9874 REFERENCE

STATE OF NORTH CAROLINA

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

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STRUCTURE SUBSURFACE INVESTIGATION

COUNTY ROBESON

PROJECT DESCRIPTION <u>I-95 IMPROVEMENTS</u> FROM SOUTH OF US 301 (EXIT 22) TO NORTH OF SR 1758 (McDUFFIE CROSSING ROAD)

SITE DESCRIPTION SITE 3 - ABUTMENT RETAINING WALLS AT END BENT 1 AND END BENT 2 OF BRIDGE ON -Y3- (SR 1758 McDUFFIE CROSSING ROAD) OVER -L-(I-95) AT -Y3-STA.30+04.11

STATE PROJECT REFERENCE NO I-5987A

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 1991 707-680. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS NDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:

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

 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

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Prepared in the Office of:



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01/28/2022

PROJECT REFERENCE NO. SHEET NO.

I—5987A

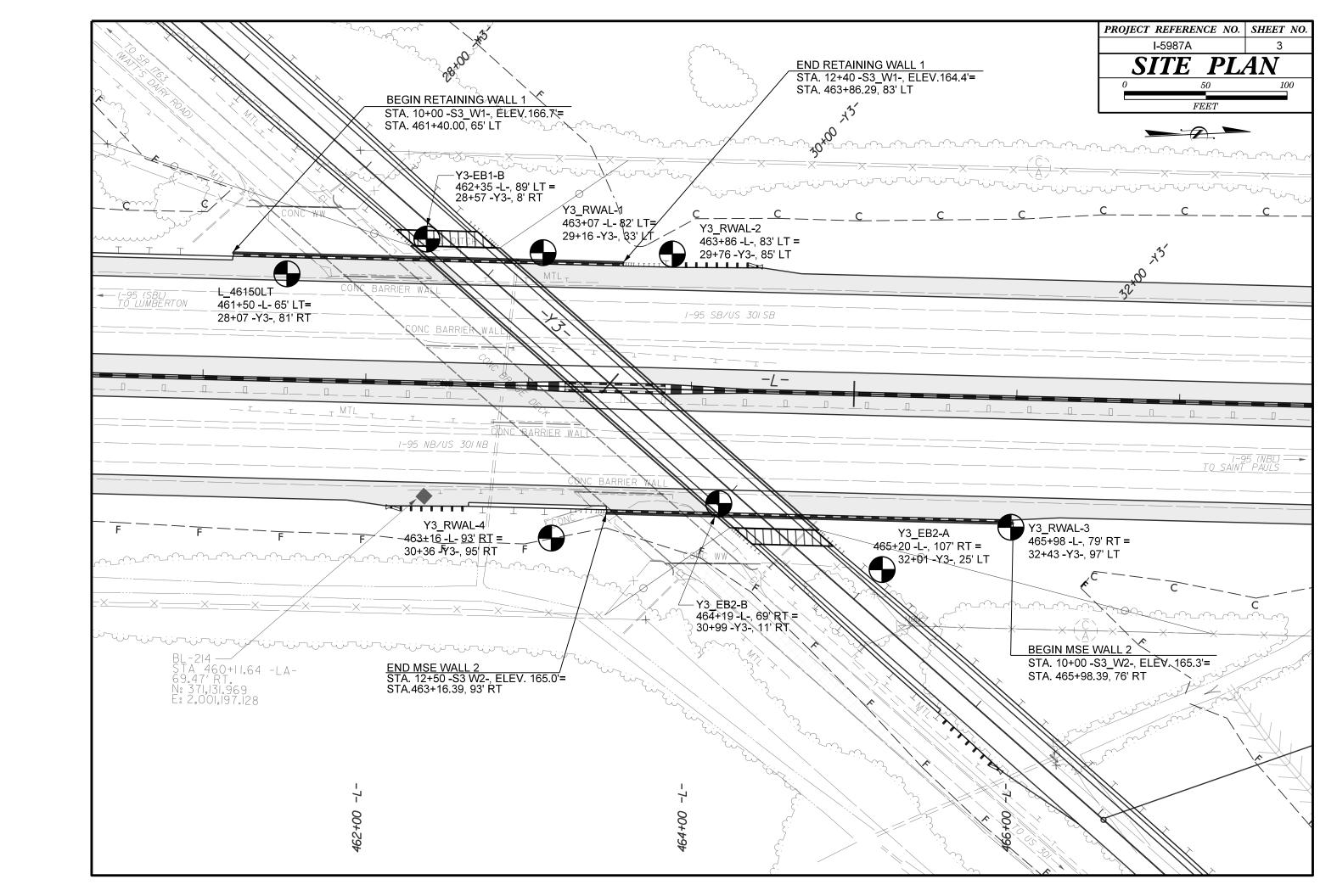
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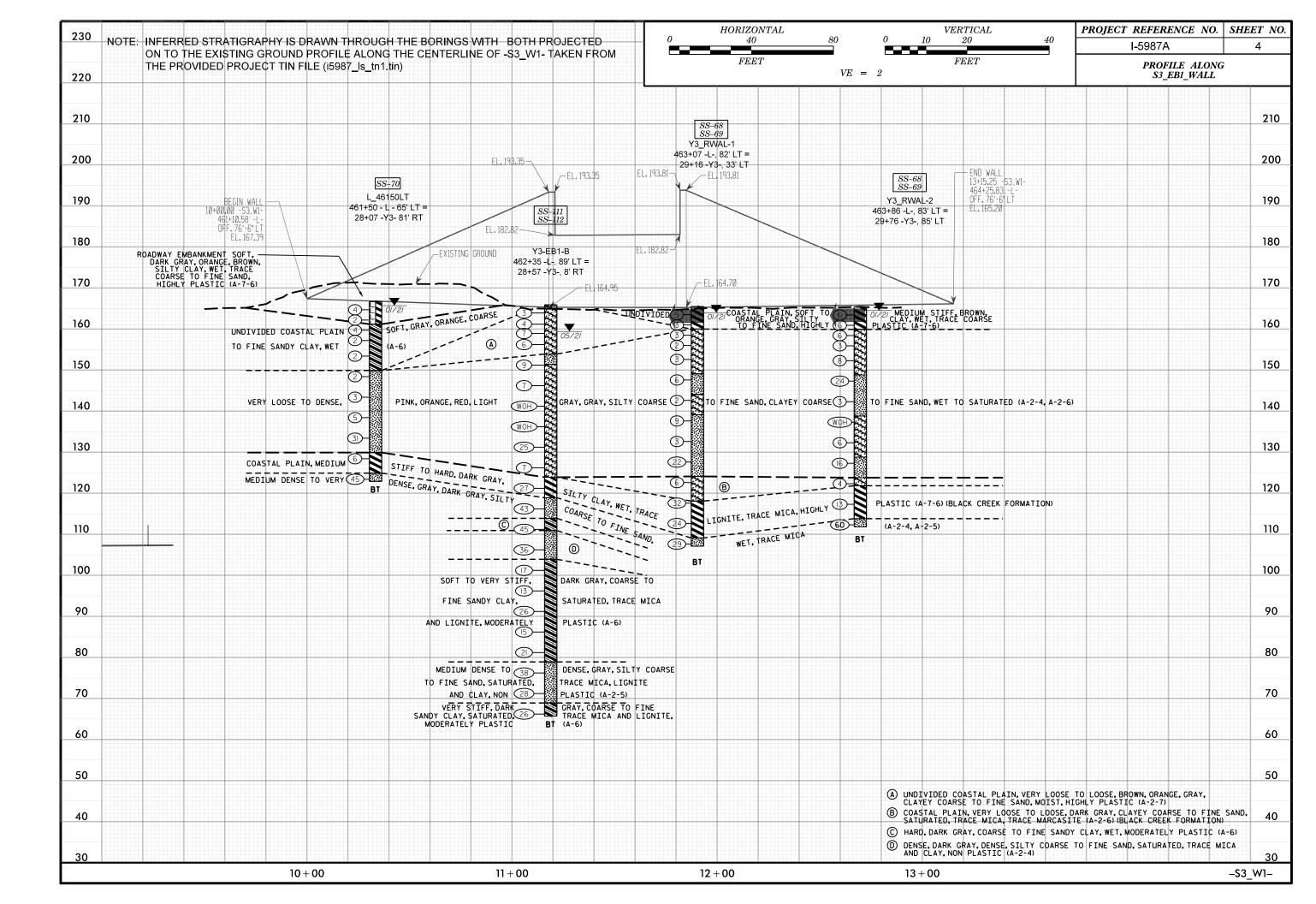
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

