STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	35871.1.1 (U-4703)	1	28

ID: 35871.1.1

PROJECT: U-4703

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. *35871.1.1 (U-4703)* F.A. PROJ. *STP-0508(2)*

COUNTY *WAKE*

PROJECT DESCRIPTION *TIMBER DR. EAST EXTENSION (SR 2812) FROM NC 51 TO WHITE OAK RD. (SR 2547) IN GARNER*

SITE DESCRIPTION *BRIDGE ON -L- (SR 2812, TIMBER DR.) OVER MAHLER'S CREEK AT -L- STA. 33+54*

INVENTORY

CONTENTS

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 (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.

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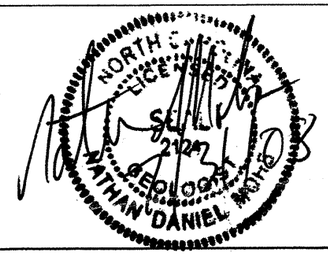
DATE *JULY 2008*



DRAWN BY: *N.D. MOHS, T.T. WALKER*

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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.

PROJECT REFERENCE NO.	SHEET NO.
35871.1.1 (U-4703)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SATY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10 # 40 # 200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

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.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

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

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT CPT DPT DMT PMT VST — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF — SPT REFUSAL

SAMPLE DESIGNATIONS
S - BULK SAMPLE
SS - SPLIT SPOON SAMPLE
ST - SHELBY TUBE SAMPLE
RS - ROCK SAMPLE
RT - RECOMPACTED TRIAXIAL SAMPLE
CBR - CALIFORNIA BEARING RATIO SAMPLE

ABBREVIATIONS

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 - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-55
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [X] TUNG.-CARBIDE INSERTS
- [X] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N Q-3
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. 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:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	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 (SLI.)	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, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 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.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - 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.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (D)P AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GODD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - 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.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - 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.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - 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.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - 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.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: BL-107, -BL- 28+13, 275.11'
BL-108, -BL-30+01, 270.77'
ELEVATION: FT.

NOTES:

REVISED 02/23/06

PROJECT REFERENCE NO.	SHEET
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SITE PLAN

0 60 120

FEET

NAD 83

ARTIFICIAL FILL

MAHLER'S CREEK

EB1-A

EB1-B

EB1-C

EB2-A

EB2-B

EB2-C

B1-A

B1-B

B1-C

B2-A

B2-B

B2-C

B3-A

B3-B

B3-C

35

30

BUILDING RUINS
(OLD FOUNDATION)

ROCK
OUTCROP

ARTIFICIAL FILL

SKEW ANGLE=105°

0	50	100

FEET

VE = 5:1

PROJECT REFERENCE NO.	SHEET
35871.1.1 (U-4703)	4
PROFILE THROUGH BORINGS PROJECTED ALONG -L-	

GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 5/12/2008

320 310 300 290 280 270 260 250 240 230

EB1-C
31+74
8' RT

B1-C
32+66
14' RT

B2-C
33+62
18' LT

B3-C
34+42
14' RT

EB2-C
35+34
℄

EXISTING GROUNDLINE

RESIDUAL, ORANGE, BROWN, AND GRAY

WEATHERED ROCK

(GRANITE)

15 90 100/0.6 100/0.3 60/0.0

07/08

LOOSE TO VERY

Ⓐ

5 6 34

DENSE, MOIST, MICACEOUS, SILTY AND CLAYEY SAND

06/08 60/0.1

MAHLER'S CREEK WATER SURFACE 12/07

WOH 5 20 60/0.2

06/08

Ⓒ

Ⓑ 5 2 100/0.2

DRY 07/08 60/0.0

TAN, MEDIUM STIFF, MOIST, SANDY CLAY

7 100/0.2 60/0.0

RESIDUAL

WEATHERED ROCK

(GRANITE)

DRY 07/08

REC=92%
RQD=81%

REC=95%
RQD=74%

CRYSTALLINE ROCK, GRAY, WHITE AND PINK, HARD TO VERY HARD,
FRESH TO SLIGHTLY WEATHERED, CLOSELY TO MODERATELY CLOSELY FRACTURED,
APHANITIC TO PHANERITIC GRANITE

Ⓐ ARTIFICIAL FILL, BROWN, LOOSE, MOIST, SILTY SAND

Ⓑ ALLUVIAL, BROWN AND GRAY, VERY SOFT TO MEDIUM STIFF, WET TO SATURATED, SANDY SILT

Ⓒ ALLUVIAL, GRAY, LOOSE, SATURATED, COARSE SAND

-L-

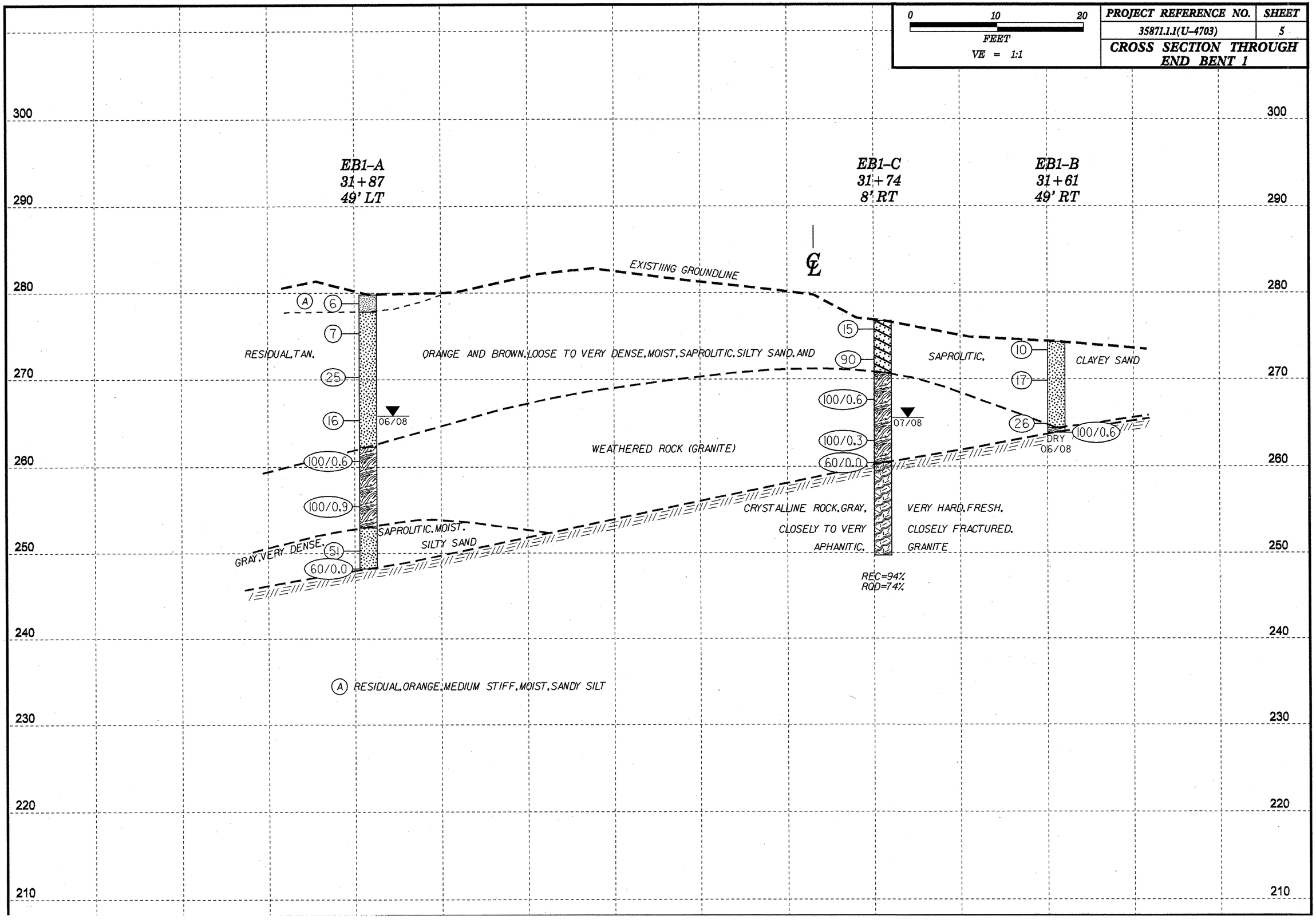
SKEW ANGLE = 105°

30 31 32 33 34 35 36 37

0	10	20
FEET		
VE = 1:1		

PROJECT REFERENCE NO.	SHEET
35871.1.1(U-4703)	5

CROSS SECTION THROUGH END BENT 1



0	10	20

FEET

VE = 1:1

PROJECT REFERENCE NO.	SHEET
35871.1.1(U-4703	6

CROSS SECTION THROUGH BENT 1

300
290
280
270
260
250
240
230
220
210

B1-A
32+73
41' LT

B1-C
32+66
14' RT

B1-B
32+51
41' RT

℄

EXISTING GROUNDLINE

ARTIFICIAL FILL.

