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REFERENCE: B-5142

PROJECT: 42303

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY IREDELL  
PROJECT DESCRIPTION BRIDGE 057 ON SR 1302  
(CORNELIUS RD.) OVER CORNELIUS CREEK /  
LAKE NORMAN  
SITE DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CONTENTS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE(S)
5-8	CROSS SECTION(S)
9-11	BORE LOG(S)
12	SOIL TEST RESULTS
13	SITE PHOTOGRAPH(S)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5142	1	13

**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 1919 TOT-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

J.K. STICKNEY

C.L. SMITH

M.R. MOORE

INVESTIGATED BY J.E. BEVERLY

DRAWN BY J.K. McCLURE

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE NOVEMBER 2014



DocuSigned by:  
Clinton B. Little 11/18/2014  
SIGNATURE DATE

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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

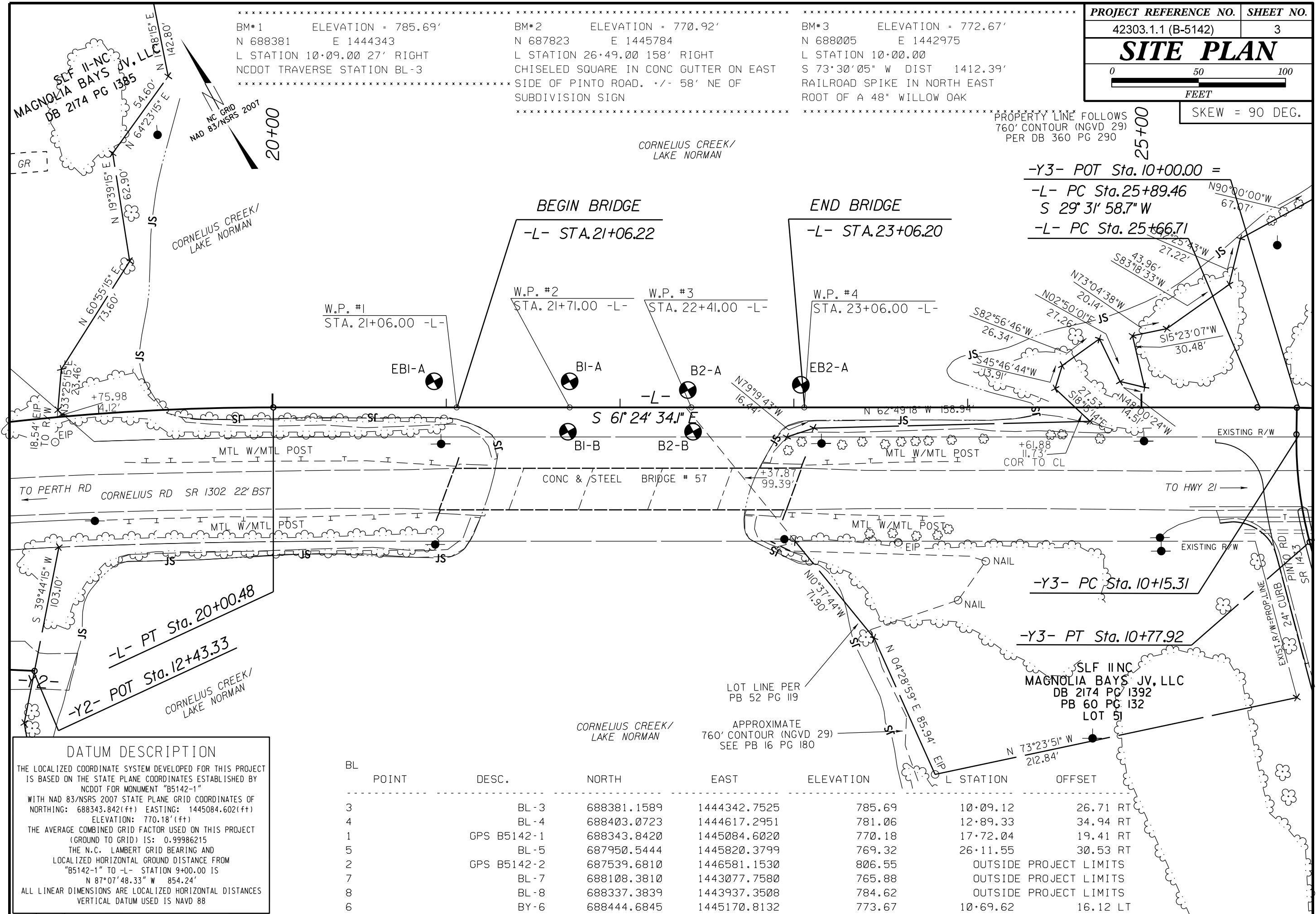
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																				
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER 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 DISLOGGED 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>SLICKENSIDE</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>																																																																				
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)																																																																														
<p>GENERAL CLASS. GRANULAR MATERIALS (≤ 35% PASSING #200) SILT-CLAY MATERIALS (&gt; 35% PASSING #200) ORGANIC MATERIALS</p>										<p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>										<p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p>																																																																														
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<p><b>COMPRESSION</b> SLIGHTLY COMPRESSIBLE LL &lt; 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL &gt; 50</p>										<p><b>PERCENTAGE OF MATERIAL</b></p> <table border="1"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE 1 - 10%</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE 10 - 20%</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME 20 - 35%</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>&gt; 10%</td> <td>&gt; 20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> </table>										ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%	HIGHLY ORGANIC	> 10%	> 20%	HIGHLY 35% AND ABOVE	<p><b>WEATHERING</b> FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V.SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF VERY SEVERE (V. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p>																																																										
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<p><b>GROUND WATER</b>   WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING   STATIC WATER LEVEL AFTER 24 HOURS   PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA   SPRING OR SEEP</p>										<p><b>MISCELLANEOUS SYMBOLS</b>   ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION   SOIL SYMBOL   ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT   INFERRED SOIL BOUNDARY   INFERRED ROCK LINE   ALLUVIAL SOIL BOUNDARY   DIP &amp; DIP DIRECTION OF ROCK STRUCTURES   TEST BORING   AUGER BORING   CORE BORING   MONITORING WELL   PIEZOMETER INSTALLATION   SLOPE INDICATOR INSTALLATION   CONE PENETROMETER TEST   SOUNDING ROD   TEST BORING WITH CORE   SPT N-VALUE</p>										<p><b>RECOMMENDATION SYMBOLS</b>   UNDERCUT EXCAVATION   UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE   UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK   SHALLOW UNDERCUT</p>										<p><b>ABBREVIATIONS</b>  AR - AUGER REFUSAL  BT - BORING TERMINATED  CL - CLAY  CPT - CONE PENETRATION TEST  CSE - COARSE  DMT - DILATOMETER TEST  DPT - DYNAMIC PENETRATION TEST  e - VOID RATIO  F - FINE  FOSS. - FOSSILIFEROUS  FRAC. - FRACTURED, FRACTURES  FRAGS. - FRAGMENTS  HI. - HIGHLY  MED. - MEDIUM  MICA. - MICACEOUS  MOD. - MODERATELY  NP - NON PLASTIC  ORG. - ORGANIC  PMT - PRESSUREMETER TEST  SAP. - SAPROLITIC  SD. - SAND, SANDY  SL. - SILT, SILTY  SLI. - SLIGHTLY  TCR - TRICONE REFUSAL  w - MOISTURE CONTENT  V - VERY  VST - VANE SHEAR TEST  WEA. - WEATHERED  γ<sub>u</sub> - UNIT WEIGHT  γ<sub>d</sub> - DRY UNIT WEIGHT  SAMPLE ABBREVIATIONS  S - BULK  SS - SPLIT SPOON  ST - SHELBY TUBE  RS - ROCK  RT - RECOMPACTED TRIAXIAL  CBR - CALIFORNIA BEARING RATIO</p>																																																																				
<p><b>TEXTURE OR GRAIN SIZE</b></p> <table border="1"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </tr> <tr> <td></td> <td>4.76</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> </table>										U.S. STD. SIEVE SIZE OPENING (MM)	4	10	40	60	200	270		4.76	2.00	0.42	0.25	0.075	0.053	<table border="1"> <tr> <th>BOULDER (BLDR.)</th> <th>COBBLE (COB.)</th> <th>GRAVEL (GR.)</th> <th>COARSE SAND (CSE, SD.)</th> <th>FINE SAND (F SD.)</th> <th>SILT (SL.)</th> <th>CLAY (CL.)</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE, SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)								<table border="1"> <tr> <th>GRAIN SIZE</th> <th>MM</th> <th>305</th> <th>75</th> <th>2.0</th> <th>0.25</th> <th>0.05</th> <th>0.005</th> </tr> <tr> <td></td> <td>IN.</td> <td>12</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005		IN.	12	3					<p><b>SOIL MOISTURE - CORRELATION OF TERMS</b></p> <table border="1"> <tr> <th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th> <th>FIELD MOISTURE DESCRIPTION</th> <th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th> </tr> <tr> <td>LL - LIQUID LIMIT</td> <td>- SATURATED - (SAT.)</td> <td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td> </tr> <tr> <td>PL - PLASTIC LIMIT</td> <td>- WET - (W)</td> <td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td> </tr> <tr> <td>OM - OPTIMUM MOISTURE SHRINKAGE LIMIT</td> <td>- MOIST - (M)</td> <td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td> </tr> <tr> <td>SL - SHRINKAGE LIMIT</td> <td>- DRY - (D)</td> <td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td> </tr> </table>										SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION	LL - LIQUID LIMIT	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE	PL - PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	OM - OPTIMUM MOISTURE SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE	SL - SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE
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PL - PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE																																																																																																
OM - OPTIMUM MOISTURE SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE																																																																																																
SL - SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE																																																																																																
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<p><b>COLOR</b> 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><b>NOTES:</b> SOIL STRATIGRAPHY IS THROUGH THE BORINGS FOR PROFILE AND CROSS-SECTIONS.</p>										<p><b>BENCH MARK: GPS B5142-1</b> N 688343.8420 E 1445084.6020 ELEVATION: 770.18 FEET</p>																																																																														

