#### **CONTENTS**

SHEET NO. 2 3 4-15

330

(m)

REFERENCE

**DESCRIPTION** TITLE SHEET LEGEND SITE PLAN AND PROFILE BORING LOGS, CORE LOGS, AND CORE PHOTOS ROCK STRENGTH TEST RESULTS

# STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT** 

# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY <u>N</u>ASH

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

SITE DESCRIPTION NOISE WALL 2 ALONG US 301 BYPASS FROM -L- STA 30+81 TO STA 38+46

# 36591 PROIEC

STATE N.C

NO.

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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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICL ENGINEERING UNIT AT 1991 707-6860. THE SUBSIFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSUFFACE DATA AND MAY NOT INCESSARILY REFLECT THE ACTUAL SUBSUFFACE 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 DECREE OF RELIBULITY INHERENT IN THE SUBSUFFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THES SUBJFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THES WATER LEVELS OR SOL MOSTURE CONDITIONS MAY VARY CONSDERABLY WITH THE ACCOMPING OL CUMUTIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CALITORIED 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTION STO 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 CONDENSATION OF FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- TES: THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR CUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR ISI CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT. BY HAVING REDUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAVES 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

B. KEANEY

B. HOWEY

C. JONES

**B. THOMPSON** 

D. TIGNOR

HDR ENGINEERING, INC. INVESTIGATED BY **F&R, INC.** 

CHECKED BY \_ECH

SUBMITTED BY HDR ENGINEERING, INC.



# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

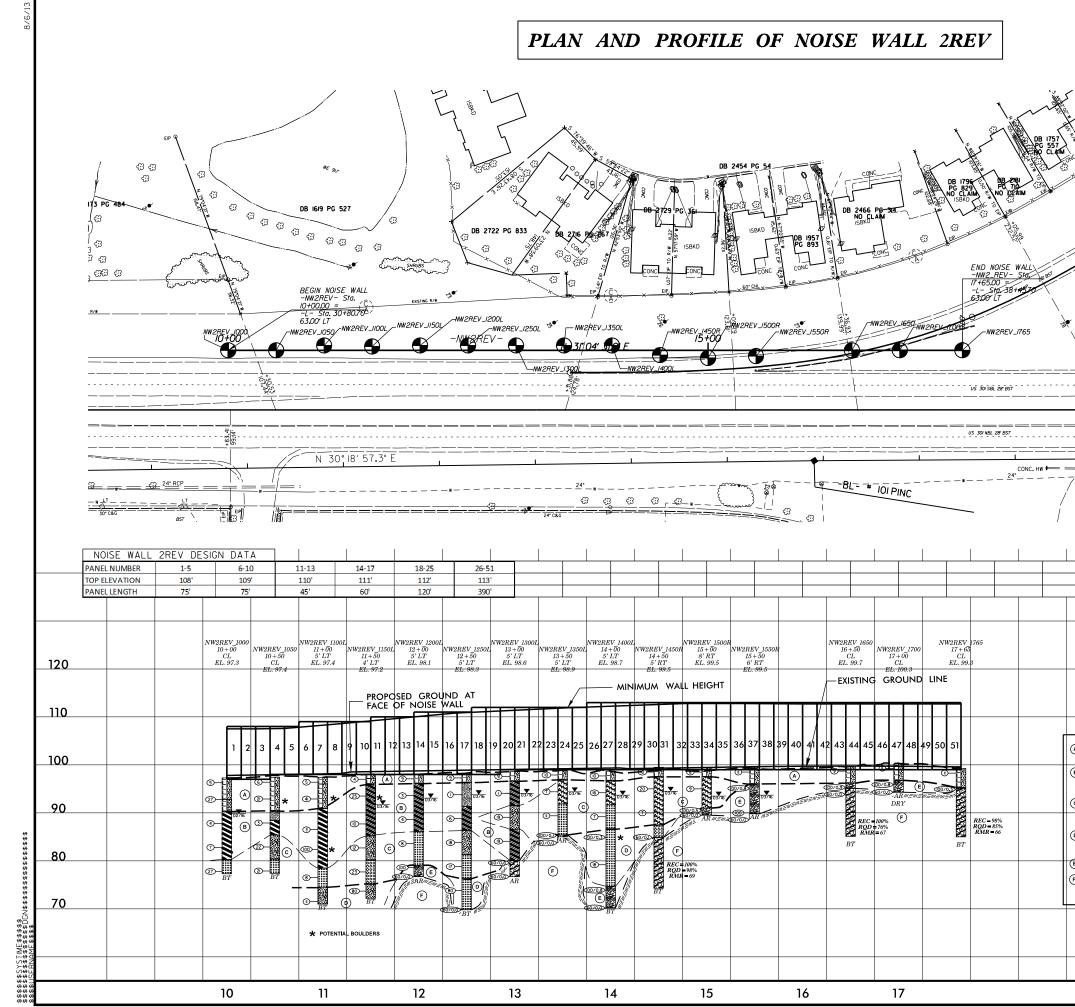
	SOIL D	ESCRIPTION			GRADATION				ROCK DESCR	
		SOLIDATED, OR WEATHERED E WER AUGER AND YIELD LESS			TES A GOOD REPRESENTATION OF PARTIC INDICATES THAT SOIL PARTICLES ARE AL					D YIELD SPT REFUSAL IF TESTE _ PLAIN MATERIAL WOULD YIELD
ACCORDING TO THE	STANDARD PENETRATION TES	ST (AASHTO T 206, ASTM DI DESCRIPTIONS GENERALLY IN	586). SOIL CLASSIFICATION		ES A MIXTURE OF UNIFORM PARTICLE SI					ER EQUAL TO OR LESS THAN 0.1 TION BETWEEN SOIL AND ROCK
CONSISTENCY, COLOR,	TEXTURE, MOISTURE, AASHTO	CLASSIFICATION, AND OTHER	R PERTINENT FACTORS SUCH		ANGULARITY OF GRAIN	NS	REPRESENTED BY	Y A ZONE OF WEATHER	RED ROCK.	
		RITY, STRUCTURE, PLASTICITY ERBEDDED FINE SAND LAYERS,			TY OR ROUNDNESS OF SOIL GRAINS IS DE	ESIGNATED BY THE TERMS:		S ARE TYPICALLY DIVID		
		AASHTO CLASSIFIC		ANGULAR, SUBA	NGULAR, SUBROUNDED, OR ROUNDED.	TION	WEATHERED ROCK (WR)		N-CUASTAL PLAIN M 9 BLOWS PER FOOT	ATERIAL THAT WOULD YIELD SP1 IF TESTED.
	GRANULAR MATERIALS	SILT-CLAY MATERIALS	ORGANIC MATERIALS		MINERALOGICAL COMPOSI		CRYSTALLINE			N IGNEOUS AND METAMORPHIC RC
	≤ 35% PASSING #200)	( > 35% PASSING *200) A-4 A-5 A-6 A-7			AMES SUCH AS QUARTZ,FELDSPAR,MICA,T IN DESCRIPTIONS WHEN THEY ARE CONSID		ROCK (CR)	J. J. GNE	EISS, GABBRO, SCHIS	
GROUP A-1 CLASS. A-1-a A-1-b	A-2-4 A-2-5 A-2-6 A-2-		A-1, A-2 A-4, A-5 A-3 A-6, A-7		COMPRESSIBILITY		NON-CRYSTALLIN			N METAMORPHIC AND NON-COASTA AT WOULD YEILD SPT REFUSAL
SYMBOL 000000000000000000000000000000000000					GHTLY COMPRESSIBLE	LL < 31	ROCK (NCR)	ROC	CK TYPE INCLUDES	PHYLLITE, SLATE, SANDSTONE, ET ENTS CEMENTED INTO ROCK, BUT
X PASSING					ERATELY COMPRESSIBLE HLY COMPRESSIBLE	LL = 31 - 50 LL > 50	COASTAL PLAIN SEDIMENTARY RO	ОСК <b>ЦАЛ</b> SPT	T REFUSAL. ROCK T	YPE INCLUDES LIMESTONE, SANDS
*10 50 MX			GRANULAR SILT- MUCK,		PERCENTAGE OF MATER	RIAL	(CP)	SHE	ELL BEDS, ETC. WEATHEF	
*40 30 MX 50 MX 5 *200 15 MX 25 MX 1	51 MN 10 MX 35 MX 35 MX 35 MX 35 M	1X 36 MN 36 MN 36 MN 36 MN	SOILS SOILS PEAT	ORGANIC MATERIA	GRANULAR SILT - CLAY <u>SOILS</u> <u>SOILS</u>	OTHER MATERIAL	FRESH RO			AY SHOW SLIGHT STAINING. ROCK
MATERIAL				TRACE OF ORGANIC	MATTER 2 - 3% 3 - 5%	TRACE 1 - 10%		AMMER IF CRYSTALLINE.		HI SHOW SEIGHT STHINING, NOCK
PASSING #40			SOILS WITH	LITTLE ORGANIC MA MODERATELY ORGANI		LITTLE 10 - 20% SOME 20 - 35%				E JOINTS MAY SHOW THIN CLAY C
LL – PI 6 MX		IN 40 MX 41 MN 40 MX 41 MN N 10 MX 10 MX 11 MN 11 MN	LITTLE OR HIGHL	UTCUL V. ODCANTO	> 10% > 20%	HIGHLY 35% AND ABOVE		RYSTALS ON A BROKEN S F A CRYSTALLINE NATUR		E BRIGHTLY. ROCK RINGS UNDER H
GROUP INDEX Ø	0 0 4 MX	8 MX 12 MX 16 MX NO MX	AMOUNTS OF SOILS		GROUND WATER					DISCOLORATION EXTENDS INTO RO
USUAL TYPES STONE FRAGS.	FINE SILTY OR CLAYEY	SILTY CLAYEY	ORGANIC SOLES MATTER	$\nabla$	WATER LEVEL IN BORE HOLE IMMEDIA	ATELY AFTER DRILLING				GRANITOID ROCKS SOME OCCASIONA ALLINE ROCKS RING UNDER HAMMEF
	SAND GRAVEL AND SAND	SOILS SOILS		▼	STATIC WATER LEVEL AFTER 24	HOURS				ORATION AND WEATHERING EFFECT
GEN BATING			FAIR TO		PERCHED WATER, SATURATED ZONE, OR	WATER BEARING STRATA	(MOD.) GR	RANITOID ROCKS, MOST FE	ELDSPARS ARE DULL	AND DISCOLORED, SOME SHOW CLA
AS SUBGRADE	EXCELLENT TO GOOD	FAIR TO POOR	POOR POOR UNSUITAI		SPRING OR SEEP			JLL SOUND UNDER HAMME [TH FRESH ROCK.	ER BLOWS AND SHOW	S SIGNIFICANT LOSS OF STRENGTH
Р		- 30 ; PI OF A-7-6 SUBGROUP IS >	≻LL - 30	000-					Z DISCOLORED OR ST	AINED. IN GRANITOID ROCKS, ALL F
	CONSISTENC	Y OR DENSENESS			MISCELLANEOUS SYMBO	DLS				INIZATION. ROCK SHOWS SEVERE L PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY SOIL TYPE	COMPACTNESS OR	RANGE OF STANDARD PENETRATION RESISTENCE	RANGE OF UNCONFINED COMPRESSIVE STRENGTH		BANKMENT (RE) 25/025 DIP & DIP DIR	ECTION		TESTED, WOULD YIELD S		FICK, NUCK DIVES CEUNK SUUND
	CONSISTENCY	(N-VALUE)	(TONS/FT <sup>2</sup> )	WITH SOIL C						AINED. ROCK FABRIC CLEAR AND E
GENERALLY	VERY LOOSE LOOSE	< 4 4 TO 10		SOIL SYMBOL	- SPT DAT TEST BOP	RING SLOPE INDICATOR INSTALLATION				RANITOID ROCKS ALL FELDSPARS 4 NG ROCK USUALLY REMAIN.
GRANULAR MATERIAL	MEDIUM DENSE	10 TO 30	N/A				<u>IF</u>	TESTED, WOULD YIELD S	SPT N VALUES > 100	BPF
(NON-COHESIVE)	DENSE VERY DENSE	30 TO 50 > 50		THAN ROADW	AY EMBANKMENT AUGER BORING	TEST	VERY AL			AINED. ROCK FABRIC ELEMENTS AF STATUS, WITH ONLY FRAGMENTS O
	VERY SOFT	< 2	< 0.25	INFERRED SC	DIL BOUNDARY - CORE BORING	SOUNDING ROD	(V SEV.) RE	EMAINING. SAPROLITE IS	AN EXAMPLE OF RO	CK WEATHERED TO A DEGREE THAT
GENERALLY	SOFT	2 TO 4	Ø.25 TO Ø.5							IF TESTED, WOULD YIELD SPT N V
SILT-CLAY MATERIAL	MEDIUM STIFF STIFF	4 TO 8 8 TO 15	0.5 TO 1.0 1 TO 2	INFERRED RO	ő	WITH CORE	COMPLETE RO SC	CK REDUCED TO SOIL, R	RUCK FABRIC NUT DI DNS. QUARTZ MAY BE	SCERNIBLE, OR DISCERNIBLE ONLY PRESENT AS DIKES OR STRINGERS
(COHESIVE)	VERY STIFF HARD	15 TO 30 > 30	2 TO 4	TTTTT ALLUVIAL SC	DIL BOUNDARY A PIEZOMETER INSTALLATION	- SPT N-VALUE		SO AN EXAMPLE.		
		OR GRAIN SIZE			RECOMMENDATION SYMB	n s			ROCK HAR	DNESS
U.S. STD. SIEVE SIZE	4 10	40 60 200	270					ANNOT BE SCRATCHED BY EVERAL HARD BLOWS OF		ICK. BREAKING OF HAND SPECIMEN
OPENING (MM)	4.76 2.00	0.42 0.25 0.075		EXCAVATION	UNSUITABLE WASTE	ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF				WITH DIFFICULTY. HARD HAMMER B
BOULDER COB	BLE GRAVEL	COARSE FINE	SILT CLAY	SHALLOW	UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK	EMBANKMENT OR BACKFILL		D DETACH HAND SPECIME		
	0B.) (GR.)	SAND SAND (CSE. SD.) (F SD.)	(SL.) (CL.)		ABBREVIATIONS					S OR GROOVES TO 0.25 INCHES DE PICK. HAND SPECIMENS CAN BE D
GRAIN MM 305	75 2.0	0.25	0.05 0.005	AR - AUGER REFUSAL	MED MEDIUM	VST - VANE SHEAR TEST		MODERATE BLOWS.	V OF H GEOEDGISTS	FICK, HAND SPECIMENS CAN BE D
SIZE IN. 12	3	0.20	0.000 0.0000	BT - BORING TERMINATE	D MICA MICACEOUS	WEA WEATHERED				P BY FIRM PRESSURE OF KNIFE C
S	OIL MOISTURE - (	CORRELATION OF	TERMS	CL CLAY CPT - CONE PENETRATI	MOD MODERATELY ON TEST NP - NON PLASTIC	$\gamma$ - UNIT WEIGHT $\gamma_{\rm d}$ - DRY UNIT WEIGHT		AN BE EXCAVATED IN SMA DINT OF A GEOLOGIST'S I		S 1 INCH MAXIMUM SIZE BY HARD
SOIL MOISTURE S			IELD MOISTURE DESCRIPTIO	CSE COARSE	ORG ORGANIC					E OR PICK. CAN BE EXCAVATED IN
(ATTERBERG LIM	ITS) DESCRI	PTION		DMT - DILATOMETER TE DPT - DYNAMIC PENETR		EST <u>SAMPLE ABBREVIATIONS</u> S - BULK		ROM CHIPS TO SEVERAL : ECES CAN BE BROKEN B		MODERATE BLOWS OF A PICK POIN
	- SATURA		UID; VERY WET, USUALLY	e - VOID RATIO	SD SAND, SANDY	SS - SPLIT SPOON				ED READILY WITH POINT OF PICK.
	LIMIT	FROM BELOW	THE GROUND WATER TABLE	F - FINE FOSS FOSSILIFEROUS	SL SILT, SILTY SLI SLIGHTLY	ST - SHELBY TUBE RS - ROCK	SOFT OR	R MORE IN THICKNESS C4		INGER PRESSURE. CAN BE SCRATCH
PLASTIC RANGE <		SEMISOLID; R	EQUIRES DRYING TO	FRAC FRACTURED, FRA	CTURES TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL		NGERNAIL.		
	- WEI -	ATTAIN OPTIM	MUM MOISTURE	FRAGS FRAGMENTS HI HIGHLY	ω - MOISTURE CONTENT V - VERY	CBR - CALIFORNIA BEARING RATIO		ACTURE SPACINO SPAC		BEDDING
					UIPMENT USED ON SUBJECT		VERY WIDE	MORE THAN		VERY THICKLY BEDDED
OM OPTIMUN		- (M) SOLID; AT OR	NEAR OPTIMUM MOISTURE	DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	WIDE MODERATELY	3 TO 10 CLOSE 1 TO 3		THICKLY BEDDED 1 THINLY BEDDED 0.1
SL SHRINKA	AGE LIMIT			CME-45C	CLAY BITS	X AUTOMATIC _ MANUAL	CLOSE	Ø.16 TO	1 F00T	VERY THINLY BEDDED 0.0
	- DRY - 1		DITIONAL WATER TO MUM MOISTURE		6' CONTINUOUS FLIGHT AUGER	CORE SIZE:	VERY CLOSE	LESS THAN	0.16 FEET	THICKLY LAMINATED 0.00 THINLY LAMINATED <
		STICITY	-	X CME-55	8" HOLLOW AUGERS				INDURAT	
			DRY STRENGTH	CME-550	HARD FACED FINGER BITS		FOR SEDIMENTAF	ROCKS, INDURATION		OF MATERIAL BY CEMENTING, HE
NON PLASTIC	PLASTI	0-5	VERY LOW		TUNGCARBIDE INSERTS	X-N <u>Q-3</u>	FRIABLE			GER FREES NUMEROUS GRAINS;
SLIGHTLY PLAS		6-15	SLIGHT	VANE SHEAR TEST		HAND TOOLS:	FRINDLE		GENTLE BLOW BY	HAMMER DISINTEGRATES SAMPLE.
MODERATELY PL HIGHLY PLASTIC		16-25 6 OR MORE	MEDIUM HIGH		TRICONE 'STEEL TEETH	POST HOLE DIGGER	MODERATE			PARATED FROM SAMPLE WITH ST NEN HIT WITH HAMMER.
		COLOR		PORTABLE HOIST		HAND AUGER				CULT TO SEPARATE WITH STEEL
					TRICONE TUNGCARB.	SOUNDING ROD	INDURATE		DIFFICULT TO BRE	
		COMBINATIONS (TAN, RED, ) KED, ETC, ARE USED TO DE	(ELLOW-BROWN, BLUE-GRAY). SCRIBE APPEARANCE.		CORE BIT	VANE SHEAR TEST	FYTREMEI			DWS REQUIRED TO BREAK SAMPLE
					X  2- 1/4" HSA				SAMPLE BREAKS AN	POSS GRAINS