BROWN, LOOSE, MOIST, SILTY SAND, AND VERY STIFF.

SANDY SILT WITH GRAVEL

RESIDUAL.

GRAY, WHITE, ORANGE AND BROWN, LOOSE TO VERY DENSE.

MOIST, SAPROLITIC, MICACEOUS.

SILTY SAND

CRYSTALLINE ROCK, GRAY AND WHITE, FRESH, HARD TO VERY HARD.

VERY CLOSELY TO MODERATELY CLOSELY FRACTURED, APHANITIC.

GRANITE

REC=89%
RQD=70%

REC=98%
RQD=72%

(A) WEATHERED ROCK (GRANITE)

0	10	20
FEET		
VE = 1:1		

PROJECT REFERENCE NO.	SHEET
35871.1.1(U-4703)	7
CROSS SECTION THROUGH BENT 2	

290
280
270
260
250
240
230
220
210
200

B2-A
33+62
39' LT

B2-C
33+66
18' LT

B2-B
33+43
41' RT

℄

ARTIFICIAL FILL

EXISTING GROUNDLINE

ALLUVIAL,

WOH 07/08 GRAY AND BROWN, VERY SOFT, SATURATED, SANDY CLAY AND SANDY SILT

100/0.9 60/0.1

WOH 06/08

5 20 60/0.0

A

1 6 07/08

49 100/0.2 60/0.1

GRAY AND TAN, LOOSE TO DENSE, SATURATED, COARSE SAND AND SILTY SAND

WEATHERED ROCK (GRANITE)