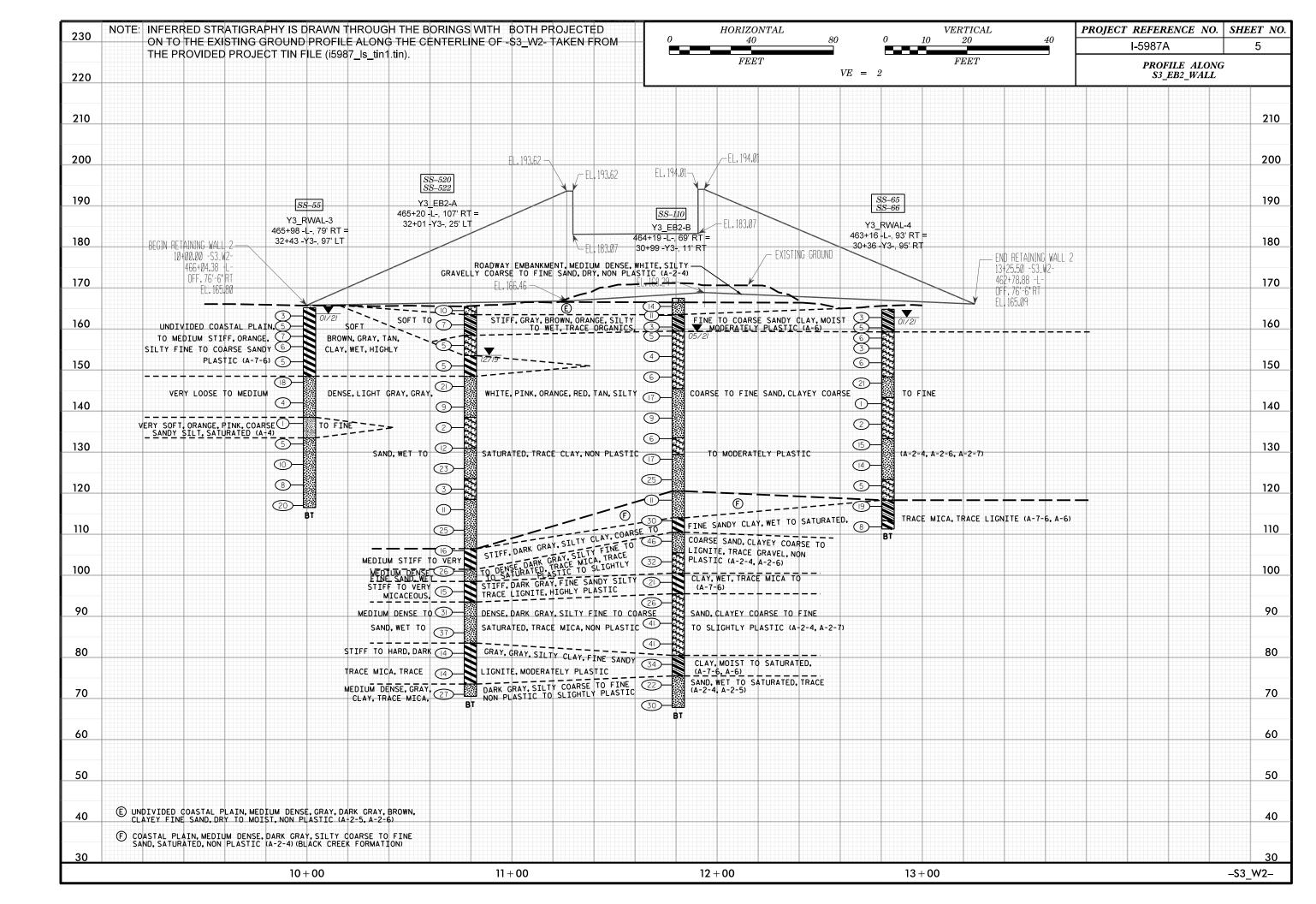
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ADUIFER - A WATER BEARING FORMATION OR STRATA.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	WEATHERED WANDOWN NON-COASTAL PLAIN MATERIAL THAT WOULD VIELD SPT N VALUES >	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.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED. MINERALOGICAL COMPOSITION	ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED, ROCK TYPE INCLUDES GRANITE,	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-6	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YELLD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	ROCK (NCR) ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SEDIMENTARY ROCK SPI REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	OF SLOPE. <u>CORE RECOVERY (REC.)</u> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
7. PASSING 18 GRANULAR SILT- MUCK.	PERCENTAGE OF MATERIAL	(CP) SHELL BEDS, ETC.	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*40 30 MX 50 MX 51 MN PEAT *200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	WEATHERING	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL MATERIAL	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	$\overline{ ext{DIP}}$ - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING *40	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
LL 48 MX 41 MN LITTLE OR HIGHLY OF A MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 11 MN 11 MN 11 MN	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX Ø Ø Ø 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOUS	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER		(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	(MOD.) 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	PARENT MATERIAL.
AS SUBLIMADE PUUM	SPRING OR SEEP	WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
DANCE OF CTANDARD BANCE OF UNICONICINED	E	(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (N-VALUE) (TONS/FT²)	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION WITH SOIL DESCRIPTION OF ROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
VERY LODGE 4.4	SPI CLOSS THIS COATON	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANIII AR LOOSE 4 TO 10	SOIL SYMBOL OPT DMT TEST BORING SLOPE INDICATOR INSTALLATION	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS
MATERIAL DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER THAN ROADWAY EMBANKMENT AUGER BORING TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERT DENSE > 500		SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK (V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO 0.5	- INFERRED SOIL BOUNDARY - CORE BORING SOUNDING ROD	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	INFERRED ROCK LINE MONITORING WELL TEST BORING WITH CORE	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	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4	TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER INSTALLATION - SPT N-VALUE	ALSO AN EXAMPLE.	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
HARD > 30 > 4 TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK,
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	UNDERCOT IZZ UNSUITABLE WASTE IZZ ACCEPTABLE, BUT NOT TO BE	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	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
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY 7 - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	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
SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\dot{\gamma}_{d}$ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	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	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID, VERY WET, USUALLY	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLIDA PEDILIPES DEVINC TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
KANDE C - WEI - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING	BENCH MARK: BL-214
	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	69.74' RIGHT OF STA. 460+II.64 -L- N: 37I,I3I.969; E: 2,00I,I97.I28 ELEVATION: I66.I5 FEET
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	
SL _ SHRINKAGE LIMIT	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6 CONTINUOUS FLIGHT AUGER CORE SIZE:	. VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	NOTE: ELEVATIONS OF BORING Y3_EB2-A PERFORMED BY F&R Inc. OBTAINED FROM PROVIDED TIN FILE: i5987_Is_tinl.tin DATED: //4/2019
PLASTICITY	CME-55	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC Ø-5 VERY LOW	TUNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST X CASING W/ ADVANCER HAND TOOLS: POST HOLE DIGGER	CRAING CAN BE CERARATED FROM CAMPUS MITH CITES PROPE	
HIGHLY PLASTIC 26 OR MORE HIGH	X CME-55 X TRICONE 25% STEEL TEETH HAND AUGER	MODERATELY INDURATED WATER SEASON SEASON OF THE MALE WITH SIEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	DIEDRICH D-50 TRICONE TUNG,-CARB. SOUNDING ROD	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT VANE SHEAP TEST	UIFFICULI TU BREAK WITH HAMMER,	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	ACKER RENEGADE THE STEAM TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REGULIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	











