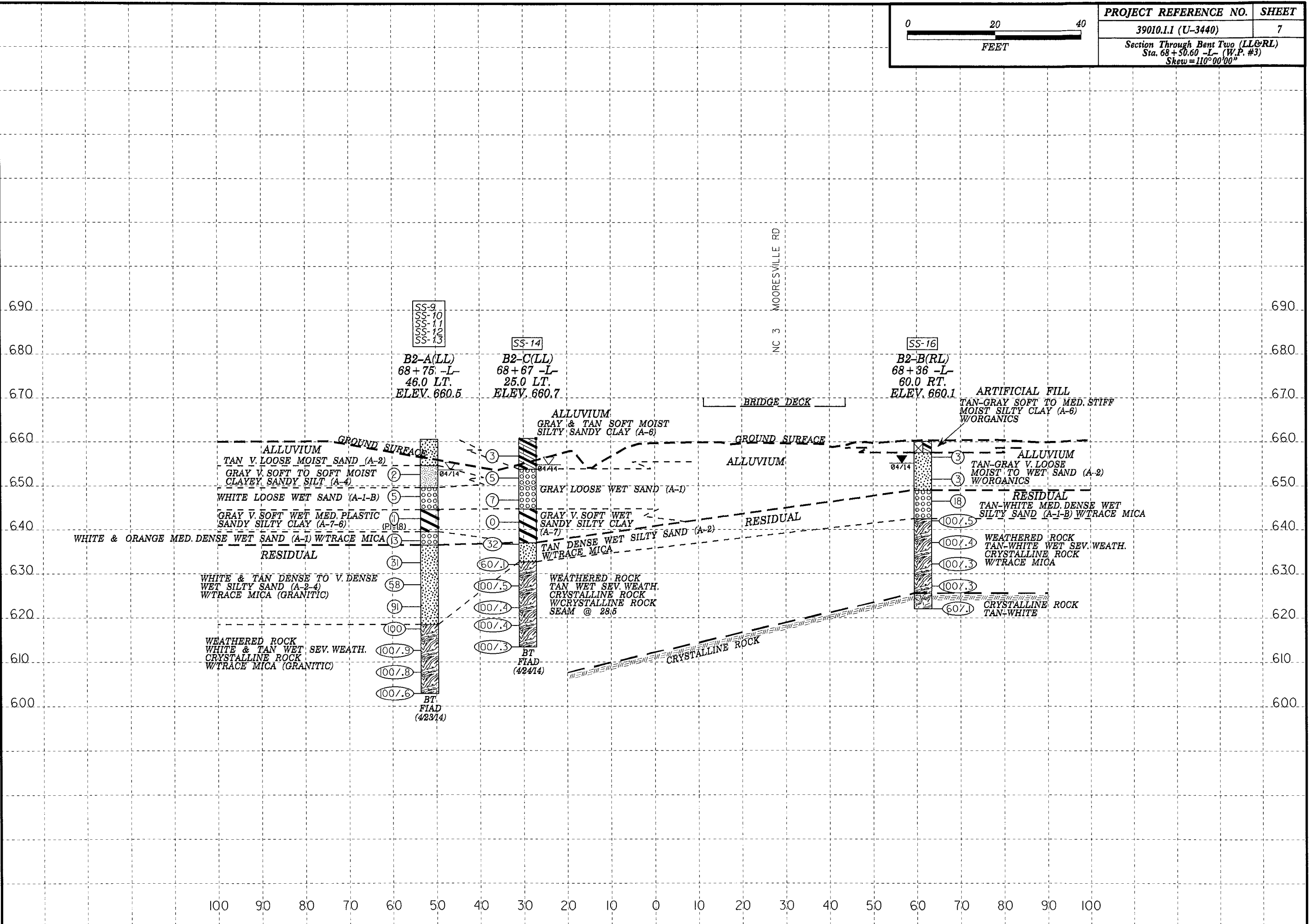
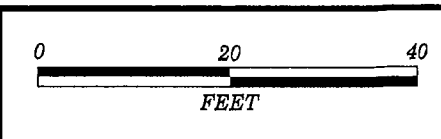
CRYSTALLINE ROCK  
OLIVE & WHITE