CRYSTALLINE ROCK, GRAY, WHITE AND PINK, VERY HARD, FRESH,
MODERATELY CLOSELY FRACTURED, APHANITIC, GRANITE

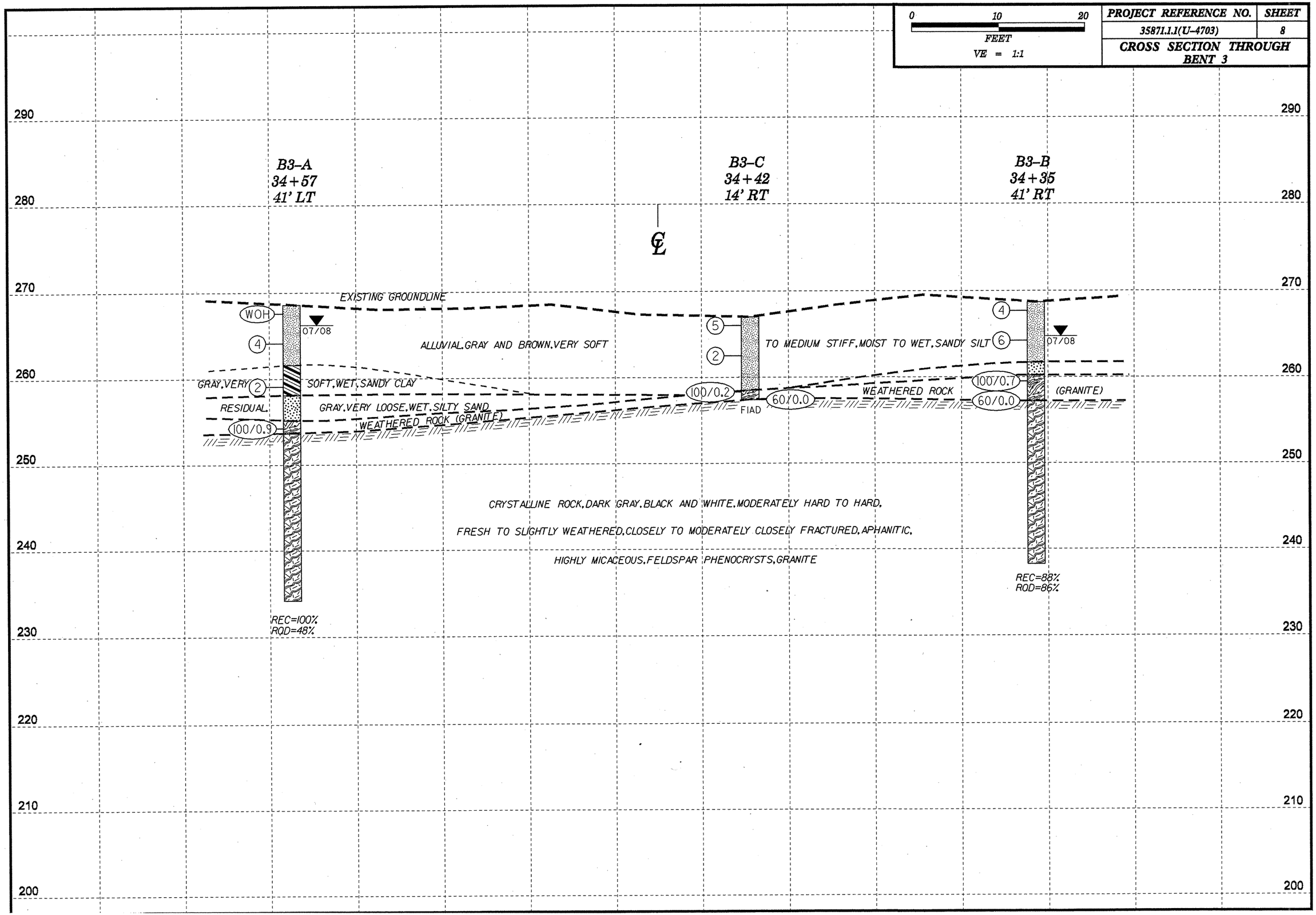
REC=98%
RQD=69%

REC=95%
RQD=82%

(A) RESIDUAL, GRAY, MEDIUM DENSE, MOIST, SAPROLITIC, SILTY SAND

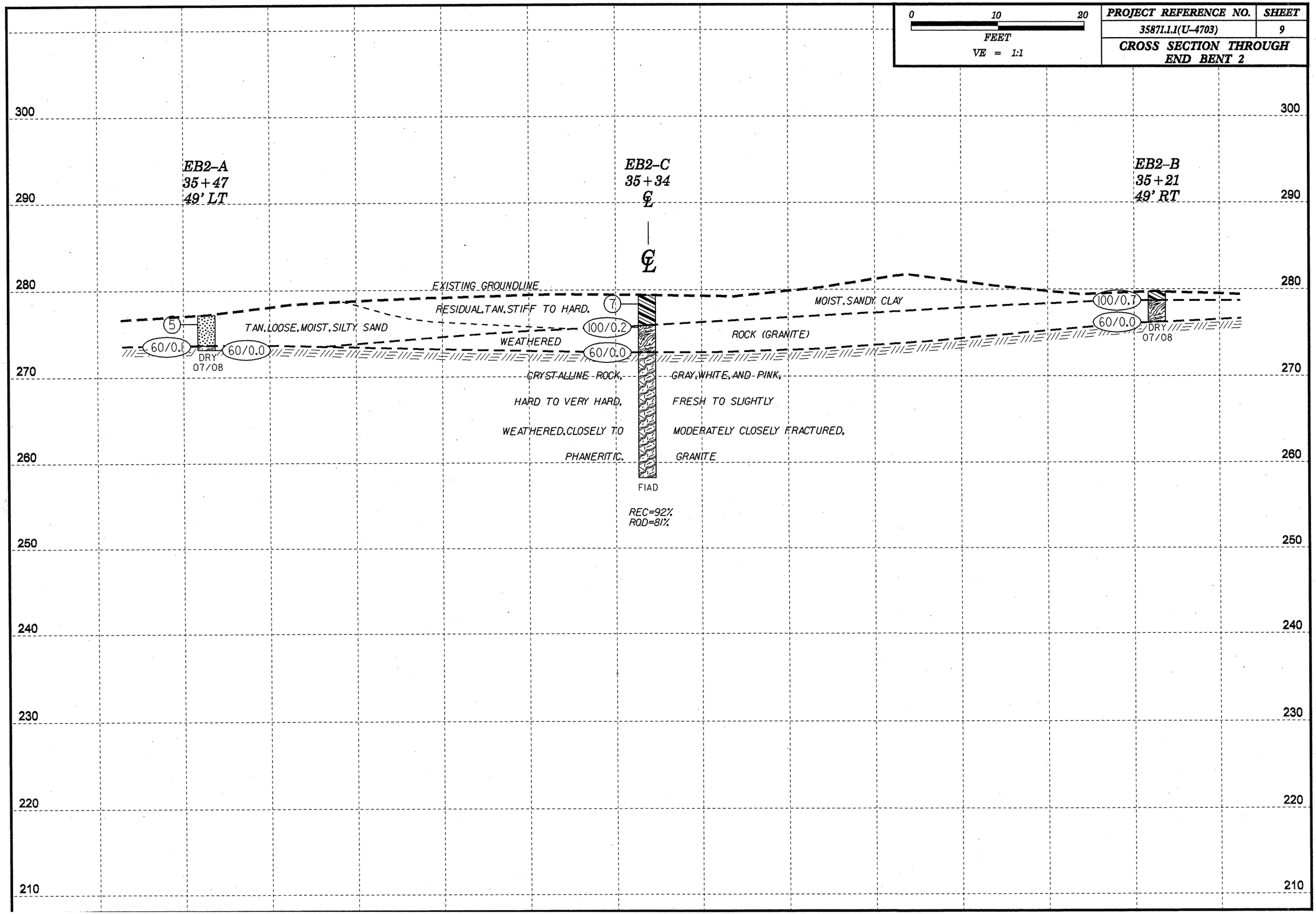
0	10	20
FEET		
VE = 1:1		

PROJECT REFERENCE NO.	SHEET
35871.1.1(U-4703)	8
CROSS SECTION THROUGH BENT 3	



0	10	20
FEET		
VE = 1:1		

PROJECT REFERENCE NO.	SHEET
35871.1.1(U-4703)	9
CROSS SECTION THROUGH END BENT 2	



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 31+87	**OFFSET** 49ft LT	**ALIGNMENT** -L-	**0 HR.** 14.6
COLLAR ELEV. 278.9 ft	**TOTAL DEPTH** 31.6 ft	**NORTHING** 705,102	**EASTING** 2,119,382	**24 HR.** 14.0
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 06/27/08	**COMP. DATE** 06/27/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 31.6 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
280	278.9	0.0								278.9 GROUND SURFACE 0.0
			1	2	4	6	SS-1	M		276.9 **RESIDUAL** ORANGE, SANDY SILT 2.0
275	275.4	3.5								TAN, SAPROLITIC, SILTY SAND
			3	3	4	7	SS-2	M		
270	270.4	8.5								
			8	10	15	25		M		
265	265.4	13.5								
			9	7	9	16				261.4 17.5 **WEATHERED ROCK** (GRANITE)
260	260.4	18.5						M		
			73	27/0.1		100/0.6				
255	255.4	23.5								
			17	40	60/0.4	100/0.9				
250	250.4	28.5								252.1 26.8 **RESIDUAL** GRAY, SAPROLITIC, SILTY SAND
			19	19	32	51	SS-3	M		
245	247.3	31.6	60/0.0			60/0.0				247.3 31.6 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 247.3 ft ON CRYSTALLINE ROCK (GRANITE)
240										
235										
230										
225										
220										
215										
210										
205										
200										

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 31+61	**OFFSET** 49ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 272.5 ft	**TOTAL DEPTH** 10.5 ft	**NORTHING** 705,001	**EASTING** 2,119,389	**24 HR.** Dry
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 06/27/08	**COMP. DATE** 06/27/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 10.5 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
275	272.5	0.0								272.5 GROUND SURFACE 0.0
			1	3	7	10	SS-6	M		**RESIDUAL** BROWN AND ORANGE, SAPROLITIC, SILTY SAND
270	269.0	3.5								
			7	8	9	17		M		
265	264.0	8.5								
			13	13	13	26		M		262.5 10.0
260	262.0	10.5	60/0.0			60/0.0				262.0 10.5 **WEATHERED ROCK** (GRANITE) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 262.0 ft ON CRYSTALLINE ROCK (GRANITE)
255										
250										
245										
240										
235										
230										
225										
220										
215										
210										
205										
200										
195										

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB1-C	**STATION** 31+74	**OFFSET** 8ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 275.8 ft	**TOTAL DEPTH** 27.0 ft	**NORTHING** 705,044	**EASTING** 2,119,388	**24 HR.** 11.2
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/01/08	**COMP. DATE** 07/01/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 16.3 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
280										
275	275.8	0.0								275.8 0.0 GROUND SURFACE
			1	7	8	15	SS-15	M		**RESIDUAL** ORANGE, SAPROLITIC, CLAYEY SAND
	272.3	3.5								
270			9	31	59	90		M		
	269.8	6.0								**WEATHERED ROCK** (GRANITE)
	267.3	8.5	72	28/0.1		100/0.6				
265										
	262.3	13.5	100/0.3			100/0.3				
260	259.5	16.3								259.5 16.3
			60/0.0			60/0.0	RS-1			**CRYSTALLINE ROCK** GRANITE, GRAY, VERY HARD, FRESH, CLOSELY TO VERY CLOSELY FRACTURED, APHANITIC REC=94% RQD=74%
255							RS-2			
250										
	248.8	27.0								248.8 27.0 Boring Terminated at Elevation 248.8 ft IN CRYSTALLINE ROCK (GRANITE)
245										
240										
235										
230										
225										
220										
215										
210										
205										

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB1-C	**STATION** 31+74	**OFFSET** 8ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 275.8 ft	**TOTAL DEPTH** 27.0 ft	**NORTHING** 705,044	**EASTING** 2,119,388	**24 HR.** 11.2
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/01/08	**COMP. DATE** 07/01/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 16.3 ft	
CORE SIZE NQ-3	**TOTAL RUN** 10.7 ft		**DRILLER** Contract Driller	

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
259.5											Begin Coring @ 16.3 ft
	259.5	16.3	0.7	3:25/0.7	(0.7)	(0.7)	RS-1	(10.1)	(7.9)		259.5 16.3 **CRYSTALLINE ROCK**
	258.8	17.0	5.0	*N=60/0.0*	100%	100%	RS-2	94%	74%		GRANITE, GRAY, VERY HARD, FRESH, CLOSELY TO VERY CLOSELY FRACTURED, APHANITIC
255				3:25/0.7							
				3:25/1.0	(4.4)	(4.2)					
				3:58/1.0							
	253.8	22.0		4:13/1.0	88%	84%					
				3:58/1.0							
			5.0	2:15/1.0	(5.0)	(3.0)					
250				3:51/1.0							
				5:38/1.0	100%	60%					
				5:31/1.0							
	248.8	27.0		4:40/1.0							248.8 27.0
				3:50/1.0							Boring Terminated at Elevation 248.8 ft IN CRYSTALLINE ROCK (GRANITE)
245											
240											
235											
230											
225											
220											
215											
210											
205											
200											
195											
190											
185											
180											

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 32+73	**OFFSET** 41ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 276.3 ft	**TOTAL DEPTH** 36.3 ft	**NORTHING** 705,122	**EASTING** 2,119,466	**24 HR.** 10.8
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 06/30/08	**COMP. DATE** 06/30/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 17.7 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
280											
	276.3	0.0								276.3 GROUND SURFACE	0.0
275			7	10	7	17	SS-10	M		**ARTIFICIAL FILL** BROWN, SANDY SILT WITH GRAVEL	
	272.8	3.5									
270			4	3	2	5		M		270.3	6.0
	267.8	8.5								**RESIDUAL** GRAY AND WHITE, SAPROLITIC, SILTY SAND	
265			7	6	6	12	S-11	M			
	262.8	13.5									
260			27	43	37	80	SS-12	M			
	258.6	17.7	60/0.1			60/0.1	RS-3			259.3	17.0
255										258.6 **WEATHERED ROCK** (GRANITE)	17.7
							RS-4			**CRYSTALLINE ROCK** GRANITE, HARD TO VERY HARD, FRESH TO SLIGHTLY WEATHERED, CLOSELY TO VERY CLOSELY FRACTURED, APHANITIC REC=89% RQD=70%	
250											
245											
240										240.0	36.3
										Boring Terminated at Elevation 240.0 ft IN CRYSTALLINE ROCK (GRANITE)	
235											
230											
225											
220											
215											
210											
205											

