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REFERENCE

50473

# STATE OF NORTH CAROLINA

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

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1	TITLE SHEET
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# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY WAYNE

PROJECT DESCRIPTION DIVISION 4 - US 117 AND SR 1135 (COUNTRY CLUB ROAD) INTERCHANGE

SITE DESCRIPTION DUAL BRIDGES ON -L- (US 117) AT STA. 39+11 OVER -YI- (COUNTRY CLUB ROAD) AT STA. 20+00

STATE PROJECT REFERENCE NO. 8 R = 5719

# **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 INDICATED IN THE SUBSURFACE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS AND ASSECTIONS OF THE INVESTIGATION. THE STATEM LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS AND ASSECTIONS AND ASSECTIONS OF THE INVESTIGATION. THE ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS AND ASSECTIONS AND ASSECTIONS OF THE ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS AND ASSECTIONS AND ASSECTIONS OF THE ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS AND ASSECTIONS AND ASSECTIONS OF THE ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS AND ASSECTIONS AND ASSECTIONS OF THE ACCORDING TO CLIMATIC CONDITIONS MEDICATED DESCRIPTIONS ASSECTIONS OF THE ACCORDING TO CLIMATIC CONDITIONS MEDICATED ASSECTIONS. INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

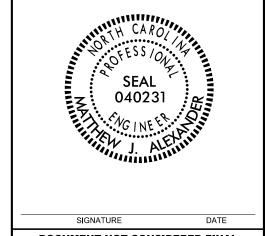
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT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

- IES:
  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.
  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.

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**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED** 



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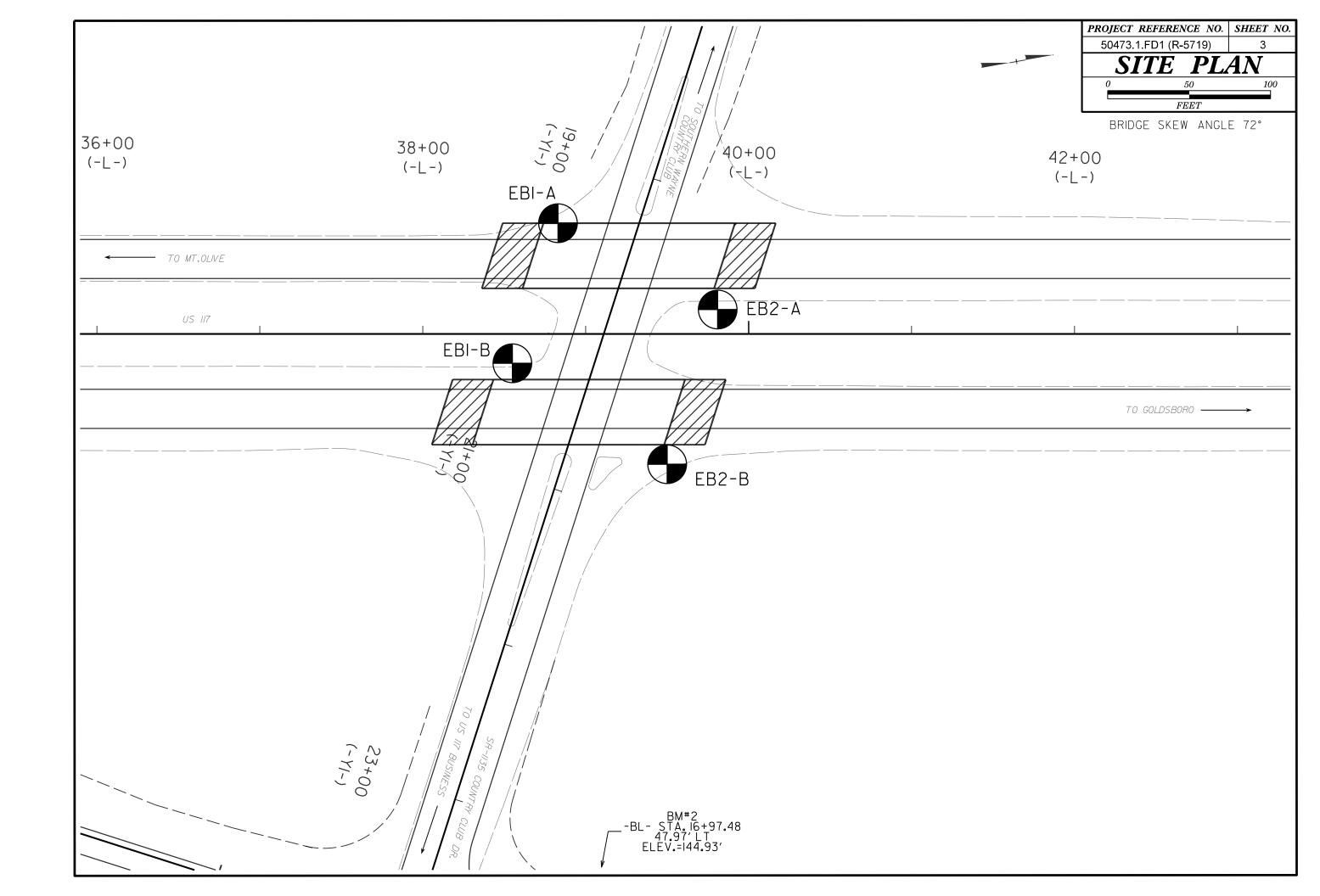
PROJECT REFERENCE NO. SHEET NO. 2