#### SHEET NO.

DATE: 8-15-1-

# U-3330

TERMS AND DEFINITIONS D AN INFERRED ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ED. AN INFERRED ) SPT REFUSAL. 1 FOOT PER 60 IS OFTEN 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, SUCH AS SHALE, SLATE, ETC. N VALUES > 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. СК ТНАТ CLUDES GRANITE, 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. AL PLAIN IF TESTED. MAY NOT YIELD 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. STONE, CEMENTED DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. RINGS UNDER DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DATINGS IF OPEN. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. AMMER BLOWS IF FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE СК ИР ТО SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FELDSPAR FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. BLOWS.  $\underline{\mathsf{FLOAT}}$  - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. IN ROCK HAS AS COMPARED 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. FELDSPARS DULL OSS OF STRENGTH WHEN STRUCK. 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 VIDENT BUT ITS LATERAL EXTENT. ARE KAOLINIZED 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 GOOD DRAINAGE. E DISCERNIBLE STRONG ROCK PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE ONLY MINOR OF AN INTERVENING IMPERVIOUS STRATUM. ALUES < 100 BPF RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - 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 IN SMALL AND SAPROLITE IS RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. REQUIRES <u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO LOWS REQUIRED THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.  $\underline{\text{SLICKENSIDE}}$  - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. EEP CAN BE TACHED 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 B PICK POINT. WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL BLOWS OF THE 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. FRAGMENTS IT. SMALL, THIN 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. PIECES 1 INCH ED READILY BY TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: \* SEE NOTE THICKNESS 4 FEET 1.5 - 4 FEET FEET ELEVATION: 16 - 1.5 FEET NOTES: 3 - Ø.16 FEET 98 - Ø.Ø3 FEET 0.008 FEET BORING AND GROUND SURFACE ELEVATIONS DERIVED FROM GEOPAK AND TIN FILE "U3330\_Is\_tin\_tin" DATED 10/10/14 FIAD - FILLED IN AFTER DRILLING AT. PRESSURE. ETC. EEL PROBE; PROBE:

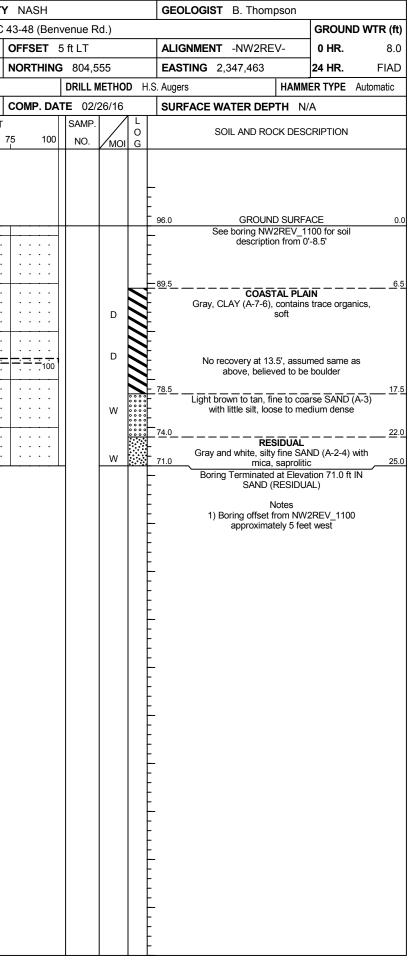


	PROJECT REFERENCE NO.	SHEET NO.
	U-3330	PEDEA
	INCOMPLETE P	ENGINEER
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	PRELIMINARY DO NOT USE FOR CONSTR	PLANS AUCTION
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		120
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		120
		110
A         ROADWAY EMBANKMENT           LIGHT BROWN TO GRAY, FINE TO COARSE SAND (A-2-4,A-1-b)           LIGHT BROWN TO GRAY, FINE TO COARSE TO DENSE           B         COASTAL PLAN           GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A-6 TO A-7-6)		
A         ROADWAY EMBANKMENT           I         I           I		110
COADWAY EMBANKMENT LIGHT BROWN TO GRAVEL AND CLAY, LODGE TO DENSE      GRAV WITH YELLOW, CLAY TO FINE SANDY CLAY (A6 TO A7-6) AND FINE SANDY SILT, TRACE GRAVEL AND CLAY, LODGE TO DENSE      GRAV WITH YELLOW, CLAY TO FINE SANDY CLAY (A6 TO A7-6) AND FINE SANDY SILT, THE TO COARSE GRAVEL VERY SOFT TO VERY STIFF		110
ROADWAY EMBANKMENT LIGHT BROWN TO GRAY, FINE TO COARSE SAND (A-24,A-1-b) LITTLE SIL, TRACE GRAVEL AND CLAY, LOSSE TO DENSE      COASTAL FLAIN     TAN AND CLAY ENFET     COASTAL FLAIN     TANAND CLAY ENFET     COASTAL FLAIN     TANAND CLAY ENFET     COASTAL FLAIN     TANAND CLAYEY SAND (A-1-b, A-3, A-2-6),     STRACE GRAVEL     SUBJECT ON MEDIUM DENSE		110 100
ROADWAY EMBANKMENT LIGHT BROWN TO GRAY, FINE TO COARSE SAND (A-24,A-1-b) LITTLE SIL, TRACE GRAVEL AND CLAY, LOSSE TO DENSE      COASTAL FLAIN     TAN AND CLAY ENFET     COASTAL FLAIN     TANAND CLAY ENFET     COASTAL FLAIN     TANAND CLAY ENFET     COASTAL FLAIN     TANAND CLAYEY SAND (A-1-b, A-3, A-2-6),     STRACE GRAVEL     SUBJECT ON MEDIUM DENSE		110 100 90
COADWAY EMBANKMENT LIGHT BROWN TO GRAVEL AND CLAY, LODGE TO DENSE      GRAV WITH YELLOW, CLAY TO FINE SANDY CLAY (A6 TO A7-6) AND FINE SANDY SILT, TRACE GRAVEL AND CLAY, LODGE TO DENSE      GRAV WITH YELLOW, CLAY TO FINE SANDY CLAY (A6 TO A7-6) AND FINE SANDY SILT, THE TO COARSE GRAVEL VERY SOFT TO VERY STIFF		110
COASTAL PLAN     CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY AND ARED, FINE TO COARSE SAND (A-2-4A-1-4))     LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSET O DENSE      COASTAL PLAN     GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY SILTY SAND     AND CRAY WITH YELLOW, AND RED, FINE TO COARSE,     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-4),     TRACE GRAVEL LOOSE TO MEDIUM DENSE      GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-4),     MEDIUM DENSE     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-4),     MEDIUM DENSE TO VERY DENSE      E WEATHERED ROCK (GRANTEE		110 100 90
COASTAL PLAN     CLAY TO FINE SAND (A-2-4A-1-b)     LIGHT BROWN TO GRAY FINE TO COARSE SAND (A-2-4A-1-b)     LIGHT BROWN TO GRAY. FINE TO COARSE SAND (A-2-4A-1-b)     LIGHT BROWN TO GRAY. FINE TO COARSE SAND (A-2-4A-1-b)     LIGHT BROWN TO GRAY AND WITH YELLOW, CLAY TO FINE SANDY CLAY (A-6 TO A-7-6)     AND FINE SANDY SALT (A-4), WITH TRACE GRAVEL     VERY STOPTIOU VERY STIFF     COASTAL PLAN     SANDY SALT (A-4), WITH TRACE GRAVEL     VERY SANDY AND CLAY (A-6 TO A-7-6)     AND FINE SANDY CLAY TO FINE SANDY CLAY (A-6 TO A-7-6)     AND FINE SANDY AND RED, FINE TO COARSE,     SLAT SAND AND CLAY VERY STIFF     COASTAL PLAN     SANDY SALT (A-4), WITH TRACE GRAVEL     VERY STIFT O COARSE SAND (A-2-4, A-3, A-2-6),     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WITH YELLOW AND PROVIN SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-1-6),     MEDIUM DENSE TO KEASTAND     AND FINE TO KEASTAND      AND FINE TO KEASTAND		110 100 90
COASTAL PLAN     CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY AND ARED, FINE TO COARSE SAND (A-2-4A-1-4))     LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSET O DENSE      COASTAL PLAN     GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY SILTY SAND     AND CRAY WITH YELLOW, AND RED, FINE TO COARSE,     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-4),     TRACE GRAVEL LOOSE TO MEDIUM DENSE      GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-4),     MEDIUM DENSE     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-4),     MEDIUM DENSE TO VERY DENSE      E WEATHERED ROCK (GRANTEE		110 100 90
COASTAL PLAN     CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY AND ARED, FINE TO COARSE SAND (A-2-4A-1-4))     LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSET O DENSE      COASTAL PLAN     GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY SILTY SAND     AND CRAY WITH YELLOW, AND RED, FINE TO COARSE,     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     TRACE GRAVEL LOOSE TO MEDIUM DENSE      GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE TO VERY DENSE      E WEATHERED ROCK (GRANTEE		110 100 90
COASTAL PLAN     CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY AND ARED, FINE TO COARSE SAND (A-2-4A-1-4))     LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSET O DENSE      COASTAL PLAN     GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY SILTY SAND     AND CRAY WITH YELLOW, AND RED, FINE TO COARSE,     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     TRACE GRAVEL LOOSE TO MEDIUM DENSE      GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE TO VERY DENSE      E WEATHERED ROCK (GRANTEE		110 100 90
COASTAL PLAN     CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY AND ARED, FINE TO COARSE SAND (A-2-4A-1-4))     LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSET O DENSE      COASTAL PLAN     GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY SILTY SAND     AND CRAY WITH YELLOW, AND RED, FINE TO COARSE,     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     TRACE GRAVEL LOOSE TO MEDIUM DENSE      GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE TO VERY DENSE      E WEATHERED ROCK (GRANTEE		110 100 90
COASTAL PLAN     CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY AND ARED, FINE TO COARSE SAND (A-2-4A-1-4))     LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSET O DENSE      COASTAL PLAN     GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A& TO A.7-6)     AND FINE SANDY SILTY SAND     AND CRAY WITH YELLOW, AND RED, FINE TO COARSE,     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     TRACE GRAVEL LOOSE TO MEDIUM DENSE      GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE     TRACE GRAVEL LOOSE TO MEDIUM DENSE     GRAY AND WHITE RED AND BROWN, SILTY SAND     AND FINE TO COARSE SAND (A-2-4, A-3, A-2-6),     MEDIUM DENSE TO VERY DENSE      E WEATHERED ROCK (GRANTEE		110 100 90