Terracon GEOTECHNICAL BORING REPORT

SHEET 6 OF 13

WBS	47533.	.1.2			TI	P I-5987A	COU	NTY ROBE	SON				GEOLOGIST FARMER, B. C.		
SITE	DESCRI	PTION	SITE	3 - AI	BUTMI	ENT RET. W	ALLS AT EB1 A	ND EB2 OF	BRIDGE	E ON	-Y3-	OVER	R -L- AT -Y3- STA. 30+40.11	GROUND W	TR (ft
BORI	NG NO.	L_46	150LT		S.	TATION 46	1+50	OFFSE	65 ft	LT			ALIGNMENT -L-	0 HR.	N/A
COLI	AR ELE	V. 16	6.7 ft		T	OTAL DEPTI	H 43.8 ft	NORTH	NG 37	71,05	5		EASTING 2,001,044	24 HR.	1.0
RILL	RIG/HAM	MER EF	F./DAT	E TER	R92-0 A	CKER RENEGA	ADE 86% 02/15/201	9	DRI	ILL ME	ETHOD) Mud	d Rotary HAMI	MER TYPE Autor	natic
DRIL	LER DU	JGGIN	S, W.	T.	S	TART DATE	01/22/21	COMP.	DATE	01/2	2/21		SURFACE WATER DEPTH N	I/A	
LEV	DRIVE	DEPTH	BLC	W CO	UNT		BLOWS PER FO	OT	SA	MP.	V /	L	COIL AND DOOK DE	CODIDTION	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	5 50	75 1	00 N	10.	/MOI	O G	SOIL AND ROCK DE-		EPTH
70												L	_		
	1	_										l			
	165.7	- 1.0							- -	-	•		166.7 GROUND SUR ROADWAY EMBA		(
65	1	-	1	2	2	4			- SS	S-70	W 18%		- SOFT, DARK GRAY, ORA SILTY CLAY, WET, TRAC	NGE, BROWN,	
	163.2	3.5	WOH	WOH	2	2			-		W		FINE SAND, HIGHLY PL		
60	160.7	- 6.0	2	3	1	<u> </u>					W		UNDIVIDED COAST		
	158.2	8.5							-		VV		SOFT, GRAY, ORANGE FINE SANDY CLAY,		
	1	_	1	1	1	\$ 2			-		W				
55	154.4	12.3											-		
	Ŧ	_	1	1	1	2			-		W	**			
50	-	_				i : : : :			-				_149.9		1
	149.4	17.3	WOH	1	1				\exists		Sat.	-	VERY LOOSE TO DENS		·
	+	-							:				TO FINE SAND, SATUR	ATED, TRACE	
5	144.4	- 22.3							_			<u> </u>	CLAY (A-2-	4)	
		-	2	2	1	3			:		Sat.				
••		-				;:::			-						
10	139.4	27.3	4	3	2						Cot		-		
	1	_	'		_	● 5			:		Sat.				
35	134.4	- 32.3										L	_		
	134.4	- 32.3 -	9	16	15	: : : :	31		:		Sat.				
	1	_					<u> </u>		-						
30_	129.4	37.3					-' 	 					-129.9 COASTAL PL		3
	1	_	2	2	4	♦ 6			-		W		MEDIUM STIFF, DARK CLAY, WET, TRACE LI	GRAY, SILTY	
25	I I	_				::::			-				(BLACK CREEK FO		4
	124.4	42.3	12	19	26		45				W		DENSE, DARK GRAY, SIL 122.9 FINE SAND, WET, TRAC		 4
	-	-										F	Boring Terminated at Elev	ration 122.9 ft IN	
	4	-										l F	COASTAL PLAIN SILTY CREEK FORMA	TION)	
	1	-										l F	STA. 28+07 -Y3-	81' RT	
	†	-													
	1	-										-	-		
		-										-			
	#	_											-		
	1	-													
	+	-													
	+	-										l ⊨	-		
	1	-													
	<u> </u>	_										E	_		
	1	_													
		_										F			
	‡	-											-		
		_													
	†	_								- 1		Ιŀ			



	aiting Line								<u>_</u>	UNL	<u> </u>	00				
WBS	47533	3.1.2			1	ΓIP	I-5987A		COUNT	Y ROBE	SO	N			GEOLOGIST DEGON, A. N.	
SITE	DESCR	IPTION	SITE	3 - Al	BUTM	ΛEΝ	NT RET. W	ALLS AT	EB1 AND	EB2 OF	BRI	DGE ON	I -Y3-	OVE	R -L- AT -Y3- STA. 30+40.11 GRO	OUND WTR (ft
BORI	NG NO.	Ү3-Е	B1-B		5	STA	ATION 28	+57		OFFSE	T 8	3 ft RT			ALIGNMENT -Y3- 0 H	IR. N/A
COLL	AR ELE	EV. 16	55.9 ft		7	τοτ	TAL DEPT	H 100.2	ft	NORTH	IING	371,14	11		EASTING 2,001,040 24 H	IR. 6.5
DRILL	RIG/HAN	MER EF	F./DAT	E TER	R299 [DIE	DRICH D-50	79% 12/31	/2020			DRILL M	ETHO) Mu	Rotary HAMMER TY	PE Automatic
DRIL	LER T	URNAG	E, J. F	₹.	5	STA	ART DATE	05/10/2	1	COMP.	DA	ΓE 05/1	1/21		SURFACE WATER DEPTH N/A	
ELEV	DRIVE	DEPTH	T	W CO					PER FOOT			SAMP.	V /	11		
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	t	0 2	5 ;	50	75	100	NO.	MOI	O G	SOIL AND ROCK DESCRIPT ELEV. (ft)	TION DEPTH (
	(11)					\dagger							/ IVIOI		LLL V. (II)	DEFIII
170		ł												<u> </u>	-	
	-	+														
165	164.9	1.0				+			1						165.9 GROUND SURFACE UNDIVIDED COASTAL PLA	.IN
	104.9	- '	3	2	1	٦i	∮ 3 · · ·				-		М		VERY LOOSE TO LOOSE, BR	OWN,
	162.2	3.7	2	3	1	41	 								ORANGE, GRAY, CLAYEY COA FINE SAND, MOIST, HIGHLY PI	
160	159.9 <u>-</u>	6.0					4				-		M		(A-2-7)	
		-	2	4	3		7				-	SS-111	<u></u>			
	157.2	8.7	3	3	3	+]		: : : :		-		М	//		
155	_	‡					♥ 6			ļ · · ·	-		IVI	<i>**</i> **********************************	- 450.0	
		<u> </u>					:j: : :								LOOSE, LIGHT GRAY, ORANGE	
	152.2	13.7	9	6	3	$\exists 1$. 1				-		Sat.		COARSE TO FINE SAND, SATU NON PLASTIC (A-2-4)	RATED, 14
150	_	-					1			+					- VERY LOOSE TO MEDIUM DE	
	147.2	107					: : : :			: : :	:				ORANGE, RED, GRAY, CLAYE SAND, SATURATED, TRACE	SILT.
	147.2	10./	2	2	5	1	7				-	SS-112	Sat.	/ /	MODERATELY PLASTIC (A-	2-6)
145	-	ŀ					1		 	+	-			//	-	
	142.2	23.7					<i> </i>		: : : :		-					
140	-		WOH	WOH	WOF	╗	0		: : : :	: : :	-		Sat.			
140	-	‡				H			<u> </u>	+ : : :					-	
	137.2	28.7									-			///		
135	-	F	WOH	WOH	WOH	¹ ₫	φ		: : : :	: : :	-		Sat.			
100	-	‡					. \			<u> </u>					=	
	132.2	33.7	ļ	10	15	41					:		_	//		
130	-	ł	7	10	15		· · · · · · · · · · · · · · · · · · ·	25			-		Sat.	///		
	-	F					/.								-	
ŀ	127.2	38.7	10	4	3	+	: //: :				-		Cot			
125	-	ţ	"	'			Q 7			1 : : :	-		Sat.		_	
	-	ł									:				123.9 COASTAL PLAIN	42
	122.2	43.7	8	12	15	+					-		w		VERY STIFF, DARK GRAY, SAND CLAY, WET, HIGHLY PLASTIC	
120	-	1						\\ \		<u> </u>	-				 (BLACK CREEK FORMATIC 	
	4470	40.7								: : :					DENSE, DARK GRAY, DENSE,	SILTY
	117.2	48.7	19	20	23			\ .			:		W		COARSE TO FINE SAND, WET PLASTIC (A-2-5)	T, NON
115	-	+						i		$+\cdots$						52
	112.2	[53.7							: : : :	: : :	-				HARD, DARK GRAY, COARSE T SANDY CLAY, WET, MODERA	O FINE
110	-		6	19	26			4	· · · · 5 · · · ·	: : :	-		W		_110.9PLASTIC (A-6)	<u></u>
110	-	‡						/ .		 : : :					DENSE, DARK GRAY, DENSE, COARSE TO FINE SAND, SATU	
	107.2	58.7	<u> </u>	10				: : <i>[</i> ::	: : : :						TRACE MICA AND CLAY, NON F	
105	-	<u> </u>	11	16	20			36			-		Sat.	-	(A-2-4)	
	-	F						<i>/</i> · · · ·		1					103.9	<u> </u>
	102.2	63.7	8	7	10	41	::::/		: : : :	: : :	:		C		SOFT TO VERY STIFF, DARK COARSE TO FINE SANDY C	LAY,
100	-	ţ	°	′	10		· · • 17		<u> </u>	1:	-]		Sat.		SATURATED, TRACE MICA A LIGNITE, MODERATELY PLAST	
	-	+					.				-7				L.C L, MODERVILLE I LAGI	(,,,
}	97.2	68.7	3	5	8	+	: : [: :		: : : :	: : :	-		Sat.			
95	-	‡					• 13-		: : : :	1:::			Jal.		_	
	-	t									:					
, }	92.2	73.7	9	11	15	+	\	200			-		Sat.			
90	_	<u> </u>						26					Jai.			