BM\*1 ELEVATION = 785.69'  
 N 688381 E 1444343  
 L STATION 10+09.00 27' RIGHT  
 NCDOT TRAVERSE STATION BL-3

BM\*2 ELEVATION = 770.92'  
 N 687823 E 1445784  
 L STATION 26+49.00 158' RIGHT  
 CHISELED SQUARE IN CONC GUTTER ON EAST  
 SIDE OF PINTO ROAD, +/- 58' NE OF  
 SUBDIVISION SIGN

BM\*3 ELEVATION = 772.67'  
 N 688005 E 1442975  
 L STATION 10+00.00  
 S 73°30'05" W DIST 1412.39'  
 RAILROAD SPIKE IN NORTH EAST  
 ROOT OF A 48" WILLOW OAK

PROPERTY LINE FOLLOWS  
 760' CONTOUR (NGVD 29)  
 PER DB 360 PG 290



**DATUM DESCRIPTION**

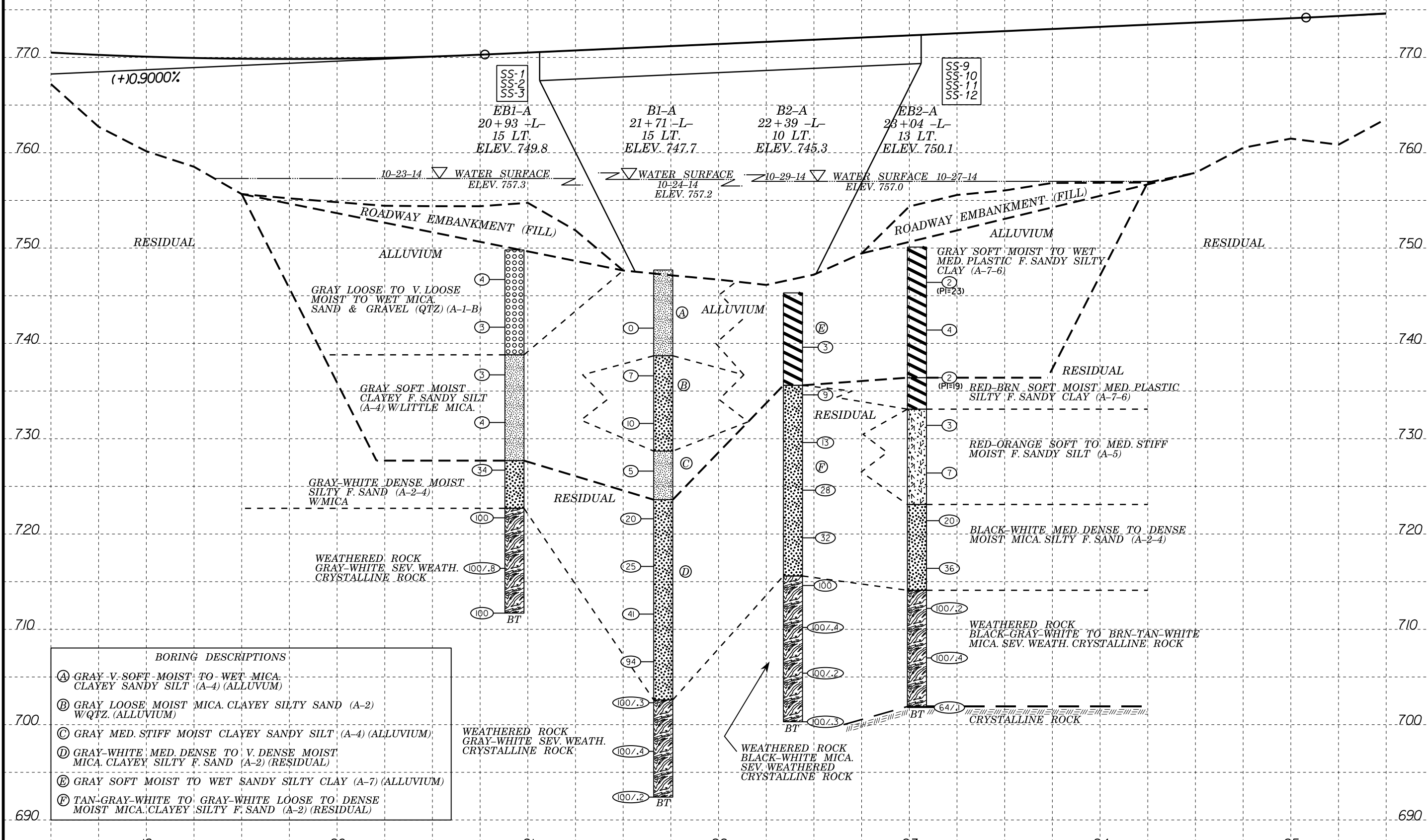
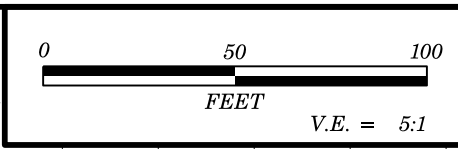
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5142-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 688343.842(ft) EASTING: 1445084.602(ft) ELEVATION: 770.18'(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986215

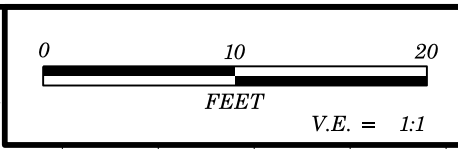
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5142-1" TO -L- STATION 9+00.00 IS N 87°07'48.33" W 854.24'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