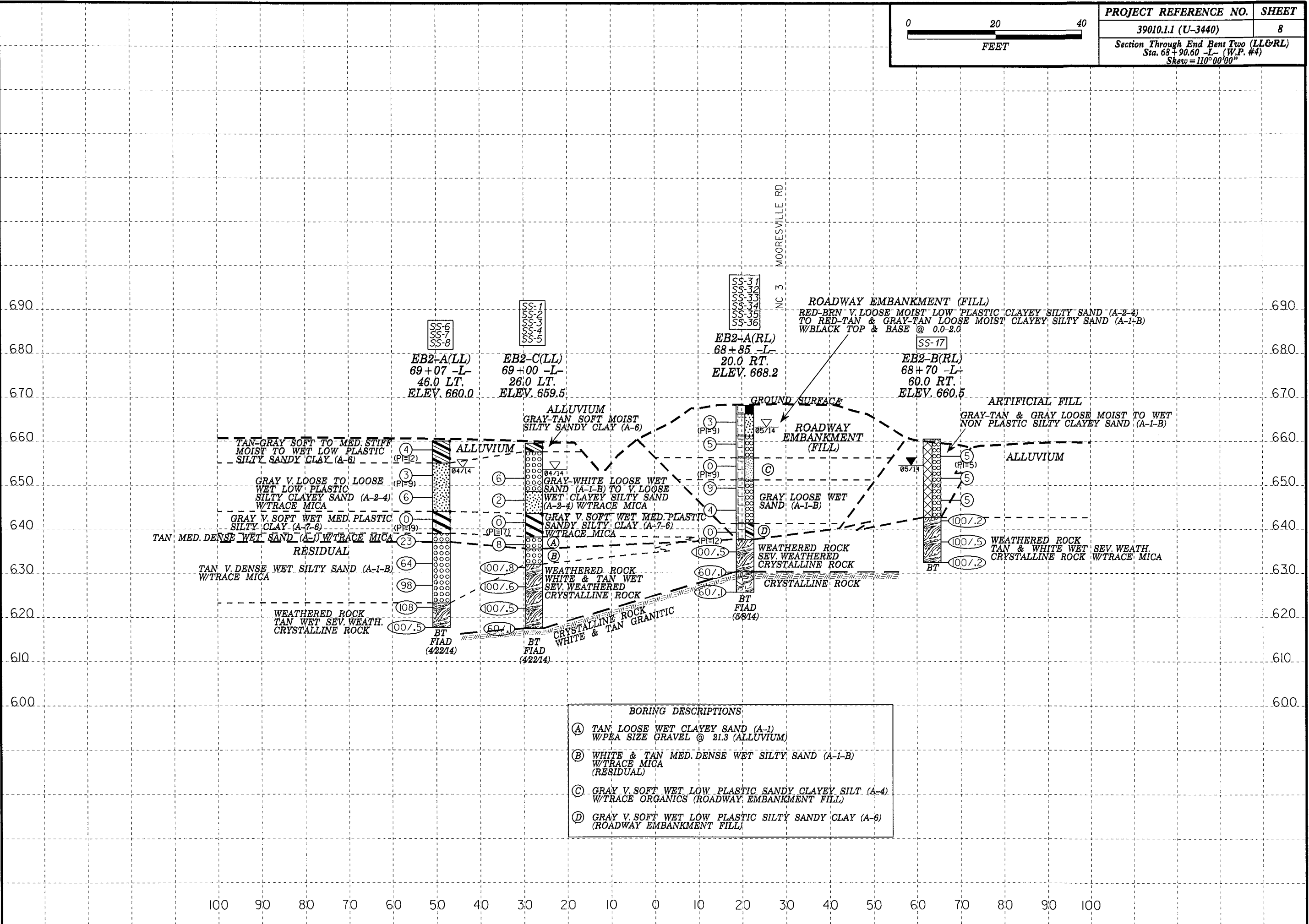
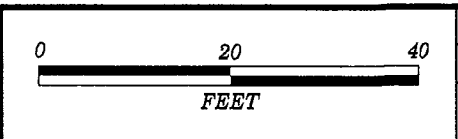
TCR

BT

**BORING DESCRIPTIONS**

(A) WHITE & TAN MED. DENSE MOIST SAND (A-1-B)  
W/TRACE MICA (RESIDUAL)







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

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. EB1-A(LL)	STATION 67+78	OFFSET 58 ft LT	ALIGNMENT -L-
COLLAR ELEV. 659.5 ft	TOTAL DEPTH 28.0 ft	NORTHING 636,638	EASTING 1,507,906
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014			DRILL METHOD NW Casing w/ SPT
DRILLER Estep, J. E.			HAMMER TYPE Automatic
START DATE 05/02/14		COMP. DATE 05/02/14	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					
660													659.5 GROUND SURFACE	0.0
655	656.6	2.9	2	1	1						SS-19	W	ALLUVIAL TAN & GRAY SOFT MOIST TO WET LOW (PI=12) PLASTIC SILTY SANDY CLAY (A-6)	7.0
650	651.6	7.9	2	3	4						SS-20	W	ALLUVIAL ORANGE & WHITE LOOSE WET SAND (A-1-B) W/ TRACE MICA	11.5
645	646.6	12.9	4	11	12						SS-21	W	RESIDUAL WHITE & TAN MED. DENSE WET SILTY SAND (A-1-B) W/ TRACE MICA	15.0
640	641.6	17.9	52	48/0.4							W	W	WEATHERED ROCK WHITE & TAN WET SEV. WEATH. CRYSTALLINE ROCK	100/9
635	636.6	22.9	60	60/0.1							W	W	CRYSTALLINE ROCK WHITE & TAN	60/1
	631.6	27.9	60/0.1								W	W	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 631.5 ft IN CRYSTALLINE ROCK	60/1

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. EB1-B(LL)	STATION 67+63	OFFSET 9 ft LT	ALIGNMENT -L-
COLLAR ELEV. 661.8 ft	TOTAL DEPTH 23.5 ft	NORTHING 636,591	EASTING 1,507,887
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014			DRILL METHOD NW Casing w/ SPT
DRILLER Estep, J. E.			HAMMER TYPE Automatic
START DATE 05/06/14		COMP. DATE 05/06/14	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					
665													661.8 GROUND SURFACE	0.0
660													ROADWAY EMBANKMENT TAN MED. STIFF MOIST SILTY SANDY CLAY (A-6)	3.5
655	658.7	3.1	3	2	3								ALLUVIAL GRAY V. LOOSE TO LOOSE MOIST CLAYEY SILTY SAND (A-2-4)	10.5
650	653.7	8.1	0	1	4						SS-26	M	WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK	100/6
645	648.7	13.1	21	69	31/0.1									100/4
640	643.7	18.1	100/0.4											100/4
	638.7	23.1	100/0.4											100/4
													Boring Terminated at Elevation 638.3 ft IN SEV. WEATH. CRYSTALLINE ROCK	23.5

NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRDC0036(LL&RL),GPJ\_NC\_DOT\_GDT\_6/10/14

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

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. B1-A(LL)	STATION 68+05	OFFSET 38 ft LT	ALIGNMENT -L-
COLLAR ELEV. 660.1 ft	TOTAL DEPTH 37.1 ft	NORTHING 636,615	EASTING 1,507,931
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 05/05/14	COMP. DATE 05/05/14	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
665															
660													660.1	0.0	
655	658.1	2.0	1	2	1							M	ALLUVIAL GRAY-TAN TO GRAY V. LOOSE TO LOOSE MOIST TO WET SAND (A-1-B)		
650	653.1	7.0	1	2	2							SS-22	W		
645	648.1	12.0	2	3	3								W	648.6	11.5
640	643.1	17.0	25	61	39/0.2							SS-23	W	642.6	17.5
635	638.1	22.0	58	60/0.1									W	637.6	22.5
630	633.1	27.0	60/0.1										W		
625	628.1	32.0	60/0.1										W		
620	623.1	37.0	60/0.1										W	623.0	37.1
Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 623.0 ft IN CRYSTALLINE ROCK															

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. B1-B(LL)	STATION 67+91	OFFSET 9 ft LT	ALIGNMENT -L-
COLLAR ELEV. 660.7 ft	TOTAL DEPTH 26.2 ft	NORTHING 636,588	EASTING 1,507,914
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ Tri-Cone & SPT	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 05/05/14	COMP. DATE 05/05/14	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
665															
660													660.7	0.0	
655	658.3	2.4	6	6	5							SS-24	M	654.2	6.5
650	653.3	7.4	3	2	4							SS-25	M		
645	648.3	12.4	14	70	30/0.1								W	648.7	12.0
640	643.3	17.4	100/0.3										W	647.8	12.9
635	638.3	22.4	100/0.3										W		
630	634.5	26.2	60/0.0										W	634.5	26.2
Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 634.5 ft ON CRYSTALLINE ROCK															

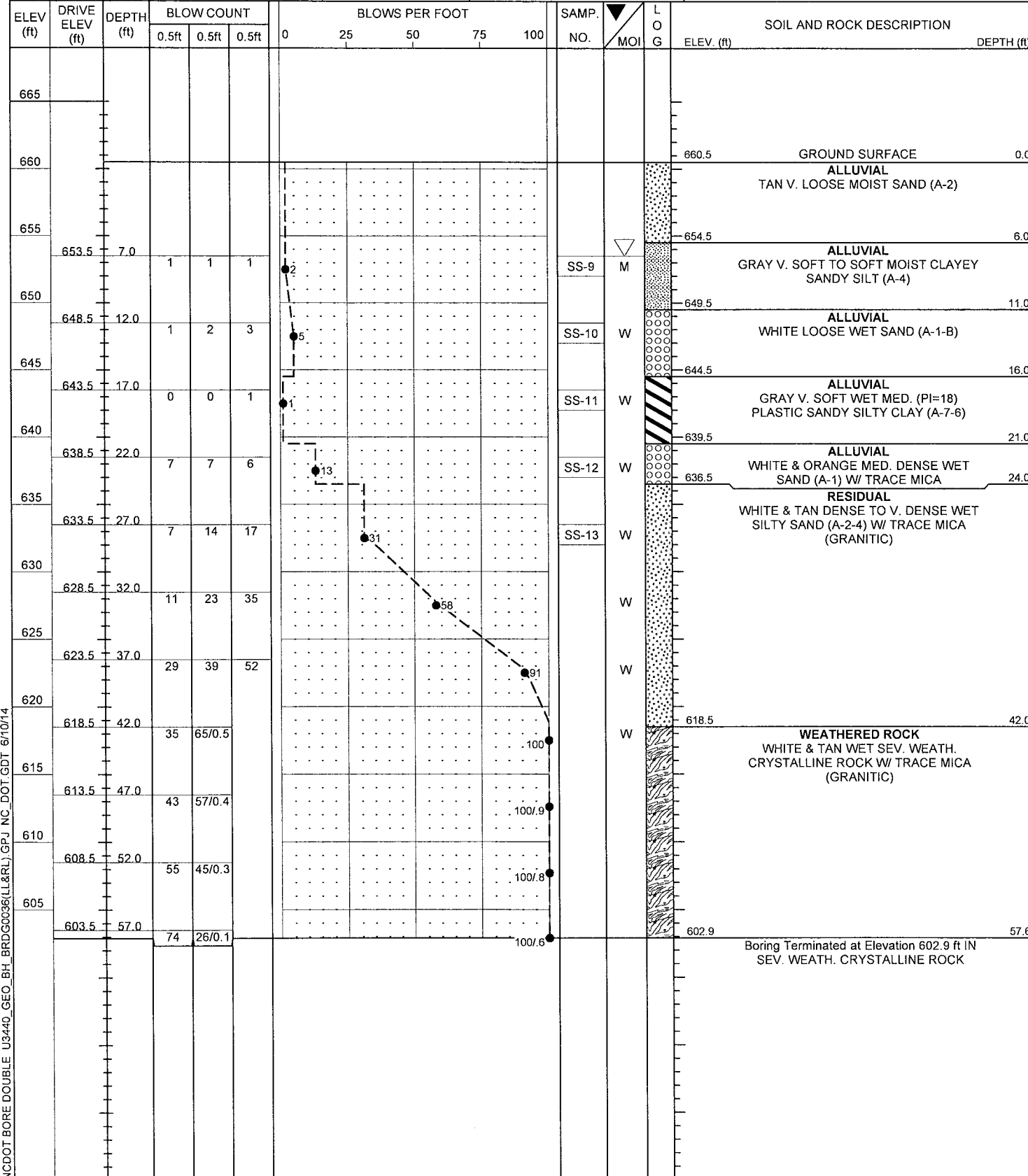
NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRD00036(LL&RL).GPJ NC\_DOT\_GDT 6/10/14