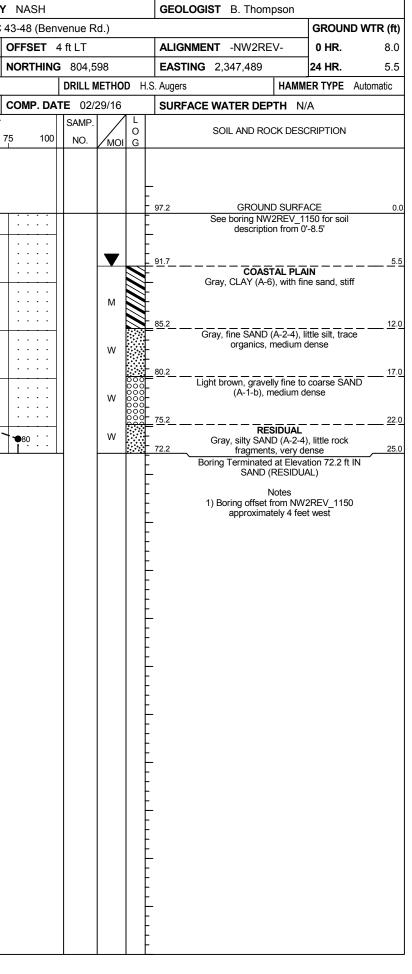
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								Dr.) to N	IC 43-48 (Be		Rd.)			GROUND WTR (ft)		DESCRIPTION					
	NG NO			_1000		TATION			OFFSET				ALIGNMENT -NW2REV-	<b>0 HR.</b> 11.0		RING NO. NW2			TATION 1		0
	AR EL					OTAL DEP			NORTHIN	<b>G</b> 805,	122		EASTING 2,347,811	<b>24 HR.</b> 7.5		LAR ELEV. 9				<b>TH</b> 20.0 ft	
				ATE F		5 CME-55 7							H.S. Augers HAM	MER TYPE Automatic	-	L RIG/HAMMER E					
DRIL	LER D	). Tigno	-			TART DAT			COMP. D				SURFACE WATER DEPTH	I/A	DRII	LER D. Tigno	1			E 02/26/1	
ELEV (ft)	DRIVE ELEV	DEPTH	· —	ow co	_			S PER FOO		SAMP	1.7	0	SOIL AND ROCK DES	SCRIPTION	ELEV (ft)			-			
(11)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	) NO.	/мс	DI G	ELEV. (ft)	DEPTH (f	) (11)	(ft) (ft)	0.5ft 0.5	11 0.511	0	25 5	50 75
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С	43-	48	(Ben	IV	enue R	d.)		_		_			GROUN	ID WTR (ft)
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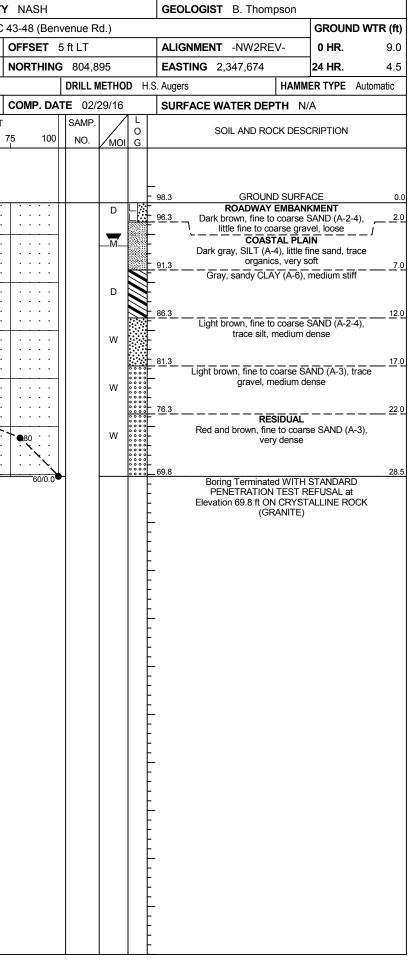
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	36591					<b>P</b> U-333				Y NASH				GEO	LOGIST	B. Thompson				<b>S</b> 3659 <sup>-</sup>					<b>P</b> U-33		COUNTY
								lay Dr.	) to NC	43-48 (Be		Rd.)						OUND WTR (ft)									Dr.) to NC
BOR	ing no.	NW2	2REV_	1100	SI	TATION	11+00			OFFSET	CL			ALIG	SNMENT	-NW2REV-	0 HI	<b>R.</b> FIAD	BOF	RING NO	. NW2	2REV_	_1100L	S1	TATION	11+00	
COL	LAR ELE	<b>EV.</b> 9	7.4 ft		т	OTAL DE	<b>PTH</b> 6.	.5 ft		NORTHI	<b>IG</b> 804	553		EAS	<b>TING</b> 2,3	47,468	24 HI	<b>R.</b> N/A	COL	LAR EL	<b>EV</b> . 9	6.0 ft		т	OTAL DE	<b>PTH</b> 25.0	ft
DRILI	L RIG/HAI	MMER E	EFF./DA	TE F8	R3495	CME-55 7	3% 02/15	5/2015			DRILL	METHO	DD H	H.S. Auger	rs	HAM	MER TY	PE Automatic	DRIL	.L RIG/HA	MMER E	EFF./DA	TE F	&R3495	CME-55	73% 02/15/20	15
DRIL	<b>.LER</b> D	. Tigno	or		ST		<b>TE</b> 02/	26/16		COMP. D	<b>ATE</b> 02	2/26/16	6	SUR	FACE WA	TER DEPTH	N/A		DRII	LLER D	). Tigno	or		S	TART DA	TE 02/26	/16
ELEV	DRIVE ELEV	DEPTH	H BLC	ow col	JNT		BLO	WS PE	R FOOT		SAMF	P. 💙/			SOI	_ AND ROCK DE		ON	ELEV	, DRIVE ELEV	DEPTH	H BLO	on wc	UNT		BLOWS	S PER FOOT
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50		75 10	0 NO.	Имо						DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50 7
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	97.4 -	<u> </u>	3	3	2	<b>6</b> 5 <sup>•••</sup>	• • • •	• •	• • • •	· · · ·			L	<u>- 97.4</u>		OADWAY EMBA	ANKMENT				Ŧ						
95	93.9	3.5					•	•••	· · · ·	· · · ·	_			Ļ	SAND (A-2	rown to dark gray 2-4), trace fine to	o coarse q	ravel, silt	95		ŧ						
	93.9	- 3.5	7	28	13			• • • •						1	ar	nd organics, loos	e to dense	e			ŧ						·   · · · · ·
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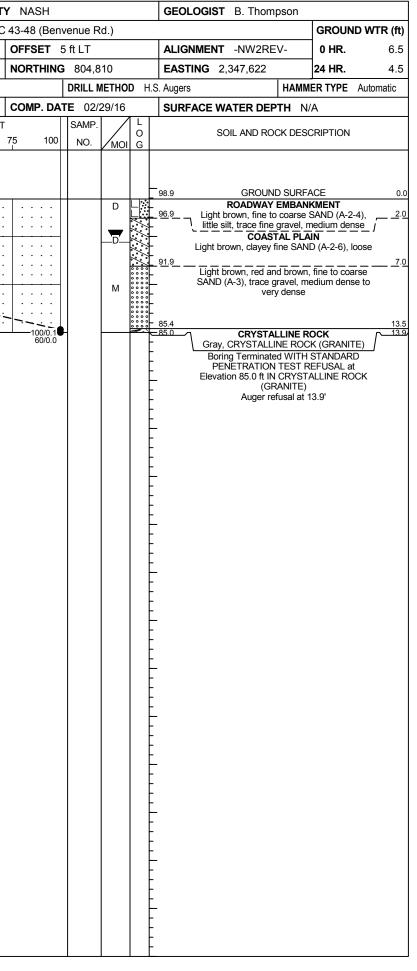
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<b>WBS</b> 36591.1.1	TIP U-3330 COUN	Y NASH	GEOLOGIST B. Thompson	<b>WBS</b> 36591.1.1	<b>TIP</b> U-3330 <b>COUNT</b>
SITE DESCRIPTION US 301 Byp	ass from SR 1836 (May Dr.) to N	C 43-48 (Benvenue Rd.)	GROUND WTR (ft	SITE DESCRIPTION US 301 B	ypass from SR 1836 (May Dr.) to NC
BORING NO. NW2REV_1150	STATION 11+50	OFFSET CL	ALIGNMENT -NW2REV- 0 HR. FIAD	BORING NO. NW2REV_1150L	<b>STATION</b> 11+50
COLLAR ELEV. 98.0 ft	TOTAL DEPTH 5.5 ft	NORTHING 804,981	EASTING 2,347,726 24 HR. N/A	COLLAR ELEV. 97.2 ft	TOTAL DEPTH 25.0 ft
DRILL RIG/HAMMER EFF./DATE F&R	3495 CME-55 73% 02/15/2015	DRILL METHOD H.	Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE F&	&R3495 CME-55 73% 02/15/2015
DRILLER D. Tignor	START DATE 02/29/16	COMP. DATE 02/29/16	SURFACE WATER DEPTH N/A	DRILLER D. Tignor	START DATE 02/29/16
LEV DRIVE DEPTH BLOW COUN	IT BLOWS PER FOO	Г SAMP. V		ELEV DRIVE DEPTH BLOW CO	UNT BLOWS PER FOOT
(ft) ELEV (ft) 0.5ft 0.5ft (	0.5ft 0 25 50				0.5ft 0 25 50
ELEV DRIVE ELEV (ft) DEPTH (ft) BLOW COUN (ft) 0.5ft 0.5ft (ft) 0.5ft 0.	IT BLOWS PER FOO	SAMP.         L           75         100         NO.         MOI         G           .         .         .         D         L         O	SOLVACE WATER DEPTH 10/A SOL AND ROCK DESCRIPTION ELEV. (t) DEPTH ( 98.0 GROUND SURFACE 0 98.0 GROUND SURFACE	ELEV (ft)         DRIVE ELEV (ft)         DEPTH (ft)         BLOW CO           0         0.5ft         0.5ft         0.5ft           100         -         -         -           0         -         -         -           0         -         -         -           0         -         -         -           0         -         -         -           0         -         -         -	UNT         BLOWS PER FOOT           0.5ft         0         25         50