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 32+73	**OFFSET** 41ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 276.3 ft	**TOTAL DEPTH** 36.3 ft	**NORTHING** 705,122	**EASTING** 2,119,466	**24 HR.** 10.8
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 06/30/08	**COMP. DATE** 06/30/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 17.7 ft	
CORE SIZE NQ-3	**TOTAL RUN** 18.6 ft	**DRILLER** Contract Driller		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
258.6												
	258.6	17.7	3.6	2:20/1.0 2:20/1.0 *N=60/0.1* 2:30/1.0	(2.8) 78%	(2.3) 64%	RS-3	(16.6) 89%	(13.0) 70%		Begin Coring @ 17.7 ft	
255	255.0	21.3									258.6 **CRYSTALLINE ROCK** GRANITE, GRAY AND WHTIE, HARD TO VERY HARD, FRESH TO SLIGHTLY WEATHERED, CLOSELY TO VERY CLOSELY FRACTURED, APHANITIC	17.7
			5.0	2:25/1.0 :46/0.6 1:28/1.0 6:45/1.0 6:35/1.0 5:16/1.0 4:42/1.0	(4.0) 80%	(2.3) 46%	RS-4					
250	250.0	26.3										
			5.0	2:50/1.0 4:00/1.0 4:00/1.0 3:45/1.0 3:20/1.0	(5.0) 100%	(4.5) 90%						
245	245.0	31.3										
			5.0	5:08/1.0 6:22/1.0 9:15/1.0 11:20/1.0 10:39/1.0	(4.8) 96%	(3.9) 78%						
240	240.0	36.3									240.0	36.3
											Boring Terminated at Elevation 240.0 ft IN CRYSTALLINE ROCK (GRANITE)	
235												
230												
225												
220												
215												
210												
205												
200												
195												
190												
185												
180												

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 32+51	**OFFSET** 41ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 270.4 ft	**TOTAL DEPTH** 35.6 ft	**NORTHING** 705,037	**EASTING** 2,119,471	**24 HR.** 5.5
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/01/08	**COMP. DATE** 07/01/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 17.4 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) / DEPTH (ft)
270	270.4	0.0	2	4	3	7	SS-13	M		270.4 / 0.0 GROUND SURFACE
	266.9	3.5								268.4 / 2.0 ARTIFICIAL FILL BROWN, SILTY SAND
265			4	6	5	11	SS-14	M		RESIDUAL GRAY AND BROWN, SAPROLITIC, SILTY SAND
	261.9	8.5								
260			8	6	7	13		M		
	256.9	13.5								
255			7	12	20	32		W		255.4 / 15.0 WEATHERED ROCK (GRANITE)
	253.0	17.4								253.0 / 17.4 CRYSTALLINE ROCK GRANITE, GRAY, FRESH, HARD, MODERATELY CLOSE FRACTURE, APHANITIC REC=98% RQD=72%
250			60/0.1			60/0.1	RS-5			
							RS-6			
245							RS-7			
240										
235										234.8 / 35.6 Boring Terminated at Elevation 234.8 ft IN CRYSTALLINE ROCK (GRANITE)
230										
225										
220										
215										
210										
205										
200										

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 32+51	**OFFSET** 41ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 270.4 ft	**TOTAL DEPTH** 35.6 ft	**NORTHING** 705,037	**EASTING** 2,119,471	**24 HR.** 5.5
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/01/08	**COMP. DATE** 07/01/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 17.4 ft	
CORE SIZE NQ-3	**TOTAL RUN** 18.2 ft		**DRILLER** Contract Driller	

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) / DEPTH (ft)
253											Begin Coring @ 17.4 ft
	253.0	17.4	3.2	7:45/1.0 7:45/1.0 N=60/0.1	(3.2) 100%	(2.3) 72%	RS-5	(17.9) 98%	(12.8) 70%		253.0 / 17.4 CRYSTALLINE ROCK GRANITE, GRAY, FRESH, HARD, MODERATELY CLOSE FRACTURE, APHANITIC
250	249.8	20.6		7:45/1.0			RS-6				
			5.0	6:30/1.0 7:06/1.0 :30/0.2	(4.7) 94%	(3.6) 72%	RS-7				
245	244.8	25.6		2:40/1.0 3:15/1.0 2:50/1.0							
			5.0	3:02/1.0 3:29/1.0	(5.0) 100%	(3.1) 62%					
240	239.8	30.6		3:03/1.0 3:20/1.0 3:58/1.0 4:38/1.0							
			5.0	5:03/1.0	(5.0) 100%	(3.8) 76%					
235	234.8	35.6		5:57/1.0 7:06/1.0 6:10/1.0 6:03/1.0 11:03/1.0							234.8 / 35.6 Boring Terminated at Elevation 234.8 ft IN CRYSTALLINE ROCK (GRANITE)
230											
225											
220											
215											
210											
205											
200											
195											
190											
185											
180											
175											

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B1-C	**STATION** 32+66	**OFFSET** 14ft RT	**ALIGNMENT** -L-	**0 HR.** 9.5
COLLAR ELEV. 272.9 ft	**TOTAL DEPTH** 10.3 ft	**NORTHING** 705,067	**EASTING** 2,119,477	**24 HR.** 9.0
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 06/27/08	**COMP. DATE** 06/27/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 10.2 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
275											
	272.9	0.0	2	2	3	5	SS-4	M		272.9 GROUND SURFACE	0.0
										ARTIFICIAL FILL	
270	269.4	3.5								270.9 BROWN, SILTY SAND	2.0
			3	3	3	6	SS-5	M		**RESIDUAL** ORANGE-BROWN AND GRAY, MICACEOUS, SILTY SAND	
265	264.4	8.5									
			9	7	27	34		W			
	262.7	10.2	60/0.1			60/0.1				262.7	10.2
260										262.6 **CRYSTALLINE ROCK** (GRANITE)	10.3
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 262.6 ft IN CRYSTALLINE ROCK (GRANITE)	
255											
250											
245											
240											
235											
230											
225											
220											
215											
210											
205											
200											
195											

NCDOT BORE DOUBLE U4703_GEO_BH.GPJ NC_DOT.GDT 07/29/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 33+62	**OFFSET** 39ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 267.9 ft	**TOTAL DEPTH** 21.3 ft	**NORTHING** 705,148	**EASTING** 2,119,551	**24 HR.** 1.0
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/02/08	**COMP. DATE** 07/02/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 5.0 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
270										ELEV. (ft) DEPTH (ft)
	267.9	0.0								267.9 GROUND SURFACE 0.0
			0	0	0 WOH	0	SS-16	Sat.		**ALLUVIAL** GRAY, SANDY CLAY
265	264.4	3.5								264.4 3.5
	262.9	5.0	38	62/0.4		100/0.9				262.9 **WEATHERED ROCK** (GRANITE) 5.0
			60/0.1			60/0.1				**CRYSTALLINE ROCK**
260							RS-8			GRANITE, GRAY AND PINK, VERY HARD, FRESH, MODERATELY CLOSELY FRACTURED, PHANERITIC
							RS-9			REC=98% RQD=69%
255										
250										246.6 21.3
										Boring Terminated at Elevation 246.6 ft IN CRYSTALLINE ROCK (GRANITE)
245										
240										
235										
230										
225										
220										
215										
210										
205										
200										
195										

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 33+62	**OFFSET** 39ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 267.9 ft	**TOTAL DEPTH** 21.3 ft	**NORTHING** 705,148	**EASTING** 2,119,551	**24 HR.** 1.0
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/02/08	**COMP. DATE** 07/02/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 5.0 ft	
CORE SIZE NQ-3	**TOTAL RUN** 16.3 ft	**DRILLER** Contract Driller		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
262.9											ELEV. (ft) DEPTH (ft)
	262.9	5.0	1.3	3:45/1.0	(1.3)	(0.0)		(16.0)	(11.3)		Begin Coring @ 5.0 ft
	261.6	6.3	3.6	3:45/1.0	100%	0%	RS-8	98%	69%		262.9 **CRYSTALLINE ROCK** 5.0
260				N=60/0.1							GRANITE, GRAY AND PINK, VERY HARD, FRESH, MODERATELY CLOSELY FRACTURED, PHANERITIC
				1:36/0.3	(3.3)	(1.0)					
	258.0	9.9		5:50/1.0	92%	28%					
				3:43/1.0							
	256.6	11.3	1.4	6:00/1.0	(1.4)	(1.3)	RS-9				
				8:27/0.6	100%	93%					
255			5.0	3:00/0.4							
				6:00/1.0	(5.0)	(4.0)					
				5:00/1.0	100%	80%					
				5:50/1.0							
				4:15/1.0							
	251.6	16.3		7:08/1.0							
250			5.0	7:40/1.0	(5.0)	(5.0)					
				5:40/1.0	100%	100%					
				5:55/1.0							
				6:30/1.0							
	246.6	21.3		5:43/1.0							246.6 21.3
245				7:40/1.0							Boring Terminated at Elevation 246.6 ft IN CRYSTALLINE ROCK (GRANITE)
240											
235											
230											
225											
220											
215											
210											
205											
200											
195											
190											
185											

