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TRIAXIAL TEST RESULTS

CONSOLIDATION TEST RESULTS

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STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY _CRAVEN PROJECT DESCRIPTION BRIDGE NOS. 138 AND 139 ON SR 1470 (MAPLE CYPRESS RD.) OVER NEUSE RIVER AND NEUSE RIVER OVERFLOW SITE DESCRIPTION RETAINING WALLS 1-2

STATE PROJECT REFERENCE NO. 36 B-4484

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) 707-6850. THE SUBSURFACE 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 SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABDRATORY SAMPLE DATA AND THE IN SITU (IM-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 NIDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISTY 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.

J.R. SWARTLEY

MID-ATLANTIC DRILLING, INC.
INVESTIGATED BY S&ME, Inc.
DRAWN BY J.R. SWARTLEY
CHECKED BY S.S. LANEY
SUBMITTED BY
DATE JUNE 2019



3201 SPRING FOREST ROAD RALEIGH, NC 27616 (919) 872-2660



UNLESS ALL SIGNATURES COMPLETED

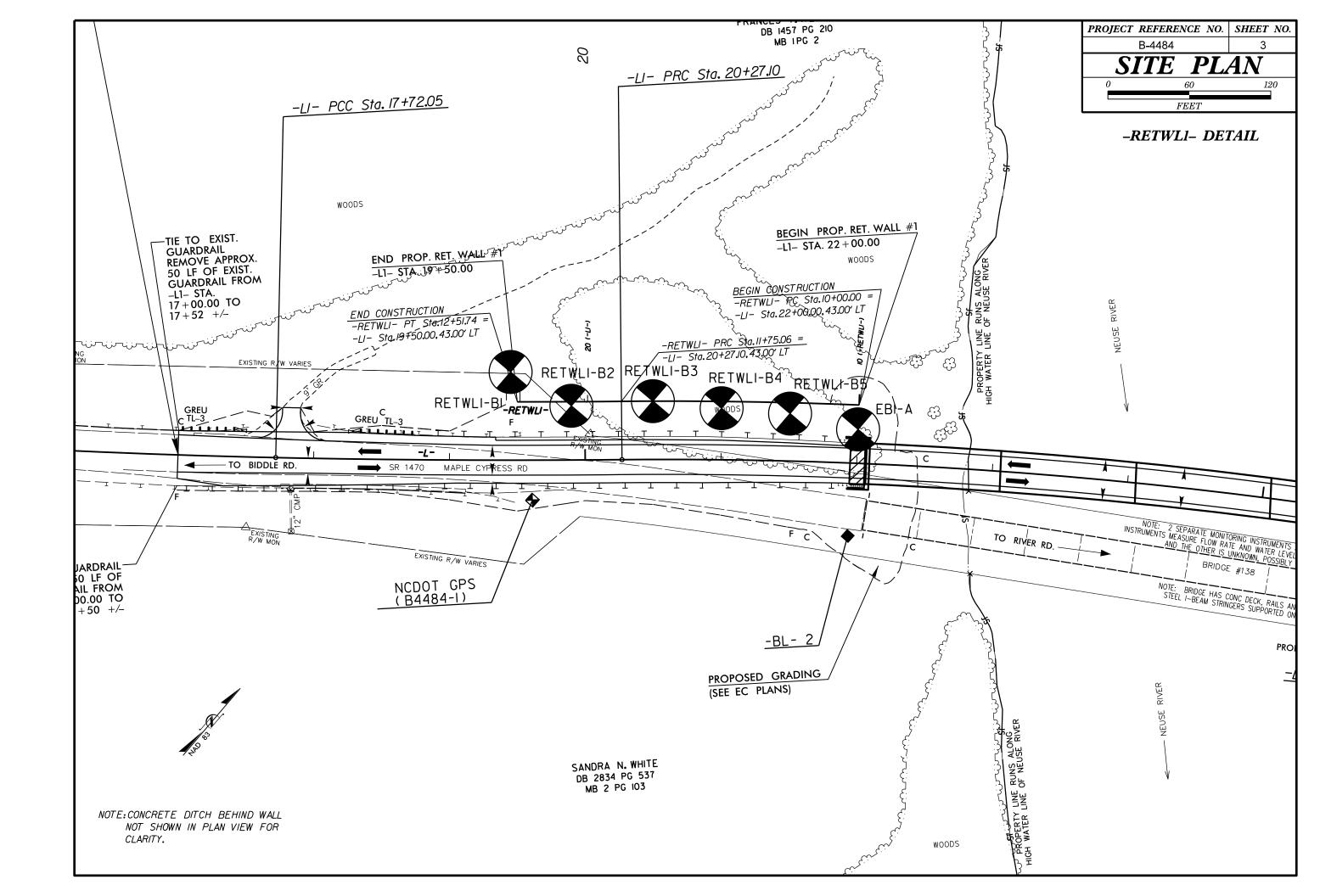
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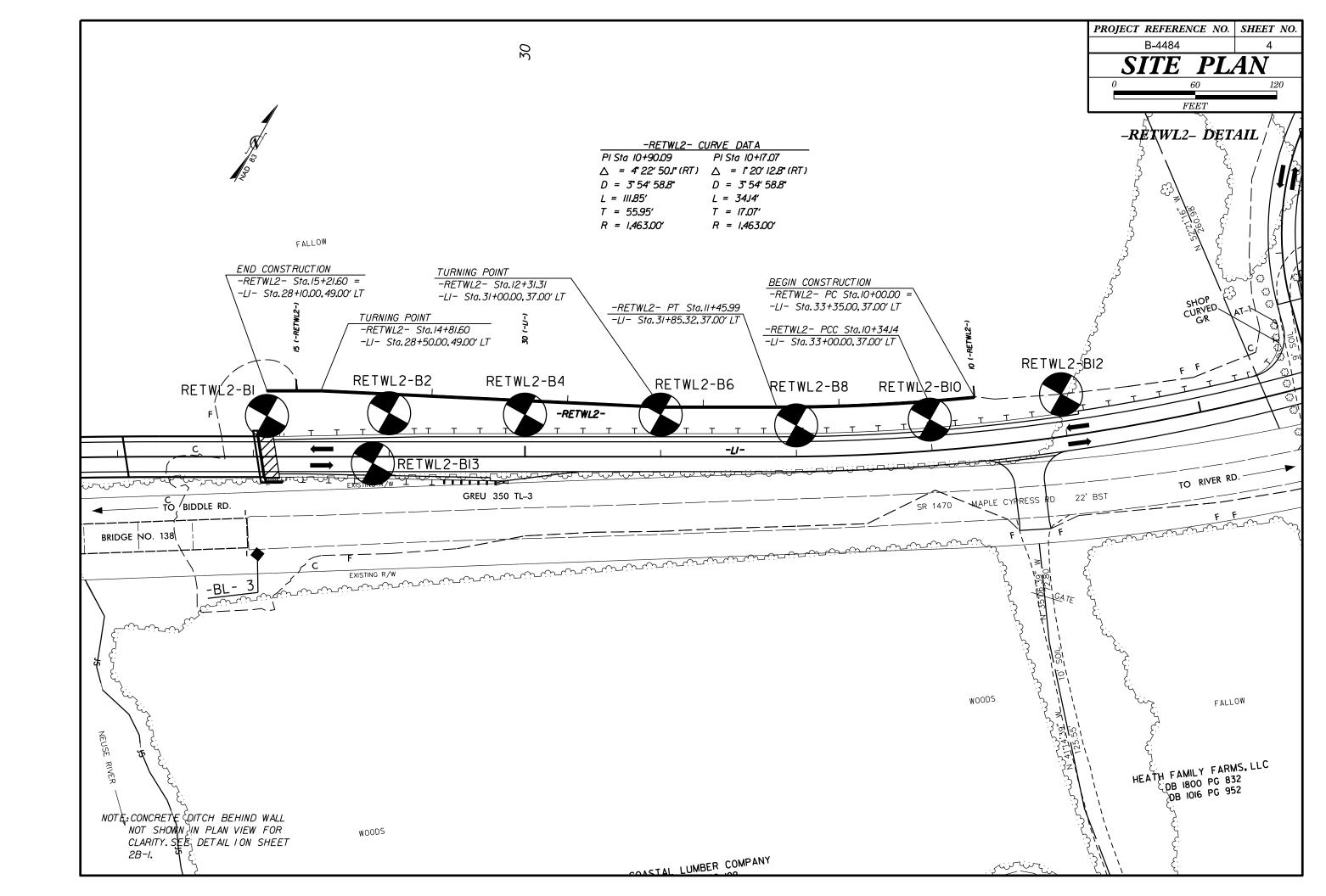
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

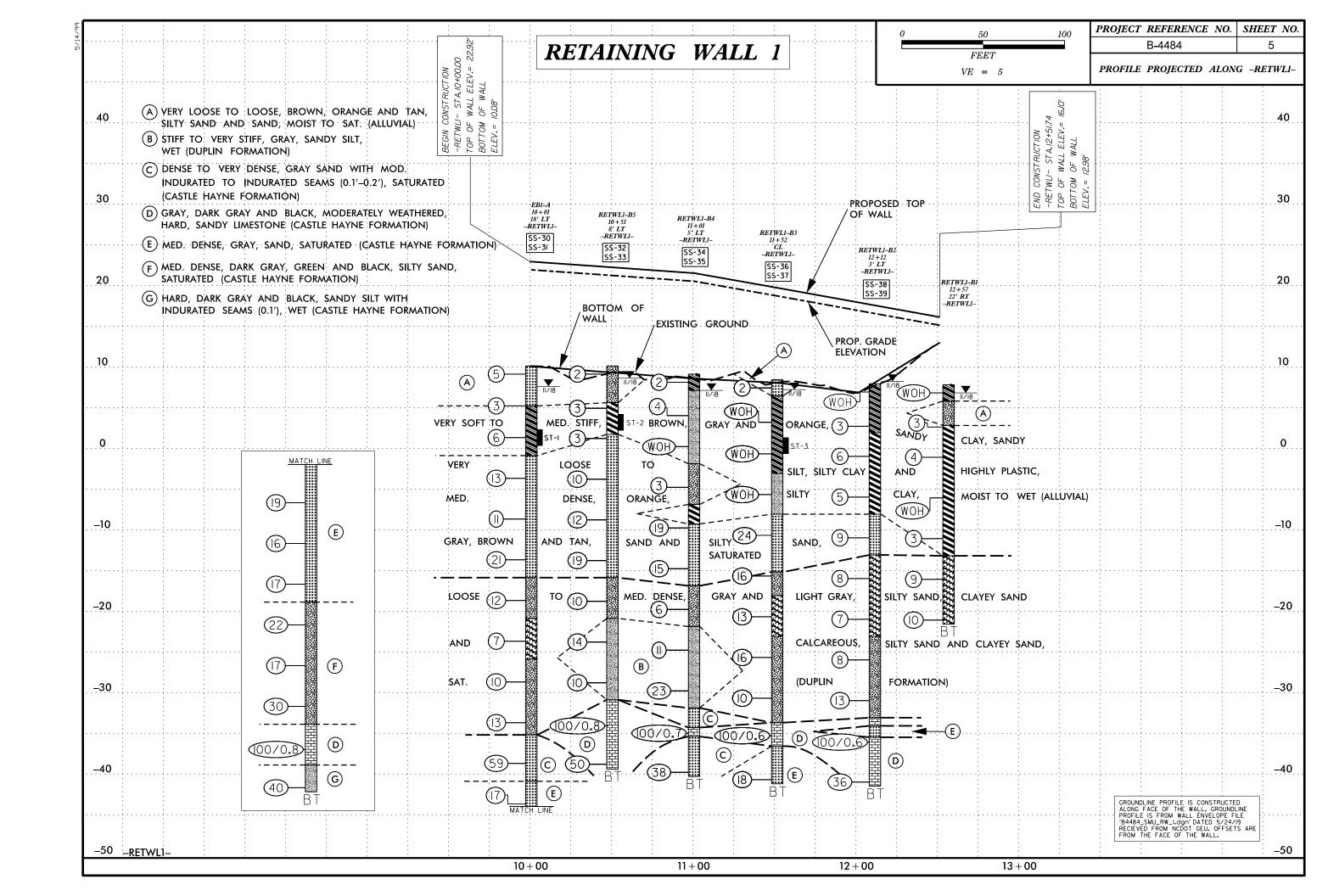
SUBSURFACE INVESTIGATION

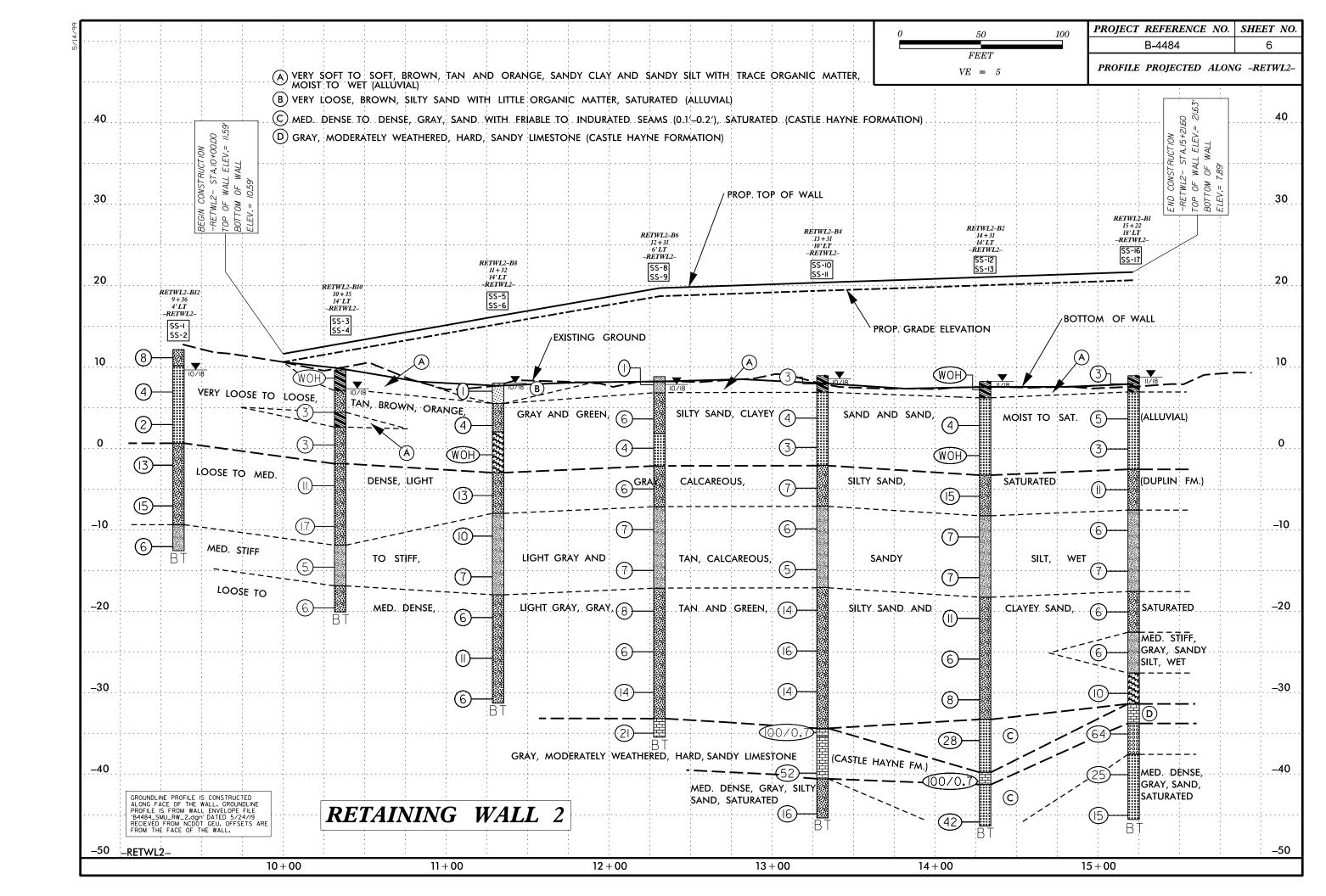
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