													UG																
<b>VBS</b> 36	6591.1.	1			TIF	P U-33	330		С	OUNT	Y NA	SH				GE	DLOGIST B. Thompson	1		WBS	36591	1.1.1			T	I <b>P</b> U-333	30	C	OUNTY
ITE DES					pass f	from SF	R 183	6 (Ma	y Dr.)	) to NC	43-48	B (Ben	venue F	Rd.)					rr (ft)							from SR	1836 (Ma	ay Dr.)	to NC 4
ORING	<b>NO.</b> N	IW2RE	EV_12	200L	ST	ATION	12+	-00			OFFS	SET (	5 ft LT			ALI	GNMENT -NW2REV-	0 HR.	9.0	BOR	ING NO.	. NW	2REV_	_1250L	_ S	TATION	12+50		0
OLLAR	ELEV.	98.1	ft		тс	DTAL DI	EPTH	<b>I</b> 21.4	4 ft		NOR	THING	804,9	938		EAS	<b>TING</b> 2,347,700	24 HR.	5.0	COL	LAR ELI	EV. 9	8.3 ft		Т	OTAL DE	<b>PTH</b> 28	.5 ft	1
RILL RIG	HAMME	R EFF.	/DATE	F&F	R3495	CME-55	73%	02/15/2	015		1		DRILL	METHO	DD H	I.S. Aug	rs HAMM	IER TYPE Autor	natic	DRIL	RIG/HA	MMER E	EFF./DA	ATE Fa	kR3495	CME-55	73% 02/15/2	2015	1
RILLER	D. Ti	anor			ST	ART D	ATE	02/29	9/16		сом	P. DA	<b>TE</b> 02	/29/16	;	SU	RFACE WATER DEPTH N	/A		DRIL	.LER D	. Tiana	or		S	TART DA	<b>TE</b> 02/2	9/16	(
		- -	BLOW	/ COU	_					R FOOT			SAMP		/ L					ELEV	DRIVE		1	ow co					RFOOT
(ft) ELI	EV 102	· · · · -		0.5ft		0	25		50		75	100	NO.	Имо	O I G	ELEV.	SOIL AND ROCK DES		EPTH (ft)	(ft)	ELEV (ft)	(ft)	· —	0.5ft	1	0	25	50	7
	<u> </u>								-				-				(ii)	DL	_F 111 (II.)		(11)								
00																<b>-</b>				100		╞							
98	3.1 + 0	.0	1	5	4	+r.			· _ ·					D		98.1	GROUND SURF		0.0		98.3	<u> </u>	2	6	3	· .	• • • •	• • •	
95	‡			Ĩ		. <b>P</b> <sup>9</sup>		· · · · · ·		 		•••				96.1	Brown, fine to coarse SANE	) (A-2-4), trace		95	-	‡					· · · · ·		
95 94	L <u>6 +</u> 3	.5	1	2	1		.				+ : :						Letter Silt and fine gravel, COASTAL PLA	<u>лп — — — — (</u>		95	94.8 -	- 3.5	WOH	I WOH	1				
	Ŧ					$\P^3$ · ·	•			 		· ·		<u> </u>		Ł	Gray with light brown marblin trace fine sand,	ng, CLAY (A-6),			-	Ł							
90	Ŧ	_					•	• • •				••					trace fine sand,	3011		90	89.8	8.5							
	9.6 <del>+</del> 8 +	1.5 W	юн	2	2	4.								м							- 09.0 -	- 0.0 -	1	2	4				
	‡					$\left  \begin{array}{c} \mathbf{T} & \cdot \\ \mathbf{V} & \cdot \end{array} \right $		· · · · · ·		 						- 06 1			12.0		-	ŧ				:`X :	· · · · ·		
85 84	+ 1.6 + 1:	35				1.	•		• •							<u>86.1</u>	Gray, red, and brown, fine to	coarse SAND	<u> </u>	85	84.8 -	- 13.5						• •	
-04			3	4	4				.   .			· ·		w	0000	-	(A-3), trace silt, loose to m	edium dense				+	3	6	12	] )	18 • • •		
	Ŧ														0000	F						Ŧ							
80 79	2.6 + 18	3.5									<u> </u>					79.1			19.0	80	- 79.8 -	18.5							
	‡		15	59	52			· · · · · ·		 		100	,		97	ſ	WEATHERED R	рск			-	ŧ	5	8	9	:::•			
76	<u>).7 + 2</u>		/0.0				•					60/0.0	Н		S.	- 76.7 -	Gray, GRANIT	E 5'to 21.4' /	21.4		-	t						<u>      </u>	
	+															╞	Boring Terminated WITH PENETRATION TEST R			75	74.8 -	23.5	17	36	44				<u> </u>
	Ŧ															F	Elevation 76.7 ft ON CRYST	ALLINE ROCK			-	Ŧ							
	‡															F	(GRANITE)			70	- - - 69.8 -	28.5							
	******************																												