GEOTECHNICAL BORING REPORT BORF LOG

SHEET 7 OF 13

								B	<u>ORE L</u>	<u>UG</u>							
WBS	47533	3.1.2			TI	P I-5987A		COUNTY	ROBESO	N			GEOLOGI	ST DEGON	, A. N.		
SITE	DESCR	IPTION	SITE	3 - AE	BUTME	ENT RET. W	'ALLS AT E	B1 AND			1 -Y3-	OVEF	R -L- AT -Y3	- STA. 30+40	.11	GROUN	ND WTR (f
BORI	NG NO.	Y3-EI	31-B		S	TATION 28	8+57		OFFSET 8	ft RT			ALIGNME			0 HR.	N/
COLI	LAR ELE	EV. 16	5.9 ft		TO	OTAL DEPT	H 100.2 f	t	NORTHING	371,14	41		EASTING	2,001,040		24 HR.	6.
					299 DI	EDRICH D-50	79% 12/31/2	2020		DRILL N) Mu	d Rotary		HAMMI	ER TYPE	Automatic
DRIL	LER TO					ΓART DATE			COMP. DA		11/21	/ 	SURFACE	WATER DEI	PTH N/	A	
(ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft	_	0 2	BLOWS P		75 100	SAMP. NO.	MO	O G	ELEV. (ft)	SOIL AND RO	OCK DESC	CRIPTION	N DEPTH
90	· – – –					 	Match	Line			L			OFT TO VERY	OTICE F	<u> </u>	. ~
85	87.2 - - - -	78.7	5	6	9						Sat.			COARSE TO I SATURATED, SNITE, MODER	FINE SAN	IDY CLAY	′,)
80	82.2 - - - -	83.7	6	7	14		1				Sat.		- - <u>78</u> .9	MEDĪŪM DENS	E TO DE	NSE. GRA	
75	77.2 - - - - 72.2 -	88.7 93.7	10	15	23		38-				Sat.		S	SILTY COARS ATURATED, T AND CLAY, NO	SE TO FII RACE MI	NE ŚAND CA, LIGN	, ^r ITE
70	67.2	98.7	7	12	16		♦ 28				Sat.			RY STIFF, DAF SANDY CLAY			
		-	6	13	13		26				Sat.		65.7 N - Bo	MICA AND LIGI PLA: ring Terminate DASTAL PLAIN CREEK	NITE, MO STIC (A-6 d at Eleva	DERATEI i) ation 65.7 CLAY (BL ION)	ft IN
	- - - - -	† - - - - - -										-	-				
	- - - -												-				
	- - - -	† - - -										-	-				
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	-	<u> </u>															



Collec	liting Eng	Jiliceis a	and Scie	51111313				<u>D</u>	UKE	<u></u> '					
WBS	47533	3.1.2			1	TIP 1-5987 <i>P</i>		COUNT	Y ROBE	SON	1			GEOLOGIST FARMER, B. C.	
SITE	DESCR	IPTION	SITE	3 - AE	BUTM	MENT RET. V	VALLS AT	EB1 AND	EB2 OF	BRID	OGE ON	-Y3-	OVE	R -L- AT -Y3- STA. 30+40.11 GRO	UND WTR (ft
BORI	NG NO.	Y3_R	WAL-	1	- (STATION 2	9+16		OFFSE	T 3	3 ft LT			ALIGNMENT -Y3- 0 HF	R. N/A
COLL	AR ELE	EV . 16	55.5 ft		٦,	TOTAL DEP	TH 58.4 f	t	NORTH	ING	371.21	2		EASTING 2,001,051 24 HF	R. 1.5
				F TFD		ACKER RENE					DRILL M) Mu		
									COMP) iviu	, ' 	L Automatic
DKILI	LER D DRIVE		1			START DAT			СОМР.	DAI		2/21	1 . 1	SURFACE WATER DEPTH N/A	
ELEV (ft)	ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft	0.5ft	t O		PER FOOT 50		100	SAMP. NO.	MOI	0	SOIL AND ROCK DESCRIPTION ELEV. (ft)	ON DEPTH (
170														-	
165	-						T							165.5 GROUND SURFACE	(
	164.5	1.0	3	3	2									 UNDIVIDED COASTAL PLAII SOFT TO MEDIUM STIFF, BRO 	
	162.0	3.5	WOLL	1		_ <i>Ț</i> °::::								ORANGE, SILTY CLAY, WET, TI COARSE TO FINE SAND, HIGI	
160	450.5-	1	WOH	1	2	∮ 3 · · ·						W		160.0 PLASTIC (A-7-6)	5
-	159.5	6.0	2	2	1	⊣ j						W		VERY LOOSE, GRAY, ORANGE, C COARSE TO FINE SAND. WE	
	157.0	8.5	1	1	1	_ T* : : :		: : : :	: : :				\\\	MODERATELY PLASTIC (A-2	
155	-	ţ	'	1	1	• 2 · · ·		1	1			W		_	
	153.6	11.9	3	2	1	_ · · · ·									
	-	Į	"	-	'	3	: : : :	: : : :	: : :	-		W			
150	-	‡				<u> i : : :</u>	1							-4404	4.0
-	148.6	16.9	1	2	4	- } : : :						0		LOOSE, ORANGE, GRAY, SIL	TY 16
	-	Į	'	-	4	• 6	: : : :	: : : :	: : :	-		Sat.	· · · ·	COARSE TO FINE SAND, SATUR INTERBEDDED CLAY LAYERS (A	
145	-	‡				1								_	•
	143.6	21.9	1	1	1	$\exists i : : :$						0-4		VERY LOOSE, PINK ORANGE, CI	
	-	F	'	'	'	Q 2	: : : :	: : : :	: : :	-		Sat.		COARSE TO FINE SAND, SATUR (A-2-6)	ATED
140	_	Į.				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	: : : :		_			\\		26
	138.6	26.9	5	6	3							0-4		VERY LOOSE TO MEDIUM DEN	
	-	-			J	9				-		Sat.		ORANGE, GRAY, SILTY COARS FINE SAND, SATURATED (A-2	
135	_	ţ				'/ · · ·	1							FINE SAND, SATURATED (A-2	(-4)
	133.6	31.9	1	1	2	$\exists \mid t : : :$						0	-		
	-	Į.	'	'	2	3	: : : :	: : : :	: : :	:		Sat.	l I		
130	_	‡				. /								_	
	128.6	36.9	1	10	12	$\exists 1 : : \mathbb{N}$						0-4			
	-	-	~	10	12	: : : 3	22			-		Sat.			
125	_	‡					1	1	1					-4044	44
ļ	123.6	41.9	WOH	3	3	- [; <u>-</u>						Sc.		COASTAL PLAIN	41
	-	+			J	1				-		Sat.		LOOSE, DARK GRAY, CLAYEY CO TO FINE SAND, SATURATED, T	
120	_	Į.						: : : :	1:::				\\\	_ MICA, TRACÉ MARCASITE (A-	2-6)
	118.6	46.9	15	12	20		\\		: : :			W		(BLACK CREEK FORMATION	47
	-	+	.		_0		∮ 32			-		vv		VERY STIFF TO HARD, DARK G SILTY CLAY, WET, TRACE LIGI	
115	-	F					<i>i.</i>	ļ : : : :	1:::	_				HIGHLY PLASTIC (A-7-6)	•
	113.6	51.9	6	7	17		<u> </u>	: : : :				W	1		
	-	t					24			:		••			
110	_	-					\	ļ	+						56
-	108.6	<u> 56.9</u>	7	14	15	\dashv \mid \vdots \vdots \vdots	7					W		MEDIUM DENSE, DARK GRAY, S 107.1 COARSE TO FINE SAND, WET, T	SILTY
-	-						<u> </u>							MICA (A-2-4)	RACE 50
	_	+											-	Boring Terminated at Elevation 107 COASTAL PLAIN SILTY SAND (B	
	-	Į.												COASTAL PLAIN SILTY SAND (B CREEK FORMATION)	LACK
	-	‡												STA. 463+07 -L-; 82' LT	
	_	+											-		
	-	Į.													
	-	‡													
	_	+											-	-	
	-	Į.													
	-	‡													
		L	<u> </u>			_1							LLL		