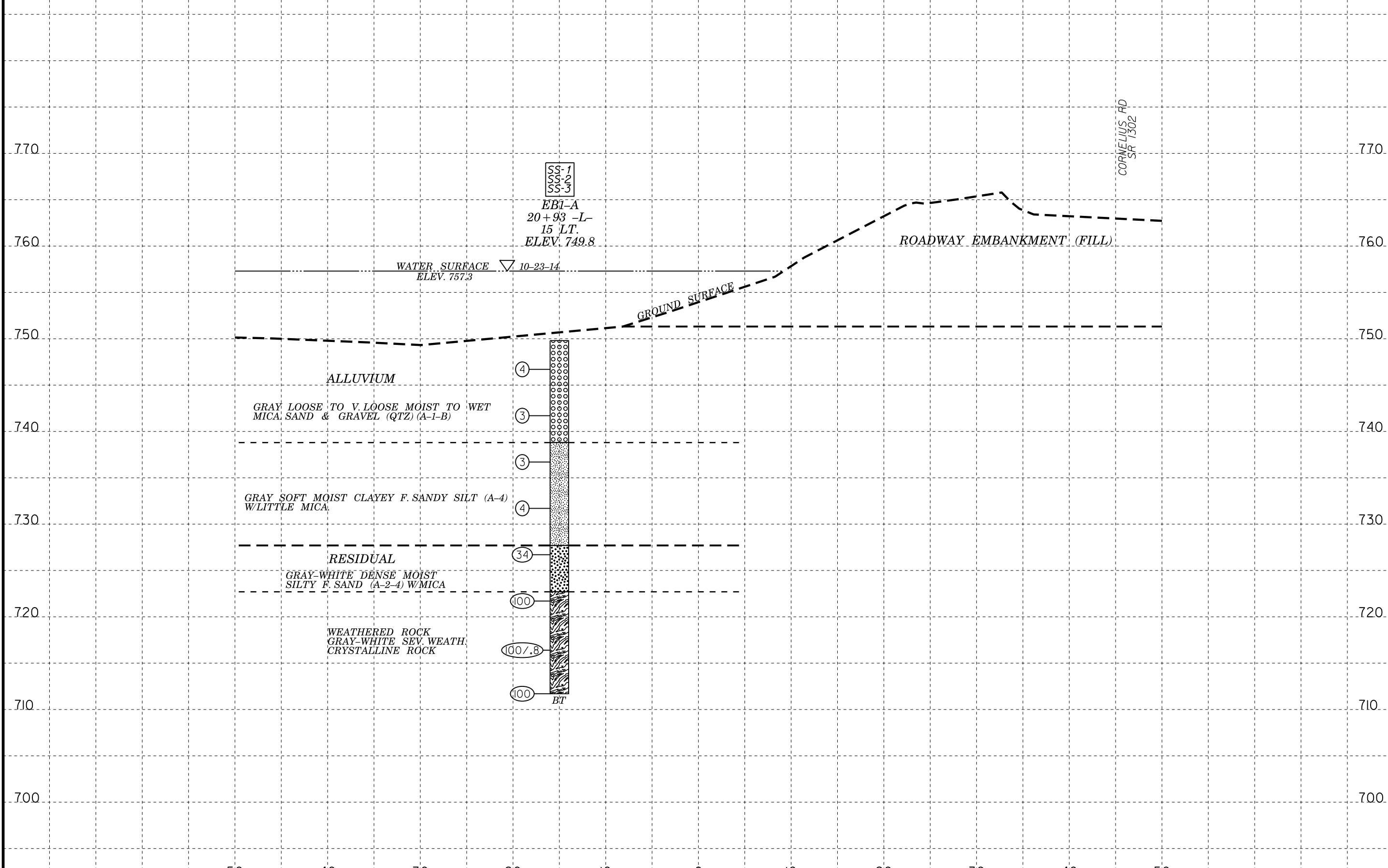
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3		BL-3	688381.1589	1444342.7525	785.69	10+09.12	26.71 RT
4		BL-4	688403.0723	1444617.2951	781.06	12+89.33	34.94 RT
1		GPS B5142-1	688343.8420	1445084.6020	770.18	17+72.04	19.41 RT
5		BL-5	687950.5444	1445820.3799	769.32	26+11.55	30.53 RT
2		GPS B5142-2	687539.6810	1446581.1530	806.55		OUTSIDE PROJECT LIMITS
7		BL-7	688108.3810	1443077.7580	765.88		OUTSIDE PROJECT LIMITS
8		BL-8	688337.3839	1443937.3508	784.62		OUTSIDE PROJECT LIMITS
6		BY-6	688444.6845	1445170.8132	773.67	10+69.62	16.12 LT



BORING DESCRIPTIONS	
(A)	GRAY V. SOFT MOIST TO WET MICA CLAYEY SANDY SILT (A-4) (ALLUVIUM)
(B)	GRAY LOOSE MOIST MICA CLAYEY SILTY SAND (A-2) W/QTZ. (ALLUVIUM)
(C)	GRAY MED. STIFF MOIST CLAYEY SANDY SILT (A-4) (ALLUVIUM)
(D)	GRAY-WHITE MED. DENSE TO V. DENSE MOIST MICA CLAYEY SILTY F. SAND (A-2) (RESIDUAL)
(E)	GRAY SOFT MOIST TO WET SANDY SILTY CLAY (A-7) (ALLUVIUM)
(F)	TAN-GRAY-WHITE TO GRAY-WHITE LOOSE TO DENSE MOIST MICA CLAYEY SILTY F. SAND (A-2) (RESIDUAL)



PROJECT REFERENCE NO.	SHEET
42303.1.1 (B-5142)	5
Section Through End Bent One Sta. 21+06 -L- (W.P. #1) Skew=90 Deg.	



SS-1  
SS-2  
SS-3

EB1-A  
20+93 -L-  
15 LT.  
ELEV. 749.8

WATER SURFACE  $\nabla$  10-23-14  
ELEV. 757.3

ROADWAY EMBANKMENT (FILL)

GROUND SURFACE

CORNELIUS RD  
SR 1302

ALLUVIUM

GRAY LOOSE TO V. LOOSE MOIST TO WET  
MICA SAND & GRAVEL (QTZ) (A-1-B)