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 33+43	**OFFSET** 41ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 268.2 ft	**TOTAL DEPTH** 31.3 ft	**NORTHING** 705,066	**EASTING** 2,119,559	**24 HR.** 3.0
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/07/08	**COMP. DATE** 07/07/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 14.0 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
270										
	268.2	0.0								268.2 GROUND SURFACE 0.0
			0	0	1	1	SS-17	W		**ALLUVIAL** GRAY AND TAN, SILTY SAND
265	264.7	3.5								
			2	2	4	6	SS-18	Sat.		
260	259.7	8.5								261.2 7.0 GRAY, COARSE SAND
			21	32	17	49	SS-19	Sat.		258.2 10.0 **WEATHERED ROCK** (GRANITE)
255	254.7	13.5								
	254.3	13.9	100/0.2			100/0.2	RS-10			254.2 14.0 **CRYSTALLINE ROCK** GRANITE, GRAY, WHITE AND PINK, VERY HARD, FRESH, MODERATELY CLOSELY FRACTURED, APHANITIC REC=95% RQD=82%
			60/0.1			60/0.1	RS-11			
250										
245										
240										
										236.9 31.3 Boring Terminated at Elevation 236.9 ft IN CRYSTALLINE ROCK (GRANITE)
235										
230										
225										
220										
215										
210										
205										
200										
195										

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 33+43	**OFFSET** 41ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 268.2 ft	**TOTAL DEPTH** 31.3 ft	**NORTHING** 705,066	**EASTING** 2,119,559	**24 HR.** 3.0
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/07/08	**COMP. DATE** 07/07/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 14.0 ft	
CORE SIZE NQ-3	**TOTAL RUN** 17.3 ft		**DRILLER** Contract Driller	

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
254.2											Begin Coring @ 14.0 ft
	254.2	14.0	4.3	5:45/1.0 5:04/1.0 8:14/1.0 7:34/1.0 2:41/0.3	(4.0) 93%	(2.5) 58%	RS-10	(16.5) 95%	(14.2) 82%		254.2 **CRYSTALLINE ROCK** 14.0 GRANITE, GRAY, WHITE AND PINK, VERY HARD, FRESH, MODERATELY CLOSELY FRACTURED, APHANITIC
250	249.9	18.3					RS-11				
			5.0	6:30/1.0 7:09/1.0 7:52/1.0 10:02/1.0 12:50/1.0	(5.0) 100%	(5.0) 100%					
245	244.9	23.3									
			5.0	9:20/1.0 6:53/1.0 7:30/1.0 9:47/1.0 9:00/1.0	(4.5) 90%	(3.7) 74%					
240	239.9	28.3									
			3.0	7:02/1.0 9:09/1.0 10:15/1.0	(3.0) 100%	(3.0) 100%					
	236.9	31.3									236.9 31.3 Boring Terminated at Elevation 236.9 ft IN CRYSTALLINE ROCK (GRANITE)
235											
230											
225											
220											
215											
210											
205											
200											
195											
190											
185											
180											
175											

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Mohs, N. D.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B2-C	**STATION** 33+66	**OFFSET** 18ft LT	**ALIGNMENT** -L-	**0 HR.** 2.0
COLLAR ELEV. 267.6 ft	**TOTAL DEPTH** 12.2 ft	**NORTHING** 705,129	**EASTING** 2,119,562	**24 HR.** 1.0
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 06/27/08	**COMP. DATE** 06/27/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 12.2 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
270											
	267.6	0.0								267.6 GROUND SURFACE	0.0
			0	0	0 WOH	0	SS-7	Sat.		**ALLUVIAL**	
265										265.6 BROWN, SANDY SILT	2.0
	264.1	3.5								GRAY, COARSE SAND	
			2	2	3	5	SS-8	Sat.			
260										260.6	7.0
	259.1	8.5								**RESIDUAL**	
			50	12	8	20	SS-9	M		GRAY, SAPROLITIC, SILTY SAND	
										257.6	10.0
255	255.4	12.2								**WEATHERED ROCK**	
			60/0.0			60/0.0				(GRANITE) 255.4	12.2
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 255.4 ft ON CRYSTALLINE ROCK (GRANITE)	
250											
245											
240											
235											
230											
225											
220											
215											
210											
205											
200											
195											
190											

NCDOT BORE DOUBLE U4703_GEO_BH.GPJ NC_DOT.GDT 07/29/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 34+57	**OFFSET** 41ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 268.6 ft	**TOTAL DEPTH** 34.5 ft	**NORTHING** 705,180	**EASTING** 2,119,641	**24 HR.** 2.4
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/11/08	**COMP. DATE** 07/11/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 15.0 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
270	268.6	0.0								268.6 GROUND SURFACE 0.0
			0	0	0	0	SS-22	M		**ALLUVIAL** GRAY AND BROWN, SANDY SILT
265	265.1	3.5			WOH					
			0	1	3	4	SS-23	W		
260	260.1	8.5								261.6 7.0 GRAY, SANDY CLAY
			1	1	1	2	SS-24	W		258.1 10.5 **RESIDUAL** GRAY, SILTY SAND
255	255.1	13.5								255.1 13.5 **WEATHERED ROCK** (GRANITE) 253.6 15.0
			45	55/0.4		100/0.9	SS-25	M		**CRYSTALLINE ROCK** GRANITE, DARK GRAY, HARD TO MODERATELY HARD, FRESH TO SLIGHTLY WEATHERED, MODERATELY CLOSELY FRACTURED, APHANITIC, HIGHLY MICACEOUS REC=100% RQD=48%
250							RS-12			
							RS-13			
245										
240							RS-14			
235										234.1 34.5
										Boring Terminated at Elevation 234.1 ft IN CRYSTALLINE ROCK (GRANITE)
230										
225										
220										
215										
210										
205										
200										
195										

NCDOT BORE DOUBLE U4703_GEO_BH.GPJ NC_DOT.GDT 07/30/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 34+57	**OFFSET** 41ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 268.6 ft	**TOTAL DEPTH** 34.5 ft	**NORTHING** 705,180	**EASTING** 2,119,641	**24 HR.** 2.4
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/11/08	**COMP. DATE** 07/11/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 15.0 ft	
CORE SIZE NQ-3	**TOTAL RUN** 19.5 ft	**DRILLER** Contract Driller		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
253.6											Begin Coring @ 15.0 ft
	253.6	15.0	5.0	2:27/1.0 2:39/1.0 4:35/1.0 3:21/1.0 2:43/1.0	(5.0) 100%	(2.0) 40%	RS-12	(24.5) 126%	(9.4) 48%		253.6 **CRYSTALLINE ROCK** 15.0 GRANITE, DARK GRAY, HARD TO MODERATELY HARD, FRESH TO SLIGHTLY WEATHERED, MODERATELY CLOSELY FRACTURED, APHANITIC, HIGHLY MICACEOUS
250											
	248.6	20.0	5.0	2:47/1.0 2:38/1.0 2:41/1.0 2:54/1.0 3:08/1.0	(5.0) 100%	(2.2) 44%	RS-13				
245											
	243.6	25.0	5.0	2:41/1.0 2:49/1.0 2:39/1.0 3:18/1.0 4:06/1.0	(5.0) 100%	(2.5) 50%					
240											
	238.6	30.0	4.5	2:46/1.0 2:56/1.0 3:58/1.0 4:20/1.0 5:28/0.5	(4.5) 100%	(2.7) 60%	RS-14				
235											
	234.1	34.5									234.1 34.5 Boring Terminated at Elevation 234.1 ft IN CRYSTALLINE ROCK (GRANITE)
230											
225											
220											
215											
210											
205											
200											
195											
190											
185											
180											
175											