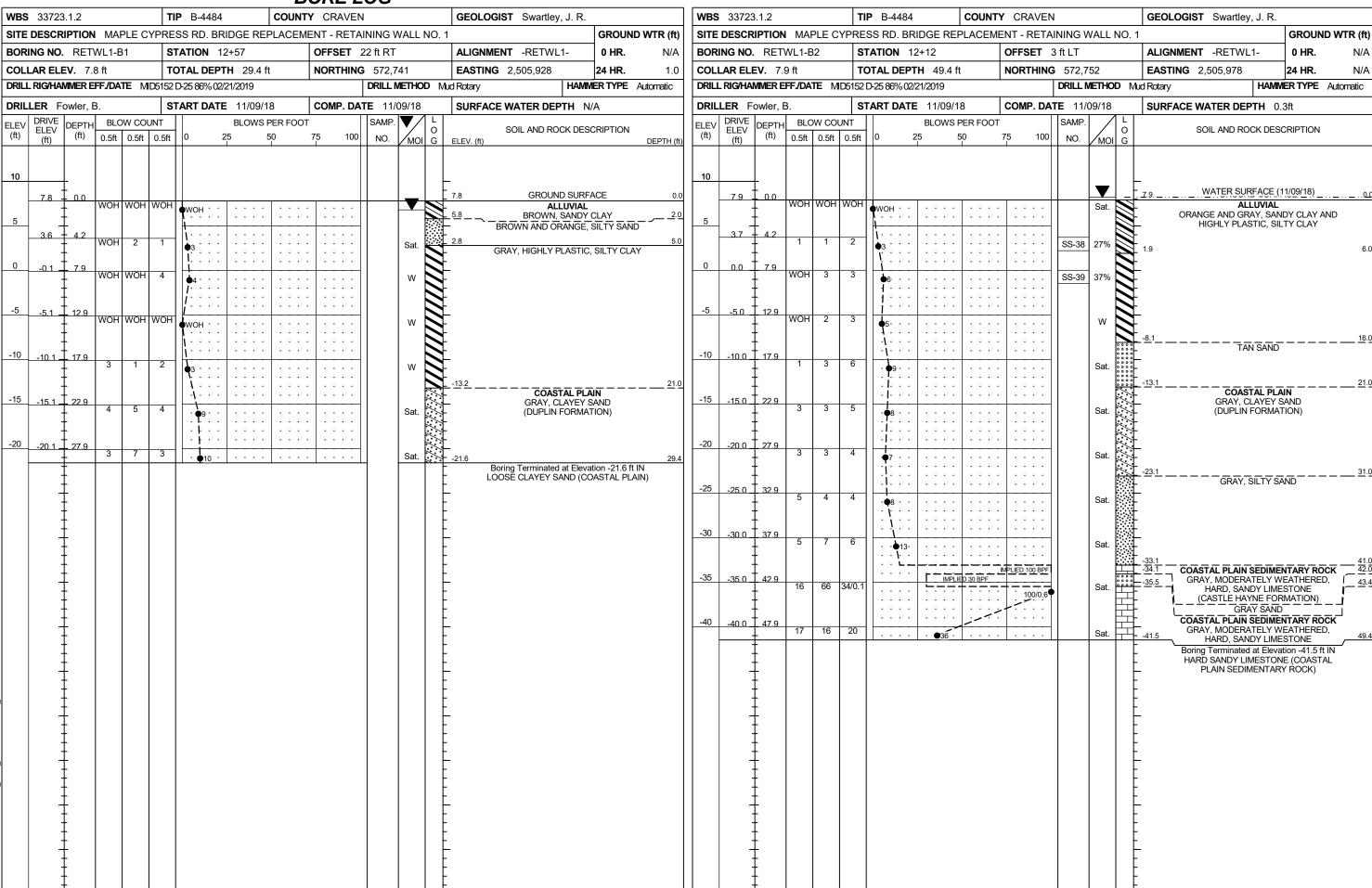
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	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.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	<u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. <u>GAP-GRADED</u> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	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:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
CENERAL CRANIII AR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	FINE TO COARSE CRAIN ICNEOUS AND METAMORPHIC POCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	ROCK (CP) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	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.	UNCLISS, OMBBRU, SURISI, EIC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-0 A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-6 A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YELLD SET REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL 0000 d000000	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
% PASSING SUIT-	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*10 50 MX GRANULAR CLAY MUCK, *40 30 MX 50 MX 51 MN SOILS SOILS SOILS PEAT	PERCENTAGE OF MATERIAL	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*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 36 MN	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING *40 48 MX 41 MN	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, (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN 11 MN 11 MN HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.	LINE OF DIP MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 0 0 0 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	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(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 GRAYEL, AND MATERIALS SAND GRAYEL 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
CEN BATING FAIR TO	<u> </u>	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS	PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED 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	O-111- STAING ON SEET	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FIELD.
PRIMARY SOIL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION	(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES 'CLUNK' SOUND WHEN STRUCK, IF TESTED, WOULD YIELD SPT REFUSAL	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
CONSISTENCY (N-VALUE) CONFICE STACHOLD	WITH SOIL DESCRIPTION → OF ROCK STRUCTURES	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.
GENERALLY VERY LOOSE < 4	SOIL SYMBOL SPIT TEST BORING SLOPE INDICATOR INSTALLATION	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR LUUSE 4 10 100	VST PMT INSTRICTION	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 CONE PENETROMETER	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERT DENSE 2 2	- INCEDDED COTA DOLINDARY CORE DODING A COUNDING DOD	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. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE MONITORING WELL TEST BORING WITH CORE	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
MATERIAL STIFF 8 TO 15 1 TO 2	TTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER SPT N-VALUE	SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
HARD > 30 → 4	INSTRUCTION	ROCK HARDNESS	RUN AND EXPRESSED AS A PERCENTAGE. SAPPOLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE ACCEPTABLE, BUT NOT TO BE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
DPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	USED IN THE TOP 2 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN. MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.005 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. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 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 $\gamma_{ m d}$ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN Ø.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE 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.
	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON 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	TENGTH 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.
	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE, CAN BE SCRATCHED READILY BY FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
PLASTIC SEMISOLID: REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	
(PI) PLASTIC LIMIT ATTAIN OPTIMUM MOISTURE	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	BENCH MARK: BL-3 N: 573123 E: 2506704
- MOIST - (M) COLID. AT OR NEAR ORTIMIN MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: 28,95 FEET
OM OPTIMUM MOISTURE SL SHRINKAGE LIMIT	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	
SE SHRINKHUE LIMIT	X CME-45C X CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) ATTAIN OPTIMUM MOISTURE	6' CONTINUOUS FLIGHT AUGER CORE SIZE:	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.008 FEET THINLY LAMINATED < 0.008 FEET	
PLASTICITY	CORE SIZE: 8' HOLLOW AUGERS	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	-	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST X CASING WY ADVANCER HAND TOOLS:	GENILE BLUW BY HAMMER DISINIEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	TOTAL	CRAINS ARE DIFFICULT TO SERAPATE WITH STEEL PROPE.	
	X D-25 TRICONE 'TUNGCARB. SOUNDING ROD	INDURATED OFFICULT TO BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	CORE BIT VANE SHEAR TEST	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	
HOSTILING SOUTH AS LIGHT, DANK, STILLANED, ETC. HAE USED TO DESCRIBE HETEARANCE.	<u> </u>	EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-
			