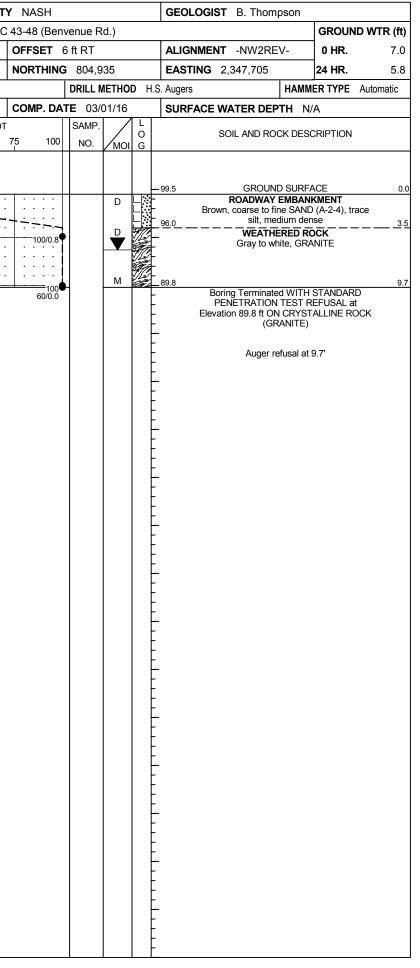
								1		-00													
	<b>3</b> 659					<b>P</b> U-333			Y NASH				GEOLOGIST B. Thompson	-	WB	<b>3</b> 6591	1.1.1			TIF	• U-3330		COUNTY
SITE	DESCR	RIPTION	US	301 B	ypass	from SR 1	1836 (May	Dr.) to NO	C 43-48 (Ber	nvenue F	Rd.)			GROUND WTR (ft)	SITE		RIPTION	US	301 B	ypass f	rom SR 18	36 (May Di	r.) to NC
BOR	ING NO	. NW2	2REV_	_1300L	. S	TATION	13+00		OFFSET	5 ft LT			ALIGNMENT -NW2REV-	<b>0 HR.</b> 17.0	BOF	RING NO	. NW2	2REV_	1350L	ST	ATION 13	8+50	
COL	LAR EL	<b>EV</b> . 98	8.6 ft		т	OTAL DEF	<b>TH</b> 21.9	ft	NORTHIN	<b>G</b> 805, <sup>2</sup>	122		EASTING 2,347,811	<b>24 HR.</b> 4.5	COL	LAR EL	<b>EV</b> . 98	3.9 ft		то	TAL DEPT	H 13.9 ft	
DRIL	L RIG/HA	MMER E	EFF./DA	TE F8	R3495	CME-55 73	3% 02/15/202	15	1	DRILL	METHO	D ⊢	H.S. Augers HAMN	IER TYPE Automatic	DRIL	L RIG/HA	MMER E	FF./DA	TE F8	R3495	CME-55 73%	02/15/2015	I
DRIL	LER [	). Tianc	or		S		E 02/29/	16	COMP. DA	TE 02/	/29/16		SURFACE WATER DEPTH N	I/A	DRI	LER D	). Tiana	or		ST	ART DATE	02/29/16	3
ELEV	DRIVE	-	1	OW CO				PER FOO		SAMP.	-	1 L			ELEV	DRIVE		1	W COL			BLOWS PE	
(ft)	ELEV (ft)	(ft)	' <b> </b>	0.5ft		0	25	50	75 100		мо	0		CRIPTION DEPTH (ft)	(ft)	ELEV (ft)	(ft)	0.5ft			0 2	5 50	
	(,															(,							
															100								
100	98.6	+ 0.0											- 98.6 GROUND SURF.	ACE 0.0	100	98.9	± 0.0						
1	96.0	<u>+ 0.0</u> +	2	4	5	· <b>•</b> 9 · ·					D		ROADWAY EMBAN	IKMENT			+	2	5	5	· • 10 ·		
95	95.1	T 3.5				/							<u>96.6</u> Light brown, fine to coarse trace fine gravel and silt, n	SAND (A-2-4), <u>2.0</u> medium dense	95	95.4 ·	3.5				. <b>j</b>	· · · · ·	· · · · · · · ·
		+ 0.0	3	1	WOH					1			COASTAL PLA Yellow and light brown, san			1 -	ŧ	1	3	4			
ł		‡					·   · · · · ·		·   · · · · ·				91.6 very soft	7.0			‡					· · · ·	
90	90.1	8.5				· · · · ·							Light yellow and brown, fine (A-2-4), little silt, trace gravel	to coarse SAND	90	90.4	8.5	5	6	5			
		ł	4	8	11		19				D						ł		Ū		. •11		
		Ŧ												<u>12.0</u>			Ŧ						·
85	85.1	13.5	7	8	11				· · · · · ·	41			Gray, CLAY (A-6), little fine	e sand, very stiff	85	<u>85.4</u> ·	+ <u>13.5</u> + <u>13.9</u>	100/0.1			••••		· · · ·
		‡	'			· · ·●     · · · ·	19		·   · · · · ·		W						‡	60/0.0					
		t						Ĩ <u>Ţ</u> ŢŢŢ									t						
80	80.1	18.5	34	60/0.0					60/0.0	•	w			<u>19.0</u>			+						
	70.7	T 21.9								!			Gray, CRYSTALLINE ROC	CK (GRANITE) 21.9			Ŧ						
	76.7	<u>+ 21.9</u> +	60/0.0	)					60/0.0	●┤		12	<ul> <li>Boring Terminated WITH</li> </ul>	I STANDARD			Ŧ						
	-	ŧ											PENETRATION TEST F     Elevation 76.7 ft IN CRYST	REFUSAL at TALLINE ROCK		-	ŧ						
		‡											GRANITE)				‡						
	_	ŧ											– Auger refusal at 2	21 9'			t						
		ł												21.5			ł						
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WBS	36591	.1.1			TI	IP U	-3330		C	COUNT	TY N	IASH					GEOLOGIST B. Thompson	
SITE	DESCR	IPTION	US	301 B	ypass	from	SR 18	36 (Ma	ay Dr	.) to N	C 43-	48 (Be	nven	ue R	d.)			GROUND WTR (f
BORI	NG NO.	NW2	REV	1400L	S	ΤΑΤΙΟ	<b>DN</b> 14	+00			OF	FSET	5 ft	LT			ALIGNMENT -NW2REV-	<b>0 HR.</b> 7.0
	AR ELE			-	_		DEPT		5 ft		-	RTHIN			67		EASTING 2,347,597	
	RIG/HAN			TE E							1					пц	I	IMER TYPE Automatic
																υп.		
	LER D	-				TART	DATE					MP. D			29/16	1	SURFACE WATER DEPTH	N/A
ELEV	DRIVE ELEV	DEPTH			1					R FOO		100		AMP.	▼∕		SOIL AND ROCK DE	SCRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	5	50		75 I	100		NO.	Иоі	G	ELEV. (ft)	DEPTH
100																		
ŀ	98.7 -	- 0.0	3	5	5	_	ı —	1									98.7 GROUND SUF	
	-	-			5	:•	10			· · · · · ·		· · · ·			D		96.7 Brown, fine to coarse SA	ND (A-2-4), trace2
95	95.2	3.5	5	5	11	L.	· \· ·		• •		· ·							
	-	_		5	''	·	- 16		•••	· · ·	:   :				<b>₽</b>		Light brown, clayey SAN	D (A-2-6), trace
	-	-															91.7 gravel, medium	1
90	90.2	8.5	3	4	3				•••		·   ·					0 0 0 0 0 0 0 0 0 0 0 0	Light brown, fine SAN	J (A-3), loose
	-	_		<sup>-</sup>		•	<sup>7</sup>			· · ·	: :	· · ·			M	0 0 0 0 0 0 0 0		
	-	-				.			. – . – .		.   ·					0 0 0 0 0 0 0 0 0 0 0 0	- 86.7 <b>    RESIDUA</b>	12
85	85.2	13.5	100/0.3	3			· · ·		•••			100/0.3			D	0000	<ul> <li>Light brown, fine to coarse</li> </ul>	
	-	-		1			· · ·			· · ·	ببليز						dense	
	-	_						•••			• •					0 0 0 0 0 0 0 0 0 0 0 0		
80	80.2	18.5	5	8	10	1									D	0000	-	
	-	_				:				· · · ·	:   :					0 0 0 0 0 0 0 0 0 0 0 0		
		-					· · ·		::``	·	÷Ļ.	· · ·				0 0 0 0 0 0 0 0 0 0 0 0		
75	75.2	23.5	12	36	64/0.3					· · · ·					D	0000 0000	<u></u>	POCK2
	-	-										100/0.8					Light gray and light bro	
	70.0	-					· · · · · ·			· · · · · ·	:   :	· · · · · ·	!				70.2	28
F	70.2	28.5	60/0.0									60/0.0	•			52112	Boring Terminated WIT	H STANDARD
	-	-														F	PENETRATION TEST Elevation 70.2 ft ON CRY	
	-	_															(GRANITE	
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SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.) GROUND WTR (ft) SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.)	OUNTY     NASH     GEOLOGIST     B. Thompson       to NC 43-48 (Benvenue Rd.)     GROUND WTR (ft)
	to NC 43-48 (Benvenue Rd.)
BORING NO.         NW2REV_1450R         STATION         14+50         OFFSET         5 ft RT         ALIGNMENT         NW2REV_         0 HR.         12.0         BORING NO.         NW2REV_1450R         STATION         14+50	OFFSET         5 ft RT         ALIGNMENT         -NW2REV-         0 HR.         12.0
COLLAR ELEV.         99.5 ft         TOTAL DEPTH         25.2 ft         NORTHING         804,850         EASTING         2,347,653         24 HR.         5.0         COLLAR ELEV.         99.5 ft         TOTAL DEPTH         25.2 ft	NORTHING         804,850         EASTING         2,347,653         24 HR.         5.0
DRILL RIG/HAMMER EFF./DATE       F&R3495       CME-55       73% 02/15/2015       DRILL METHOD       H.S. Augers       HAMMER TYPE       Automatic       DRILL RIG/HAMMER EFF./DATE       F&R3495       CME-55       73% 02/15/2015	DRILL METHOD H.S. Augers HAMMER TYPE Automatic
DRILLER     D. Tignor     START DATE     03/01/16     COMP. DATE     03/01/16     SURFACE WATER DEPTH     N/A	COMP. DATE 03/01/16 SURFACE WATER DEPTH N/A
ELEV     DRIVE ELEV     DEPTH     BLOW COUNT     BLOWS PER FOOT     SAMP.     L 0     L 0     SOIL AND ROCK DESCRIPTION       (ft)     0.5ft     0.5ft     0.5ft     0.5ft     0     25     50     75     100     NO     VIOI     C     FLEV (#)     DEDUL(#)     DE	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	RATA         L           RQD         O           (ft)         G           %         G           ELEV. (ft)         DESCRIPTION AND REMARKS
$(ft) \stackrel{ELEV}{(ft)} (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)$	
100 99.5 GROUND SURFACE 0.0 84.3 15.2 5.0 3.50/1.0 (5.0) (4.8)	Begin Coring @ 15.2 ft CRYSTALLINE ROCK
$\begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 $	Gray, black, and white, very slight to fresh weathering, hard, closely to widely fractured, CRYSTALLINE ROCK (GRANITE)         RMR = 69 (continued)
96.0 3.5 10 10 10 20 20 20 20 20 10 10 20 20 20 20 20 10 10 20 20 20 20 20 20 20 20 20 20 20 20 20	
Light brown to yellow-brown, coarse to fine	RMR = 69 (continued)
dense to loose	
90 91.0 8.5 4.00/1.0 75 74.3 25.2 7.50/1.0 D	
	Boring Terminated at Elevation 74.3 ft IN CRYSTALLINE ROCK (GRANITE)
84.3 15.2 1 0 00/0.1	
Grav, black, and white, CRVSTALLINE	
80 I Hard drilling from 14.6' to 15.2'	
Boring Terminated at Elevation 74.3 ft IN CRYSTALLINE ROCK (GRANITE)	
Auger refusal at 15.2'	