GRAY SOFT MOIST CLAYEY F. SANDY SILT (A-4)  
W/LITTLE MICA

RESIDUAL

GRAY-WHITE DENSE MOIST  
SILTY F. SAND (A-2-4) W/MICA

WEATHERED ROCK  
GRAY-WHITE SEV. WEATH.  
CRYSTALLINE ROCK

4

3

3

4

34

100

100/.8

100

BT

50

40

30

20

10

0

10

20

30

40

50

770

770

760

760

750

750

740

740

730

730

720

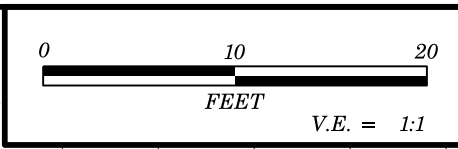
720

710

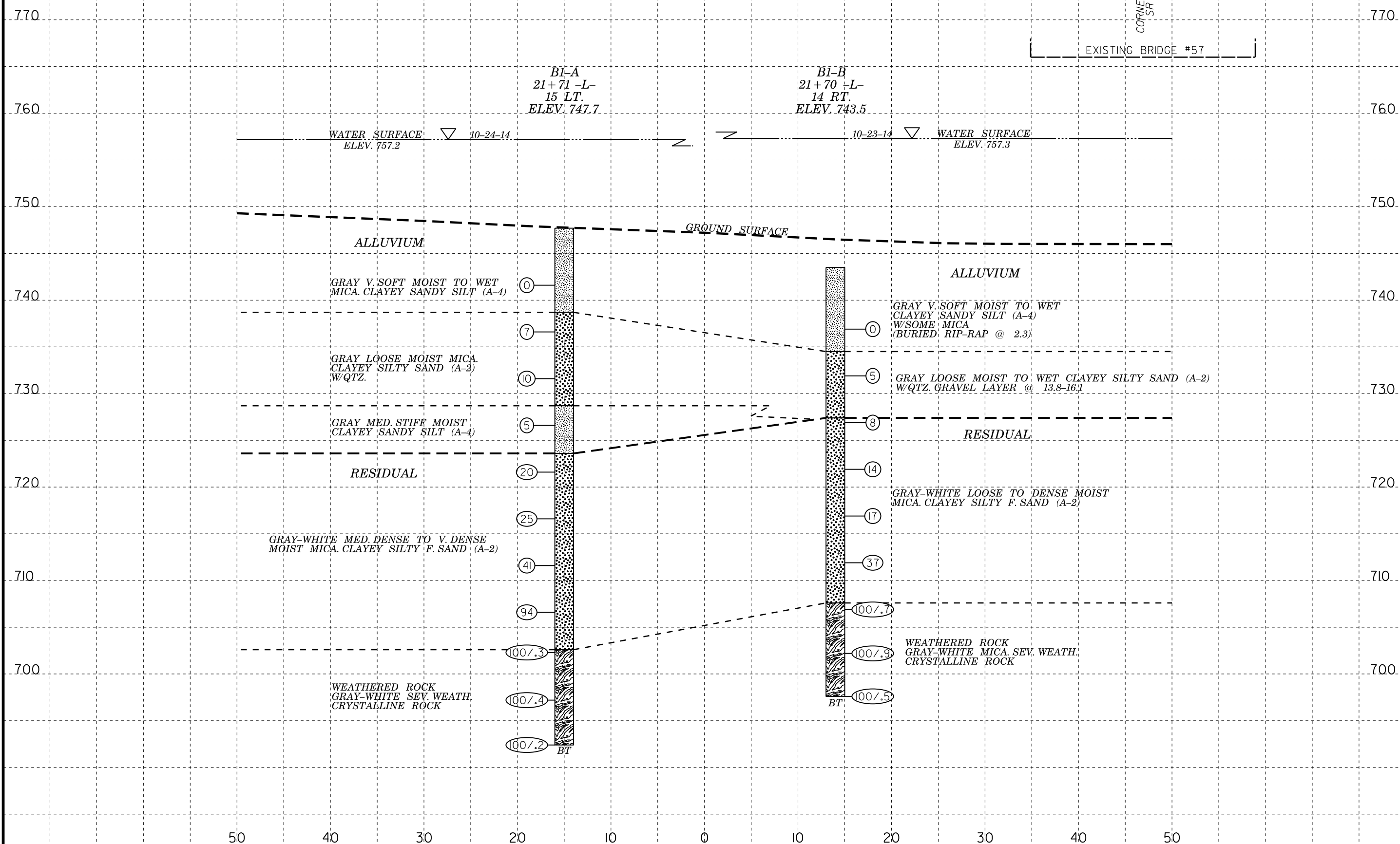
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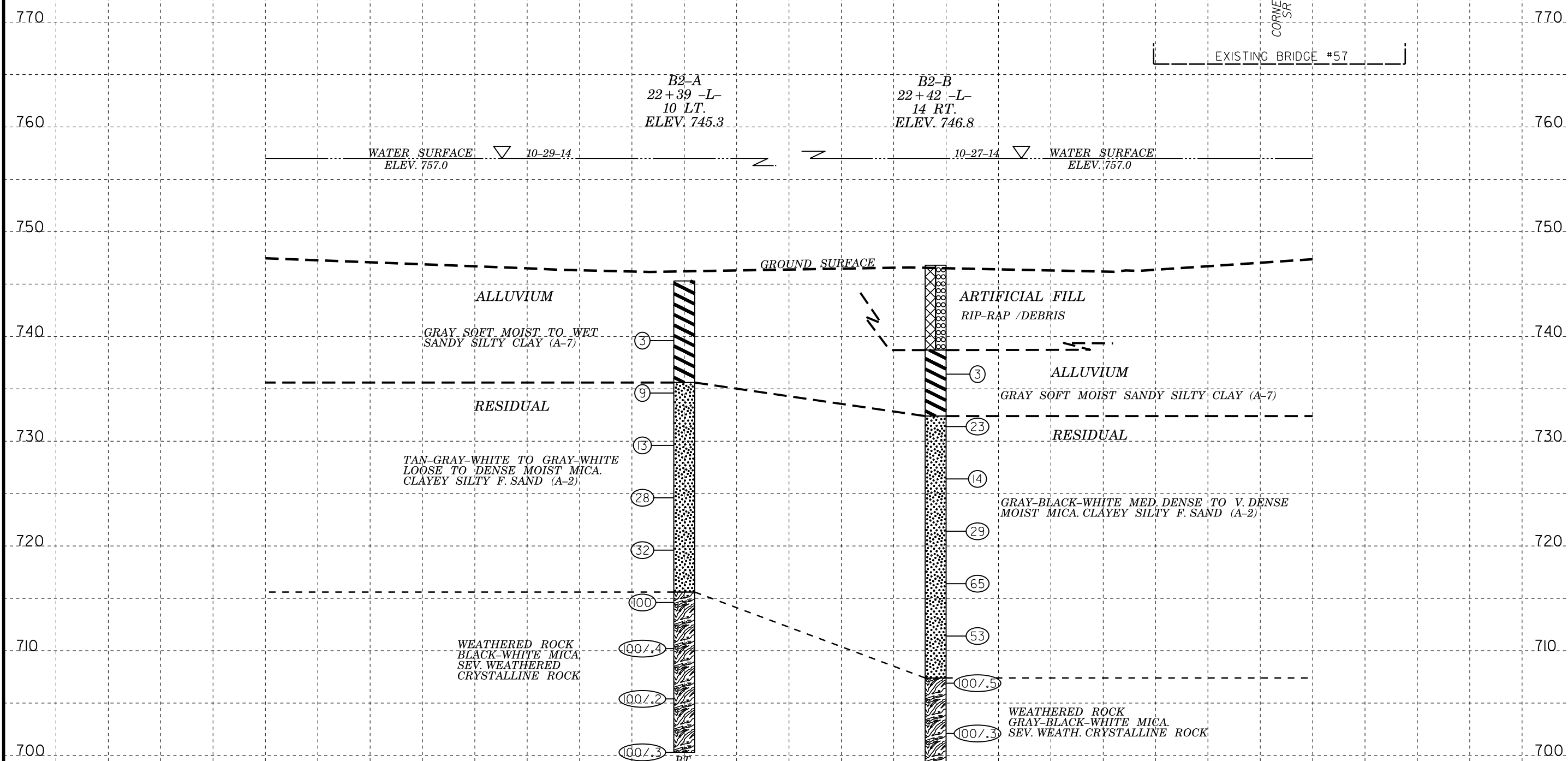
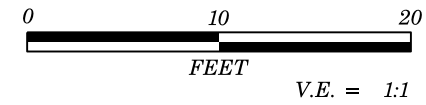
700

700



PROJECT REFERENCE NO.	SHEET
42303.1.1 (B-5142)	6
Section Through Bent One Sta. 21+71 -L- (W.P. #2) Skew = 90 Deg.	