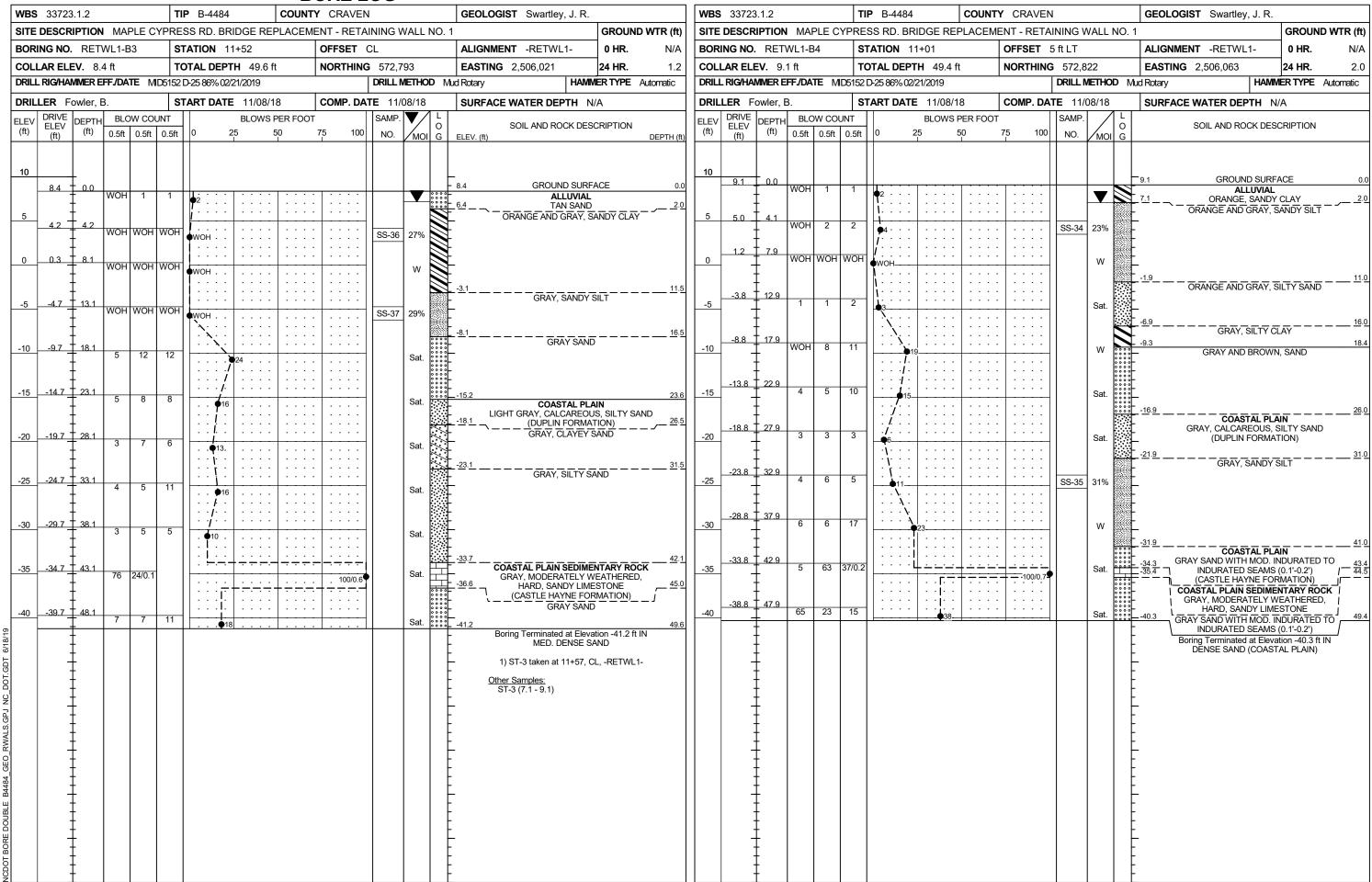






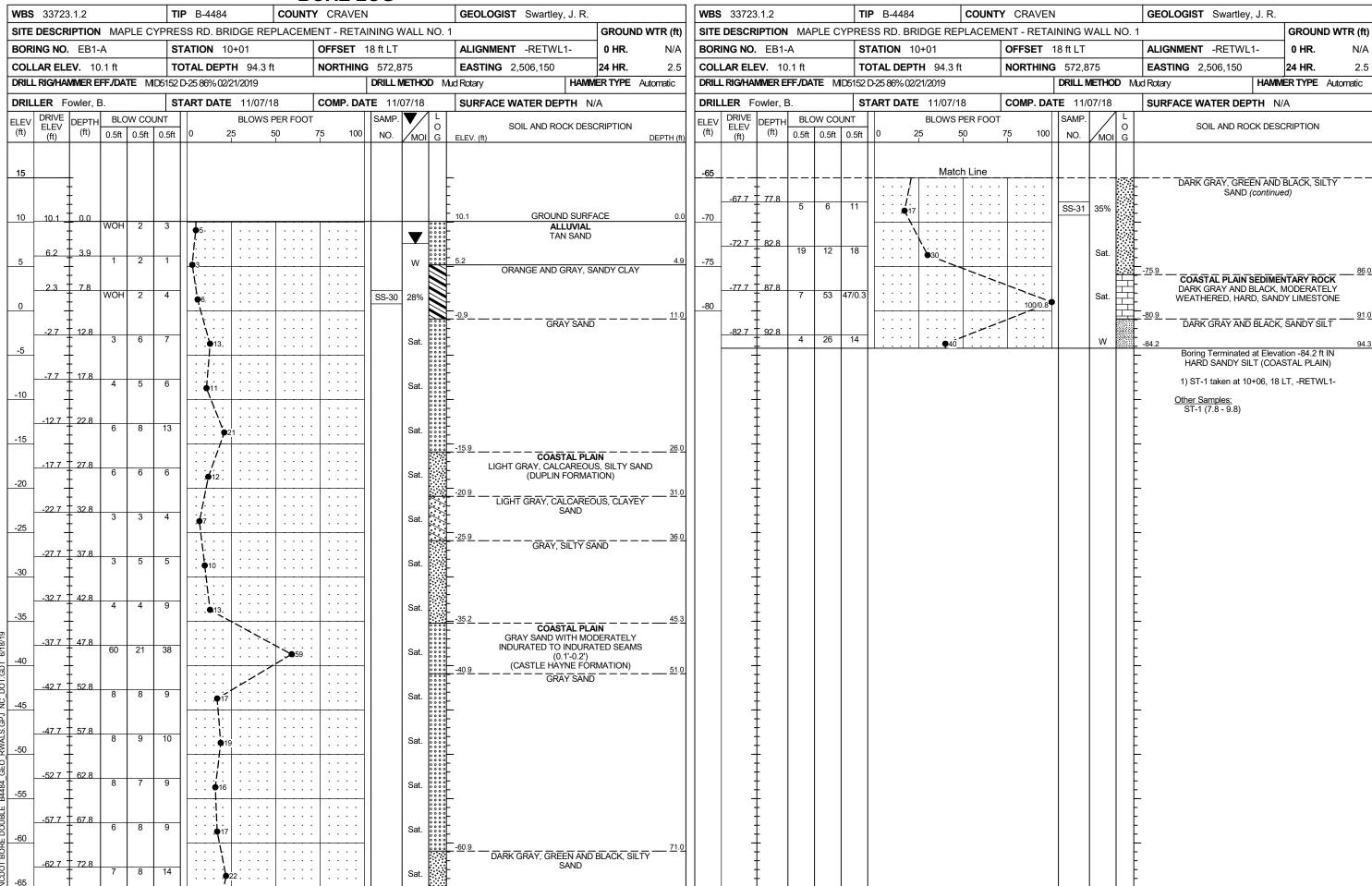


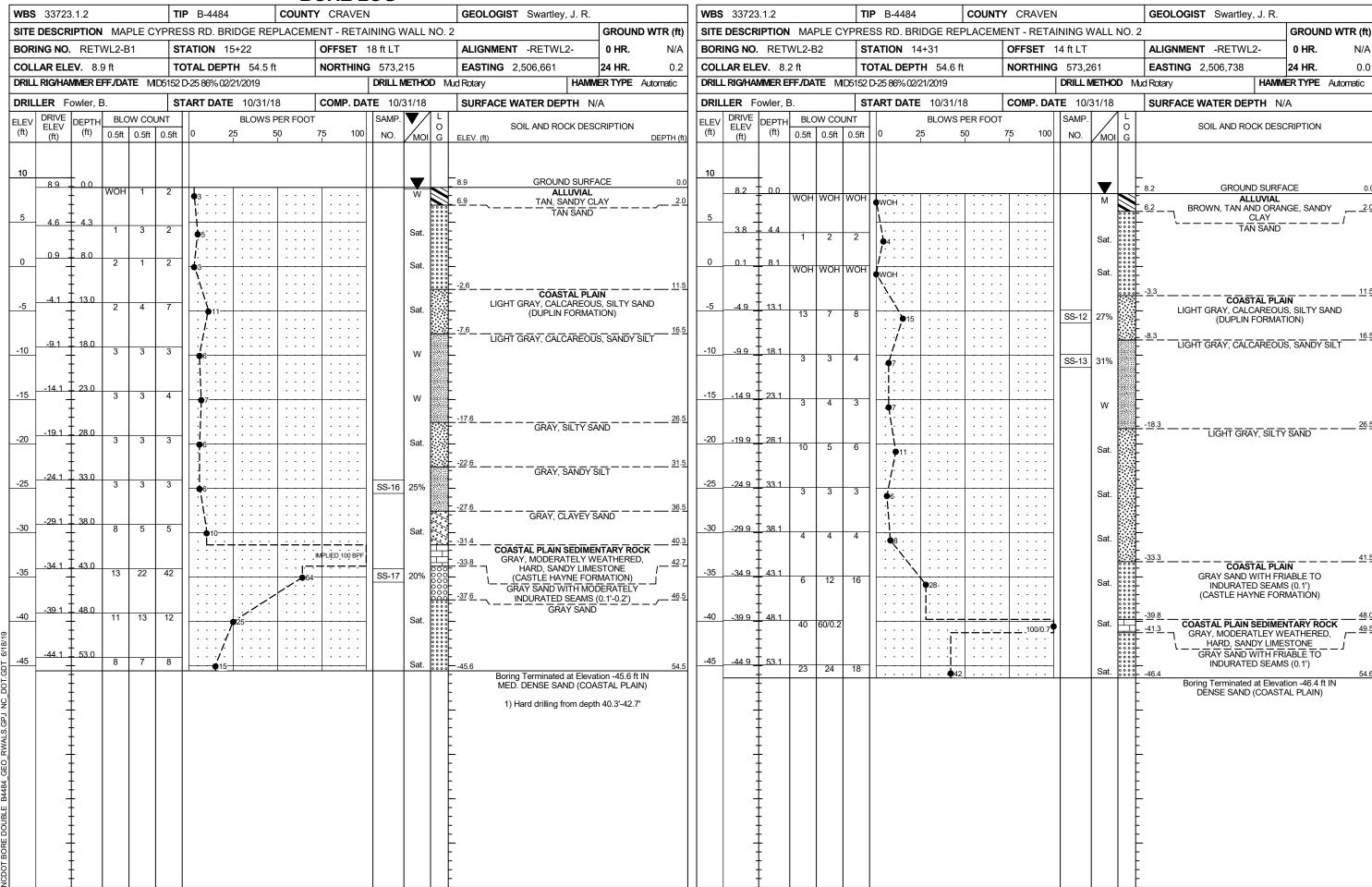


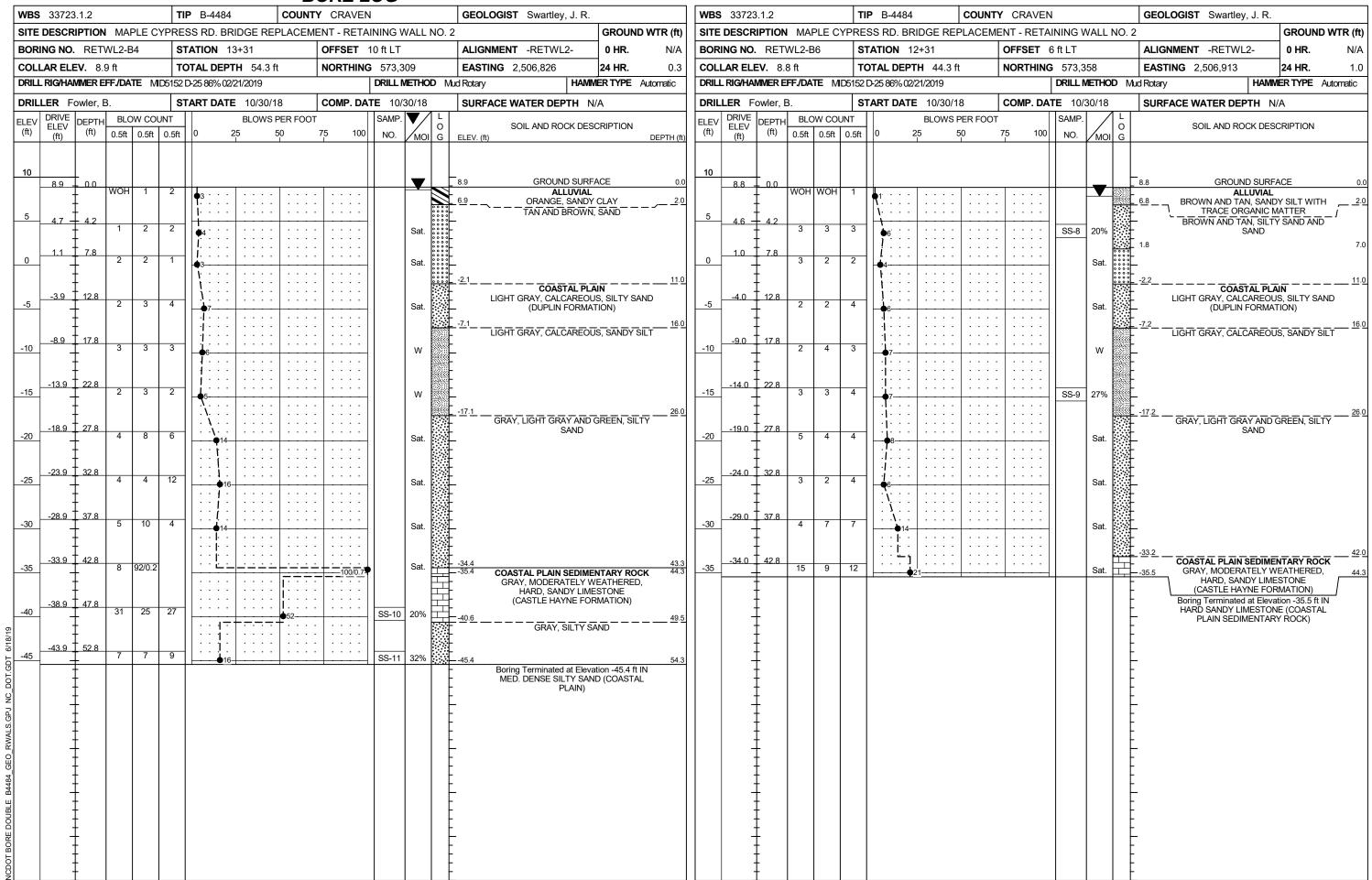


SHEET 9

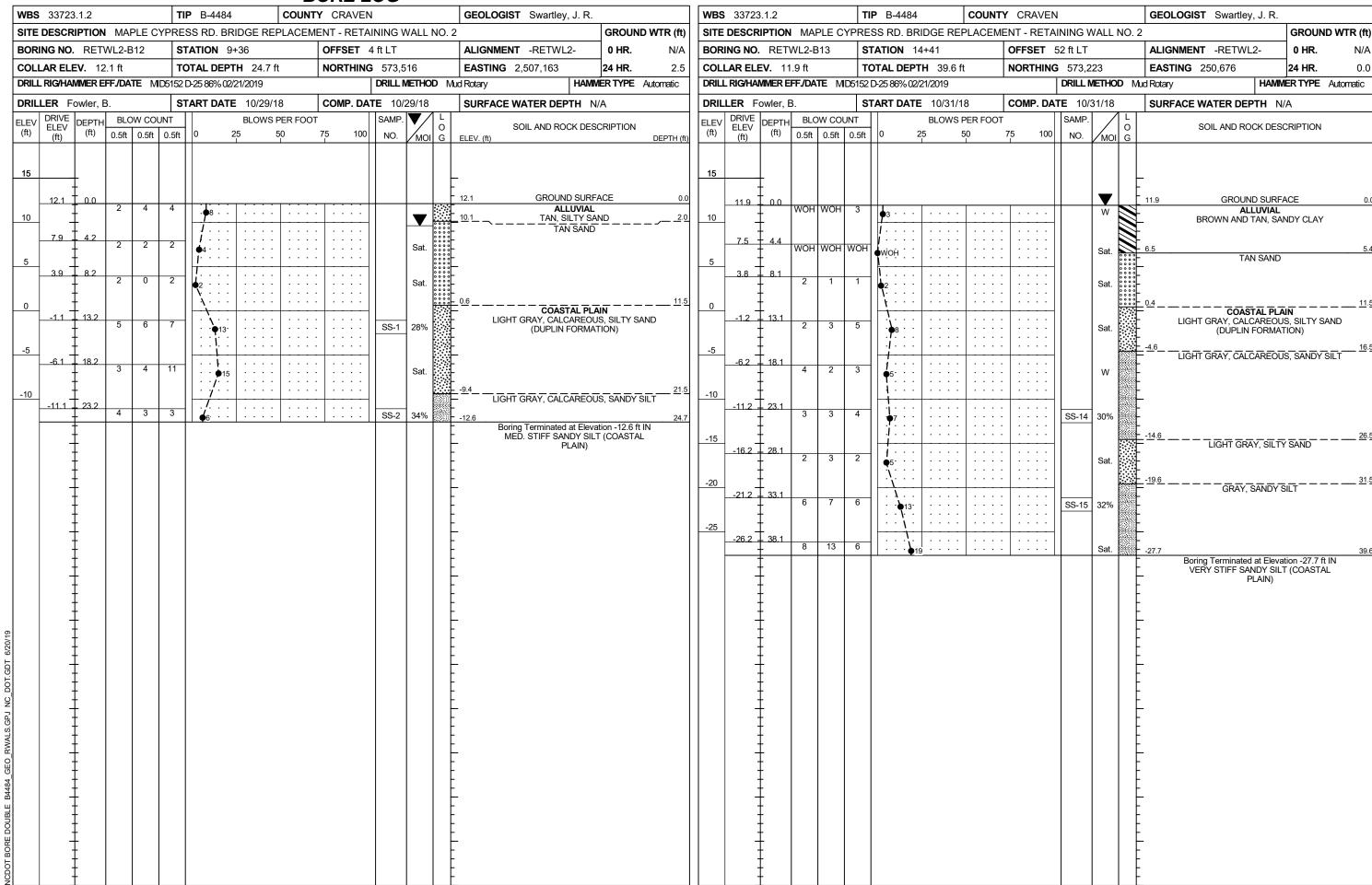
COLLAR ELEV. 10.1 ft													<u>'E L</u>	<u>. U</u>	<u> </u>					
BORING NO. RETWL1-85	WBS	33723	.1.2			Т	IP B	4484			COUNT	Y C	RAVE	٧				GEOLOGIST Swartley, J. R.		
COLLAR ELEV. 10.1 ft TOTAL DEPTH 49.5 ft NORTHING 572.85° EASTING 2.506.104 24 R.	SITE	DESCR	IPTION	MAI	PLE C	YPRE	ESS R	D. BR	IDGE F	REPI	LACEM	IENT -	RETA	NININ	NG W	/ALL I	NO. 1		GROUN	D WTR (ft)
DRILL RIGH-WAMER EFF.DATE MIDS RIG D-25 85% (0221/2019 SOUR DRILLER Fowler, B. START DATE 11/09/18 COMP. DATE 11/08/18 SURFACE WATER DEPTH N/A	BORI	NG NO.	RET	WL1-E	35	s	STATIC	DN 10	0+51			OFF	SET	8 ft I	LT			ALIGNMENT -RETWL1-	0 HR.	N/A
DRILLER FOWING B START DATE 11/08/18 COMP. DATE 11/08/18 SURFACE WATER DEPTH N/A	COLL	AR ELE	V . 10).1 ft		Т	OTAL	DEPT	ΓH 49.	.5 ft		NOF	RTHING	3 5	72,8	52		EASTING 2,506,104	24 HR.	1.5
ELEV CRIVE	DRILL	. RIG/HAI	VIMER E	FF./DA	TE M	ID5152	2 D-25 8	6% 02/	21/2019			1		DR	RILL M	ETHO	D Mu	d Rotary HAM	MER TYPE	Automatic
ELEV CRIVE	DRIL	IFR F	nwler F	3		S	START	DATE	= 11/0	8/18		CON	/IP DΔ	TF	11/0	18/18		SURFACE WATER DEPTH	.Ι/Δ	
Column C		DDI\ /E		1	OW CO			DAIL								V /	1 L I	SON ACE WATER DEFINE	N/A	
ALLUVIAL TAN, SILTY SAND 5	(ft)	ELEV					0	2					100	Ш		MOI			SCRIPTION	DEPTH (ft)
TAN, SILTY SAND 5	10	- - 10.1 _	- - - 0.0	WOH	1	1	<u> </u>										- - - -			0.0
Sat. Sat. Sat. Sat. Sat. Sat. Sat. Sat.		-	-	WOII	'	'	P 2				: : :	: :			ŀ		-			
Sat. GRAY, SAND Sat. Sat		5.9 -	- - 4.2] . .			:		: :					-	5.6		4.5
Sat. GRAY SAND 2	5			1	2	1	♦ 3-		 	_		+-				W		GRAY, SILTY	CLAY	
0		2.2	7.9				;			:		. .						4.7		8.4
	_ [-	-	1	2	1	3					: :				Sat.	0000		D	8.4
Sat. Sat. Sat. Sat. Sat. Sat. Sat. Sat.		-	-				11		<u> </u>			. .		11						
		-2.8	12.9		_	-	<i>i</i> : _	 				: :				_				
10	-5	_	_) 5	5		10 .		·		. .				Sat.	0000			
-10		-	-					į		-							0000			
-17.8 22.9 6 8 11 15.9 COASTAL PLAIN LIGHT GRAY, CALCAREOUS, SILTY SAND (DUPLIN FORMATION) -20 -27.8 37.9 3 3 7 10 10 14 -28 -27.8 37.9 3 3 7 10 10 10 10 10 10 10	-	-7.8	17.9	8	6	6	- :	1:::				: :		-	5 32	2/10/2	0000			
-17.8 27.9 3 3 7 10 10 10 10 10 10 10	-10	_	_		`		-	12.				· ·	· · ·	-	0-02	24 /0	-			
-17.8 27.9 3 3 7 -17.8 27.9 3 3 7 -17.8 27.9 3 3 7 -17.8 27.9 3 3 7 -17.8 27.9 3 3 7 -17.8 27.9 3 3 7 -17.8 27.9 -27.8 37.9 3 3 3 7 -17.8 -27.8 37.9 3 3 3 7 -17.8 -27.8 37.9 3 3 3 7 -17.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8 -27.8		-	-					. / .				: :								
-17.8	-	-12.8	22.9	6	8	11	$+ \cdot $	· ·/.				. .				Sat.	0000			
-17.8	-15	-	_				-	7	<u> </u>	-		<u> </u>						-15.9		26.0
20		47.0	- 27.0					:/. :				: :					::: <u>-</u>	COASTAL PL		
-25		-17.0	- 27.9 -	3	3	7	† ∶ ₍	./ ●10 .				: :				Sat.		LIGHT GRAY, CALCAREO (DUPLIN FORM)	JS, SILTY S ATION)	AND
-25	-20	_	-					. 				-					_	-20.9		31.0
27.8 37.9 3 3 7		-22.8	32.9									. .					F	GRAY, SANDY	SILT	
-30	-25	-	-	4	4	10		. •14				. :		S	S-33	31%	j j			
-30 3 3 7 10 10 W Sat. -30.9 COASTAL PLAIN SEDIMENTARY ROCK GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) -37.8 47.9 34 32 18 50 Sat. -39.4 Boring Terminated at Elevation -39.4 ft IN HARD SANDY LIMESTONE (COASTAL PLAIN SEDIMENTARY ROCK) Other Samples:	-20	-	_						<u> </u>		· · · ·			1						
-30.9 -30.9 -30.9 COASTAL PLAIN SEDIMENTARY ROCK GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) -37.8 47.9 34 32 18 Sat. 39.4 Boring Terminated at Elevation -39.4 ft IN HARD SANDY LIMESTONE (COASTAL PLAIN SEDIMENTARY ROCK) Other Samples:		-27.8	37.9] :	į::				: :					M:			
-32.8	-30	-	-	3	3	/	. •	¹⁰ ∴ .	↓ · · ·	.		. .				W	-			
-32.8 42.9 6 25 75/0.3 100/0.8 Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HARD, SANDY LIMESTONE (CASTLE HAYNE FORMATION) Sat. GRAY, MODERATELY WEATHERED, HAYNE FORMATION Sat. GRAY, MODERATELY WEATHERED, HAYNE FORMATION Sat. GRAY, MODERATELY WEATHERED, HAYNE FORMATIO		-	-								<u> </u>	. .						-30.9 — COASTAL DI AIN SEDIM	ENTARY PO	<u> 41.0</u>
-35		-32.8	42.9	6	25	75/0.3	.					:- -`_				0-4		GRAY, MODERATELY	VEATHERE	
34 32 18	-35	_	_		25	7 5/0.0	ĬĿ			•		<u>: :</u>	100/0.8			Sal.				
34 32 18		=	-				-			-		·/~	·							
Boring Terminated at Elevation -39.4 ft IN HARD SANDY LIMESTONE (COASTAL PLAIN SEDIMENTARY ROCK) Other Samples:		-37.8	47.9	34	32	18	$+ \cdot $. .				Sat	Ħ	20.4		40.5
+ + PLAIN SEDIMENTARY ROCK) - Other Samples:			-				++-		1	. Ψ		. .		+		-ui.		Boring Terminated at Elev		
+ - - Other Samples:		-	-																	AL
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	BORE LOG				
WBS 33723.1.2	TIP B-4484 COUNTY CRAVEN	GEOLOGIST Swartley, J. R.	WBS 33723.1.2 TIP B-4484	COUNTY CRAVEN	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION MAPLE CY	PRESS RD. BRIDGE REPLACEMENT - RETAINING WALL NO	. 2 GROUND WTR (ft)	SITE DESCRIPTION MAPLE CYPRESS RD. BF	RIDGE REPLACEMENT - RETAINING WALL N	O. 2 GROUND WTR (ft)
BORING NO. RETWL2-B8	STATION 11+32 OFFSET 14 ft LT	ALIGNMENT -RETWL2- 0 HR. N/A	BORING NO. RETWL2-B10 STATION 1	0+35 OFFSET 14 ft LT	ALIGNMENT -RETWL2- 0 HR. N/A
COLLAR ELEV. 8.0 ft	TOTAL DEPTH 39.3 ft NORTHING 573,400	EASTING 2,507,004 24 HR. 0.0	COLLAR ELEV. 9.6 ft TOTAL DEP	·	EASTING 2,507,087 24 HR. 2.3
DRILL RIG/HAMMER EFF./DATE MID	5152 D-25 86% 02/21/2019 DRILL METHOD	Mud Rotary HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF/DATE MID5152 D-25 86% 02	/21/2019 DRILL METHOD	Mud Rotary HAMMER TYPE Automatic
DRILLER Fowler, B.	START DATE 10/30/18	SURFACE WATER DEPTH N/A	DRILLER Fowler, B. START DATE		SURFACE WATER DEPTH N/A
ELEV (ft) DRIVE ELEV (ft) DEPTH BLOW COUNTY (ft) 0.5ft 0.5ft (ELEV (ft) DEPTH (ft) DEPTH (ft) D.5ft 0.5ft 0.5ft 0	BLOWS PER FOOT SAMP. SAMP.	C SOIL AND ROCK DESCRIPTION G
10			10 9.6 0.0 WOH WOH WOH		_9.6 GROUND SURFACE 0.0
8.0 <u>0.0</u> WOH WOH	1 1	8.0 GROUND SURFACE 0.0 ALLUVIAL	The state of the s		7.1 BROWN, SANDY CLAY 2.5
		BROWN, SILTY SAND WITH LITTLE ORGANIC MATTER - 2.5	5 5.4 4.2		ORANGE, SILTY SAND
3.8 4.2 WOH 2	2 \ \langle \cdot	TAN AND ORANGE, SILTY SAND	1 2 1 63	Sat.	7.0 ORANGE, SANDY CLAY
		2.0 GREEN AND GRAY, CLAYEY SAND6.0	1.4 + 8.2 WOUL 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		ORANGE, SILTY SAND
0 0.2 T 7.8 WOH WOH V	WOH WOH	-	0 WOH 2 1	SS-3 19%	
		-3.011.0			COASTAL PLAIN 11.5
-5 -4.8 12.8	· · · · · · · · · · · · · · ·	COASTAL PLAIN LIGHT GRAY, CALCAREOUS, SILTY SAND	-5 -3.7 13.2 7 6 5 1 1 1	Sat.	LIGHT GRAY, CALCAREOUS, SILTY SAND (DUPLIN FORMATION)
7 8	5•13	(DUPLIN FORMATION)	Ţ - 1,		——————————————————————————————————————
‡		-8.0 LIGHT GRAY AND TAN, CALCAREOUS, 16.0	-8.7 + 18.2		
<u>-10</u> <u>-9.8</u> <u>+ 17.8</u> <u>-9.8</u> <u>-10</u> 5 6	4 10 W	SANDY SILT	-10	Sat.	***
	.				-12.021.5 LIGHT GRAY, CALCAREOUS, SANDY SILT
-15 -14.8 22.8		-	-15 -13.7 + 23.2 3 2 3	: : : : : : : :	-
3 3	4 •7	-	† 	· · · · · · · · · · · · ·	
		-18.0	-18.7 + 28.2		LIGHT GRAY, SILTY SAND
-20 -19.8 + 27.8 2 3	3 A. Sat	TAN AND GRAY, SILTY SAND	-20 5 3 3	SS-4 28%	20.2 29.7
	3 6	- -			Boring Terminated at Elevation -20.2 ft IN LOOSE SILTY SAND (COASTAL PLAIN)
‡			±		<u>t</u>
-25 -24.8 32.8 5 8 	3 Sat. Sat.	<u>-</u>	±		-
		-	±		Ŀ
-30 -29.8 7 37.8		<u>}</u>			_
4 3	3 •6	-31.3 39.3 - Boring Terminated at Elevation -31.3 ft IN	Ŧ		-
‡		LOOSE SILTY SAND (COASTAL PLAIN)			F
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		F			-
		F			F
		F	‡		F
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SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation



S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 6235-18-036 Date Report: 11/26/2018

 State Project No.: 33723.1.2
 County: Craven
 Date Tested: 11/16-11/26/18

Federal ID No.: N/A TIP No.: B-4484

Project Name: Maple Cypress Rd. Bridge Replacement, Retaining Walls 1-2

Client Name: NCDOT GEU Client Address: Raleigh, NC

	e. NCDC			Sample	AASHTO		Tot	al % Pas			Tota	l Mortar	Fraction	า (%)				
Sample				Depth	Classification			Sieve #			Coarse	Fine			LL	PL	PI	Moist.
No.	Station	Offset	Alignment	(ft)		10	40	60	200	270	Sand	Sand	Silt	Clay				%
SS-1	9+36	4 LT	-RETWL2-	13.2-14.7	A-2-4 (0)	91	52	41	24	22	50	19	13	9	NP	NP	NP	28.2
SS-2	9+36	4 LT	-RETWL2-	23.2-24.7	A-4 (0)	100	97	93	47	40	7	54	19	21	25	22	3	34.0
SS-3	10+35	14 LT	-RETWL2-	8.2-9.7	A-2-4 (0)	98	78	61	22	17	37	44	8	9	NP	NP	NP	19.0
SS-4	10+35	14 LT	-RETWL2-	28.2-29.7	A-2-4 (0)	91	84	75	35	31	16	15	44	16	NP	NP	NP	28.3
SS-5	11+32	14 LT	-RETWL2-	0.0-1.5	A-2-4 (0)	100	95	87	35	30	13	57	14	6	28	26	2	80.1
SS-6	11+32	14 LT	-RETWL2-	7.8-9.3	A-2-6 (0)	91	80	66	33	30	27	40	15	18	30	18	12	38.6
SS-8	12+31	6 LT	-RETWL2-	4.2-5.7	A-2-4 (0)	100	86	57	17	13	43	44	5	8	NP	NP	NP	19.6
SS-9	12+31	6 LT	-RETWL2-	22.8-24.3	A-4 (0)	94	83	70	37	34	26	38	18	18	NP	NP	NP	26.8
SS-10	13+31	10 LT	-RETWL2-	47.8-49.3	A-2-4 (0)	86	60	40	17	14	54	29	10	7	NP	NP	NP	19.9
SS-11	13+31	10 LT	-RETWL2-	52.8-54.3	A-2-4 (0)	98	76	49	17	15	50	35	7	8	NP	NP	NP	31.9
SS-12	14+31	14 LT	-RETWL2-	13.1-14.6	A-2-4 (0)	90	65	52	29	27	43	28	15	14	NP	NP	NP	26.9
SS-13	14+31	14 LT	-RETWL2-	18.1-19.6	A-4 (1)	98	84	76	46	42	23	35	20	22	24	16	8	31.0
SS-14	14+41	52 LT	-RETWL2-	23.1-24.6	A-4 (0)	95	80	72	45	41	24	32	21	23	23	20	3	29.5
SS-15	14+41	52 LT	-RETWL2-	33.1-34.6	A-4 (0)	97	94	89	42	37	9	53	20	18	25	22	3	31.9
SS-16	15+22	18 LT	-RETWL2-	33.0-34.5	A-4 (0)	95	79	68	41	39	28	31	20	21	27	25	2	25.2
SS-17	15+22	18 LT	-RETWL2-	43.0-44.5	A-1-b (0)	63	33	23	12	11	63	20	8	9	NP	NP	NP	20.0
SS-30	10+01	18 LT	-RETWL1-	7.8-9.3	A-6 (11)	10	100	98	70	63	2	35	18	45	37	18	19	27.9
SS-31	10+01	18 LT	-RETWL1-	77.8-79.3	A-2-4 (0)	100	97	85	21	18	15	67	7	11	NP	NP	NP	34.9
SS-32	10+51	8 LT	-RETWL1-	17.9-19.4	A-3 (1)	100	80	33	4	3	67	30	1	2	NP	NP	NP	23.5
SS-33	10+51	8 LT	-RETWL1-	32.9-34.4	A-4 (0)	95	91	86	40	36	10	53	15	22	23	20	3	30.8
SS-34	11+01	5 LT	-RETWL1-	4.1-5.6	A-4 (0)	100	100	97	39	30	3	67	10	20	25	18	7	23.2
SS-35	11+01	5 LT	-RETWL1-	32.9-34.4	A-4 (0)	99	96	92	45	40	7	52	18	23	24	21	3	30.9
SS-36	11+52	CL	-RETWL1-	4.2-5.7	A-6 (12)	100	100	99	73	66	1	33	23	43	37	19	18	27.2
SS-37	11+52	CL	-RETWL1-	13.1-14.6	A-4 (0)	100	100	99	43	34	1	65	13	21	23	21	2	28.5
SS-38	12+12	3 LT	-RETWL1-	4.2-5.7	A-6 (6)	100	99	95	62	54	5	41	20	34	31	18	13	27.0
SS-39	12+12	3 LT	-RETWL1-	7.9-9.4	A-7-6 (31)	100	99	98	91	87	2	11	28	59	56	26	30	37.3
ST-1	10+06	18 LT	-RETWL1-	7.8-9.8	A-7-6 (17)	100	100	97	74	68	3	30	22	45	45	21	24	ND
ST-2	10+51	8 LT	-RETWL1-	5.9-7.9	A-7-6 (13)	100	96	89	67	61	12	27	22	39	42	20	22	ND
ST-3	11+57	CL	-RETWL1-	7.1-9.1	A-6 (4)	100	94	83	49	44	17	39	14	30	32	16	16	ND
																		<u> </u>
																		<u> </u>
																		<u> </u>
		,			temined NP=													<u></u>

References / Comments / Deviations: ND=Not Determined. NP=Non-Plastic.

SUMMARY OF LABORATORY TEST DATA

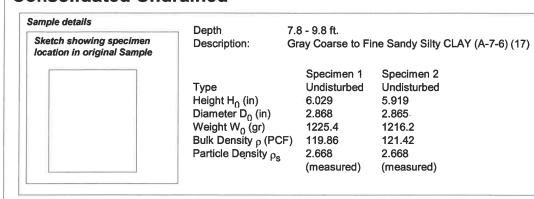
Soil Classification and Gradation



				S&M	E, Inc. Raleigh,	3201 Sp	ring Fore	st Roa	d, Raleigh	, North	Carolina	27616						
S&ME Proj	ME Project #: 6235-18-036 Date Report: 1									11/26	/2018							
State Proje	ct No.: 33	723.1.2			County: Craven							Date	Tested:	11/16	5-11/26,	′18		
Federal ID	No.: N/A							TIP No	.: B-448	4								
Project Nai	ne: Mapl	e Cypress	Rd. Bridge R	eplacemer	nt, Retaining W	alls 1-2												
Client Nam	e: NCDC	T GEU							Client A	ddress:	Raleigh,	NC						
				Sample	AASHTO		Tota	l % Pa	ssing		Tota	Mortar	Fraction	n (%)				
Sample				Depth	Classification			Sieve #	#		Coarse	Fine			LL	PL	PI	Moist
No.	Station	Offset	Alignment	(ft)		10	40	60	200	270	Sand	Sand	Silt	Clay				%
AASHTO T8	3: Particle Si	ze Analysis	s of Soils as Mo	odified by th	by the NCDOT AASHTO T89: Determining the Liquid Limit					d Limit o	of Soils							
AASHTO T9): Determini	ing the Pla	stic Limit & Pla	sticity Inde	icity Index of Soils AASHTO T265: Laboratory Determination						nation o	f Moistur	e Conter	t of Soils	5			
AASHTO M1	45: The Cla	ssification	of Soils and So	il Aggregate Mixtures for Highway Construction Purposes														
		Mal Kr	ajan, ET		104-01-0703 Thomas J. Dai					Daily, F	<u>PE</u>		<u>Project</u>	Manag	<u>er</u>			
		Technici	ian Name:			Signatu	re	(Certification	#	Te	chnical Re	sponsibili	itv:		Po	sition	

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Consolidated Undrained



	Specimen 1	Specimen 2	
Cell Pressure o ₃ (lbf/in2)	2.5	10.0	
Pore Pressure u (lbf/in2)	5.0	5.0	
Machine Speed d _r (in/min)	0.015	0.023	
No. of Membranes	1	1	
Total Thickness (in)	0.012	0.012	
Strain Channel	1798	1798	
oad Channel	1776	1776	
Pore P. Channel	1779	1779	
/olume Channel	Volume Chan	g Volume Chang	
Moisture Content w ₀ %	28.4	29.4	
Dry Density _{Pd0} (PCF)	93.33	93.82	
/oids Ratio e₀	0.78	0.77	
Deg of Saturation S ₀ %	96.75	100.00	
Final B Value	0.98	0.97	

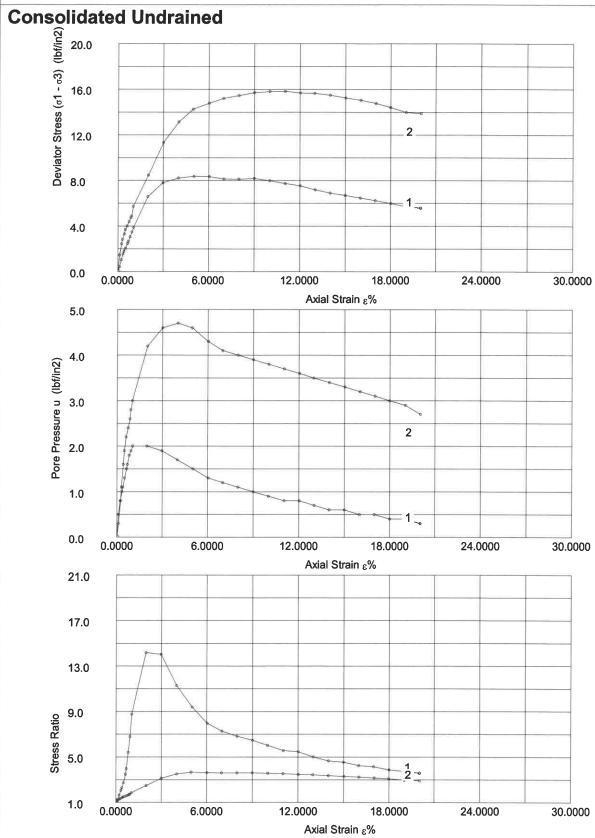
Final Conditions	Specimen 1	Specimen 2	Follow Objects
Moisture Content w _f %	28.3	27.4	Failure Sketch
Dry Density ρ _d (PCF)	94.23	95.26	Sp 1 Sp 2
Voids Ratio e	0.77	0.75	
Deg of Saturation S _f %	98.62	97.76	
Failure Criteria	Mx Stress Ra	tioMx Stress Ratio	
Axial Strain &	2.0	5.0	
Corr Dev Stress (σ_1 - σ_3)f (lbf/in2)	6.6	14.3	
Minor Stress o3f (lbf/in2)	0.5	5.4	
Major Stress of (lbf/in2)	7.1	19.7	
Stress Ratio (σ ₁ /σ ₃) _f	14.2	3.6	
Notes:			
			Surface Inclination