GEOTECHNICAL BORING REPORT BORE LOG

SHEET 8 OF 13

								-				UG							
WBS	47533	.1.2			TI	P I-5987/	4		COUNT	Y RO	BESO	N			GEOLOGIST	FARMER,	B. C.		
SITE	DESCRI	PTION	SITE	3 - AE	BUTME	ENT RET.	NALLS	AT E	B1 AND	EB2 C	F BRI	DGE ON	1 -Y3-	OVER	-L- AT -Y3- S	TA. 30+40.1	1	GROUND W	/TR (ft)
BORI	NG NO.	Y3_R	WAL-2	2	S	TATION 2	29+76			OFFS	SET 8	35 ft LT			ALIGNMENT	-Y3-		0 HR.	N/A
COLL	AR ELE	V . 16	5.4 ft		Т	OTAL DEP	TH 53	6 ft		NOR	THING	371.29	91		EASTING 2	.001.055		24 HR.	0.9
				TED		CKER RENE			15/2010	11011		DRILL M		D Mud				R TYPE Auto	
-					_				13/2017	2014	D D 4 7			D IVIUU	, , , , , , , , , , , , , , , , , , , 			CITE Aut	malic
DKILI	LER DI	JGGIN				TART DAT					P. DA	TE 01/2	22/21	111	SURFACE W	ATER DEP	IH N/A		
ELEV (ft)	DRIVE ELEV	DEPTH (ft)		W COI					ER FOOT		400	SAMP.	▼/	0	sc	OIL AND ROC	K DESCF	RIPTION	
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	,	75	100	NO.	<u>/мо</u>	I G	ELEV. (ft)]	DEPTH (ft)
170		_												ΙL					
	+	-												 					
	- 1	-												1 -					
165	164.4	- 10				—							V		165.4	GROUND JNDIVIDED C			0.0
-	104.4	- 1.0	3	3	3	6 .						SS-68	17%	N	MEDIU	IM STIFF, GF	RAY, ORA	NGE, SILTY	
-	161.9	3.5	1	3	3					: :			w			, WET, TRAC ND, HIGHLY			
160	159.4	- 60	'			6	ļ			<u> </u>			l vv		159.9			,	5.5
	100.4	-	2	3	3	6 :	: :	: :		: :	::		w			RY LOOSE T NGE, CLAYE			
-	156.9	8.5	1	1	2	$ _{I_{\cdot}}$ \cdots						SS-69	l w		SANE	D, WÉT, MOE		Y PLASTIC	
155	4	-	'	· .	_	93	+			ļ::		33-09	٧٧			(A	-2-6)		
	153.3	12.1	3	4	4	'\ : : :		: :		: :			١.,,						
	+	-	3	"	-	. • 8							W						
150		-					+			<u> </u>									46.6
	148.3	17.1	3	7	17	::::		: :		: :			0-4		.148.8VER	TOOSE TO	O MEDIUN	И DENSE,	<u>16.6</u>
	f	-		′	17	: : : ;	24						Sat.			NGE, GRAY, IE SAND, SA			
145	4	-					+			+				I I		IL OAND, OA	TORATE	J (M-2-4)	
	143.3	22.1	1	1	2	/. : :				: :			Sat.						
		-	'	· .	_	∮ 3		: :		: :			Sai.						
140		-				i	+							-	138.8				26.6
•	138.3	27.1	WOH	WOH	WOH		: :	: :					Sat.		VERY	LOOSE TO L			
405	‡	-				T ⁰		: :		: :	::		Jai.			ANGE, LIGH ARSE TO FIN			
135	+	-				\	+ : :			+::						SATURA	TED (A-2-	·6)	
•	133.3	32.1	WOH	1	5	,							l w						
130	- 1	-				7% : :		: :		: :	::								
130						 . \	+ : :			+ : :					128.8				36.6
•	128.3	37.1	9	8	8	\ ●10	3						Sat.	-		M DENSE, O			/
125	- 1	-				: : ; ; :		: :		: :	::			F	COAN		-2-4)	ATOKATED	
.20	123.3	- 121					1::			1::					123.8				41.6
		- + ∠.l	WOH	2	2		: :	: :		: :	::		Sat.		121.8 VERY	COAST LOOSE TO L	AL PLAIN OOSE. D		43.6
120	-	-				:\ :									CLA	YEY COARS	SE TO FIN	IE SAND,	
	118.3	- - _{47 1}					1			: :					1		(NÓITAN		
		- ''-' -	4	5	8	\		: :		: :	::		w			, DARK GRA` E LIGNITE, T			-
115	+	-				L: : · }	1							1	I KACI		IC (A-7-6)		
	113.3	52.1						>\		T					113.8	DENSE, GRA	√ हा। च √		<u>51.6</u>
[-	15	28	32	: : : :		<u> </u>	60	: :			W		111.8 FINE S	SAND, WET,	TRACE N	/IICA (A-2-4)	53.6
]	_												1 E	Boring	Terminated a	at Elevatio	n 111.8 ft IN	_]
	7	-												F	COAS	CREEK F			
	- 1	-												F		STA. 463+	86 -l -· 83'	'IT	
	į	-														0171. 1001	00 2,00		
	+	-												 					
ı	- 1	-												l F					
		-																	
	+	-												 					
	‡	- -																	
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	7	-												F					
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Terracon GEOTECHNICAL BORING REPORT