NCDOT CORE SINGLE U4703_GEO_BH.GPJ NC_DOT.GDT 07/31/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Milkovits, J. I.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 34+35	**OFFSET** 41ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 268.7 ft	**TOTAL DEPTH** 30.5 ft	**NORTHING** 705,095	**EASTING** 2,119,646	**24 HR.** 4.0
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/14/08	**COMP. DATE** 07/15/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 11.5 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
270										
	268.7	0.0								268.7 GROUND SURFACE 0.0
			1	2	2	4		M		**ALLUVIAL** GRAY AND BROWN, SANDY SILT
265	265.2	3.5								
			1	2	4	6		M		261.7 7.0
260	260.2	8.5						M		**RESIDUAL** 260.2 8.5 BROWN AND ORANGE, SAPROLITIC SILTY SAND
			9	91/0.2		100/0.7				
	257.2	11.5	60/0.0			60/0.0				**WEATHERED ROCK** (GRANITE) 257.2 11.5
255							RS-15			**CRYSTALLINE ROCK** GRANITE, GRAY, BLACK AND WHITE, HARD, FRESH TO SLIGHTLY WEATHERED, CLOSELY TO MODERATELY CLOSELY FRACTURED, APHANITIC WITH FELDSPAR PHENOCRYSTS REC=88% RQD=86%
							RS-16			
250										
245										
240										
										238.2 30.5
235										Boring Terminated at Elevation 238.2 ft IN CRYSTALLINE ROCK (GRANITE)
230										
225										
220										
215										
210										
205										
200										
195										

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Milkovits, J. I.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 34+35	**OFFSET** 41ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 268.7 ft	**TOTAL DEPTH** 30.5 ft	**NORTHING** 705,095	**EASTING** 2,119,646	**24 HR.** 4.0
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/14/08	**COMP. DATE** 07/15/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 11.5 ft	
CORE SIZE NQ-3	**TOTAL RUN** 19.0 ft		**DRILLER** Contract Driller	

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
257.2											Begin Coring @ 11.5 ft
	257.2	11.5	4.0	:49/1.0 *N=60/0.0* 5:06/1.0 5:06/1.0 6:40/1.0	(2.2) 55%	(2.0) 50%	RS-15	(16.7) 88%	(16.3) 86%		257.2 **CRYSTALLINE ROCK** 11.5 GRANITE, GRAY, BLACK AND WHITE, HARD, FRESH TO SLIGHTLY WEATHERED, CLOSELY TO MODERATELY CLOSELY FRACTURED, APHANITIC WITH FELDSPAR PHENOCRYSTS
255	253.2	15.5									
			5.0	6:20/1.0 5:01/1.0 5:03/1.0 5:04/1.0 6:15/1.0	(5.0) 100%	(5.0) 100%	RS-16				
250	248.2	20.5									
			5.0	5:00/1.0 5:50/1.0 5:56/1.0 6:54/1.0 8:46/1.0	(5.0) 100%	(5.0) 100%					
245	243.2	25.5									
			5.0	5:54/1.0 2:38/1.0 3:36/1.0 4:15/1.0 3:43/1.0	(4.5) 90%	(4.3) 86%					
240	238.2	30.5									238.2 30.5
235											Boring Terminated at Elevation 238.2 ft IN CRYSTALLINE ROCK (GRANITE)
230											
225											
220											
215											
210											
205											
200											
195											
190											
185											
180											

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Milkovits, J. I.	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. B3-C	**STATION** 34+42	**OFFSET** 14ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 267.0 ft	**TOTAL DEPTH** 9.6 ft	**NORTHING** 705,123	**EASTING** 2,119,644	**24 HR.** FIAD
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 07/15/08	**COMP. DATE** 07/15/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 9.6 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
270										
	267.0	0.0								267.0 GROUND SURFACE 0.0
265			4	3	2	5		W		**ALLUVIAL** GRAY, SANDY SILT
	263.5	3.5								
260			0	1	1	2		W		
	258.5	8.5								258.5 8.5
	257.4	9.6	100/0.2			100/0.2				257.4 **WEATHERED ROCK** (GRANITE) 9.6
255			60/0.0			60/0.0				Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 257.4 ft ON CRYSTALLINE ROCK (GRANITE)
250										
245										
240										
235										
230										
225										
220										
215										
210										
205										
200										
195										
190										

NCDOT BORE DOUBLE U4703_GEO_BH.GPJ NC_DOT.GDT 07/29/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 35+47	**OFFSET** 49ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 277.2 ft	**TOTAL DEPTH** 4.0 ft	**NORTHING** 705,216	**EASTING** 2,119,724	**24 HR.** FIAD
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 07/09/08	**COMP. DATE** 07/09/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 4.0 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
280										
	277.2	0.0	2	3	2	5	SS-20	M		277.2 GROUND SURFACE 0.0
275										**RESIDUAL** TAN, SILTY SAND
	273.7	3.5								273.7 3.5
	273.2	4.0	60/0.1			60/0.1				273.2 **CRYSTALLINE ROCK** (GRANITE) 4.0
270			60/0.0			60/0.0				Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 273.2 ft ON CRYSTALLINE ROCK (GRANITE)
265										
260										
255										
250										
245										
240										
235										
230										
225										
220										
215										
210										
205										
200										

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y	
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 35+21	**OFFSET** 49ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 279.7 ft	**TOTAL DEPTH** 3.5 ft	**NORTHING** 705,115	**EASTING** 2,119,730	**24 HR.** Dry
DRILL MACHINE CME-55	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 07/10/08	**COMP. DATE** 07/10/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 3.5 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
280										279.7 GROUND SURFACE 0.0
	279.7	0.0	1	3	97/0.2	100/0.7		M		278.7 **RESIDUAL** TAN, SANDY CLAY 1.0
275	276.2	3.5	60/0.0			60/0.0				276.2 **WEATHERED ROCK** (GRANITE) 3.5
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 276.2 ft ON CRYSTALLINE ROCK (GRANITE)
270										
265										
260										
255										
250										
245										
240										
235										
230										
225										
220										
215										
210										
205										
200										

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE	**GEOLOGIST** Kuntukova, Y
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK			**GROUND WTR (ft)**
BORING NO. EB2-C	**STATION** 35+34	**OFFSET** CL	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 279.4 ft	**TOTAL DEPTH** 21.1 ft	**NORTHING** 705,166	**EASTING** 2,119,727	**24 HR.** FIAD
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/10/08	**COMP. DATE** 07/10/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 6.6 ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
280	279.4	0.0	1	2	5	7	SS-21	M		GROUND SURFACE **RESIDUAL** TAN, SANDY CLAY	279.4	0.0
	275.9	3.5	100/0.2			100/0.2				**WEATHERED ROCK** (GRANITE)	275.9	3.5
275	272.8	6.6	60/0.0			60/0.0	RS-17			**CRYSTALLINE ROCK** GRANITE, GRAY, WHITE AND PINK, HARD TO VERY HARD, FRESH TO SLIGHTLY WEATHERED, CLOSELY TO MODERATELY CLOSELY FRACTURED, PHANERITIC REC=92% RQD=81%	272.8	6.6
270												
265							RS-18					
260											258.3	21.1
255										Boring Terminated at Elevation 258.3 ft IN CRYSTALLINE ROCK (GRANITE)		
250												
245												
240												
235												
230												
225												
220												
215												
210												
205												