(0)       (											JREL	.00								-   —								
BORNE ON.         NV2PCPL_15002         TATION 15-00         OPFREF         0.01001100         DORM MADE SPECIAL         DORM MADE SPECIAL <thdorm made="" special<="" th=""> <thdorm made="" special<="" th=""></thdorm></thdorm>															G	EOLOGI	ST B. Thomp	oson	1									
OCLUBELEV         05.1         TOTAL DEPTH         10.1         NORTHWEI         20.473         Jahr         Her.         6.0         Columber PLANCE         TOTAL DEPTH         7.1           Deall.com/metric/article/artite/article/article/artite/artite/article/artite/artit	SITE	DESCR	RIPTION	N US	301 B	ypass	from SR 1	1836 (Ma	ay Dr.) to				Rd.)						GROUND WTR (ft	SIT	E DESCI	RIPTIO	N US	301 B	ypass	from SR 1	836 (May	Dr.) to NC
Della Londonameter produce (xe-s) 73 (2003) Della Conventional della	BOR	ING NO	). NW2	2REV_	1500F	ং <b>ऽ</b> ⊺	TATION	15+00			OFFSET	8 ft RT			AL		NW2RE	V-	0 HR. 8.0	во	RING NC	<b>).</b> NW:	2REV_	1550F	२ <b>ऽ</b> ।	TATION	15+50	
DelLLeR 0         START DATE         DOU/1/6         Common Date         DOU/1/6         SuperAct watter DEPTH         NAME         DEULER 0         Tigger         TART DATE         DOU/1/6           00	COLI	LAR EL	EV. 99	9.5 ft		т	OTAL DEF	<b>TH</b> 10.	.0 ft		NORTHING	<b>3</b> 804,8	393		EA	ASTING	2,347,678		<b>24 HR.</b> 6.0	со	LLAR EL	<b>EV</b> . 9	9.5 ft		т	OTAL DEF	<b>TH</b> 9.7 ft	
Intelligence         BLOW DEAR TOOT         BLOW PERFORT         DATE	DRILL	RIG/HA	MMER E	EFF./DA	TE F8	R3495	CME-55 73	3% 02/15/2	2015			DRILL	METHO	OD H	H.S. Au	gers		HAMM	ER TYPE Automatic	DRI	LL RIG/HA	MMER E	EFF./DA	TE F	&R3495	CME-55 73	3% 02/15/201	15
00       m	DRIL	LER [	D. Tigno	or		S	FART DAT	<b>E</b> 03/0	1/16		COMP. DA	<b>TE</b> 03/	01/16	3	รเ	JRFACE	WATER DEP	TH N/	Ά	DR	ILLER [	D. Tigno	or		ST	FART DAT	E 03/01/	16
00       00 <td< td=""><td>ELEV</td><td>DRIVE</td><td></td><td>·</td><td></td><td></td><td></td><td>BLOW</td><td>VS PER F</td><td>ООТ</td><td></td><td>SAMP.</td><td><math>\mathbf{V}</math></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ELE</td><td></td><td>DEPTH</td><td>·</td><td></td><td></td><td></td><td>BLOWS</td><td>PER FOOT</td></td<>	ELEV	DRIVE		·				BLOW	VS PER F	ООТ		SAMP.	$\mathbf{V}$							ELE		DEPTH	·				BLOWS	PER FOOT
00         3.6         4         7         4.7	(ft)		(ft)	0.5ft	0.5ft	0.5ft	0	25	50	7	75 100	NO.	Имс		ELE					(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50
00.0         3.6         2.3         4         7         4.7																												
9     3     5     4     7     41     1       9     15     2     3     6     1     1     1       9     15     10     100     1     1     1     1       10     15     10     100     1     1     1     1       10     15     10     100     1     1     1     1       10     15     10     100     1     1     1     1       10     15     10     100     1     1     1     1       10     15     10     100     1     1     1     1       10     15     10     100     1     1     1     1       11     10     10     1     1     1     1     1       12     10     10     10     10     10     10     10       13     10     10     10     10     10     10     10       14     1     1     1     1     1     1     1       14     1     1     1     1     1     1     1       15     10     10     10     1     1     1 </td <td>100</td> <td></td> <td>99.5</td> <td></td> <td>GROUND</td> <td>) SURFA</td> <td>ACF 0</td> <td>0 100</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	100														99.5		GROUND	) SURFA	ACF 0	0 100								
80       30       33       33       70.3       1       1         90       35       0       0       0.3       33       70.3       1       1         90       10       0       00       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       0       1       0       0       0       1 <td></td> <td></td> <td><u>1 0.0</u></td> <td>4</td> <td>3</td> <td>5</td> <td>•8</td> <td></td> <td></td> <td>•••</td> <td></td> <td></td> <td>D</td> <td></td> <td>-</td> <td></td> <td>ROADWAY I</td> <td></td> <td>KMENT</td> <td></td> <td>99.5</td> <td>1 0.0</td> <td>3</td> <td>4</td> <td>7</td> <td>•11</td> <td></td> <td></td>			<u>1 0.0</u>	4	3	5	•8			•••			D		-		ROADWAY I		KMENT		99.5	1 0.0	3	4	7	•11		
00     0     00     0     00     0     0     00     0     0     0     0     0     0     0     0     0     0     0     0     0     0 <td< td=""><td></td><td>96.0</td><td>I 3.5</td><td></td><td></td><td></td><td></td><td></td><td></td><td>• •</td><td></td><td></td><td></td><td>J/~,</td><td><u>; <u> </u></u></td><td></td><td>trace organics (</td><td>grass an</td><td>id roots), loose</td><td></td><td>96.0</td><td>3.5</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		96.0	I 3.5							• •				J/~,	<u>; <u> </u></u>		trace organics (	grass an	id roots), loose		96.0	3.5						
	95		Ŧ	2	3	6				· ·					F.	Redo	COAST dish-brown, claye	CAL PLA	<b>IN</b> ), (A-2-6), loose	95		Ŧ	33	67/0.3			+	
Unit     Line			Ŧ										┢		\$ {		, ,					Ŧ						
0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         0000         0000         0000         0000           0000         00000         0000         0000 <td< td=""><td>90</td><td></td><td>T</td><td>100/0 5</td><td></td><td></td><td></td><td>·   · · · ·</td><td></td><td></td><td><u> </u></td><td></td><td>М</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>25</td><td>75/0 5</td><td></td><td></td><td></td><td></td></td<>	90		T	100/0 5				·   · · · ·			<u> </u>		М										25	75/0 5				
		89.5	<u>+ 10.0</u> +							• •		5		<u>ن</u> کرک	<u>]— 89.5</u>  -	$\neg$	Dark brow	/n, GRAN	NITE / 10.		89.8 -	+ 9.7 +						
Elevation 8.9.1 MO RYYTALLINE ROCK (GUARD 1) Auger relucal at 10.0"			‡												Ę	I	PENETRATION	TEST R	EFUSAL at			‡						
Auger refaal at 10.0*       Auger refaal at 10.0*         Auger refaal at 10.0*       Auger refaal at 10.0* <td></td> <td></td> <td>ŧ</td> <td></td> <td>Ł</td> <td>Elev</td> <td>ation 89.5 ft ON</td> <td>CRYST</td> <td>ALLINE ROCK</td> <td></td> <td></td> <td>ŧ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			ŧ												Ł	Elev	ation 89.5 ft ON	CRYST	ALLINE ROCK			ŧ						
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			Ŧ												-		Auger ref	<sup>i</sup> usal at 1	10.0'			Ŧ						
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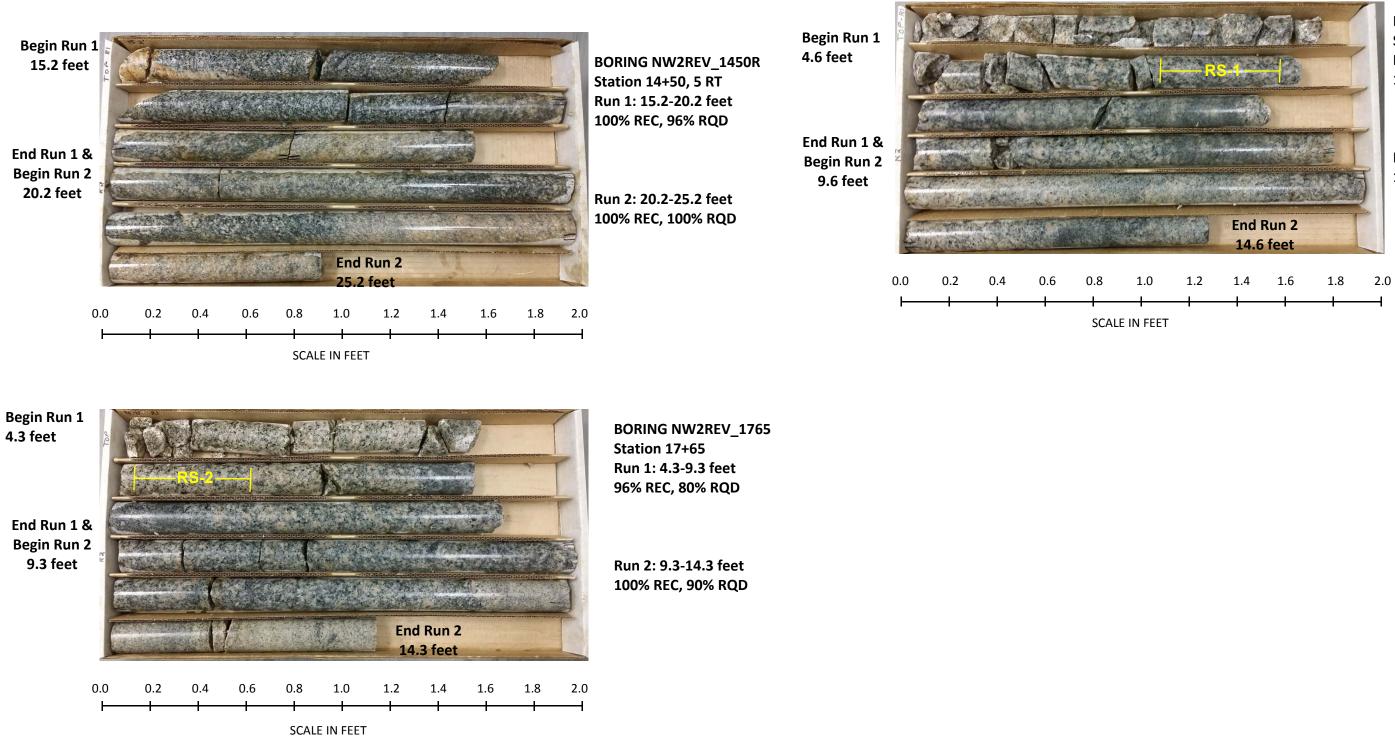
WF	<b>S</b> 365	9111		TIF	U-3330	)	CC		/ NASH					GEOLOGIST B. Thompson		WB	<b>S</b> 365	91 1 1			ТІР	U-33	330	С	OUNT	TY N	IASH	GEOLOGIST B. Thompson	
			US 301								nue Ro	d.)			GROUND WTR (ft)				DN US	5 301 Bv							48 (Benvenue Rd.)		GROUND WTR (ft)
			2REV_1650		ATION 1				OFFSE			,		ALIGNMENT -NW2REV-	0 HR. Dry		RING N						16+50	- ,			FSET CL	ALIGNMENT -NW2REV-	0 HR. Dry
		LEV. 99			TAL DEP		6 ft		NORTH			24		EASTING 2,347,751	24 HR. FIAD		LAR E				_		<b>EPTH</b> 14	.6 ft		-	RTHING 805,024	EASTING 2,347,751	<b>24 HR.</b> FIAD
			FF./DATE										DH.		 IER TYPE Automatic								73% 02/15/				DRILL METHOD	1	IER TYPE Automatic
		D. Tigno			ART DAT				COMP.								LLER				-		ATE 03/0			со	MP. DATE 03/01/16	SURFACE WATER DEPTH N	
						BLOWS					SAMP.		L				RE SIZE				тот		<b>UN</b> 10.01						
(ft)	ELEV (ft)	(ft)	0.5ft 0.5f	t 0.5ft	0	25	50	7	75 1	100	NO.	моі	O G	SOIL AND ROCK DES	DEPTH (ft)	ELEV					(ft) (ft)		SAMP.	STF		L			
																(ft)	ELE\ (ft)	/(ft)	(ft)	RATE (Min/ft	(ft) (ft)	(ft)	NO.	STF REC. (ft) %	(ft) %	G	ELEV. (ft)	DESCRIPTION AND REMARKS	DEPTH (ft
100		$\perp$												_99.7 GROUND SURI	ACE 0.0	99551												Begin Coring @ 4.6 ft	
	99.7	<u> </u>	2 4	5	:•9-::		· ·					D		ROADWAY EMBAI	KMENT clavev SAND		95.1	T 4.6	5.0	3.00/1.	0 (5.0) 0 100%	)) (2.6 % 52%	)				95.1 Gray, black, and w	CRYSTALLINE ROCK nite, very slight to fresh weathering, har ely fractured, CRYSTALLINE ROCK (GI	4.6 d to very hard,
	96.2	3.5	57 43/0.	4				· · ·		÷		D		96.2 (A-2-4), loos	e 3.5			+		4.00/1. 6.25/1.	0		RS-1				_ closely to wic		RANITE),
95	95.1	4.6	60/0.0	4		<u> </u>	<u> </u>		100/	0.9				Light brown, gray, and w	iite, GRANITE	90	90.1	9.6	5.0	<u>5.00/1.</u> 3.00/1.	0 (5.0)	) (5.0	)	<b>´</b>			_	RMR=67	
		ţ					: :	· · ·		. i L				CRYSTALLINE Gray, black, and white, C ROCK (GRAN	R <b>OCK</b> RYSTALLINE			ŧ		2.25/1. 2.50/1. 3.00/1.	0 100% 0	%   100%	6				-		
90	_	‡					· ·			·	RS-1 /			ROCK (GRAN	TE)		85.1	14.6	3	3.00/1. 3.00/1.	0	_	_			K			14.6
		‡						· · · · · ·										ŧ									Boring Terminated a	t Elevation 85.1 ft IN CRYSTALLINE RC	JCK (GRANITE)
		‡						· · ·	· · · ·					9E 1	14.6			ţ									-		
		+			1				1					BUTTING TETTITIALEU AL EIEV				+									-		
		‡												CRYSTALLINE ROCK	(GRANITE)			‡									-		
		‡												- Auger refusal a	4.6'			‡									-		
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WBS	36591	.1.1			ד	I <b>P</b> U-33	330		COUN	TY NA	ASH				GEOLOGIST B. Thompson	
SITE	DESCR	IPTION	US	301 By	ypass	from SF	R 1836	6 (May I	Dr.) to N	C 43-4	8 (Ben	venue R	ld.)			GROUND WTR (f
BORII	NG NO.	NW2	REV	1700	S	TATION	17+(	00		OFF	SET (	CL			ALIGNMENT -NW2REV-	0 HR. Dr
	AR ELE				т	OTAL DI	ЕРТН	6.0 ft		NOF	THING	805,0	66		EASTING 2,347,777	24 HR. Dr
				TE F8		CME-55				1				р на	1	ER TYPE Automatic
	ER D									CON		TE 03/				
		DEPTH (ft)		W COU 0.5ft	JNT			BLOWS	PER FOO		100	SAMP. NO.		L O G	SOIL AND ROCK DESC	
<u>105</u> 100 - 95	- - - - - - - - - - - - - - - - - - -	- - <u>3.5</u>	2	4	7						100/0.8	,	D		GROUND SURF/ ROADWAY EMBAN Light brown, coarse to fine trace silt, little organics (gra medium dense WEATHERED RC	KMENT           SAND (A-2-4),           ss and roots),
<u>,</u>	94.3 - - - - - - - -	6.0 	60/0.0						<u> </u>	<u> </u>	-60/0.0	•			-94.3 White to gray, GR4 Boring Terminated WITH PENETRATION TEST R Elevation 94.3 ft ON CRYST - (GRANITE) Auger refusal at	NITE STANDARD STANDARD EFUSAL at ALLINE ROCK
															-	
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	- - - - - - - - - - -														-	
	- - - - - - - -	- - - - - - - - - - - - - - - - - - -													-	
	-															