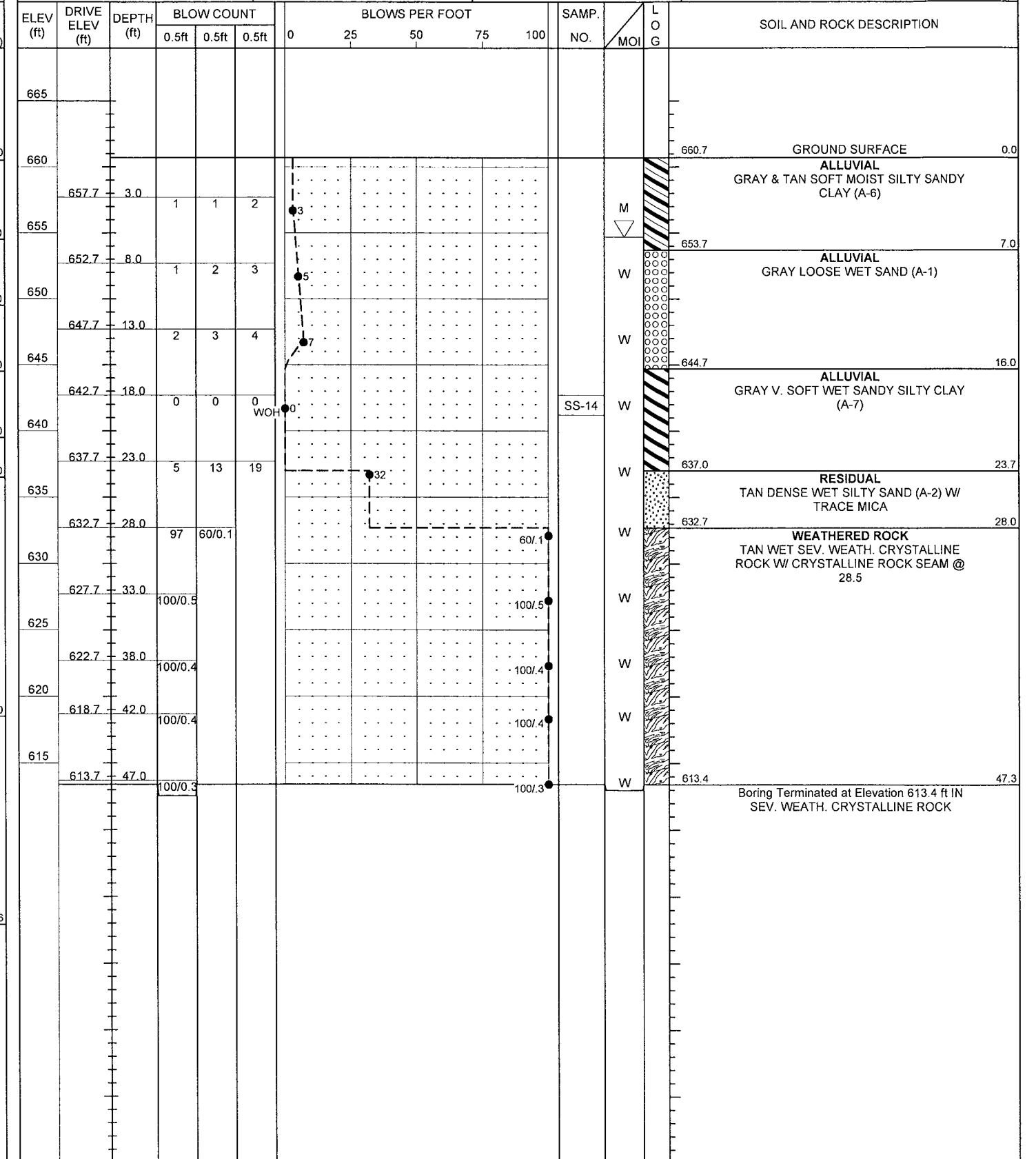
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. B2-A(LL)	STATION 68+75	OFFSET 46 ft LT	ALIGNMENT -L-
COLLAR ELEV. 660.5 ft	TOTAL DEPTH 57.6 ft	NORTHING 636,616	EASTING 1,508,002
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 04/23/14	COMP. DATE 04/23/14	SURFACE WATER DEPTH N/A



WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. B2-C(LL)	STATION 68+67	OFFSET 25 ft LT	ALIGNMENT -L-
COLLAR ELEV. 660.7 ft	TOTAL DEPTH 47.3 ft	NORTHING 636,596	EASTING 1,507,992
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 04/24/14	COMP. DATE 04/24/14	SURFACE WATER DEPTH N/A