	&	Test Method: ASTM D	D4767-95		Test name Date of Test:	CU Ti 12-26	riaxial (SS, MS) 3-18	
411			r. Nos. 138 & 139 :\18-036.JOB		Sample: Borehole:	ST-1 ST-1		
		Operator:		Checked:	ve		Approved:	

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Effective Stress Triaxial Compression



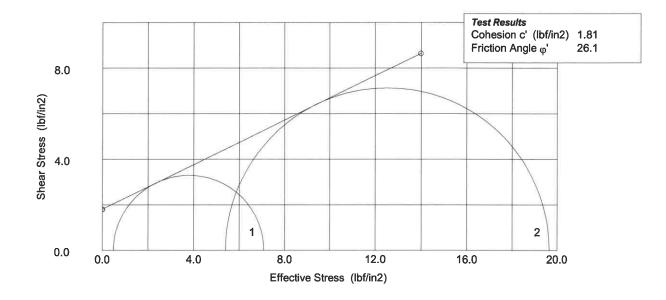


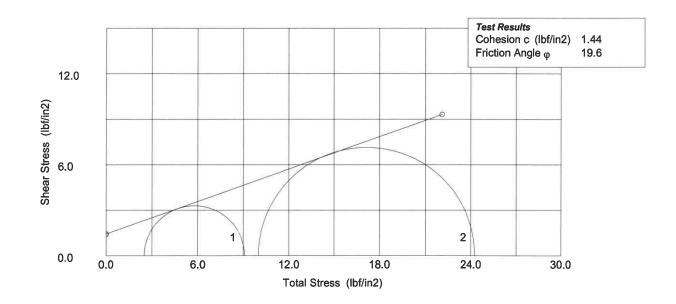


Test Method: AS	STM D4767-
Site Reference:	Br. Nos.
Jobfile:	E:\18-03
Operator:	M

Method: AS	ΓM D4767-95		Test name	CU T	riaxial (SS, MS)	
			Date of Test:	12-26	6-18	
Reference:	Br. Nos. 138 & 139		Sample:	ST-1		
ile:	E:\18-036.JOB		Borehole:	ST-1		
ator:	M	Checked:	MC -		Approved:	

Consolidated Undrained



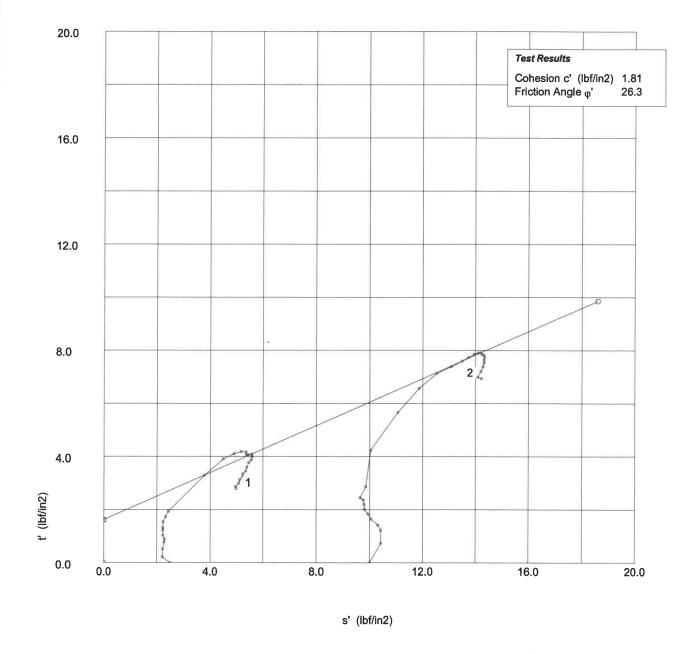


	&	Test Method: AST	ГМ D4767-95		Test name Date of Test:	CU Triaxial (SS, MS) 12-26-18	
411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-1 ST-1	
		Operator:	NE	Checked:	Mu	Approved:	

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Effective Stress Triaxial Compression

Consolidated Undrained



&	est Method: AST	M D4767-95		Test name Date of Test:	CU T 12-26	riaxial (SS, MS) i-18
1 -	Site Reference:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-1 ST-1	
	perator:	UL	Checked:	 u.	01-1	Approved:

Page 1 / 2

Consolidated Undrained Shear (Specimen 1)

No.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lbf/in2)	D. Stress (σ ₁ - σ ₃) _m (lbf/in2)	D. Stress (σ ₁ - σ ₃) _c (lbf/in2)	Minor Str σ ₃ ' (lbf/in2)	Major Str o ₁ ' (lbf/in2)	Ratio σ ₁ '/σ ₃ '
1	92	0.00	563	0.0	0	0.0	0.0	0.0	2.50	2.50	1.00
2	157	0.11	590	2.7	5	0.5	0.4	0.4	2.00	2.42	1.21
3	226	0.22	630	6.7	8	0.8	1.0	1.0	1.70	2.74	1.61
4	295	0.34	663	10.0	10	1.0	1.6	1.6	1.50	3.05	2.04
5	334	0.40	678	11.5	11	1.1	1.8	1.8	1.40	3.18	2.27
6	399	0.51	706	14.3	13	1.3	2.2	2.1	1.20	3.26	2.71
7	470	0.63	732	16.9	15	1.5	2.6	2.5	1.00	3.46	3.46
8	505	0.69	745	18.2	16	1.6	2.8	2.7	0.90	3.56	3.95
9	575	0.80	772	20.9	18	1.8	3.2	3.1	0.70	3.77	5.39
10	643	0.92	798	23.5	19	1.9	3.6	3.5	0.60	4.07	6.78
11	715	1.04	824	26.1	20	2.0	4.0	3.9	0.50	4.37	8.73
12	1278	1.97	1012	44.9	20	2.0	6.9	6.6	0.50	7.08	14.16
13	1880	2.98	1103	54.0	19	1.9	8.2	7.8	0.60	8.41	14.01
14	2496	4.00	1144	58.1	17	1.7	8.7	8.2	0.80	9.01	11.27
15	3120	5.04	1166	60.3	15	1.5	8.9	8.4	1.00	9.36	9.36
16	3719	6.04	1176	61.3	13	1.3	9.0	8.3	1.20	9.54	7.95
17	4308	7.02	1174	61.1	12	1.2	8.9	8.1	1.30	9.44	7.26
18	4901	8.00	1185	62.2	11	1.1	8.9	8.1	1.40	9.52	6.80
19	5505	9.01	1202	63.9	10	1.0	9.1	8.2	1.50	9.68	6.46
20	6102	10.00	1201	63.8	9	0.9	8.9	8.0	1.60	9.59	6.00
21	6721	11.03	1196	63.3	8	8.0	8.8	7.7	1.70	9.44	5.55
22	7319	12.03	1194	63.1	8	8.0	8.6	7.5	1.70	9.24	5.43
23	7918	13.02	1180	61.7	7	0.7	8.4	7.2	1.80	8.98	4.99
24	8505	14.00	1172	60.9	6	0.6	8.2	6.9	1.90	8.80	4.63
25	9100	14.99	1167	60.4	6	0.6	8.0	6.7	1.90	8.59	4.52
26	9704	15.99	1162	59.9	5	0.5	7.8	6.5	2.00	8.46	4.23
27	10293	16.97	1158	59.5	5	0.5	7.7	6.2	2.00	8.25	4.12
28	10915	18.01	1150	58.7	4	0.4	7.5	6.0	2.10	8.09	3.85
29	11521	19.02	1140	57.7	4	0.4	7.3	5.7	2.10	7.83	3.73
30	12115	20.01	1138	57.5	3	0.3	7.2	5.6	2.20	7.78	3.53

Те	8	
Sit		
Op		

Test Method: ASTM D4767-95	Test name	CU Triaxial (SS, MS) Shear (Specimen 1)
	Date of Test:	12-26-18
Site Reference: Br. Nos. 138 & 139	Sample:	ST-1
Jobfile: E:\18-036.JOB	Borehole:	ST-1
Operator:	Checked:	Approved:

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Effective Stress Triaxial Compression

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Consolidated Undrained Shear (Specimen 2)

1	lo.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lbf/in2)	D. Stress $(\sigma_1 - \sigma_3)_m$ (lbf/in2)	D. Stress $(\sigma_1 - \sigma_3)_c$ (lbf/in2)	Minor Str σ ₃ ' (lbf/in2)	Major Str σ ₁ ' (lbf/in2)	Ratio σ ₁ '/σ ₃ '
1		0	0.00	620	0.0	0	0.0	0.0	0.0	10.00	10.00	1.00
2		71	0.12	713	9.3	3	0.3	1.5	1.5	9.70	11.16	1.15
3	}	140	0.24	776	15.6	8	0.8	2.4	2.4	9.20	11.64	1.27
4		176	0.30	801	18.1	11	1.1	2.8	2.8	8.90	11.73	1.32
5		248	0.42	832	21.2	16	1.6	3.3	3.3	8.40	11.71	1.39
6		283	0.48	856	23.6	19	1.9	3.7	3.7	8.10	11.78	1.45
7	,	355	0.60	888	26.8	22	2.2	4.2	4.0	7.80	11.81	1.51
8		427	0.73	912	29.2	24	2.4	4.5	4.4	7.60	11.98	1.58
9		495	0.84	935	31.5	26	2.6	4.9	4.7	7.40	12.14	1.64
	0	530	0.90	945	32.5	28	2.8	5.0	4.9	7.20	12.09	1.68
1		599	1.02	999	37.9	30	3.0	5.9	5.7	7.00	12.72	1.82
	2	1182	2.01	1190	57.0	42	4.2	8.8	8.5	5.80	14.27	2.46
	3	1772	3.01	1389	76.9	46	4.6	11.7	11.3	5.40	16.73	3.10
11	4	2371	4.03	1525	90.5	47	4.7	13.6	13.1	5.30	18.43	3.48
	5	2928	4.97	1615	99.5	46	4.6	14.8	14.3	5.40	19.66	3.64
	6	3551	6.03	1667	104.7	43	4.3	15.4	14.8	5.70	20.48	3.59
1		4114	6.99	1712	109.2	41	4.1	15.9	15.2	5.90	21.10	3.58
1		4714	8.00	1748	112.8	40	4.0	16.3	15.5	6.00	21.46	3.58
1		5300	9.00	1783	116.3	39	3.9	16.6	15.7	6.10	21.81	3.57
2		5895	10.01	1809	118.9	38	3.8	16.8	15.8	6.20	22.01	3.55
2		6495	11.03	1829	120.9	37	3.7	16.9	15.8	6.30	22.12	3.51
2		7086	12.03	1839	121.9	36	3.6	16.8	15.7	6.40	22.09	3.45
2		7646	12.98	1854	123.4	35	3.5	16.8	15.6	6.50	22.15	3.41
2		8244	14.00	1862	124.2	34	3.4	16.7	15.5	6.60	22.08	3.35
2		8843	15.02	1864	124.4	33	3.3	16.6	15.3	6.70	21.95	3.28
2		9432	16.02	1868	124.8	32	3.2	16.4	15.0	6.80	21.85	3.21
2		10024	17.02	1867	124.7	31	3.1	16.2	14.8	6.90	21.66	3.14
2		10595	17.99	1860	124.0	30	3.0	15.9	14.4	7.00	21.42	3.06
2		11214	19.04	1844	122.4	29	2.9	15.5	14.0	7.10	21.07	2.97
3	0	11806	20.05	1854	123.4	27	2.7	15.5	13.9	7.30	21.17	2.90



Test Method: ASTM D4767-95	Test name Date of Test:	CU Triaxial (SS, MS) Shear (Specimen 2) 12-26-18	
Site Reference: Br. Nos. 138 & 139 Jobfile: E:\18-036.JOB	Sample: Borehole:	ST-1 ST-1	
Operator:	Checked: ~~~	Approved:	

Consolidated Undrained

Sample details Sketch showing specimen location in original Sample

Depth

Description: Gray Coarse to Fine Sandy Silty CLAY (A-7-6) (13)

Specimen 2 Specimen 1 Undisturbed Undisturbed Height H₀ (in) 5.769 5.756 Diameter D₀ (in) 2.859 2.857 Weight Wn (gr) 1165.6 1160.1 Bulk Density ρ (PCF) 119.90 119.77 Particle Density ρ_s 2.677 2.677 (measured) (measured)

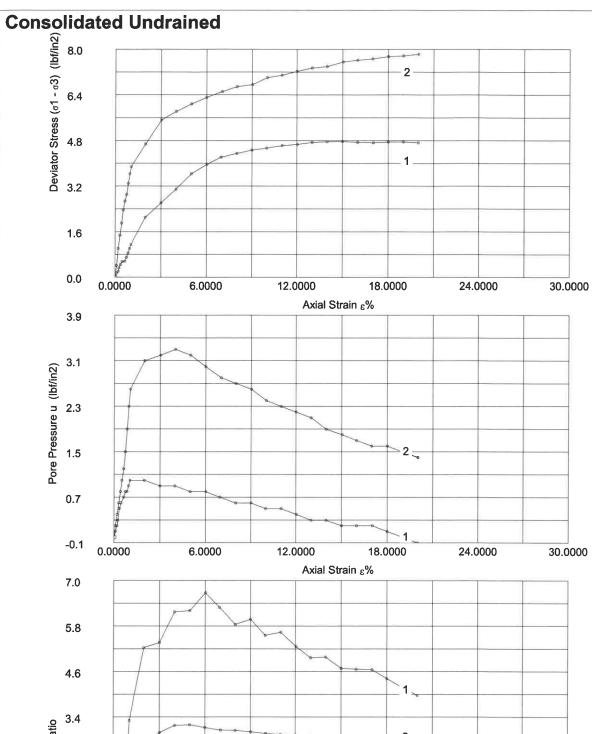
Initial Conditions			
	Specimen 1	Specimen 2	
Cell Pressure _{G3} (lbf/in2)	1.5	6.0	
Pore Pressure u (lbf/in2)	0.0	0.0	
Machine Speed d _r (in/min)	0.011	0.013	
No. of Membranes	1	1	
Total Thickness (in)	0.012	0.012	
Strain Channel	1798	1798	
oad Channel	1776	1776	
Pore P. Channel	1779	1779	
Volume Channel	Volume Chan	g Volume Chang	
Moisture Content w ₀ %	28.4	27.5	
Dry Density _{Pd0} (PČF)	93.37	93.95	
√oids Ratio e₀	0.79	0.78	
Deg of Saturation S ₀ %	96.39	94.55	
Final B Value	0.96	0.96	

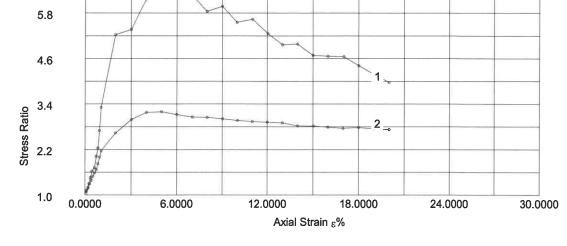
Final Conditions	Specimen 1	Specimen 2	
Moisture Content w₅%	28.2	26.9	Failure Sketch
Dry Density _{Pd} (PCF)	94.41	95.28	Sp 1 Sp 2
Voids Ratio e	0.77	0.75	
Deg of Saturation S _f %	98.02	95.65	(≈ V =
Failure Criteria	Mx Stress Ra	tioMx Stress Ratio	
Axial Strain _{&f} %	6.0	5.0	
Corr Dev Stress $(\sigma_1 - \sigma_3)$ f (lbf/in2)	4.0	6.1	
Minor Stress _{σ3f} (lbf/in2)	0.7	2.8	
Major Stress _{σ1f} (lbf/in2)	4.7	8.9	
Stress Ratio (₀₁ / ₀₃) _f	6.7	3.2	
Notes:			
			Surface Inclination

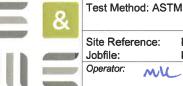


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Effective Stress Triaxial Compression







t Method: ASTM D4767-95

Test name CU Triaxial (SS, MS) 12-26-18 Date of Test:

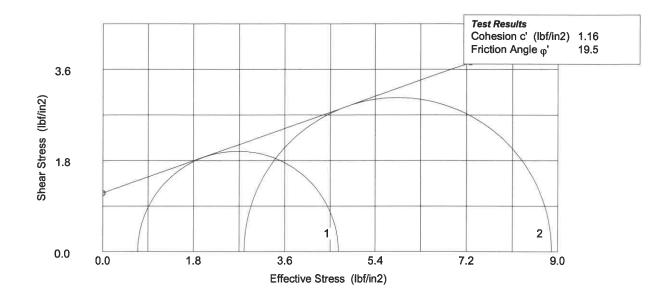
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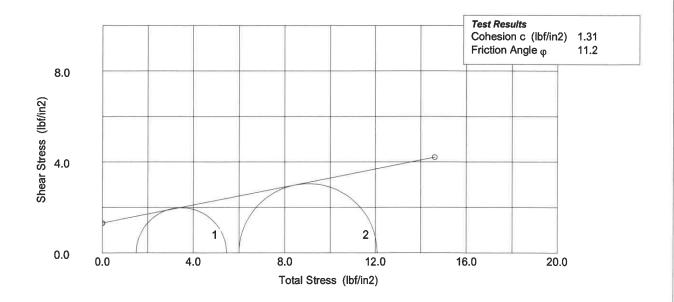
Site Reference: Br. Nos. 138 & 139

Sample: ST-2 ST-2

Checked: ,...