B2-A  
22+39 -L-  
10 LT.  
ELEV. 745.3

B2-B  
22+42 -L-  
14 RT.  
ELEV. 746.8

WATER SURFACE  
ELEV. 757.0

WATER SURFACE  
ELEV. 757.0

GROUND SURFACE

ALLUVIUM

GRAY SOFT MOIST TO WET  
SANDY SILTY CLAY (A-7)

ARTIFICIAL FILL  
RIP-RAP /DEBRIS

ALLUVIUM

GRAY SOFT MOIST SANDY SILTY CLAY (A-7)

RESIDUAL

TAN-GRAY-WHITE TO GRAY-WHITE  
LOOSE TO DENSE MOIST MICA.  
CLAYEY SILTY F. SAND (A-2)

RESIDUAL

GRAY-BLACK-WHITE MED. DENSE TO V. DENSE  
MOIST MICA. CLAYEY SILTY F. SAND (A-2)

WEATHERED ROCK  
BLACK-WHITE MICA,  
SEV. WEATHERED  
CRYSTALLINE ROCK

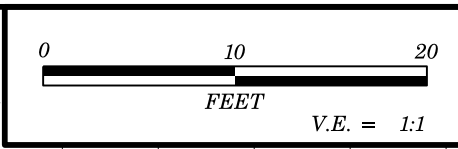
WEATHERED ROCK  
GRAY-BLACK-WHITE MICA,  
SEV. WEATH. CRYSTALLINE ROCK

CORNELIUS RD  
SR 1302

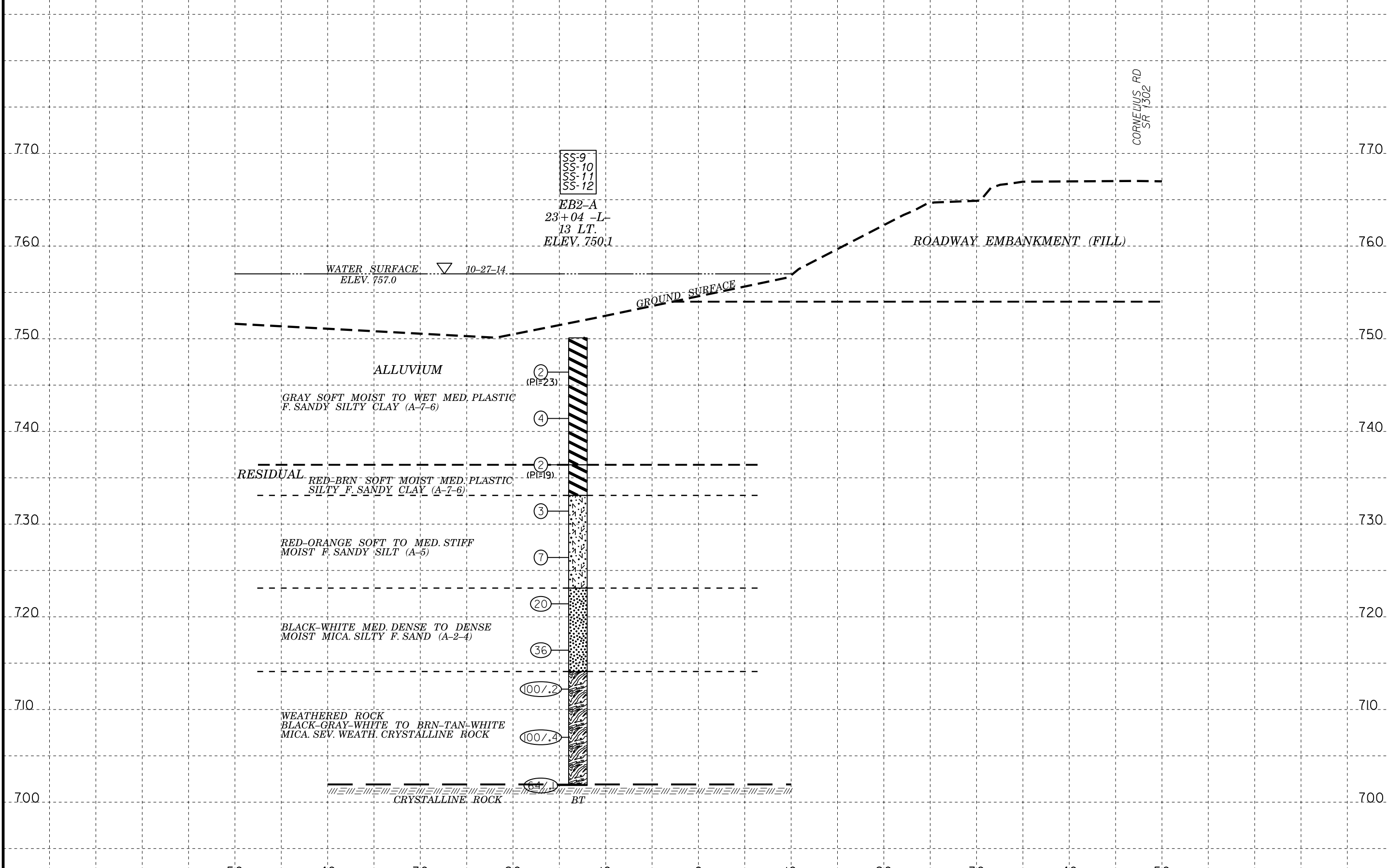
EXISTING BRIDGE #57

50 40 30 20 10 0 10 20 30 40 50





PROJECT REFERENCE NO.	SHEET
42303.1.1 (B-5142)	8
Section Through End Bent Two Sta. 23+06 -L- (W.P. #4) Skew=90 Deg.	



SS-9  
SS-10  
SS-11  
SS-12

EB2-A  
23+04 -L-  
13 LT.  
ELEV. 750.1

WATER SURFACE  $\nabla$  10-27-14  
ELEV. 757.0

GROUND SURFACE

ROADWAY EMBANKMENT (FILL)

CORNELIUS RD  
SR 1302

ALLUVIUM

GRAY SOFT MOIST TO WET MED. PLASTIC  
F. SANDY SILTY CLAY (A-7-6)

RESIDUAL RED-BRN SOFT MOIST MED. PLASTIC  
SILTY F. SANDY CLAY (A-7-6)

RED-ORANGE SOFT TO MED. STIFF  
MOIST F. SANDY SILT (A-5)

BLACK-WHITE MED. DENSE TO DENSE  
MOIST MICA SILTY F. SAND (A-2-4)

WEATHERED ROCK  
BLACK-GRAY-WHITE TO BRN-TAN-WHITE  
MICA SEV. WEATH. CRYSTALLINE ROCK

CRYSTALLINE ROCK

(2)  
(PI=23)

(4)

(2)  
(PI=19)

(3)

(7)

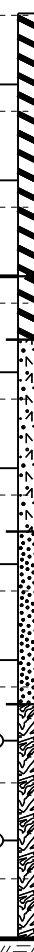
(20)

(36)

(100/.2)

(100/.4)

(64)



50 40 30 20 10 0 10 20 30 40 50

# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 42303.1.1	TIP B-5142	COUNTY IREDELL	GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK (LAKE NORMAN)		GROUND WTR (ft)										
BORING NO. EB1-A	STATION 20+93	OFFSET 15 ft LT	ALIGNMENT -L-									
COLLAR ELEV. 749.8 ft	TOTAL DEPTH 38.1 ft	NORTHING 688,239	EASTING 1,445,388									
DRILL RIG/HAMMER EFF./DATE HFO0065 CME-45C 85% 01/09/2013		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic									
DRILLER Smith, C. L.	START DATE 10/22/14	COMP. DATE 10/23/14	SURFACE WATER DEPTH 7.5ft									
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								
750											749.8 GROUND SURFACE 0.0	
745	747.7	2.1	3 2 2								ALLUVIAL GRAY LOOSE TO V. LOOSE MOIST TO WET MICA. SAND & GRAVEL (QTZ) (A-1-B)	
740	742.7	7.1	2 1 2						SS-1	MW		
735	737.7	12.1	1 2 1						SS-2	M	738.8 ALLUVIAL GRAY SOFT MOIST CLAYEY F. SANDY SILT (A-4) W/ LITTLE MICA. 11.0	
730	732.7	17.1	1 1 3									
725	727.7	22.1	7 13 21						SS-3	M	727.7 RESIDUAL GRAY-WHITE DENSE MOIST SILTY F. SAND (A-2-4) W/ MICA. 22.1	
720	722.7	27.1	39 61/0.5								722.7 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 27.1	
715	717.7	32.1	37 51 49/0.3								717.7 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 32.1	
	712.7	37.1	43 57/0.5								712.7 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 37.1	
											100.0 Boring Terminated at Elevation 711.7 ft IN SEV. WEATH. CRYSTALLINE ROCK 38.1	