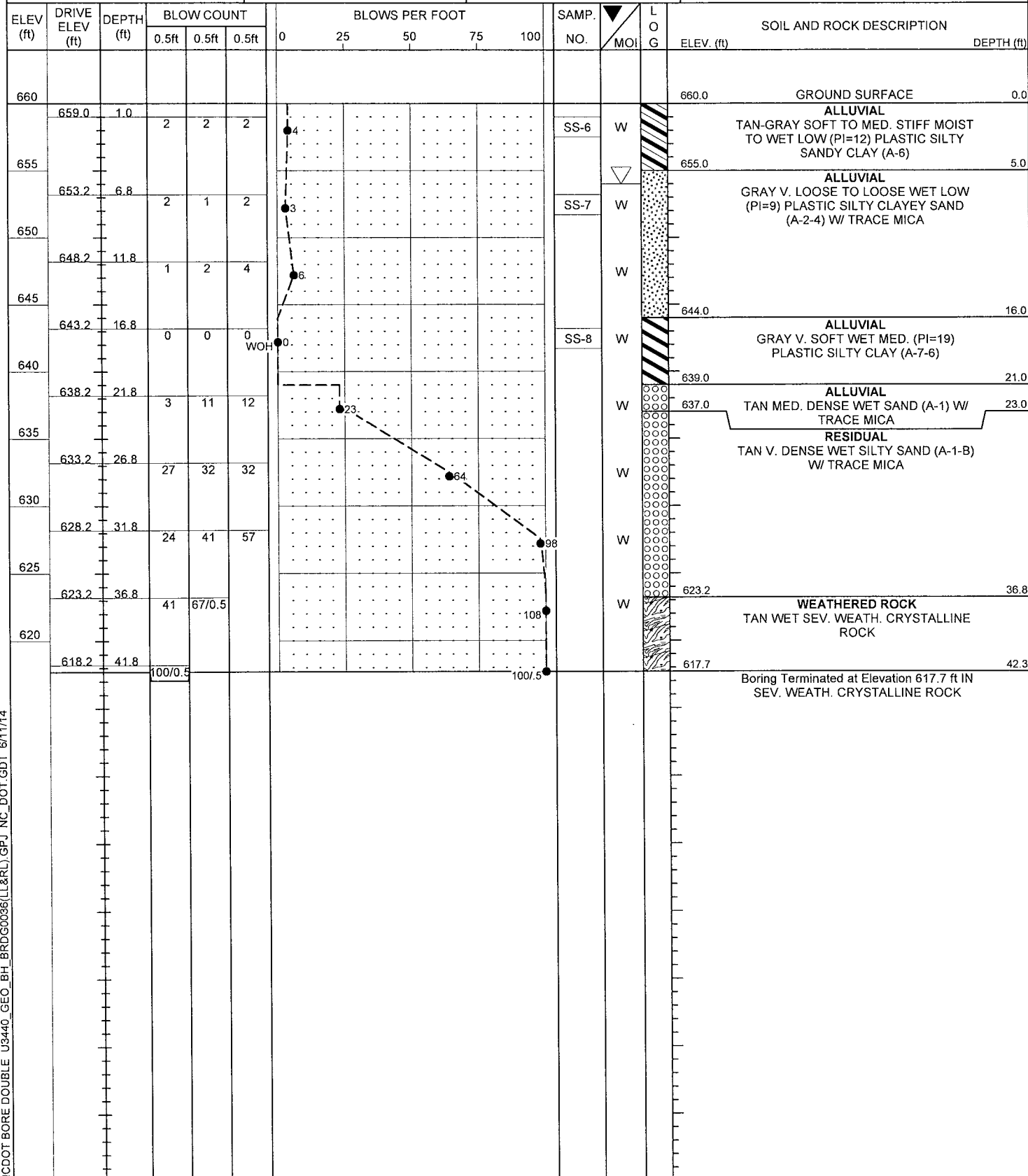
NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRD0036(LL&RL)CPJ NC\_DOT\_GDT\_6/10/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT

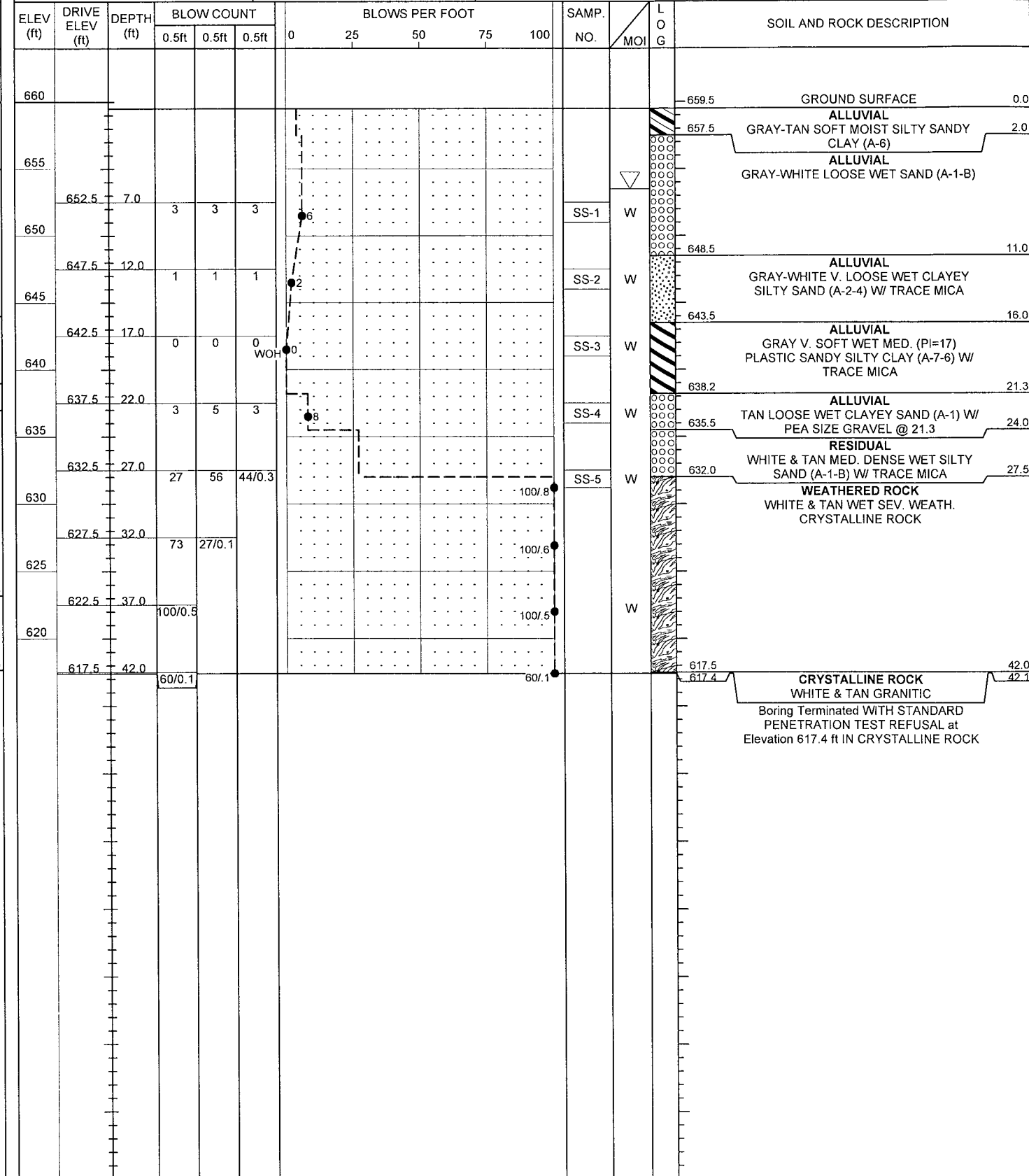
## BORELOG REPORT

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. EB2-A(LL)	STATION 69+07	OFFSET 46 ft LT	ALIGNMENT -L-
COLLAR ELEV. 660.0 ft	TOTAL DEPTH 42.3 ft	NORTHING 636,613	EASTING 1,508,034
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 04/22/14	COMP. DATE 04/22/14	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRD00036(LL&RL).GPI NC\_DOT\_GDT\_6/11/14

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (LEFT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. EB2-C(LL)	STATION 69+00	OFFSET 26 ft LT	ALIGNMENT -L-
COLLAR ELEV. 659.5 ft	TOTAL DEPTH 42.1 ft	NORTHING 636,594	EASTING 1,508,025
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 04/22/14	COMP. DATE 04/22/14	SURFACE WATER DEPTH N/A





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. EB1-A(RL)	STATION 67+46	OFFSET 20 ft RT	ALIGNMENT -L-
COLLAR ELEV. 668.0 ft	TOTAL DEPTH 28.1 ft	NORTHING 636,564	EASTING 1,507,867
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 05/08/14	COMP. DATE 05/08/14	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				
670													668.0 GROUND SURFACE 0.0
665	665.0	3.0	1	1	1						SS-38		666.0 ROADWAY EMBANKMENT BLACK TOP & BASE 2.0
660	660.0	8.0	0	1	1							M	661.0 ROADWAY EMBANKMENT BRN-TAN SOFT MOIST LOW (PI=10) PLASTIC SANDY CLAYEY SILT (A-4) 7.0
655	655.0	13.0	1	0	1							M	651.0 ALLUVIAL GRAY V. LOOSE WET CLAYEY SILTY SAND (A-2-4) W/ LAYERS OF SANDY CLAY 16.5
650	650.0	18.0	39	61/0.5							SS-39	W	651.5 WEATHERED ROCK PINK-OLIVE & WHITE WET SEV. WEATH. CRYSTALLINE ROCK 16.5
645	645.0	23.0	60/0.1									W	645.0 WEATHERED ROCK PINK-OLIVE & WHITE WET SEV. WEATH. CRYSTALLINE ROCK 23.0
640	640.0	28.0	60/0.1										639.9 CRYSTALLINE ROCK PINK-WHITE & OLIVE 28.1
													Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 639.9 ft IN CRYSTALLINE ROCK