Consolidated Undrained



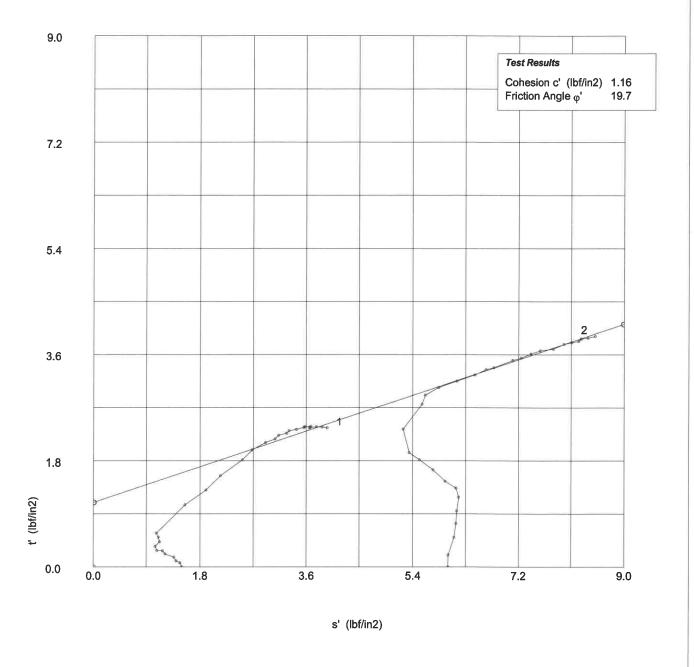


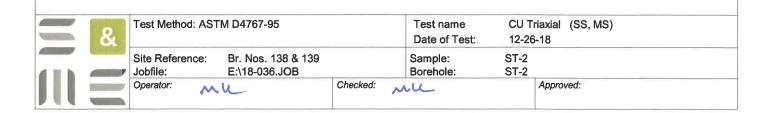
	&	Test Method: AST	M D4767-95		Test name Date of Test:	CU T 12-26	riaxial (SS, MS) i-18	
411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-2 ST-2		
Щ		Operator:	L	Checked:	ic_		Approved:	

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Effective Stress Triaxial Compression

Consolidated Undrained





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Consolidated Undrained Shear (Specimen 1)

No.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lbf/in2)	D. Stress $(\sigma_1 - \sigma_3)_m$ (lbf/in2)	D. Stress $(\sigma_1 - \sigma_3)_c$ (lbf/in2)	Minor Str σ ₃ ' (lbf/in2)	Major Str o ₁ ' (lbf/in2)	Ratio σ ₁ '/σ ₃ '
1	0	0.00	510	0.0	0	0.0	0.0	0.0	1.50	1.50	1.00
2	60	0.10	519	0.9	1	0.1	0.1	0.1	1.40	1.54	1.10
3	120	0.21	523	1.3	2	0.2	0.2	0.2	1.30	1.50	1.16
4	151	0.26	531	2.1	3	0.3	0.3	0.3	1.20	1.53	1.27
5	209	0.36	538	2.8	5	0.5	0.4	0.4	1.00	1.44	1.44
6	270	0.47	545	3.5	6	0.6	0.5	0.5	0.90	1.45	1.61
7	358	0.62	556	4.6	7	0.7	0.7	0.6	0.80	1.36	1.70
8	417	0.73	565	5.5	8	8.0	0.9	0.7	0.70	1.40	2.00
9	477	0.83	575	6.5	8	0.8	1.0	0.9	0.70	1.55	2.22
10	537	0.93	585	7.5	9	0.9	1.2	1.0	0.60	1.61	2.68
11	596	1.04	594	8.4	10	1.0	1.3	1.1	0.50	1.64	3.29
12	1136	1.98	665	15.5	10	1.0	2.4	2.1	0.50	2.60	5.21
13	1731	3.01	705	19.5	9	0.9	3.0	2.6	0.60	3.21	5.35
14	2295	3.99	747	23.7	9	0.9	3.6	3.1	0.60	3.69	6.15
15	2869	4.99	791	28.1	8	8.0	4.2	3.6	0.70	4.33	6.19
16	3465	6.03	822	31.2	8	0.8	4.6	4.0	0.70	4.66	6.66
17	4003	6.96	848	33.8	7	0.7	4.9	4.2	0.80	5.02	6.27
18	4604	8.01	866	35.6	6	0.6	5.1	4.3	0.90	5.24	5.82
19	5176	9.00	884	37.4	6	0.6	5.3	4.5	0.90	5.36	5.96
20	5740	9.99	899	38.9	5	0.5	5.5	4.5	1.00	5.54	5.54
21	6337	11.02	915	40.5	5	0.5	5.7	4.6	1.00	5.62	5.62
22	6917	12.03	929	41.9	4	0.4	5.8	4.7	1.10	5.77	5.24
23	7484	13.02	943	43.3	3	0.3	5.9	4.7	1.20	5.93	4.94
24	8052	14.01	956	44.6	3	0.3	6.0	4.8	1.20	5.96	4.96
25	8623	15.00	966	45.6	2	0.2	6.1	4.8	1.30	6.07	4.67
26	9198	16.00	974	46.4	2	0.2	6.1	4.7	1.30	6.04	4.64
27	9790	17.03	984	47.4	2	0.2	6.2	4.7	1.30	6.02	4.63
28	10358	18.02	997	48.7	1	0.1	6.3	4.7	1.40	6.15	4.39
29	10933	19.02	1006	49.6	0	0.0	6.3	4.7	1.50	6.25	4.16
30	11500	20.01	1013	50.3	-1	-0.1	6.3	4.7	1.60	6.32	3.95

	&	Test Method: AST	TM D4767-95		Test name Date of Test:	CU Triaxi: 12-26-18	al (SS, MS) Shear (Specimen 1)
11 21 2		Site Reference:	Br. Nos. 138 & 139		Sample:	ST-2	
A H B		Jobfile:	E:\18-036.JOB		Borehole:	ST-2	
		Operator:	K	Checked:	MC	App	proved:

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Effective Stress Triaxial Compression

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Consolidated Undrained Shear (Specimen 2)

	No.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lbf/in2)	D. Stress $(\sigma_1 - \sigma_3)_m$ (lbf/in2)	D. Stress $(\sigma_1 - \sigma_3)_c$ (lbf/in2)	Minor Str σ ₃ ' (lbf/in2)	Major Str ປ (lbf/in2)	Ratio σ_1'/σ_3'
	1	137	0.00	619	0.0	0	0.0	0.0	0.0	6.00	6.00	1.00
ì	2	197	0.10	645	2.6	2	0.2	0.4	0.4	5.80	6.21	1.07
1	3	256	0.21	683	6.4	4	0.4	1.0	1.0	5.60	6.61	1.18
	4	317	0.31	713	9.4	6	0.6	1.5	1.5	5.40	6.88	1.27
	5	376	0.42	740	12.1	8	0.8	1.9	1.9	5.20	7.10	1.36
	6	435	0.52	780	16.1	10	1.0	2.5	2.4	5.00	7.36	1.47
	7	496	0.63	800	18.1	12	1.2	2.8	2.7	4.80	7.47	1.56
	8	554	0.73	815	19.6	15	1.5	3.1	2.9	4.50	7.40	1.65
	9	613	0.83	840	22.1	19	1.9	3.5	3.3	4.10	7.39	1.80
	10	674	0.94	862	24.3	23	2.3	3.8	3.6	3.70	7.33	1.98
	11	734	1.04	878	25.9	26	2.6	4.0	3.9	3.40	7.28	2.14
ı	12	1277	1.99	940	32.1	31	3.1	5.0	4.7	2.90	7.58	2.61
	13	1874	3.03	1004	38.5	32	3.2	5.9	5.5	2.80	8.32	2.97
	14	2438	4.02	1036	41.7	33	3.3	6.3	5.8	2.70	8.52	3.16
1	15	3003	5.00	1063	44.4	32	3.2	6.6	6.1	2.80	8.88	3.17
	16	3573	6.00	1088	46.9	30	3.0	6.9	6.3	3.00	9.30	3.10
	17	4166	7.03	1113	49.4	28	2.8	7.2	6.5	3.20	9.71	3.04
	18	4731	8.02	1136	51.7	27	2.7	7.5	6.7	3.30	9.99	3.03
١	19	5311	9.03	1152	53.3	26	2.6	7.6	6.8	3.40	10.16	2.99
1	20	5881	10.03	1181	56.2	24	2.4	8.0	7.0	3.60	10.61	2.95
1	21	6446	11.01	1199	58.0	23	2.3	8.1	7.1	3.70	10.79	2.92
	22	7017	12.01	1221	60.2	22	2.2	8.3	7.2	3.80	11.02	2.90
	23	7592	13.01	1241	62.2	21	2.1	8.5	7.3	3.90	11.24	2.88
	24	8159	14.00	1258	63.9	19	1.9	8.7	7.4	4.10	11.49	2.80
	25	8750	15.03	1282	66.3	18	1.8	8.9	7.6	4.20	11.75	2.80
	26	9297	15.99	1299	68.0	17	1.7	9.0	7.6	4.30	11.92	2.77
	27	9866	16.98	1316	69.7	16	1.6	9.1	7.7	4.40	12.06	2.74
	28	10458	18.02	1336	71.7	16	1.6	9.3	7.7	4.40	12.14	2.76
	29	11031	19.02	1350	73.1	15	1.5	9.3	7.8	4.50	12.27	2.73
	30	11608	20.02	1367	74.8	14	1.4	9.4	7.8	4.60	12.42	2.70
- [

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P 4 4		

3.	Test Method: ASTI	M D4767-95		Test name Date of Test:	CU T 12-26	riaxial (SS, MS) Shear (Specimen 2) 3-18
	Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-2 ST-2	
	Operator:		Checked:	4		Approved:

Sample details

Sketch showing specimen location in original Sample

Depth 7.1 - 9.1 ft.

Description: Gray Coarse to Fine Sandy Silty CLAY (A-6) (4)

 $\begin{tabular}{lll} Type & Undisturbed \\ Height H_0 (in) & 0.999 \\ Diameter D_0 (in) & 2.501 \\ Weight W_0 (gr) & 158.56 \\ Bulk Density ρ (PCF) & 123.08 \\ Particle Density ρ_8 & (measured) \\ \hline \end{tabular}$

Initial Conditions

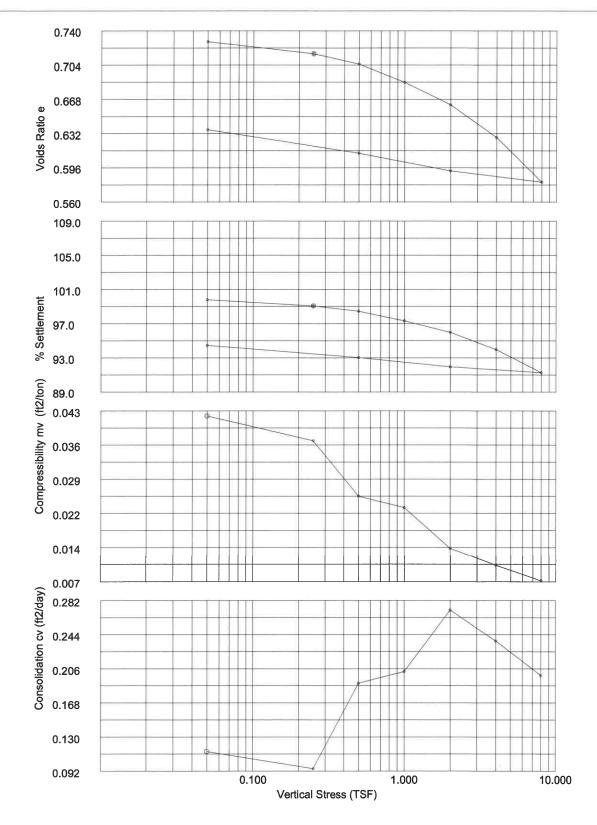
Final Conditions

 $\begin{tabular}{lll} Moisture Content $w_f\%$ & 24.5 \\ Dry Density ρ_d (PCF) & 102.52 \\ Voids Ratio e_f & 0.6361 \\ Deg of Saturation $S_f\%$ & 100.00 \\ Settlement: (in) & 0.055 \\ Compression Index C_c & 0.158 \\ \end{tabular}$

Notes: Test specimen taken from the middle portion of UD tube.

&	ASTM D2435-96			Test name Date of Test:	Cons 12-26	olidation 6-18	
	Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
	Operator:	e	Checked:	uk		Approved:	

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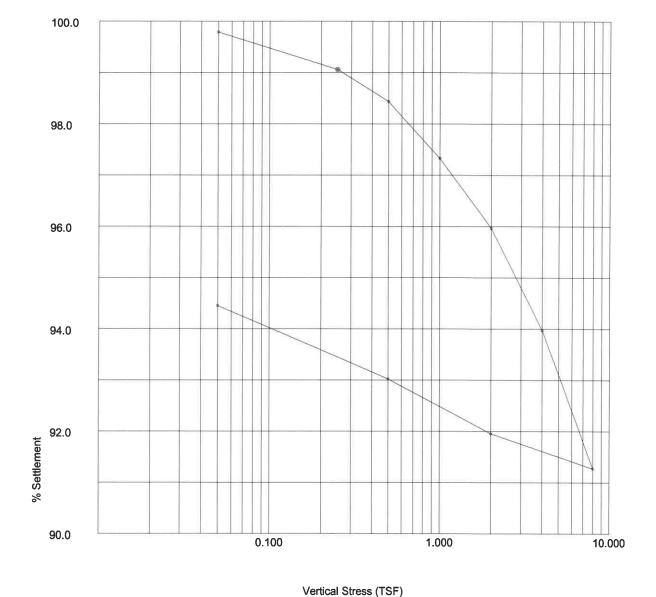


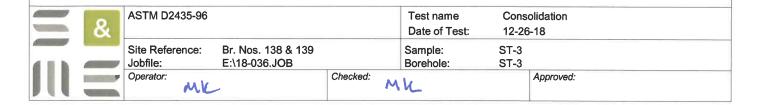
ASTM D2435-96	Test name	e Consolidation	
	Date of Te	est: 12-26-18	
Site Reference: Br. Nos. 138 & 139 Jobfile: E:\18-036.JOB	Sample: Borehole:	ST-3 ST-3	
Operator:	Checked:	Approved:	

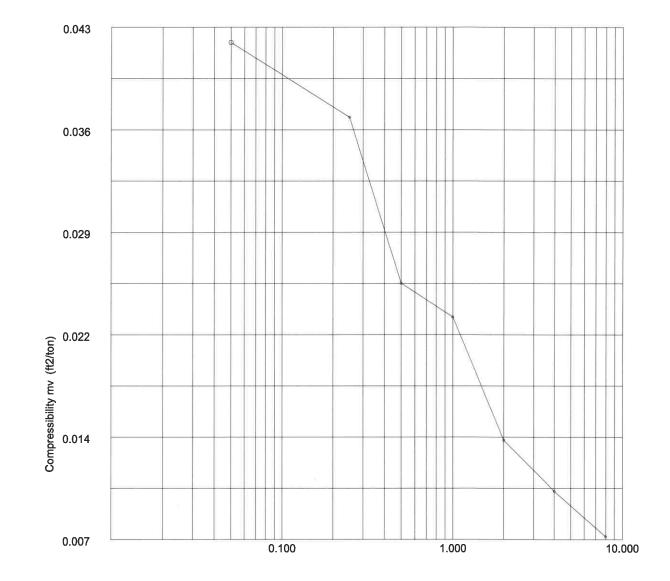
Vertical Stress (TSF)