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 35871.1.1	**ID.** U-4703	**COUNTY** WAKE		**GEOLOGIST** Kuntukova, Y
SITE DESCRIPTION BRIDGE ON -L- (SR 2812, TIMBER DRIVE EXTENSION) OVER MAHLER'S CREEK				**GROUND WTR (ft)**
BORING NO. EB2-C	**STATION** 35+34	**OFFSET** CL	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 279.4 ft	**TOTAL DEPTH** 21.1 ft	**NORTHING** 705,166	**EASTING** 2,119,727	**24 HR.** FIAD
DRILL MACHINE CME-55	**DRILL METHOD** NW Casing w/ Core		**HAMMER TYPE** Automatic	
START DATE 07/10/08	**COMP. DATE** 07/10/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** 6.6 ft	
CORE SIZE NQ-3	**TOTAL RUN** 14.5 ft	**DRILLER** Contract Driller		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS	ELEV. (ft)	DEPTH (ft)
272.8											Begin Coring @ 6.6 ft		
270	272.8	6.6	4.5	3:40/1.0 *N=60/0.0* 3:03/1.0 6:21/1.0 9:13/1.0 4:00/0.5	(3.4) 76%	(1.7) 38%	RS-17	(13.4) 92%	(11.7) 81%		**CRYSTALLINE ROCK** GRANITE, GRAY, WHITE AND PINK, HARD TO VERY HARD, FRESH TO SLIGHTLY WEATHERED, CLOSELY TO MODERATELY CLOSELY FRACTURED, PHANERITIC	272.8	6.6
	268.3	11.1	5.0	8:27/1.0 7:07/1.0 6:29/1.0 7:04/1.0 10:03/1.0	(5.0) 100%	(5.0) 100%	RS-18						
265	263.3	16.1	5.0	12:15/1.0 5:19/1.0 5:15/1.0 6:10/1.0 5:30/1.0	(5.0) 100%	(5.0) 100%						258.3	21.1
260	258.3	21.1									Boring Terminated at Elevation 258.3 ft IN CRYSTALLINE ROCK (GRANITE)		
255													
250													
245													
240													
235													
230													
225													
220													
215													
210													
205													
200													
195													

EB1-A

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1	49 LT	31+87	0.0-1.5	A-4(5)	39	9	16.2	15.2	58.4	10.2	91	81	65	-	-
SS-2	49 LT	31+87	3.5-5.0	A-2-4(0)	32	NP	36.6	40.0	13.2	10.2	100	76	31	-	-
SS-3	49 LT	31+87	28.5-30.0	A-2-4(0)	23	NP	56.5	31.0	6.3	6.1	90	54	15	-	-

EB1-B

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-6	49 RT	31+61	0.0-1.5	A-2-4(0)	22	4	42.0	29.6	14.1	14.3	98	72	32	-	-

EB1-C

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-15	8 RT	31+74	0.0-1.5	A-2-6(0)	31	11	44.9	23.5	9.2	22.4	98	66	35	-	-

B1-A

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-10	41 LT	32+73	0.0-1.5	A-4(1)	34	10	30.0	34.3	17.3	18.4	92	76	38	-	-
S-11	41 LT	32+73	8.5-10.0	A-2-4(0)	31	6	29.4	40.2	18.2	12.2	91	76	34	-	-
SS-12	41 LT	32+73	13.5-15.0	A-2-4(0)	23	NP	35.2	50.4	10.3	4.1	96	79	20	-	-

B1-B

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-13	41 RT	32+51	0.0-1.5	A-2-4(0)	32	6	32.9	36.3	10.4	20.4	93	75	33	-	-
SS-14	41 RT	32+51	3.5-5.0	A-2-4(0)	26	NP	28.4	52.2	11.2	8.2	100	92	26	-	-

B1-C

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-4	14 RT	32+66	0.0-1.5	A-2-4(0)	30	7	31.8	33.1	12.7	22.4	89	71	35	-	-
SS-5	14 RT	32+66	3.5-5.0	A-2-4(0)	31	NP	23.9	51.8	12.0	12.2	100	93	30	-	-

B2-A

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-16	39 LT	33+62	0.0-1.5	A-6(2)	31	11	27.7	29.7	20.4	22.2	99	83	47	-	-

B2-B

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-17	41 RT	33+43	0.0-1.5	A-2-4(0)	25	NP	32.3	38.4	13.1	16.2	96	82	32	-	-
SS-18	41 RT	33+43	3.5-5.0	A-2-4(0)	19	NP	38.8	44.4	6.7	10.1	99	82	21	-	-
SS-19	41 RT	33+43	8.5-10.0	A-1-b(0)	24	NP	80.8	9.7	3.4	6.1	71	34	8	-	-

B2-C

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-7	18 LT	33+66	0.0-1.5	A-4(2)	32	10	22.0	35.7	23.9	18.4	100	89	48	-	-
SS-8	18 LT	33+66	3.5-5.0	A-1-b(0)	17	NP	73.4	21.2	1.3	4.1	93	46	7	-	-
SS-9	18 LT	33+66	8.5-10.0	A-2-4(0)	19	NP	42.1	45.0	7.8	5.1	100	78	18	-	-

B3-A

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-22	41 LT	34+57	0.0-1.5	A-4(6)	37	10	15.6	25.9	32.3	26.3	100	92	65	-	-
SS-23	41 LT	34+57	3.5-5.0	A-4(0)	19	2	16.8	53.7	11.3	18.2	100	94	36	-	-
SS-24	41 LT	34+57	8.5-10.0	A-6(2)	26	11	19.2	38.0	14.5	28.3	99	90	48	-	-
SS-25	41 LT	34+57	13.5-14.5	A-2-4(0)	24	NP	36.6	50.7	6.7	6.1	95	82	18	-	-

EB2-A

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-20	49 LT	35+47	0.0-1.5	A-2-4(0)	17	NP	40.0	32.7	9.1	18.2	96	74	30	-	-

EB2-C

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-21	CL	35+34	0.0-1.5	A-6(4)	34	17	34.7	23.6	9.3	32.3	98	77	44	-	-

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

FIELD SCOUR REPORT

WBS: 35871.1.1 TIP: U-4703 COUNTY: Wake

DESCRIPTION(1): Bridge on -L- (SR 2812, Timber Dr.) over Mahler's Creek

EXISTING BRIDGE

Information from: Field Inspection X Microfilm ____ (reel ____ pos: ____)
Other (explain) ____

Bridge No.: N/A Length: N/A Total Bents: N/A Bents in Channel: N/A Bents in Floodplain: N/A
Foundation Type: N/A

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: N/A

Interior Bents: N/A

Channel Bed: N/A

Channel Bank: N/A

EXISTING SCOUR PROTECTION

Type(3): N/A

Extent(4): N/A

Effectiveness(5): N/A

Obstructions(6): N/A

DESIGN INFORMATION

Channel Bed Material(7): Alluvial, loose, silty sand (A-2-4), and coarse sand (A-1-b)

Channel Bank Material(8): Alluvial, very soft, sandy silt (A4)

Channel Bank Cover(9): Grasses and trees.

Floodplain Width(10): Approximately 150'

Floodplain Cover(11): Grasses and trees.

Stream is(12): Aggrading ____ Degrading X Static ____

Channel Migration Tendency(13): East

Observations and Other Comments: Narrow stream channel at -L- centerline, water is shallow <2'.

DESIGN SCOUR ELEVATIONS(14) Feet X Meters ____

BENTS		
B1	B2	B3
271.0'	265.5'	255.0'

Comparison of DSE to Hydraulics Unit theoretical scour:
The Geotechnical Engineering Unit agrees with the Hydraulic's Unit theoretical scour elevations for the 100 year event at Bents 1 and 2. The DSE should be 271.0' at B1, and 265.5' at B2. Based on the geologic conditions at Bent 3, the Geotechnical Engineering Unit and Hydraulics Unit agree that the DSE should be raised from the theoretical scour elevation proposed in the Hydraulics report dated 12/5/2007. The DSE should be 255.8' at B3.

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

	Bank						
Sample No.	SS-7						
Retained #4							
Passed #10	100						
Passed #40	89						
Passed #200	48						
Coarse Sand	22						
Fine Sand	35.7						
Silt	23.9						
Clay	18.4						
LL	32						
PI	10						
AASHTO	A-4(6)						
Station	33+66						
Offset	18' LT						
Depth	0.0'-1.5'						

INSTRUCTIONS

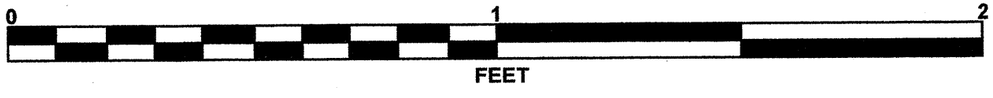
1 Describe the specific site's location, including route number and body of water crossed.
2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
3 Note existing scour protection (e.g. rip rap).
4 Describe extent of existing scour protection.
5 Describe whether or not the scour protection appears to be working.
6 Note obstructions such as dams, fallen trees, debris at bents, etc.
7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
10 Determine the approximate floodplain width from field observation or a topographic map.
11 Describe the material covering the floodplain (e.g. grass, trees, crops).
12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoritical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