WBS 39010.1.R2	TIP U-3440	COUNTY CABARRUS	GEOLOGIST Murray, C. C.
SITE DESCRIPTION BRIDGE 36 (RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK			GROUND WTR (ft)
BORING NO. EB1-B(RL)	STATION 67+37	OFFSET 60 ft RT	ALIGNMENT -L-
COLLAR ELEV. 660.7 ft	TOTAL DEPTH 23.3 ft	NORTHING 636,525	EASTING 1,507,854
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014		DRILL METHOD NW Casing w/ Tri-Cone & SPT	HAMMER TYPE Automatic
DRILLER Estep, J. E.	START DATE 05/06/14	COMP. DATE 05/06/14	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				
665													660.7 GROUND SURFACE 0.0
660	660.0	3.0									SS-27	M	657.3 ROADWAY EMBANKMENT RED-BRN MED. STIFF MOIST MED. (PI=16) PLASTIC SILTY SANDY CLAY (A-7-6) 3.4
655	655.0	8.0	4	3	4							M	652.7 ALLUVIAL GRAY V. LOOSE MOIST TO WET CLAYEY SAND (A-2) 8.0
650	650.0	13.0	2	9	16							M/W	650.7 RESIDUAL GRAY MED. DENSE WET CLAYEY SAND (A-2) 10.0
645	645.0	18.0	53	47/0.3									646.7 WEATHERED ROCK WHITE & OLIVE SEV. WEATH. CRYSTALLINE ROCK 14.0
640	640.0	23.0	60/0.1										637.4 WEATHERED ROCK WHITE & OLIVE SEV. WEATH. CRYSTALLINE ROCK 23.3
			60/0.1										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 637.4 ft IN CRYSTALLINE ROCK

NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRD0036(LL&RL).GPJ NC\_DOT\_GDT\_6/10/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 39010.1.R2		TIP U-3440		COUNTY CABARRUS		GEOLOGIST Murray, C. C.							
SITE DESCRIPTION BRIDGE 36 (RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK							GROUND WTR (ft)						
BORING NO.	STATION	OFFSET	ALIGNMENT			0 HR.	4.0						
B1-B(RL)	67+69	59 ft RT	-L-			24 HR.	FIAD						
COLLAR ELEV. 662.0 ft		TOTAL DEPTH 30.6 ft	NORTHING 636,522	EASTING 1,507,886									
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014				DRILL METHOD NW Casing w/ Tri-Cone & SPT		HAMMER TYPE Automatic							
DRILLER Estep, J. E.		START DATE 05/07/14	COMP. DATE 05/07/14	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				
665													662.0 GROUND SURFACE 0.0
660	658.7	3.3	3	2	3						SS-28	M	ROADWAY EMBANKMENT RED-BRN MED. STIFF MOIST LOW (PI=10) PLASTIC CLAYEY SANDY SILT (A-4)
655	653.7	8.3	1	1	2						SS-29	W	ALLUVIAL TAN & GRAY V. LOOSE WET NON (PI=5) PLASTIC CLAYEY SILTY SAND (A-2-4)
650	648.7	13.3	5	18	82/0.4						SS-30	W	RESIDUAL OLIVE & WHITE LOOSE WET SILTY SAND (A-1-B)
645	643.7	18.3										W	WEATHERED ROCK OLIVE & WHITE WET SEV. WEATH. CRYSTALLINE ROCK
640	638.4	23.6										W	CRYSTALLINE ROCK OLIVE & WHITE
635	633.4	28.6										W	
													Boring Terminated BY TRI-CONE REFUSAL at Elevation 631.4 ft IN CRYSTALLINE ROCK

WBS 39010.1.R2		TIP U-3440		COUNTY CABARRUS		GEOLOGIST Murray, C. C.							
SITE DESCRIPTION BRIDGE 36 (RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK							GROUND WTR (ft)						
BORING NO.	STATION	OFFSET	ALIGNMENT			0 HR.	6.0						
B2-B(RL)	68+36	60 ft RT	-L-			24 HR.	5.0						
COLLAR ELEV. 660.1 ft		TOTAL DEPTH 38.0 ft	NORTHING 636,515	EASTING 1,507,952									
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014				DRILL METHOD NW Casing w/ Tri-Cone & SPT		HAMMER TYPE Automatic							
DRILLER Estep, J. E.		START DATE 04/25/14	COMP. DATE 04/25/14	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				
665													660.1 GROUND SURFACE 0.0
660	657.5	2.6	0	1	2							M	ARTIFICIAL FILL TAN-GRAY SOFT TO MED. STIFF MOIST SILTY CLAY (A-6) W/ ORGANICS
655	652.5	7.6	1	2	1							W	ALLUVIAL TAN-GRAY V. LOOSE MOIST TO WET SAND (A-2) W/ ORGANICS
650	647.5	12.6	3	6	12							W	RESIDUAL TAN-WHITE MED. DENSE WET SILTY SAND (A-1-B) W/ TRACE MICA
645	642.5	17.6										W	WEATHERED ROCK TAN-WHITE WET SEV. WEATH. CRYSTALLINE ROCK W/ TRACE MICA
640	637.5	22.6										W	
635	632.5	27.6										W	
630	627.5	32.6										W	
625	622.2	37.9										W	CRYSTALLINE ROCK TAN-WHITE
													Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 622.1 ft IN CRYSTALLINE ROCK

NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRD00036(LL&RL)\_GPJ\_NC\_DOT\_GDT\_6/10/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 39010.1.R2		TIP U-3440		COUNTY CABARRUS		GEOLOGIST Murray, C. C.								
SITE DESCRIPTION BRIDGE 36 (RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK							GROUND WTR (ft)							
BORING NO.	STATION	OFFSET	ALIGNMENT			0 HR.	5.0							
EB2-A(RL)	68+85	20 ft RT	-L-											
COLLAR ELEV.	TOTAL DEPTH	NORTHING	EASTING			24 HR.	FIAD							
668.2 ft	42.5 ft	636,550	1,508,005											
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014				DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic								
DRILLER Estep, J. E.		START DATE 05/08/14	COMP. DATE 05/08/14	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
670														
												668.2	GROUND SURFACE	0.0
												666.2	ROADWAY EMBANKMENT BLACK TOP & BASE	2.0
665	665.3	2.9	2	1	2								ROADWAY EMBANKMENT RED-BRN V. LOOSE MOIST LOW (PI=9) PLASTIC CLAYEY SILTY SAND (A-2-4)	
												661.2	ROADWAY EMBANKMENT RED-TAN & GRAY-TAN LOOSE MOIST CLAYEY SILTY SAND (A-1-B)	7.0
660	660.3	7.9	2	2	3								ROADWAY EMBANKMENT GRAY V. SOFT WET LOW (PI=9) PLASTIC SANDY CLAYEY SILT (A-4) W/ TRACE ORGANICS	12.0
												656.2	ROADWAY EMBANKMENT GRAY V. SOFT WET LOW (PI=9) PLASTIC SANDY CLAYEY SILT (A-4) W/ TRACE ORGANICS	12.0
655	655.3	12.9	0	0	0								ROADWAY EMBANKMENT GRAY LOOSE WET SAND (A-1-B)	17.0
												651.2	ROADWAY EMBANKMENT GRAY LOOSE WET SAND (A-1-B)	17.0
650	650.3	17.9	3	5	4								ROADWAY EMBANKMENT GRAY V. SOFT WET LOW (PI=12) PLASTIC SILTY SANDY CLAY (A-6)	27.0
												641.2	ROADWAY EMBANKMENT GRAY V. SOFT WET LOW (PI=12) PLASTIC SILTY SANDY CLAY (A-6)	27.0
645	645.3	22.9	2	3	1								WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK	30.6
												637.6	WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK	30.6
640	640.3	27.9	0	0	0								CRYSTALLINE ROCK	37.9
												630.3	CRYSTALLINE ROCK	37.9
635	635.3	32.9	100/0.5										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 625.7 ft IN CRYSTALLINE ROCK	42.5
												625.7	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 625.7 ft IN CRYSTALLINE ROCK	42.5
630	630.3	37.9	60/0.1											
												625.8		42.4
														60/0.1

WBS 39010.1.R2		TIP U-3440		COUNTY CABARRUS		GEOLOGIST Murray, C. C.								
SITE DESCRIPTION BRIDGE 36 (RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK							GROUND WTR (ft)							
BORING NO.	STATION	OFFSET	ALIGNMENT			0 HR.	6.0							
EB2-B(RL)	68+70	60 ft RT	-L-											
COLLAR ELEV.	TOTAL DEPTH	NORTHING	EASTING			24 HR.	6.0							
660.5 ft	28.1 ft	636,511	1,507,986											
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 03/19/2014				DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic								
DRILLER Estep, J. E.		START DATE 05/02/14	COMP. DATE 05/02/14	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
665														
												660.5	GROUND SURFACE	0.0
660													ARTIFICIAL FILL GRAY-TAN & GRAY LOOSE MOIST TO WET NON (PI=5) PLASTIC SILTY CLAYEY SAND (A-1-B)	
												657.6	ARTIFICIAL FILL GRAY-TAN & GRAY LOOSE MOIST TO WET NON (PI=5) PLASTIC SILTY CLAYEY SAND (A-1-B)	
655													WEATHERED ROCK TAN & WHITE WET SEV. WEATH. CRYSTALLINE ROCK W/ TRACE MICA	17.9
												652.6	WEATHERED ROCK TAN & WHITE WET SEV. WEATH. CRYSTALLINE ROCK W/ TRACE MICA	17.9
650													WEATHERED ROCK TAN & WHITE WET SEV. WEATH. CRYSTALLINE ROCK W/ TRACE MICA	17.9
												647.6	WEATHERED ROCK TAN & WHITE WET SEV. WEATH. CRYSTALLINE ROCK W/ TRACE MICA	17.9
645													Boring Terminated at Elevation 632.4 ft IN SEV. WEATH. CRYSTALLINE ROCK	28.1
												642.6	Boring Terminated at Elevation 632.4 ft IN SEV. WEATH. CRYSTALLINE ROCK	28.1
640														
												637.6		22.9
635														
												632.6		27.9

NCDOT BORE DOUBLE U3440\_GEO\_BH\_BRD03036(LL&RL).GPJ NC\_DOT\_GDT\_6/10/14





TEST RESULTS

PROJECT: 39010.1.R2 (U-3440)

COUNTY: CABARRUS

SITE DESCRIPTION: BRIDGE NO. 036 (LEFT LANE & RIGHT LANE) ON NC 3 OVER IRISH BUFFALO CREEK

SOIL SAMPLE RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			%	%	UNIT WT. (d)	VOID RATIO
								C. SAND	F. SAND	SILT	CLAY	10	40	200				
		<b>EB2-B(RL)</b>																
SS-17	60 RT.	68+70	2.9-4.4	A-1-b(0)	5	27	5	60.4	14.1	11.5	14.1	89	48	25				

ROCK SAMPLE RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	RQD	UNIT WT (pcf)	Q(ksf)	E(MPsi)

\*\*\* Insufficient Material to Test Sample

\*\*\*\* Missing Sample or Not Sent to Lab for Testing