WBS 42303.1.1	TIP B-5142	COUNTY IREDELL	GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK (LAKE NORMAN)		GROUND WTR (ft)										
BORING NO. B1-A	STATION 21+71	OFFSET 15 ft LT	ALIGNMENT -L-									
COLLAR ELEV. 747.7 ft	TOTAL DEPTH 55.3 ft	NORTHING 688,201	EASTING 1,445,457									
DRILL RIG/HAMMER EFF./DATE HFO0065 CME-45C 85% 01/09/2013		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic									
DRILLER Smith, C. L.	START DATE 10/24/14	COMP. DATE 10/24/14	SURFACE WATER DEPTH 9.5ft									
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								
750											747.7 GROUND SURFACE 0.0	
745											ALLUVIAL GRAY V. SOFT MOIST TO WET MICA. CLAYEY SANDY SILT (A-4)	
740	742.6	5.1	0 0 0								742.6 ALLUVIAL GRAY V. SOFT MOIST TO WET MICA. CLAYEY SANDY SILT (A-4) 5.1	
735	737.6	10.1	4 3 4								737.6 ALLUVIAL GRAY LOOSE MOIST MICA. CLAYEY SILTY SAND (A-2) W/ QTZ. 10.1	
730	732.6	15.1	4 5 5								732.6 ALLUVIAL GRAY LOOSE MOIST MICA. CLAYEY SILTY SAND (A-2) W/ QTZ. 15.1	
725	727.6	20.1	4 3 2								727.6 ALLUVIAL GRAY MED. STIFF MOIST CLAYEY SANDY SILT (A-4) 20.1	
720	722.6	25.1	7 8 12								722.6 RESIDUAL GRAY-WHITE MED. DENSE TO V. DENSE MOIST MICA. CLAYEY SILTY F. SAND (A-2) 25.1	
715	717.6	30.1	8 11 14								717.6 RESIDUAL GRAY-WHITE MED. DENSE TO V. DENSE MOIST MICA. CLAYEY SILTY F. SAND (A-2) 30.1	
710	712.6	35.1	20 22 19								712.6 RESIDUAL GRAY-WHITE MED. DENSE TO V. DENSE MOIST MICA. CLAYEY SILTY F. SAND (A-2) 35.1	
705	707.6	40.1	10 44 50								707.6 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 40.1	
700	702.6	45.1	100/0.3								702.6 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 45.1	
695	697.6	50.1	100/0.4								697.6 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 50.1	
	692.6	55.1	100/0.2								692.6 WEATHERED ROCK GRAY-WHITE SEV. WEATH. CRYSTALLINE ROCK 55.1	
											100.2 Boring Terminated at Elevation 692.4 ft IN SEV. WEATH. CRYSTALLINE ROCK 55.3	

NCDOT BORE DOUBLE B5142\_GEO\_BH\_BRD06057.GPJ NC\_DOT.GDT 11/17/14

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

WBS 42303.1.1		TIP B-5142		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK (LAKE NORMAN)							GROUND WTR (ft)									
BORING NO. B1-B		STATION 21+70		OFFSET 14 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 743.5 ft		TOTAL DEPTH 45.9 ft		NORTHING 688,177		EASTING 1,445,442										
DRILL RIG/HAMMER EFF./DATE HFO0065 CME-45C 85% 01/09/2013		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic												
DRILLER Smith, C. L.		START DATE 10/23/14		COMP. DATE 10/23/14		SURFACE WATER DEPTH 13.8ft										
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	100						
745														743.5	GROUND SURFACE	0.0
740	737.9	5.6	0	0	0								MW	ALLUVIAL GRAY V. SOFT MOIST TO WET CLAYEY SANDY SILT (A-4) W/ SOME MICA (BURIED RIP-RAP @ 2.3)		
735	732.9	10.6	1	2	3								MW	ALLUVIAL GRAY LOOSE MOIST TO WET CLAYEY SILTY SAND (A-2) W/ QTZ. GRAVEL LAYER @ 13.8-16.1	9.0	
730	727.9	15.6	9	5	3								M	RESIDUAL GRAY-WHITE LOOSE TO DENSE MOIST MICA. CLAYEY SILTY F. SAND (A-2)	16.1	
725	722.9	20.6	3	6	8								M			
720	717.9	25.6	6	8	9								M			
715	712.9	30.6	14	17	20								M			
710	708.1	35.4	18	62	38/0.2								M			
705	703.1	40.4	41	59/0.4									M	WEATHERED ROCK GRAY-WHITE MICA. SEV. WEATH. CRYSTALLINE ROCK	35.9	
700	698.1	45.4	100/0.5											697.6	Boring Terminated at Elevation 697.6 ft IN SEV. WEATH. CRYSTALLINE ROCK	45.9

WBS 42303.1.1		TIP B-5142		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK (LAKE NORMAN)							GROUND WTR (ft)									
BORING NO. B2-A		STATION 22+39		OFFSET 10 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 745.3 ft		TOTAL DEPTH 45.0 ft		NORTHING 688,165		EASTING 1,445,514										
DRILL RIG/HAMMER EFF./DATE HFO0065 CME-45C 85% 01/09/2013		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic												
DRILLER Smith, C. L.		START DATE 10/24/14		COMP. DATE 10/24/14		SURFACE WATER DEPTH 11.7ft										
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						
750														745.3	GROUND SURFACE	0.0
745													MW	ALLUVIAL GRAY SOFT MOIST TO WET SANDY SILTY CLAY (A-7)		
740	740.6	4.7	0	1	2								MW			
735	735.6	9.7	3	4	5								M	RESIDUAL TAN-GRAY-WHITE TO GRAY-WHITE LOOSE TO DENSE MOIST MICA. CLAYEY SILTY F. SAND (A-2)	9.7	
730	730.6	14.7	7	5	8								M			
725	725.6	19.7	9	12	16								M			
720	720.6	24.7	13	14	18								M			
715	715.6	29.7	33	67/0.5									M	WEATHERED ROCK BLACK-WHITE MICA. SEV. WEATH. CRYSTALLINE ROCK	29.7	
710	710.6	34.7	100/0.4													
705	705.6	39.7	100/0.2													
700	700.6	44.7	100/0.3											700.3	Boring Terminated at Elevation 700.3 ft IN SEV. WEATH. CRYSTALLINE ROCK	45.0