	&	ASTM D2435-96			Test name Date of Test:	Conso 12-26	olidation i-18	
411)		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
Ш		Operator:	K	Checked:	41c		Approved:	

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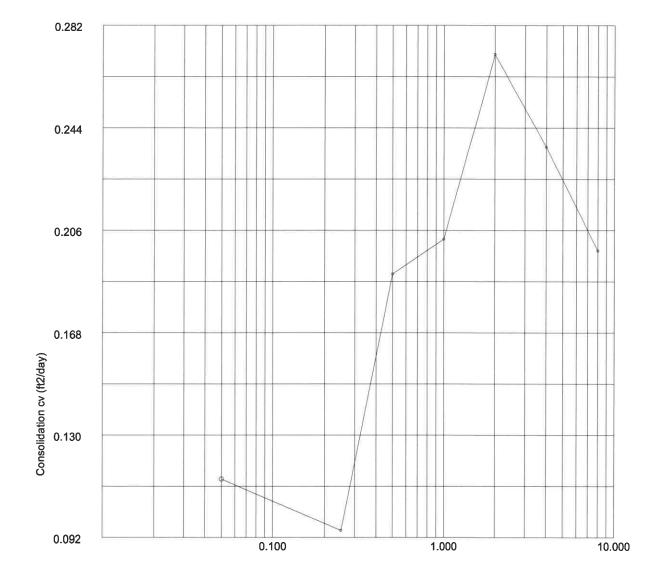




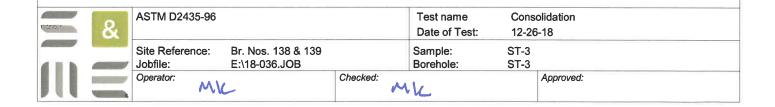
Vertical Stress (TSF)

	Q.	ASTM D2435-96			Test name Date of Test:	Cons 12-26	olidation	
	OX	Cita Deference	Dr. Non. 420 9 420			ST-3)-10	
4 11 15		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3		
Ш		Operator:		Checked:	MK		Approved:	

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Stress (TSF)	Initial Temp. oC	Settlement Total (in)	Cal Corr. (in)	Final Temp. oC	Voids Ratio e _f	t _{so} (mins)	Secondary Compr C _{sec}	c _v (ft2/day)	m _v (ft2/ton)
0.050	20.0	0.0021	0.0	21.7	0.7285	4.315	0.0003	0.115	0.042
0.250	20.0	0.0094	0.0	21.7	0.7158	5.213	0.0005	0.095	0.037
0.500	20.0	0.0156	0.0	21.7	0.7051	2.564	0.001	0.190	0.025
1.000	20.0	0.0267	0.0	21.7	0.6858	2.358	0.0006	0.203	0.023
2.000	20.0	0.0403	0.0	21.7	0.6623	1.718	0.0009	0.271	0.014
4.000	20.0	0.0602	0.0	21.7	0.6278	1.900	0.0012	0.237	0.011
8.000	20.0	0.0872	0.0	21.7	0.5809	2.157	0.0126	0.198	0.007
2.000	20.0	0.0804	0.0	21.7	0.5927				0.001
0.500	20.0	0.0697	0.0	21.7	0.6113				800.0
0.050	20.0	0.0554	0.0	21.7	0.6361				0.034

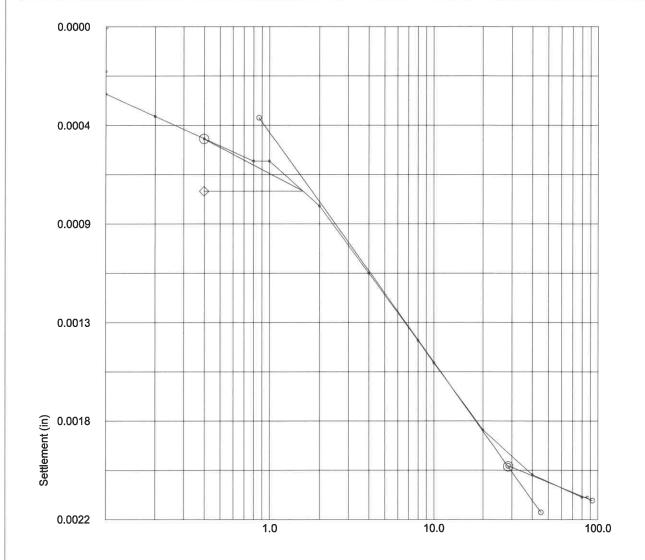
	&	ASTM D2435-96			Test name Date of Test:	Cons 12-26	olidation 6-18	
411)		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
Щ		Operator:		Checked:	MIC		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	0	0.0000	0.0000
2	0.017	2	0.0002	0.0002
3	0.033	2	0.0002	0.0002
4	0.050	3	0.0003	0.0003
5	0.067	3	0.0003	0.0003
6	0.083	3	0.0003	0.0003
7	0.100	3	0.0003	0.0003
8	0.200	4	0.0004	0.0004
9	0.400	5	0.0005	0.0005
10	0.800	6	0.0006	0.0006
11	1.000	6	0.0006	0.0006
12	2.000	8	0.0008	8000.0
13	4.000	11	0.0011	0.0011
14	8.000	14	0.0014	0.0014
15	10.000	15	0.0015	0.0015
16	20.000	18	0.0018	0.0018
17	40.000	20	0.0020	0.0020
18	80.000	21	0.0021	0.0021
19	86.183	21	0.0021	0.0021

	&	ASTM D2435-96				Test name Date of Test:	Cons 12-26	colidation Load: 0.050 (TSF) 6-18
411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB			Sample: Borehole:	ST-3 ST-3	
Ш		Operator: MK	•	Checked:	M	.kc		Approved:

Settlement Stage Results 0.050 Vertical Stress (TSF) Initial Temp oC 20.0 0.0 Correction (in) 0.0021 Settlement (in) Voids Ratio e 0.7285 0.0 Final Temp oC t₅₀ (mins) 4.32 c_v (ft2/day) 0.115 m_v (ft2/ton) Sec Compression C_{sec} 0.042 0.0003

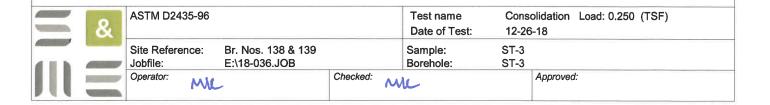


Logarithmic Time (mins)

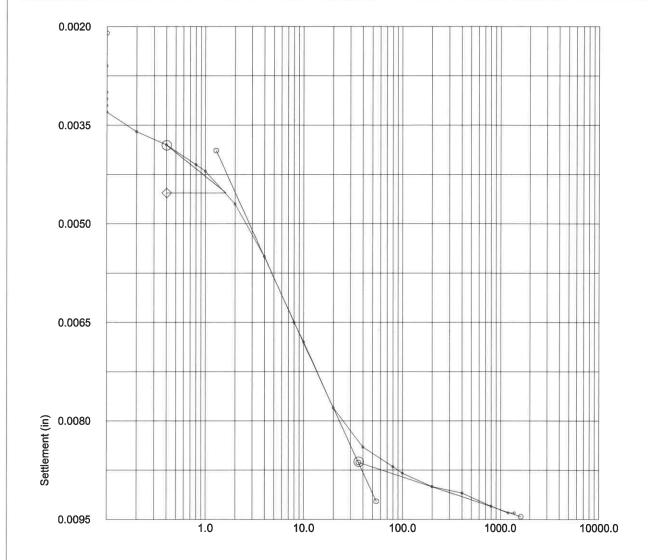
	&	ASTM D2435-96			Date of Test:	12-26	olidation 5-18	
		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
;		Operator:	L	Checked:	L		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	21	0.0021	0.0021
2	0.017	26	0.0026	0.0026
3	0.033	30	0.0030	0.0030
4	0.050	31	0.0031	0.0031
5	0.067	32	0.0032	0.0032
6	0.083	33	0.0033	0.0033
7	0.100	33	0.0033	0.0033
8	0.200	36	0.0036	0.0036
9	0.400	38	0.0038	0.0038
10	0.800	41	0.0041	0.0041
11	1.000	42	0.0042	0.0042
12	2.000	47	0.0047	0.0047
13	4.000	55	0.0055	0.0055
14	8.000	65	0.0065	0.0065
15	10.000	68	0.0068	0.0068
16	20.000	78	0.0078	0.0078
17	40.000	84	0.0084	0.0084
18	80.000	87	0.0087	0.0087
19	100.000	88	0.0088	0.0088
20	200.000	90	0.0090	0.0090
21	400.000	91	0.0091	0.0091
22	800.000	93	0.0093	0.0093
23	1200.000	94	0.0094	0.0094
24	1393.500	94	0.0094	0.0094



Settlement Stage Results Vertical Stress (TSF) 0.250 Initial Temp oC 20.0 Correction (in) 0.0 Settlement (in) 0.0073 Voids Ratio e 0.7158 Final Temp oC 0.0 t₅₀ (mins) c_v (ft2/day) 5.21 0.095 m_v (ft2/ton) Sec Compression C_{sec} 0.037 0.0005



Logarithmic Time (mins)

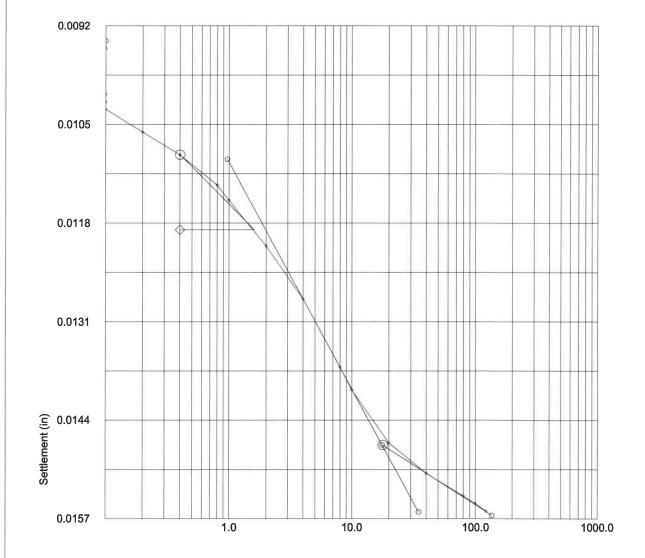
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411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
		Operator:		Checked:	me		Approved:	

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No.	Time (mins)			placement Sett (in)	lement
1	0.000	94	0.00	94 0.00	94
2	0.017	95	0.00	95 0.00	95
3	0.033	101	0.01	0.01	01
4	0.050	102	0.01	02 0.01	02
5	0.067	102	0.01	02 0.01	02
6	0.083	103	0.01	0.01	03
7	0.100	103	0.01	0.01	03
8	0.200	106	0.01	06 0.01	06
9	0.400	109	0.01	0.01	09
10	0.800	113	0.01	13 0.01	13
11	1.000	115	0.01	15 0.01	15
12	2.000	121	0.01	21 0.01	21
13	4.000	128	0.01	28 0.01	28
14	8.000	137	0.01	37 0.01	37
15	10.000	140	0.01	40 0.01	40
16	20.000	147	0.01	47 0.01	47
17	40.000	151	0.01	51 0.01	51
18	80.000	154	0.01	54 0.01	54
19	100.00	0 155	0.01	55 0.01	55
20	122.45	0 156	0.01	56 0.01	56

&	ASTM D2435-96			Test name Date of Test:	Conso 12-26	olidation Load: 0.500 (TSF)
	Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3	
	Operator:		Checked:	mle		Approved:

Settlement Stage Results Vertical Stress (TSF) 0.500 Initial Temp oC 20.0 Correction (in) 0.0 0.0062 Settlement (in) Voids Ratio e 0.7051 0.0 Final Temp oC t₅₀ (mins) c_v (ft2/day) 2.56 0.19 m_v (ft2/ton) Sec Compression C_{sec} 0.025 0.001

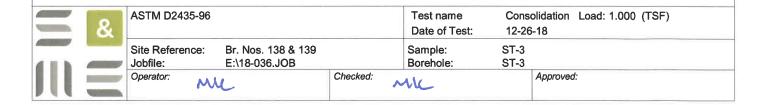


Logarithmic Time (mins)

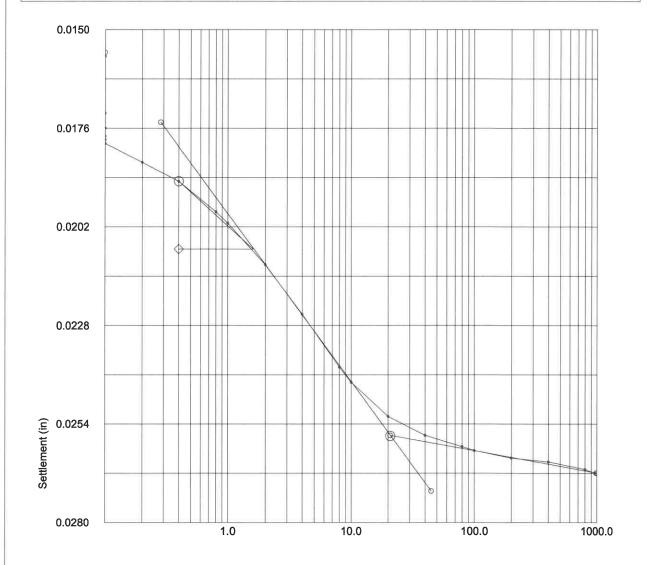
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411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
		Operator:	L	Checked:	VIC .		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	156	0.0156	0.0156
2	0.017	157	0.0157	0.0157
3	0.033	172	0.0172	0.0172
4	0.050	176	0.0176	0.0176
5	0.067	178	0.0178	0.0178
6	0.083	179	0.0179	0.0179
7	0.100	180	0.0180	0.0180
8	0.200	185	0.0185	0.0185
9	0.400	190	0.0190	0.0190
10	0.800	198	0.0198	0.0198
11	1.000	201	0.0201	0.0201
12	2.000	212	0.0212	0.0212
13	4.000	225	0.0225	0.0225
14	8.000	239	0.0239	0.0239
15	10.000	243	0.0243	0.0243
16	20.000	252	0.0252	0.0252
17	40.000	257	0.0257	0.0257
18	80.000	260	0.0260	0.0260
19	100.000	261	0.0261	0.0261
20	200.000	263	0.0263	0.0263
21	400.000	264	0.0264	0.0264
22	800.000	266	0.0266	0.0266
23	970.000	267	0.0267	0.0267



Settlement Stage Results Vertical Stress (TSF) 1.000 Initial Temp oC 20.0 Correction (in) 0.0 Settlement (in) Voids Ratio e 0.0111 0.6858 0.0 2.36 Final Temp oC t₅₀ (mins) c_v (ft2/day) m_v (ft2/ton) Sec Compression C_{sec} 0.203 0.023 0.0006



Logarithmic Time (mins)

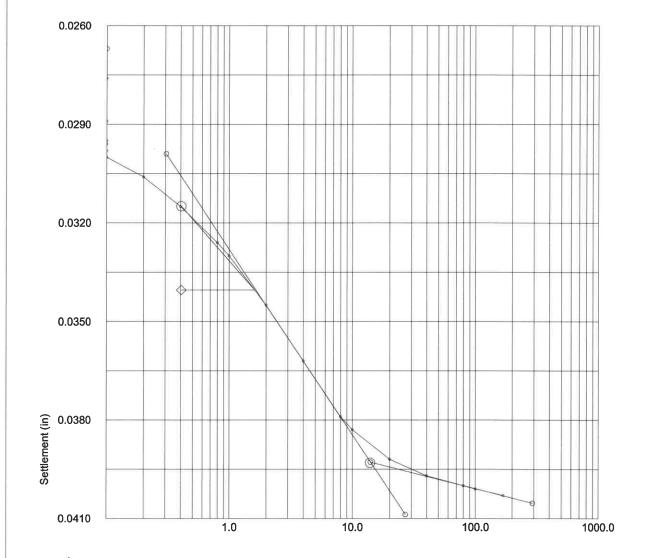
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	Ŏ.				Date of Test:	12-26	S-18	
		Site Reference:	Br. Nos. 138 & 139		Sample:	ST-3		
4 11 15		Jobfile:	E:\18-036.JOB		Borehole:	ST-3		
		Operator:	NC	Checked:	ME		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	267	0.0267	0.0267
2	0.017	276	0.0276	0.0276
3	0.033	289	0.0289	0.0289
4	0.050	295	0.0295	0.0295
5	0.067	296	0.0296	0.0296
6	0.083	298	0.0298	0.0298
7	0.100	300	0.0300	0.0300
8	0.200	306	0.0306	0.0306
9	0.400	315	0.0315	0.0315
10	0.800	326	0.0326	0.0326
11	1.000	330	0.0330	0.0330
12	2.000	345	0.0345	0.0345
13	4.000	362	0.0362	0.0362
14	8.000	379	0.0379	0.0379
15	10.000	383	0.0383	0.0383
16	20.000	392	0.0392	0.0392
17	40.000	397	0.0397	0.0397
18	80.000	400	0.0400	0.0400
19	100.000	401	0.0401	0.0401
20	168.817	403	0.0403	0.0403