SHEET 9 OF 13

VDS	47533.	1.2			11	P I-5987A	COUNT	Y ROBESO	N			GEOLOGIST FARMER, B. C.		
SITE	DESCRI	PTION	SITE	3 - AE	BUTME	ENT RET. WALLS A	T EB1 AND	EB2 OF BRI	DGE ON	1 -Y3-	OVE	R -L- AT -Y3- STA. 30+40.11	GROUND WTR	R (ft
BORII	NG NO.	Y3_R	WAL-3	3	S1	TATION 32+43		OFFSET 9	97 ft LT			ALIGNMENT -Y3-	0 HR.	N/A
OLL	AR ELE	V. 16	5.2 ft		т	OTAL DEPTH 48.7	ft	NORTHING	371,49	91		EASTING 2,001,233	24 HR.	1.5
RILL	RIG/HAMI	MER EF	F./DATE	E TER	92-0 AC	CKER RENEGADE 86%	02/15/2019	ı	DRILL N	IETHOI	D Mu	d Rotary HAMM	ER TYPE Automa	atic
RILL	LER DU	JGGIN	S, W.	Т.	ST	TART DATE 01/21	/21	COMP. DA	ΓE 01/2	21/21		SURFACE WATER DEPTH N/	A	
LEV	DRIVE	DEPTH	BLO	w col	JNT	BLOW	S PER FOOT		SAMP.	V /		COIL AND DOOK DEC	CDIDTION	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	MO	O I G	SOIL AND ROCK DES		PTH (
170		_										_		
	‡											• •		
	1	-										- 165.2 GROUND SURF	ACE	0
165	164.2	1.0	2	2	1					V		UNDIVIDED COASTA	L PLAIN	
	161.7	- - 3.5				 						SOFT TO MEDIUM STIF BROWN, GRAY, SILTY	CLAY, WET,	
160	1500	- 60	2	2	3	5			SS-55	24%		HIGHLY PLASTIC	(A-7-6)	
	159.2	6.0	2	3	4	7				w		•		
	156.7	- 8.5 -	2	3	3					l w		- -		
155	‡	-						 				- ·		
-	153.0	12.2	1	2	3	· · · · · · . · · · . · · · ·				w		• •		
150	‡	-				`\						<u>.</u>		
	148.0	17.2			- 10	::\:: :::						- 148.5 LOOSE TO MEDIUM DEN	SE ORANGE	_ 16
	‡	-	3	8	10	18				Sat.		TAN, RED, SILTY COAR SAND, SATURATED	SE TO FINE	
45	†	-				 : /: : : : :	. 	1				SAND, SATORATEL) (A-2-4)	
-	143.0	22.2	1	1	3	./ 				Sat.		. INTERBEDDED CLAY	LAYERS	
140	1	-				<u> </u>						_		
	138.0	27.2										<u>138.5</u> VERY SOFT, ORANGE, P		_ 20
	-	-	1	0	1	1				Sat.		TO FINE SANDY SILT, SAT		
35	Ŧ	-				1		+				-		0
-	133.0	32.2	1	2	3		.			Sat.		LOOSE TO MEDIUM DEN		_ <u>3</u>
130	Ŧ	-								l oat.		GRAY, WHITE, SILTY COA SAND, SATURATED		
	128.0	37.2				1		1				- ·		
	120.0	- 07.2	2	2	8	• • 10 · · · ·				Sat.		•		
25	- ‡	-										• -		
-	123.0	42.2	3	4	4					Cat		•		
120	‡	-			· ·	8				Sat.		- -		
120	118.0	- 47.2						1				-		
	118.0	- 41.2	6	8	12	20				Sat.		- - 116.5		48
	1	-										 Boring Terminated at Eleva UNDIVIDED COASTAL P 		
	‡	-										CLAY		
	‡	-										STA. 465+98 -L-; 7	79' RT	
	1	-										- ·		
	‡	-										• •		
		-										• -		
	‡	-										• •		
	‡	-										• •		
	$\frac{1}{2}$	-										-		
	7	-												
	Ŧ	-										- -		
	7	-										- ·		
	+	-		1					1	I	1	-		

								D	UKE	<u>L</u> C	JG						
WBS	47533	3.1.2			TI	P I-5987A		COUNTY	ROBE	SON				GEOLOGIST W. Po	esl		
SITE	DESCR	IPTION	SITE	3 - AI	BUTME	NT RET. W	ALLS AT	EB1 AND	EB2 OF E	RIDO	SE ON	-Y3-	OVEF	R -L- AT -Y3- STA. 30+	-40.11	GROUND W	TR (ft)
BORI	NG NO.	Y3_E	B2-A		ST	TATION 32-	+01		OFFSET	25	ft LT			ALIGNMENT -Y3-		0 HR.	N/A
COLL	AR ELE	EV. 16	5.5 ft		т	OTAL DEPTH	d 95.0 ft		NORTHI	NG (371,41	1		EASTING 2,001,25	5	24 HR.	11.9
DRILL	RIG/HAN	MER EF	F./DAT	E F&F	R2175 C	ME-55 84% 0	3/01/2019	•		D	RILL M	ETHOD) Mu	d Rotary	HAM	MER TYPE Autor	matic
DRILI	LER S.	. Davis			SI	TART DATE	12/05/1	9	COMP. I	ATE	12/0	5/19		SURFACE WATER I	DEPTH N	I/A	
ELEV	DRIVE ELEV	DEPTH	BLC	ow co	UNT		BLOWS	PER FOOT		S	SAMP.	$\overline{ullet}/$	L	SOIL AND	BOCK DE	SCRIPTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	5 ;	50	75 1	00	NO.	<u>/MOI</u>	- 1	ELEV. (ft)	NOCK DE		EPTH (
170														_			
	-	1															
	1055	0.0												165.5 GRC	OUND SURI	FACE	
165	165.5	0.0	2	3	7	10				#		М		- UNDIVID	ED COAST	AL PLAIN	
	162.0	3.5												FINE TO COAF	RSE SAND,	SILTY CLAYEY MOIST, TRACE	<u></u>
160	-	-	2	3	4	7				. S	S-520	16%			GANICS (A EDIUM STII		
	-	F				1				-						, SILTY FINE TO MOIST, TRACE	<u>, — </u>
	157.0	8.5	2	2	3			: : : :		-		W	///			ELY PLASTIC	ĺ
155	_	F				5			1					, -	-TAN, SÍLT	Y CLAYEY FINE	
	152.0	13.5							: : :	.	•			MEDIUM STIF	F, GRAY-T	NET (A-2-6) AN, SILTY FINE	1
150	-132.0	13.3	2	2	3	5				. s	S-522	25%			SE SANDY (.Y PLASTIC	CLAY, WET, (A-7-6)	
	-	Ŧ								\Box				- _ <u>148.5</u>			1
	147.0	18.5	9	8	13	:::::::::::				:		147			TO MEDIUN -GRAY, SIL	M DENSE, .TY FINE SAND,	
145	_	‡								41		W		WET TO	SATURAT	ED (A-2-4)	
	440.0					: : ;/ :				:							
140	142.0	23.5	5	4	5	. 9	: : : :	: : : :		:		Sat.	:::				
140	_	‡				 ; 			: : :	$\exists $				- _ <u>138.5</u>			2
	137.0	28.5	2	1	1	/. : : :				:			///			DIUM DENSE, SILTY CLAYEY	
135	_	‡	_	'	'	6 2 · · ·						Sat.				TED (A-2-6)	
	-	†								:							
400	132.0	33.5	2	3	9	12.				:		Sat.		131.0		N ODAY OF TY	3
130	_	‡				· · · <u> </u>				$\exists 1$			<u> </u>			N-GRAY, SILTY D, WET (A-2-4)	
	127.0	38.5		10	10					:			<u> </u>				
125	-	‡	5	10	13		23		· · ·			W		_			
	-	-				::/::				:					F ORANG	E-TAN-GRAY,	4
	122.0	43.5	2	2	1	3				-		Sat.		SILTY CLAYEY		COARSE SAND,	
120	-	ţ				7			 	\exists			\sim	_ _118.5	OIO(IED ()	(120)	4
	117.0	48.5		<u> </u>		:\: : :				-				ME	DIUM DEN	ISE, , SILTY FINE TO	
115	_	1	3	5	6	- •11 -						W	<u> </u>		ND, WET,	TRACE CLAY	
	-	‡				:::\;				:					(A-2-4)		
	112.0	53.5	5	9	16	: : : <u>;</u> \	25			:		W					
110	_	<u> </u>				 : : :/			 	$\exists 1$				-			
	107.0	58.5						: : : :		:				106.5			5
105	-		12	7	9	• • ● 16		<u> </u>	<u> </u>	_		W		CC	DASTAL PL		3
	-	t								:				WET, TRACE	MICA AND	Y, SILTY CLAY, LIGNITE (A-7-6)	
	102.0	63.5	8	13	13	: : : : \	26			:		W	N	101.5	CREEK FOR	<u> </u>	6-
100	_	Ĺ				/	-20	 	$+\cdots$	$\exists 1$		••	liii F	 FINE TO COA 	RSE SAND	GRAY, SILTY D, WET, TRACE	^
	97.0 _	68.5				:::,;i		: : : :	: : :	-			Ø			AVEL (A-2-4) DARK GRAY,	<u>, — 6</u>
95	- VI.U -	T	5	6	9	•15		: : : :	: : :	:		W		FINE SANI		CLAY, WET,	
	-	Ŧ				7				$\exists $				93.5	`		72
-	92.0	73.5	9	13	18	::::}	\ \	: : : :	: : :	:		\^/		COARSE SANI	D, WET, TR	SILTY FINE TO RACE MICA AND	
90	-	t	١	'	'	• • • •	●31		1	-		W	:::: <u> </u>	(CĹAY (Á-2-	4)	