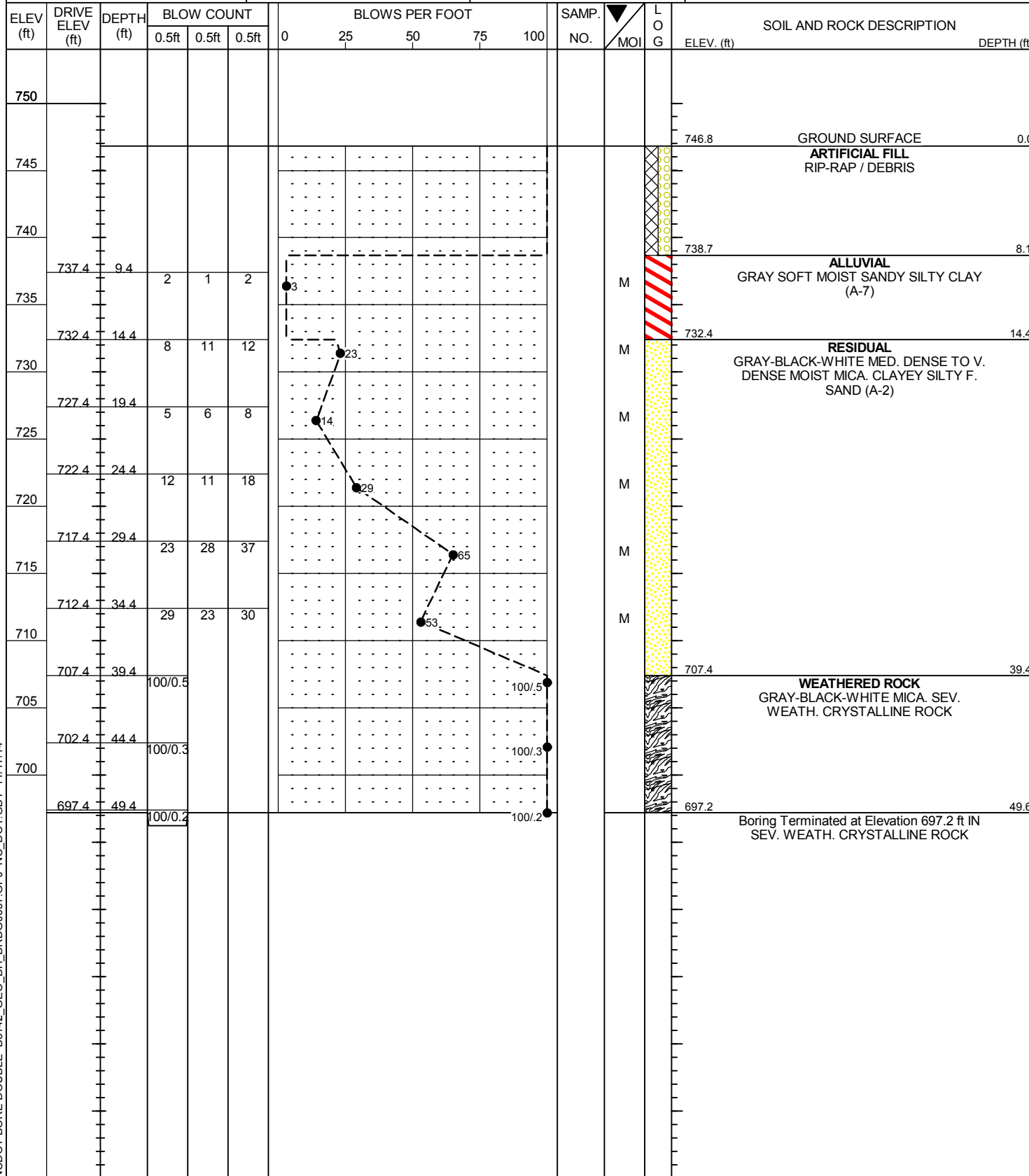
NCDOT BORE DOUBLE B5142\_GEO\_BH\_BRDG0057.GPJ NC\_DOT.GDT 11/17/14



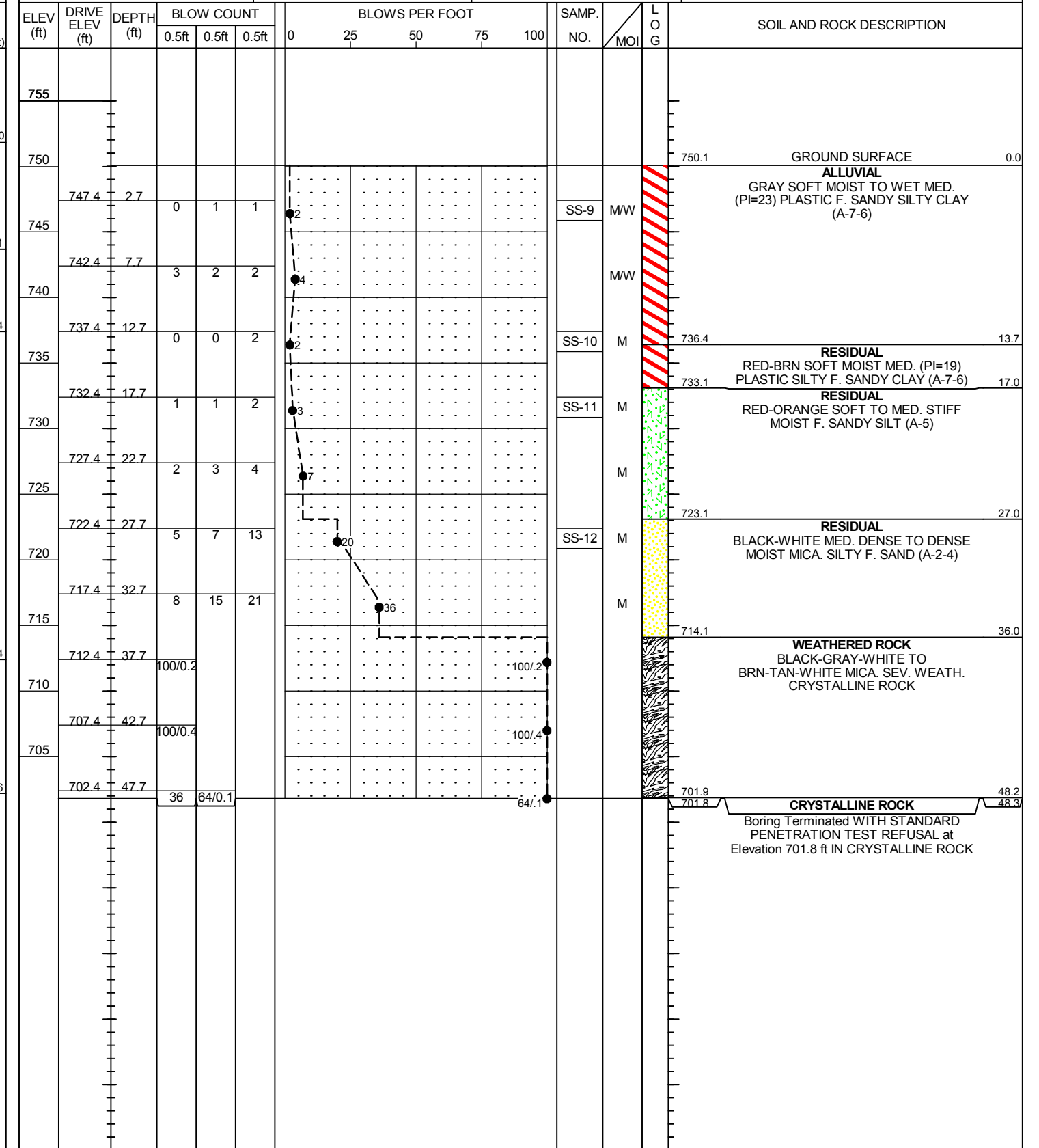
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 42303.1.1	TIP B-5142	COUNTY IREDELL	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION BRIDGE 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK (LAKE NORMAN)			GROUND WTR (ft)
BORING NO. B2-B	STATION 22+42	OFFSET 14 ft RT	ALIGNMENT -L-
COLLAR ELEV. 746.8 ft	TOTAL DEPTH 49.6 ft	NORTHING 688,142	EASTING 1,445,505
DRILL RIG/HAMMER EFF./DATE HFO0065 CME-45C 85% 01/09/2013		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 10/27/14	COMP. DATE 10/27/14	SURFACE WATER DEPTH 10.2ft



WBS 42303.1.1	TIP B-5142	COUNTY IREDELL	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION BRIDGE 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK (LAKE NORMAN)			GROUND WTR (ft)
BORING NO. EB2-A	STATION 23+04	OFFSET 13 ft LT	ALIGNMENT -L-
COLLAR ELEV. 750.1 ft	TOTAL DEPTH 48.3 ft	NORTHING 688,136	EASTING 1,445,572
DRILL RIG/HAMMER EFF./DATE HFO0065 CME-45C 85% 01/09/2013		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 10/27/14	COMP. DATE 10/27/14	SURFACE WATER DEPTH 6.9ft