	&	ASTM D2435-96		Test name Date of Test:	Cons 12-26	olidation Load: 2.000 (TSF) 3-18
411		Site Reference: Br. Nos. 138 & 139 Jobfile: E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3	
		Operator:	Checked:	M	-	Approved:

Settlement Stage Results Vertical Stress (TSF) 2.000 Initial Temp oC 20.0 Correction (in) 0.0 Settlement (in) 0.0136 Voids Ratio e 0.6623 Final Temp-oC 0.0 t₅₀ (mins) c_v (ft2/day) m_v (ft2/ton) Sec Compression C_{sec} 1.72 0.271 0.014 0.0009



Logarithmic Time (mins)

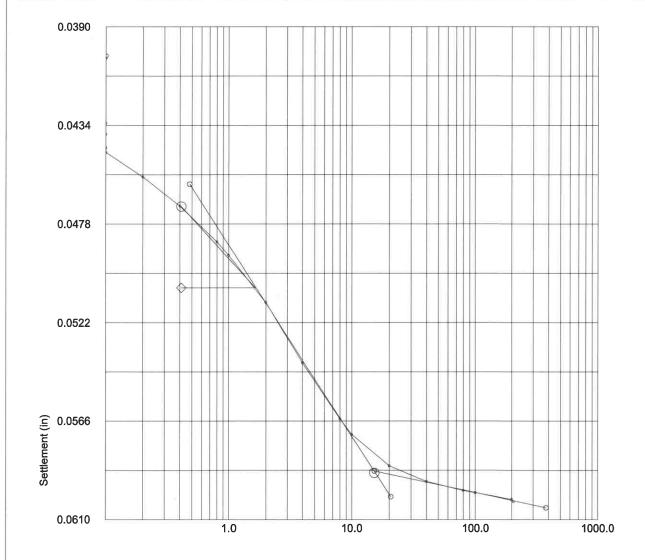
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411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
Ш		Operator:	l	Checked:	Me		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	403	0.0403	0.0403
2	0.017	404	0.0404	0.0404
3	0.033	404	0.0404	0.0404
4	0.050	433	0.0433	0.0433
5	0.067	438	0.0438	0.0438
6	0.083	444	0.0444	0.0444
7	0.100	446	0.0446	0.0446
8	0.200	457	0.0457	0.0457
9	0.400	470	0.0470	0.0470
10	0.800	486	0.0486	0.0486
11	1.000	492	0.0492	0.0492
12	2.000	513	0.0513	0.0513
13	4.000	540	0.0540	0.0540
14	8.000	565	0.0565	0.0565
15	10.000	572	0.0572	0.0572
16	20.000	586	0.0586	0.0586
17	40.000	593	0.0593	0.0593
18	80.000	597	0.0597	0.0597
19	100.000	598	0.0598	0.0598
20	200.000	601	0.0601	0.0601
21	207.150	602	0.0602	0.0602

	&	ASTM D2435-96	Test name Date of Test:	Consolidation Load: 4.000 (TSF) 12-26-18
411		Site Reference: Br. Nos. 138 & 139 Jobfile: E:\18-036.JOB	Sample: Borehole:	ST-3 ST-3
Ш		Operator:	Checked:	Approved:

Settlement Stage Results 4.000 Vertical Stress (TSF) Initial Temp oC 20.0 Correction (in) 0.0 0.0199 Settlement (in) Voids Ratio e 0.6278 0.0 Final Temp oC t_{50} (mins) 1.90 c_v (ft2/day) 0.237 m_v (ft2/ton) Sec Compression C_{sec} 0.011 0.0012

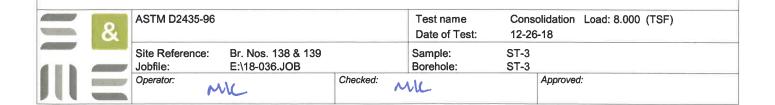


Logarithmic Time (mins)

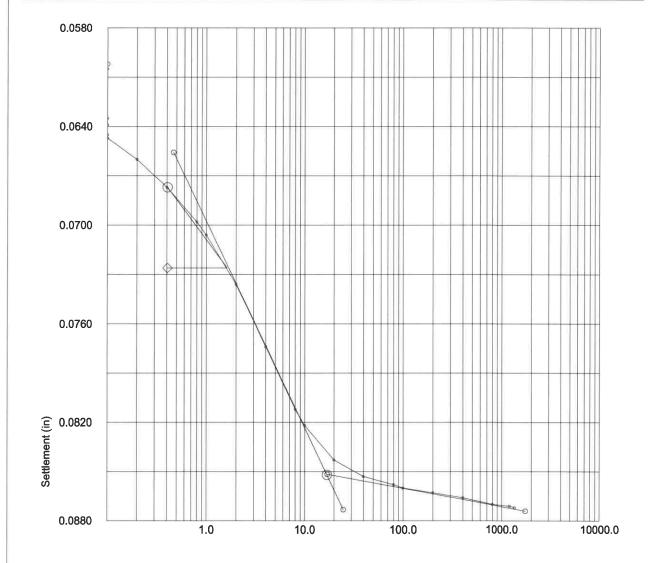
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	Site Reference: Br. Nos. 138 Jobfile: E:\18-036.J		ST-3 ST-3	
	Operator:	Checked:	Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlemen (in)
1	0.000	602	0.0602	0.0602
2	0.017	605	0.0605	0.0605
3	0.033	605	0.0605	0.0605
4	0.050	635	0.0635	0.0635
5	0.067	639	0.0639	0.0639
6	0.083	645	0.0645	0.0645
7	0.100	647	0.0647	0.0647
8	0.200	660	0.0660	0.0660
9	0.400	677	0.0677	0.0677
10	0.800	698	0.0698	0.0698
11	1.000	706	0.0706	0.0706
12	2.000	736	0.0736	0.0736
13	4.000	774	0.0774	0.0774
14	8.000	812	0.0812	0.0812
15	10.000	822	0.0822	0.0822
16	20.000	843	0.0843	0.0843
17	40.000	853	0.0853	0.0853
18	80.000	858	0.0858	0.0858
19	100.000	860	0.0860	0.0860
20	200.000	863	0.0863	0.0863
21	400.000	866	0.0866	0.0866
22	800.000	870	0.0870	0.0870
23	1200.000	871	0.0871	0.0871
24	1348.933	872	0.0872	0.0872



Settlement Stage Results Vertical Stress (TSF) 8.000 Initial Temp oC 20.0 Correction (in) 0.0 Settlement (in) Voids Ratio e 0.027 0.5809 0.0 Final Temp oC t₅₀ (mins) c_v (ft2/day) m_v (ft2/ton) Sec Compression C_{sec} 2.16 0.198 0.007 0.0126



Logarithmic Time (mins)

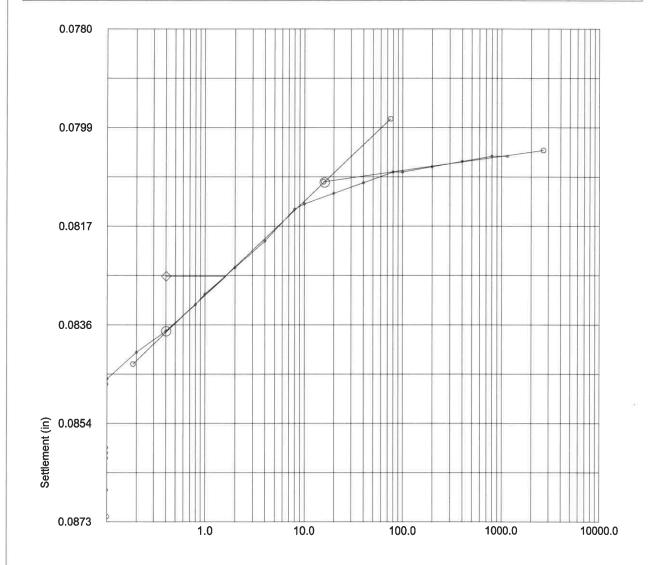
&	ASTM D2435-96			Test name Date of Test:	Cons 12-26	olidation 5-18	
	Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
The state of the s	Operator:	L	Checked:	ic		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	872	0.0872	0.0872
2	0.017	867	0.0867	0.0867
3	0.033	861	0.0861	0.0861
4	0.050	860	0.0860	0.0860
5	0.067	859	0.0859	0.0859
6	0.083	847	0.0847	0.0847
7	0.100	846	0.0846	0.0846
8	0.200	841	0.0841	0.0841
9	0.400	837	0.0837	0.0837
10	0.800	832	0.0832	0.0832
11	1.000	830	0.0830	0.0830
12	2.000	825	0.0825	0.0825
13	4.000	820	0.0820	0.0820
14	8.000	814	0.0814	0.0814
15	10.000	813	0.0813	0.0813
16	20.000	811	0.0811	0.0811
17	40.000	809	0.0809	0.0809
18	80.000	807	0.0807	0.0807
19	100.000	807	0.0807	0.0807
20	200.000	806	0.0806	0.0806
21	400.000	805	0.0805	0.0805
22	800.000	804	0.0804	0.0804
23	1153.783	804	0.0804	0.0804

	&	ASTM D2435-96	79		Test name Date of Test:	Cons 12-26	olidation Load: 2.000 (TSF) 3-18
		Site Reference:	Br. Nos. 138 & 139		Sample:	ST-3	
H h		Jobfile:	E:\18-036.JOB		Borehole:	ST-3	
		Operator:	ne	Checked:	le		Approved:

Settlement Stage Results



Logarithmic Time (mins)

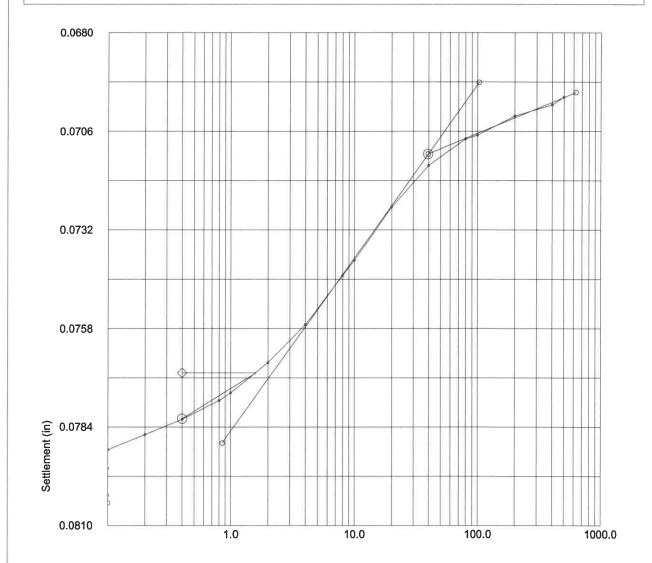
	&	ASTM D2435-96			Test name Date of Test:	Cons 12-26	solidation 6-18	
411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
		Operator:	L	Checked:	MC		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	804	0.0804	0.0804
2	0.017	802	0.0802	0.0802
3	0.033	802	0.0802	0.0802
4	0.050	802	0.0802	0.0802
5	0.067	795	0.0795	0.0795
6	0.083	790	0.0790	0.0790
7	0.100	790	0.0790	0.0790
8	0.200	786	0.0786	0.0786
9	0.400	782	0.0782	0.0782
10	0.800	777	0.0777	0.0777
11	1.000	775	0.0775	0.0775
12	2.000	767	0.0767	0.0767
13	4.000	757	0.0757	0.0757
14	8.000	744	0.0744	0.0744
15	10.000	740	0.0740	0.0740
16	20.000	726	0.0726	0.0726
17	40.000	715	0.0715	0.0715
18	80.000	708	0.0708	0.0708
19	100.000	707	0.0707	0.0707
20	200.000	702	0.0702	0.0702
21	400.000	699	0.0699	0.0699
22	498.117	697	0.0697	0.0697

&	ASTM D2435-96				Test name Date of Test:	Cons 12-26	olidation Load: 0.500 (TSF) i-18
	Site Reference:	Br. Nos. 138 & 139			Sample:	ST-3	
	Jobfile:	E:\18-036.JOB			Borehole:	ST-3	
	Operator:	لا	Checked:	M	le		Approved:

Settlement Stage Results

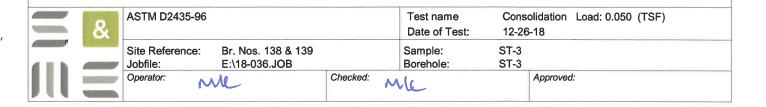


Logarithmic Time (mins)

	&	ASTM D2435-96			Date of Test:	12-26	olidation 3-18	
411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
Ш		Operator:	16	Checked:	ne		Approved:	

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No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	697	0.0697	0.0697
2	0.017	693	0.0693	0.0693
3	0.033	693	0.0693	0.0693
4	0.050	691	0.0691	0.0691
5	0.067	691	0.0691	0.0691
6	0.083	690	0.0690	0.0690
7	0.100	690	0.0690	0.0690
8	0.200	688	0.0688	0.0688
9	0.400	686	0.0686	0.0686
10	0.800	682	0.0682	0.0682
11	1.000	681	0.0681	0.0681
12	2.000	675	0.0675	0.0675
13	4.000	666	0.0666	0.0666
14	8.000	653	0.0653	0.0653
15	10.000	648	0.0648	0.0648
16	20.000	629	0.0629	0.0629
17	40.000	607	0.0607	0.0607
18	80.000	587	0.0587	0.0587
19	100.000	582	0.0582	0.0582
20	200.000	569	0.0569	0.0569
21	400.000	561	0.0561	0.0561
22	800.000	555	0.0555	0.0555
23	990.533	554	0.0554	0.0554



Settlement Stage Results

 Vertical Stress (TSF)
 0.050

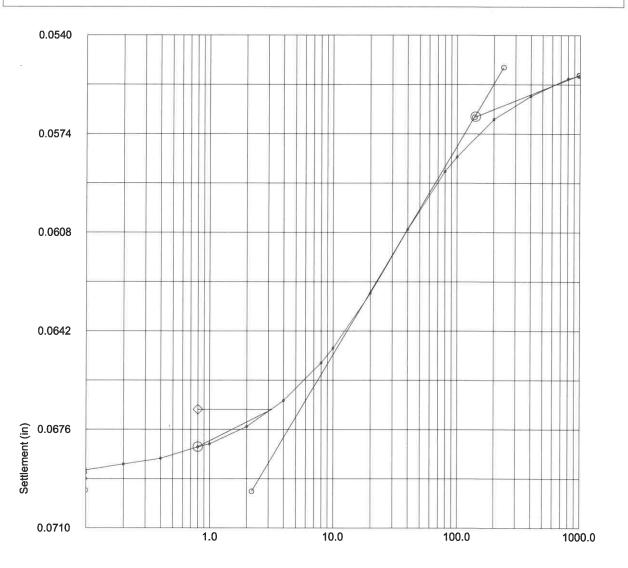
 Initial Temp oC
 20.0

 Correction (in)
 0.0

 Settlement (in)
 0.0143

 Voids Ratio e
 0.6361

Final Temp oC t₅₀ (mins) c_v (ft2/day) m_v (ft2/ton) Sec Compression C_{sec}



Logarithmic Time (mins)

	&	ASTM D2435-96			Test name Date of Test:	Cons 12-26	solidation 6-18	
411		Site Reference: Jobfile:	Br. Nos. 138 & 139 E:\18-036.JOB		Sample: Borehole:	ST-3 ST-3		
		Operator:	N	Checked:	NC		Approved:	