100 CDOUND SUDFACE 200 CDOUND SU	GEOLOGIST     B. Thompson       GROUND WTR (f       ALIGNMENT     -NW2REV-       O HR.     D       EASTING     2,347,811       S. Augers     HAMMER TYPE     Automatic       SURFACE WATER DEPTH     N/A
BORING NO.NW2REV_1765STATION17+65OFFSETCLALIGNMENTNW2REV-0HR.DryCOLLAR ELEV.99.3 ftTOTAL DEPTH14.3 ftNORTHING805,122EASTING2,347,81124 HR.FIADDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODH.S. AugersHAMMER TYPEAutomaticDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODH.S. AugersHAMMER TYPEAutomaticDRILL RIG/HAMMER EFF./DATESTART DATE03/01/16COMP. DATE03/01/16SURFACE WATER DEPTHN/AELEVDEPTHBLOW COUNTBLOWS PER FOOTSAMP.LSOIL AND ROCK DESCRIPTIONDEPTH (ft)0.5ft0.5ft0.5ft0.5ft0.5ft0.ftCOMP. DATE03/01/16100UUUUUUUUUUUUUUU100UUUUUUUUUUUUUUUUUU100UU<	ALIGNMENT         -NW2REV-         0 HR.         D           EASTING         2,347,811         24 HR.         FIA           S. Augers         HAMMER TYPE         Automatic
COLLAR ELEV.99.3 ftTOTAL DEPTH14.3 ftNORTHING805,122EASTING2,347,81124 HR.FIADDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODH.S. AugersHAMMER TYPEAutomaticDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODH.S. AugersHAMMER TYPEAutomaticDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODH.S. AugersHAMMER TYPEAutomaticDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODH.S.DRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODDRILL RIG/HAMMER EFF./DATEF&R3495CME-5573% 02/15/2015DRILL METHODDRILL RIG/HAMMER EFF./DATESTART DATE03/01/16COMP. DATE03/01/16COMP. DATEDRILL RIG/HAMMER EFF./DATEBLOWS PER FOOTSAMP.VVVVV(ft)0.5ft0.5ft0.5ft0.5ft0.5ft0.5ft0.5ft0.75100NO.MOI GELEV. (ft)DEPTH (ft)DEPTH (ft)RATERUNRATERUNRATERUN(ft)VVVVVVVVVVVVV00VVVVVVVVVVVVVVVVVVVVV	EASTING     2,347,811     24 HR.     FIA       S. Augers     HAMMER TYPE     Automatic
DRILL RIG/HAMMER EFF./DATE       F&R3495       CME-55       73% 02/15/2015       DRILL METHOD       H.S. Augers       HAMMER TYPE       Automatic         DRILL RIG/HAMMER EFF./DATE       F&R3495       CME-55       73% 02/15/2015       DRILL METHOD       H.S. Augers       HAMMER TYPE       Automatic       DRILL RIG/HAMMER EFF./DATE       F&R3495       CME-55       73% 02/15/2015       DRILL METHOD       H.S. Augers         DRILL RIG       D. Tignor       START DATE       0.3/01/16       COMP. DATE       0.3/01/16       SURFACE WATER DEPTH       N/A         ELEV       DEPTH       BLOW COUNT       BLOWS PER FOOT       SAMP.       V	S. Augers HAMMER TYPE Automatic
DRILLER       D. Tignor       START DATE       03/01/16       COMP. DATE       03/01/16       SURFACE WATER DEPTH       N/A         ELEV       DRIVE       DEPTH       BLOWS OUNT       BLOWS PER FOOT       SAMP. $V_0$ SOIL AND ROCK DESCRIPTION       DEPTH (ft) $I.0.ft$ $I.0.f$	
ELEV       DRIVE       BLOW COUNT       BLOWS PER FOOT       SAMP.       L       SOIL AND ROCK DESCRIPTION       DEPTH (ft)       CORE SIZE       1.775       TOTAL RUN       10.0 ft       L       Solid And Rock DESCRIPTION         (ft)       0.5ft       0.5ft       0.5ft       0       25       50       75       100       NO.       MOI G       ELEV. (ft)       DEPTH (ft)       RUN       DRILL (ft)       RUN       RUN       NO.       MOI G       ELEV. (ft)       NO.       MOI G       ELEV. (ft)       NO.       NO.       MOI G       ELEV. (ft)       NO.       NO.       NO.       Kth       Kth       NO.       MOI G       ELEV. (ft)       NO.       NO.       Kth       Kth       Kth       NO.       Kth       Kt	SURFACE WATER DEPTH N/A
(iii)       (iii)       (iii)       (iii)       (iii)       0.5t       0.5t       0.5t       0       23       50       75       100       NO.       /MOI       G       ELEV. (ft)       DEPTH (ft)       RUN (ft)       DEPTH (ft)       BRILL (ft)       RUN (ft)       DEPTH (ft)       RUN (ft)       DEPTH (ft)       RUN (ft)       SIRAL L (ft)       SIRAL L (ft)       C       SIRAL L (ft)       S	
	DESCRIPTION AND REMARKS
100 99.3 0.0 99.3 GROUND SURFACE 0.0 95 95.0 4.3 5.0 3.00/1.0 (4.8) (4.0)	DEPTH
	Begin Coring @ 4.3 ft CRYSTALLINE ROCK
95       95.8       3.5       6       100/03       100/0	white, very slight weathering, hard, closely fractured, CRYSTALLINE ROCK (GRANITE)
	RMR=66
0     100/0.3 <t< td=""><td></td></t<>	
CRYSTALLINE ROCK         7.25/1.0         7.25/1.0           Gray, black, and white, CRYSTALLINE         3.25/1.0         3.25/1.0	
	1 t Elevation 85.0 ft IN CRYSTALLINE ROCK (GRANITE)
85 - 85.0 14.3 - 14.3 -	
Boring Terminated at Elevation 85.0 ft IN CRYSTALLINE ROCK (GRANITE)	
Auger refusal at 4.3'	

# **FX**

# CORE PHOTOGRAPHS: NW2REV\_1450R, NW2REV\_1650, and NW2REV\_1765: Station 14+50 to 17+65



BORING NW2REV\_1650 Station 16+50 Run 1: 4.6-9.6 feet 100% REC, 52% RQD

Run 2: 9.6-14.6 feet 100% REC, 100% RQD

#### LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO .:

TIP NO.: U-3330

COUNTY: Nash

DESCRIPTION: Noise Wall 2 - US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)

												Unconfined	
							Geologic			Diameter	Unit Weight	Compressive	
Sample #	Boring #	Alignment	Station	Offset	Depth (ft)	Rock Type	Map Unit	Run RQD	Length (in)	(in)	(pcf)	Strength (psi)	RMR
RS-1	NW2REV_1650	-NW2REV-	16+50	CL	7.8-8.2	Granite	PPmg	52%	4.05	1.78	163.9	16,080	67
RS-2	NW2REV_1765	-NW2REV-	17+65	CL	6.1-6.5	Granite	PPmg	80%	3.75	1.78	164.9	11,490	66