NCDOT BORE DOUBLE B5142\_GEO\_BH\_BRDG0057.GPJ NC\_DOT\_GDT 11/17/14

**TEST RESULTS**

PROJECT: 42303.1.1 (B-5142)

COUNTY: IREDELL

SITE DESCRIPTION: BRIDGE NO. 057 ON SR 1302 (CORNELIUS RD.) OVER CORNELIUS CREEK / LAKE NORMAN

SHEET

12

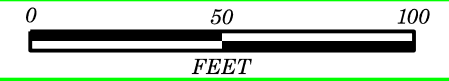
**SOIL SAMPLE RESULTS**

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	UNIT WT. (d)	VOID RATIO
								C. SAND	F. SAND	SILT	CLAY	10	40	200				
<b>EB1-A</b>																		
SS-1	15 LT.	20+93 -L-	7.6-8.6	A-1-b(0)	3	22	NP	31.4	57.4	4.1	7.0	77	47	10	-	-		
SS-2	15 LT.	20+93 -L-	12.6-13.6	A-4(0)	3	29	2	8.7	45.5	25.8	20.1	100	98	54	-	-		
SS-3	15 LT.	20+93 -L-	22.6-23.6	A-2-4(0)	34	29	NP	29.7	51.2	13.1	6.0	99	86	27	-	-		
<b>EB2-A</b>																		
SS-9	13 LT.	23+04 -L-	3.2-4.2	A-7-6(21)	2	50	23	5.8	11.9	15.9	66.4	100	97	84	-	-		
SS-10	13 LT.	23+04 -L-	13.2-14.2	A-7-6(10)	2	42	19	13.3	29.4	11.1	46.3	100	94	61	-	-		
SS-11	13 LT.	23+04 -L-	18.2-19.2	A-5(0)	3	60	NP	11.1	61.2	19.7	8.0	100	99	38	-	-		
SS-12	13 LT.	23+04 -L-	28.2-29.2	A-2-4(0)	20	32	NP	22.9	53.3	17.7	6.0	100	93	33	-	-		

**ROCK SAMPLE RESULTS**

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

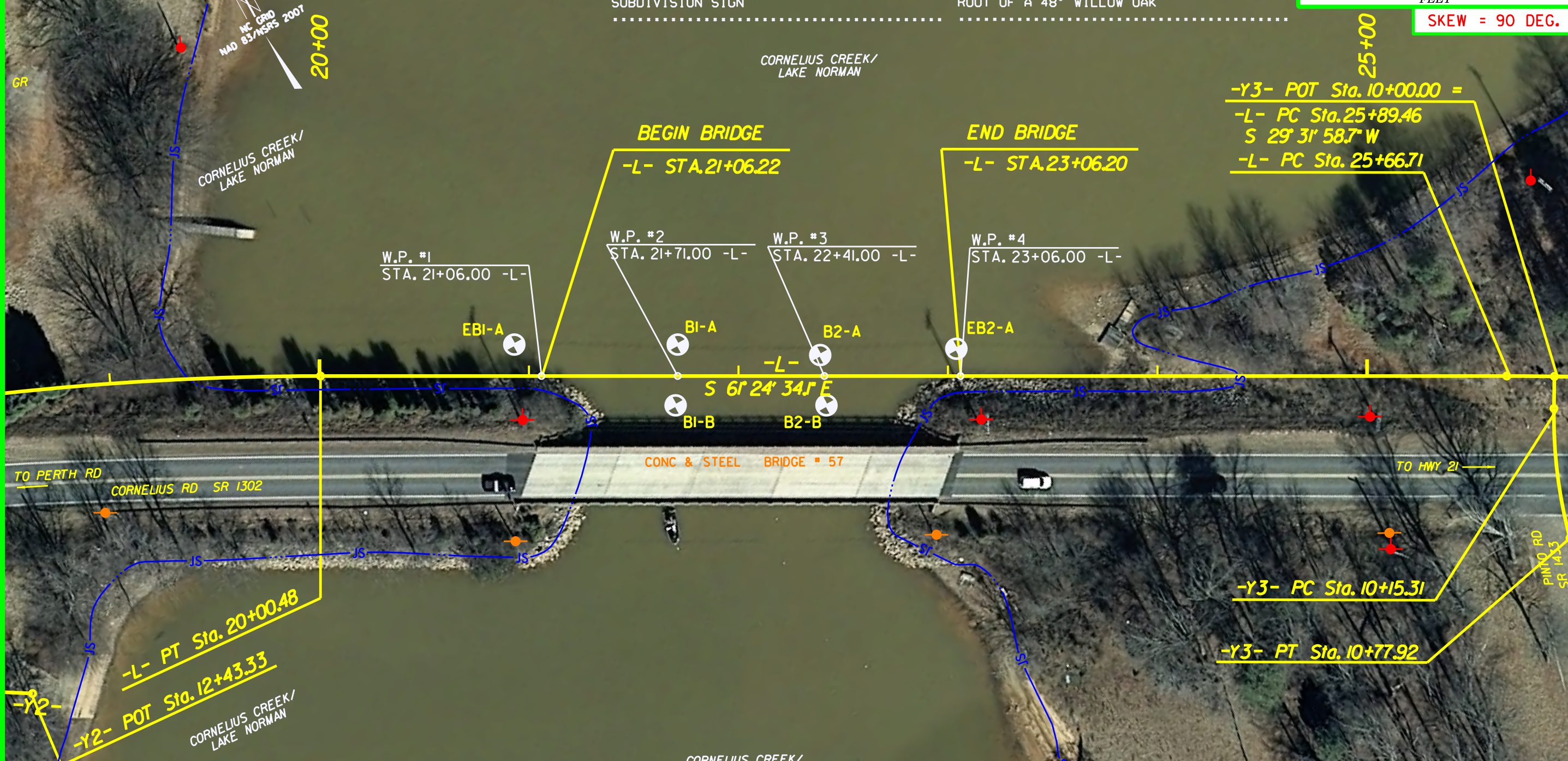


SKEW = 90 DEG.

BM\*1 ELEVATION - 785.69'  
N 688381 E 1444343  
L STATION 10+09.00 27' RIGHT  
NCDOT TRAVERSE STATION BL-3

BM\*2 ELEVATION - 770.92'  
N 687823 E 1445784  
L STATION 26+49.00 158' RIGHT  
CHISELED SQUARE IN CONC GUTTER ON EAST  
SIDE OF PINTO ROAD. +/- 58' NE OF  
SUBDIVISION SIGN

BM\*3 ELEVATION - 772.67'  
N 688005 E 1442975  
L STATION 10+00.00  
S 73°30'05" W DIST 1412.39'  
RAILROAD SPIKE IN NORTH EAST  
ROOT OF A 48" WILLOW OAK



**DATUM DESCRIPTION**  
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5142-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 688343.842(ft) EASTING: 1445084.602(ft) ELEVATION: 770.18'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986215 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5142-1" TO -L- STATION 9+00.00 IS N 87°07'48.33" W 854.24' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3		BL-3	688381.1589	1444342.7525	785.69	10+09.12	26.71 RT
4		BL-4	688403.0723	1444617.2951	781.06	12+89.33	34.94 RT
1		GPS B5142-1	688343.8420	1445084.6020	770.18	17+72.04	19.41 RT
5		BL-5	687950.5444	1445820.3799	769.32	26+11.55	30.53 RT
2		GPS B5142-2	687539.6810	1446581.1530	806.55		OUTSIDE PROJECT LIMITS
7		BL-7	688108.3810	1443077.7580	765.00		OUTSIDE PROJECT LIMITS
8		BL-8	688337.3839	1443937.3508	784.00		OUTSIDE PROJECT LIMITS
6		BY-6	688444.6845	1445170.8132	773.67	10+69.62	16.12 LT