Reported by: Nathan Mohs, LG **Date:** 6/30/2008

CORE PHOTOGRAPHS

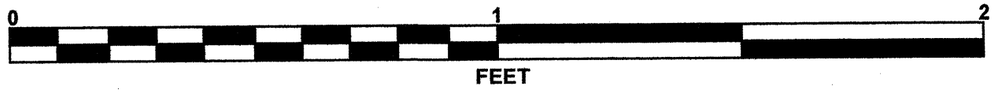
EB1-C

BOXES 1 & 2: 16.3 - 27.0 FEET



B1-A

BOXES 1 & 2: 17.7 - 36.3 FEET



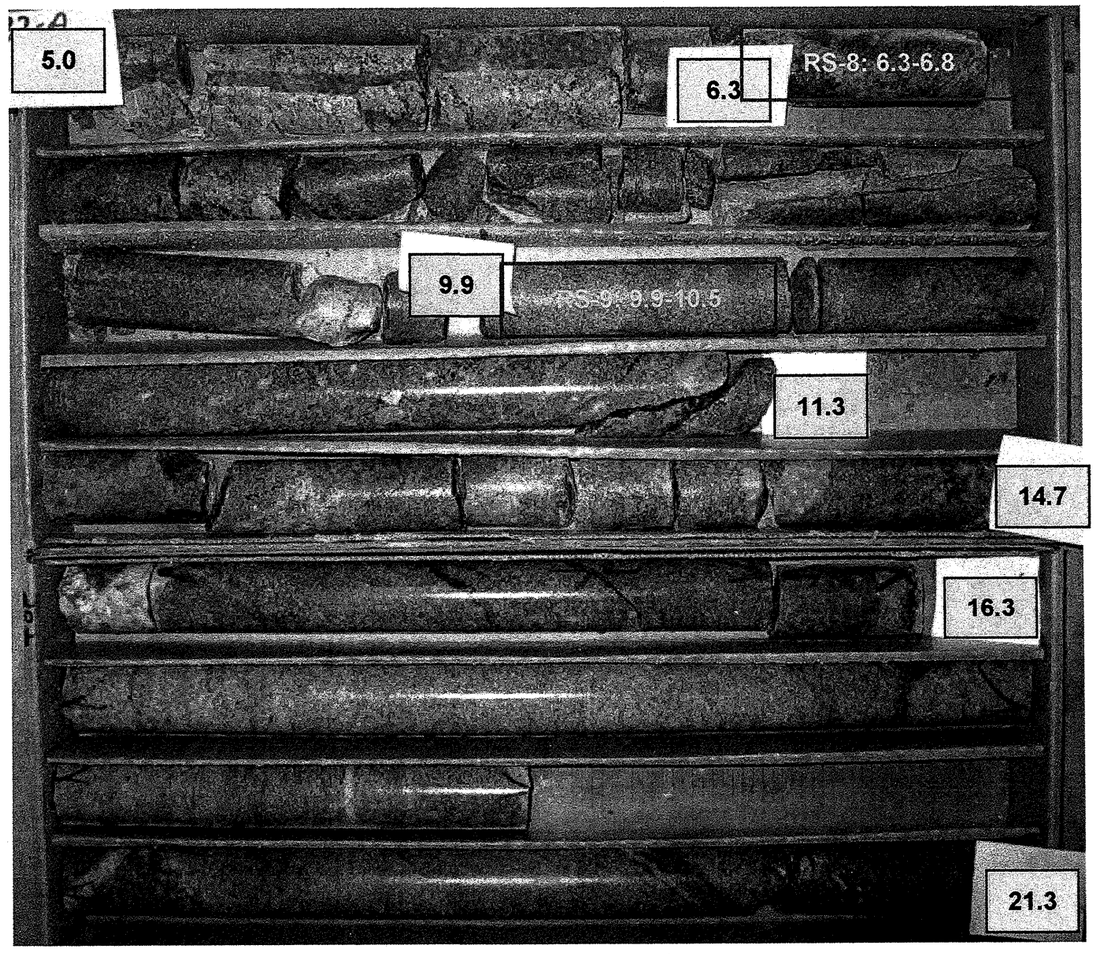
CORE PHOTOGRAPHS

B1-B

BOXES 1 - 3: 17.4 - 35.6 FEET

B2-A

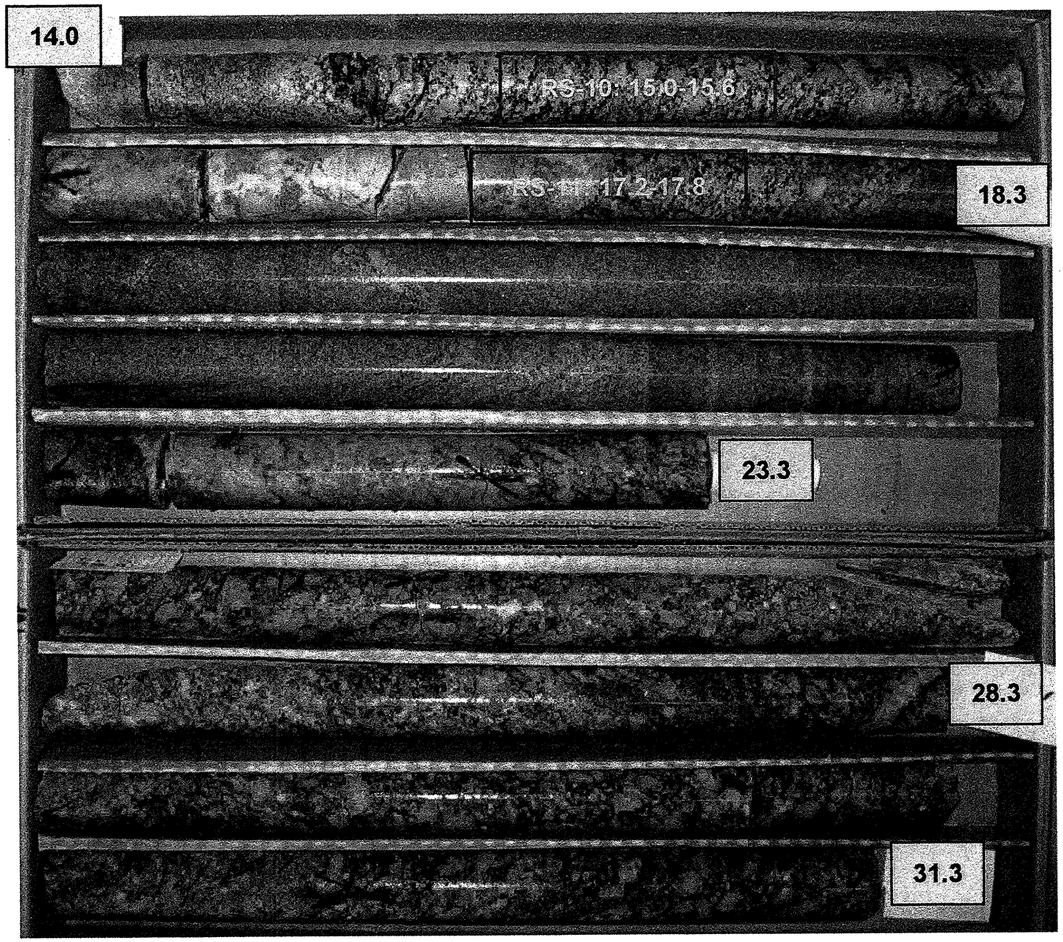
BOXES 1 & 2: 5.0 - 21.3 FEET



CORE PHOTOGRAPHS

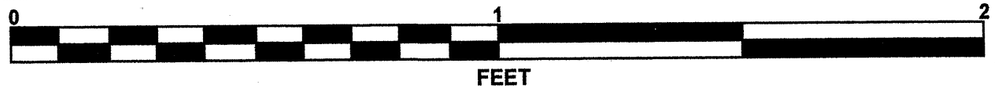
B2-B

BOXES 1 & 2: 14.0 - 31.3 FEET



B3-A

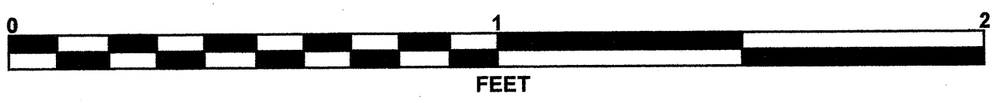
BOXES 1 & 2: 15.0 - 34.5 FEET



CORE PHOTOGRAPHS

B3-B

BOXES 1 & 2: 11.5- 30.5 FEET



EB2-C

BOXES 1 & 2: 6.6 - 21.1 FEET