GEOTECHNICAL BORING REPORT BORE LOG

SHEET 10 OF 13

									UNL						
NBS	47533	.1.2			TI	P I-5987A		COUNT	/ ROBE	102	N			GEOLOGIST W. Pesl	
SITE	DESCRI	PTION	SITE	3 - AI	BUTME	ENT RET. W	ALLS AT	EB1 AND	EB2 OF	BRII	DGE ON	1 -Y3-	OVE	R -L- AT -Y3- STA. 30+40.11	GROUND WTR (ft
BORIN	NG NO.	Y3_E	B2-A		ST	TATION 32	2+01		OFFSET	Γ 2	5 ft LT			ALIGNMENT -Y3-	0 HR. N/A
COLL	AR ELE	V. 16	5.5 ft		т	OTAL DEPT	TH 95.0 ft		NORTH	NG	371,4	11		EASTING 2,001,255	24 HR. 11.9
RILL	RIG/HAM	MER EF	F./DAT	E F&F	R2175 C	ME-55 84%	03/01/2019				DRILL M	IETHOI	D Mu	d Rotary HAMI	MER TYPE Automatic
DRILL	ER S.	Davis			Sī	TART DATE	E 12/05/1	9	COMP.	DAT	TE 12/0	05/19		SURFACE WATER DEPTH N	I/A
LLV	DRIVE ELEV	DEPTH	BLC	w co	UNT		BLOWS F	PER FOOT			SAMP.	lacksquare		SOIL AND ROCK DE	SCRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25 5	50	75 1	00	NO.	/MO		ELEV. (ft)	DEPTH (
90				↓			Matc	h Line		_	L	L	ļ.,.,.ļ	DENSE, DARK GRAY, S	
	27.0						: ; : :			:				COARSE SAND, WET, TR	RACE MICA AND
85	87.0	_ 78.5 -	11	21	16		- 37-			:		w		CLAY (A-2-4) (coa	nunuea)
00	7	-					//	: : : :	1	-				- _8 <u>3.</u> 5	82
-	82.0	83.5	5	6	8	:::,?	1::::		: : :	:		М		STIFF, DARK GRAY-GRA MOIST, TRACE MIC	Y, SILTY CLAY, CA (A-7-6)
80	- 1	-				· · • 14			<u> </u>	-		IVI		-	
	77.0	- - 88.5								:					
75		-	4	6	8	14				:		М			
	7	-				/				•				- _ <u>73.5</u>	92
-	72.0	93.5	12	11	16	: : : :\			1	:		w		MEDIUM DENSE, DARK SILTY FINE TO COARSI	E SAND, WET,
-		-					● 27 · · ·			- 1		VV		70.5 TRACE CLAY (A	vation 70.5 ft in
	1	_											F	SAND (COASTAL PLAIN) FORMATIO	(BLACK CREEK
	1	_												Notes:	,
	7	-												1. Surficial Organic S	Soil: 0.0-0.2'
		_												STA. 465+20 -L-;	107' RT
	- 1	_												=	
	‡	-													
	‡	-													
	7	-												-	
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Cons	ulting En	gineers a	and Sci	entists			B	ORE L	.OG		
WBS	47533	3.1.2			T	IP I-5987A	COUNT	Y ROBESO	N	GEOLOGIST DEGON, A. N.	
SITE	DESCR	IPTION	SITE	3 - AE	BUTMI	ENT RET. WALLS	AT EB1 AND	EB2 OF BRI	DGE ON -Y3- OVER	R -L- AT -Y3- STA. 30+40.11	GROUND WTR (ft)
BOR	NG NO.	Y3_E	B2-B		S	TATION 30+99		OFFSET	11 ft RT	ALIGNMENT -Y3-	0 HR. N/A
COLI	AR EL	EV . 16	67.5 ft		T	OTAL DEPTH 99	7 ft	NORTHING	371,312	EASTING 2,001,210	24 HR. 8.2
DRILL	RIG/HAN	/MER EF	F./DAT	E TER	299 D	IEDRICH D-50 79% 1	2/31/2020	•	DRILL METHOD Muc	d Rotary HAMN	MER TYPE Automatic
DRIL	LER T	URNAG	E, J. F	₹.	S	TART DATE 05/1	0/21	COMP. DA	TE 05/10/21	SURFACE WATER DEPTH N	/A
ELEV	DRIVE ELEV	DEPTH	BLC	w cou	JNT	BLOV	VS PER FOOT	r	SAMP. L	SOIL AND ROCK DES	SCRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO. MOI G	ELEV. (ft)	DEPTH (f
170		↓								_	
		‡								167.5 GROUND SURF	FACE 0
165	166.5	1.0	27	8	6	- · · · · · · ·			D Livit	166.5 ROADWAY EMBAN MEDIUM DENSE, WH	
165	164.3	3.2	6	5	6	- 1 14				GRAVELLY COARSE TO DRY, NON PLASTIC	O FINE SAND,
	161.5	1	"		O	11		.	M	UNDIVIDED COAST	AL PLAIN
160		†	1	2	1	4 3				MEDIUM DENSE, DARK (FINE SAND, DRY TO N	
	159.3	1 8.2	2	2	3	- \		.	SS-110 W	PLASTIC (A-2 N SOFT TO STIFF, GRA	<u>'-5)_ </u>
		Ŧ						.		COARSE TO FINESANDY	CLAY, MOIST,
155	154.3	13.2]				i <u>MODERATELY PLAS</u> LOOSE, GRAY, ORANGE	, LIGHT GRAY,
		Ŧ	2	2	2	•4			W [;;;]	CLAYEY COARSE TO FIN MODERATELY PLAS	
150		‡									,
100	149.3	18.2	3	3	3	- 1			W W	-	
		‡				.\					
145	1440	23.2				. \	· • · · · ·				<u>22</u> . ENSE LIGHT
	144.5	1 23.2	11	11	6	17		.	Sat.	GRAY, WHITE, ORANGE, TO FINE SAND, SATURA	SILTÝ COARSE
		ŧ				::/:: ::		.		CLAY, SLIGHTLY PLAS	
140	139.3	28.2				<u> </u>				-	
		Ŧ	5	6	3	. •9			Sat.		
135		Ŧ									
	134.3	33.2	3	3	3	1 1			Sat.	- _1 <u>33.5</u>	34.
	,	‡								LOOSE, LIGHT GRAY, OR COARSE TO FINE SAND	
130	120.3	38.2								SLIGHTLY PLASTIC	` ′ 38.
	120.0	‡ "	10	9	8	17			Sat.	MEDIUM DENSE, WHITE ORANGE, SILTY FIN	
405		‡				: : : \				SATURATED, NON PLA	
125	124.3	43.2	7	11	14	<u> </u>				-	
125 120 115		t	'	11	14	25 .		.	Sat.		
120		<u> </u>				/				120.5 COASTAL PL	47.
	119.3	48.2	3	5	6				Sat.	MEDIUM DENSE, DARK	GRAY, SILTY
		Ŧ								COARSE TO FINE SAND NON PLASTIC (A-2-4) (B	LACK CREEK
115	114.3	53.2								FORMATION 114.0	N) 53.
		‡	4	9	21	30			Sat.	VERY STIFF, DARK GRAY FINE SANDY CLAY, SATU	Y, COARSE TO
110		‡				:::: :`\				110.5 MICA, MODERATELY P	LASTIC (A-7) 57.
	109.3	58.2	12	20	26		X. J			DENSE, DARK GRAY, SIL FINE SAND, TRACE MICA	
I		‡	'-	-	_0		. ●46 . /.		Sat.	(A-2-4)	,
105	4040	±					/ .				AVEV COARSE 62.
	104.3	63.2	6	11	21			.	Sat.	TO FINE SAND, SATURA MICA AND LIGNITE, SLIG	ATED, TRACE
		‡				:::: /::		.		(A-2-7)	HTLY PLASTIC 67.
100	99.3	68.2	<u> </u>			↓ ├ /		+		VERY STIFF, DARK GRA	Y, SILTY FINE
105		Ŧ	7	8	13	21			w \$\frac{1}{2}	SANDY CLAY, WET, TRA LIGNITE, HIGHLY PLAS	
95		Ŧ								95.5	72.
- 55	94.3	73.2	8	12	14	-			W	MEDIUM DENSE TO DE GRAY, CLAYEY COARSE	ENSE, DARK
	•	‡			•					WET TO SATURATED, SLIGHTLY PLASTI	TRACE MICA,
90		<u> </u>						· · · · ·		OLIGITIET LAGIN	- (· · - ·)

GEOTECHNICAL BORING REPORT BORE LOG

SHEET 11 OF 13

WBS	47533	.1.2			TI	P I-5987A		COUNT	Y RO	BESOI	N			GEOLOGIST DEGON, A. N.	
SITE	DESCR	IPTION	SITE	3 - AE	BUTME	NT RET. W	/ALLS AT	EB1 AND	EB2 C)F BRI	DGE ON	N -Y3-	OVE	R -L- AT -Y3- STA. 30+40.11	GROUND WTR (ft)
BOR	ING NO.	Y3_EI	B2-B		_	TATION 30			_		11 ft RT			ALIGNMENT -Y3-	0 HR. N/A
	LAR ELE					OTAL DEPT			NOR.	THING	371,3			EASTING 2,001,210	24 HR. 8.2
						EDRICH D-50							D Mu		MER TYPE Automatic
	LER TO					TART DATE				P. DA	SAMP.	10/21	1 🗆	SURFACE WATER DEPTH N	/A
ELEV (ft)	ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft	0.5ft	0 2		PER FOOT	75	100	NO.	MO	0	SOIL AND ROCK DES	SCRIPTION DEPTH (ft)
							B.4 - 1 -	. L. L. L							
90	89.3	78.2		18	 23		IVIAIC	ch Line	Τ		+	 Sat.	*	MEDIUM DENSE TO DE	
85	-			10	20		\$41 \$1.					Sal.		GRAY, CLAYEY COARSE WET TO SATURATED, SLIGHTLY PLASTIC (A-2	TRACE MICA,
	84.3	83.2	16	21	20		41					Sat.		- - -	
80	79.3	88.2	10	13	21							Sat.		- 80.5 — HARD, DARK GRAY, FINE SATURATED, TRACE LIGNITE, MODERATELY	MICA AND
75	74.3	93.2					/·····							- - 75.5MEDIUM DENSE, GRAY, \$	SILTY COARSE 92.0
70	-	-	12	11	11		22					Sat.		TO FINE SAND, SATUR/ CLAY AND MICA, SLIGH (A-2-5)	
70	69.3	98.2	13	14	16		30					Sat.		- - - 67.8	99.7
														Boring Terminated at Elev COASTAL PLAIN SILTY: CREEK FORMA' STA. 464+19 -L-;	SAND (BLACK TION)





SHEET 12 OF 13

	ululiy Eliç	gineers a	ind Sci	entists			В	<u>ORE L</u>	<u>OG</u>					
WBS 47533.1.2 SITE DESCRIPTION SITE 3 - ABU					TI	IP I-5987A	Y ROBESON EB2 OF BRIDGE ON -Y3- OVER				GEOLOGIST FARMER, B. C.			
					BUTME	ENT RET. WALLS AT E					R -L- AT -Y3- STA. 30+40.11	GROUND WTR (ft)		
BOR	ING NO.	Y3_R	WAL-	4	S	TATION 30+36		OFFSET 9	5 ft RT			ALIGNMENT -Y3-	0 HR. N/	
COLLAR ELEV. 164.8 ft					TO	OTAL DEPTH 53.5 ft	NORTHING 371,208				EASTING 2,001,226	24 HR. 2		
DRILL RIG/HAMMER EFF./DATE TER92-					R92-0 A0	CKER RENEGADE 86% 02	/15/2019	DRILL METHOD Mu			Mud	d Rotary HAMN	MER TYPE Automatic	
DRILLER DUGGINS, W. T.					S	TART DATE 01/20/2		COMP. DATE 01/20/21				SURFACE WATER DEPTH N	/A	
DRIVE DEPTH BLOW COUNT (ft) 0.5ft 0.5ft			_	BLOWS F	75 100 SAMP. V L O NO. MOI G			0	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEF					
165	400.0						Г					_164.8 GROUND SURI		
160	163.8 -	1	WOH	WOH 2	3	\$\begin{picture}(3 \\ \cdot \) \\ \cdot \\ \cdot \) \\ \cdot \cdot \\ \cdot \cdot \\ \cdot \cdot \\ \cdot \\ \cdot \\ \cdot \cdot \\ \cdot \cdot \\ \cdot \\ \cdot \c			SS-65	20% W		SOFT TO MEDIUM ST ORANGE, FINE TO CO CLAY, WET, MODERAT 159.3 (A-6)	TIFF, GRAY, ARSE SANDY ELY PLASTIC	
155	158.8 - - 156.3	+	2	3	3	6			SS-66	W		VERY LOOSE TO LOOSE CLAYEY COARSE TO FIN SLIGHTLY PLASTI	E, GRAY, PINK, IE SAND, WET,	
150	152.8	12.0	1	2	4	6				W		-		
145	147.8 - -	17.0 -	8	10	11	21				W		MEDIUM DENSE, ORANG SILTY COARSE TO FINE INTERBEDDED CLAY LA	SAND, WET,	
140	142.8 - -	22.0	1	0	1	1				W		VERY LOOSE, GRAY, O CLAYEY COARSE TO FIN (A-2-6)		
135	137.8 - -	27.0 - 27.0	1	1	1	1				W		-		
130	132.8 -	32.0	2	6	9	15				W		MEDIUM DENSE, PINK, WHITE, SILTY COARSE T WET (A-2-4	ΓΟ FINE SAND,	
125	127.8	37.0	6	7	7	14				W		-		
120	122.8	42.0	6	3	2	6 5				W		LOOSE, ORANGE, CLAYE FINE SAND, WET	(A-2-6)	
115	117.8 -	47.0	4	7	12	<u>-</u>				W		VERY STIFF, DARK GRA' FINE SANDY CLAY, WE' CREEK FORMA	Y, COARSE TO Γ (A-6) (BLACK TION)	
	112.8 -	52.0	2	3	5	. /				W		MEDIUM STIFF TO STIFF 111.3 SILTY CLAY, WET, HIG (A-7-6)		
	- - -										Ē	Boring Terminated at Elev COASTAL PLAIN SILTY CREEK FORMA	CLAY (BLACK	
											-	- STA. 463+16 -L-; -	·	

LABORATORY TESTING SUMMARY

DESCRIPTION: SITE 3 - ABUTMENT RETAINING WALLS AT END BENT 1 AND END BENT 2 OF BRIDGE ON -Y3- (SR 1758 McDUFFIE CROSSING RD.) OVER -L- (I-95) AT -Y3- STA. 30+04.11

	. Station	Alignment	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				%	% Passing (sieves)				0/
Sample No.								Coarse Sand	Fine Sand	Silt	Clay	Retained #4 Sieve	#10	#40	#200	% Moisture	% Organic
SS-70	461+50	-L-	65 LT	1.0 - 2.5	A-7-6 (6)	43	28	40.4	20.2	6.8	32.6	0	99	72	42	17.5	
SS-65	30+36	-Y3-	95 RT	1.0 - 2.5	A-6 (7)	38	25	34.6	19.5	11.7	34.2	0	100	78	48	20.3	
SS-66	30+36	-Y3-	95 RT	6.0 - 7.5	A-2-6 (0)	28	13	54.3	26.7	2.0	17.0	0	99	68	21		
SS-55	32+43	-Y3-	97 LT	3.5 - 5.0	A-7-6 (7)	48	30	34.8	25.9	5.5	33.8	0	100	81	42	24.0	
SS-111	28+57	-Y3-	8 RT	6.0 - 7.5	A-2-7 (4)	52	32	48.2	19.7	4.4	27.7	0	100	69	34	22.5	
SS-112	28+57	-Y3-	8 RT	18.7 - 20.2		33	19	13.8	56.8	7.0	22.4	0	99	94	33		
SS-68	29+76	-Y3-	85 LT	1.0 - 2.5	A-7-6 (8)	43	26	34.0	22.1	8.7	35.2	0	99	78	47	17.3	
SS-69 SS-520	29+76	-Y3- -Y3-	85 LT	8.5 - 10.0	A-2-6 (0)	40	25	53.2	23.5	1.5	21.8 26.8	0	99 100	69 78	25 40	15.7	
SS-520	32+01 32+01	-13- -Y3-	25 LT 25 LT	3.5 - 5.0 13.5 - 15.0	A-6 (2) A-7-6 (10)	31 49	17 32	39.1 28.0	24.9 28.5	9.2 8.0	35.5	0	100	85	48	24.5	
00 022	32101	10	20 11	10.0 10.0	77 0 (10)		32	20.0	20.0	0.0	00.0		100	00	70	24.0	
														1			

Stephanie H. Huffman

Certified Lab Technician Signature

114-01-1203 Certification Number