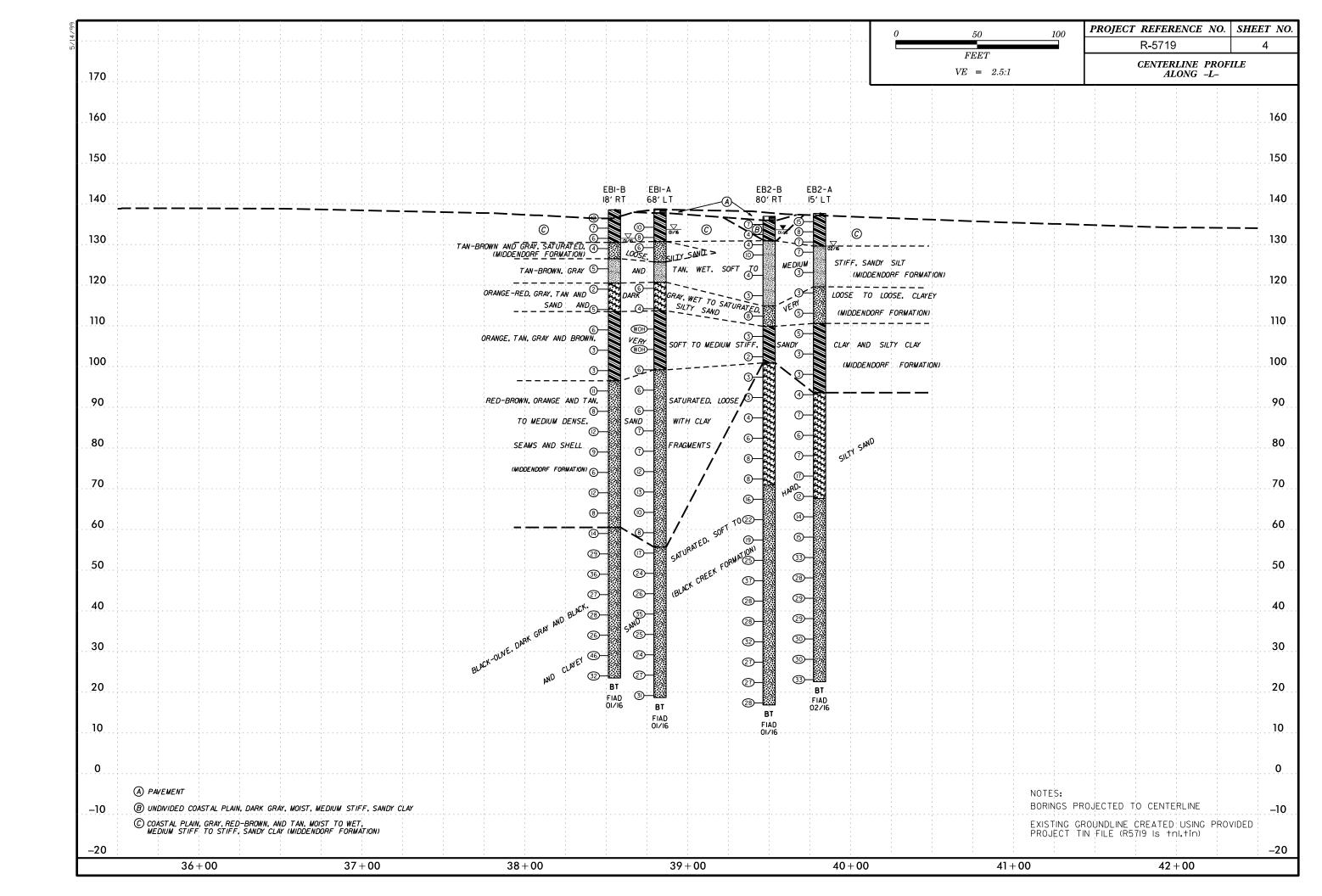
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

# 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,	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
VERY STIFF,GRAY,SILTY CLAY,MOIST WITH INTERBEDDED FINE SAND LAYERS,HIGHLY PLASTIC,A-7-6 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.
CEMERAL CRAMIII AR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	FINE TO COARSE CRAIN ICNEOUS AND METAMORPHIC POCK THAT	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
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.	UNELSS, DABBRU, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-6 A-1-6 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 SPT 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 000000	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 CT- MUCK, SOILS SOILS CAY 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	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 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 50ILS WITH	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 MODERATE 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 SOILS	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 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
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 SUBGRADE PURK	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	_	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 FIELD.
CONSISTENCY OR DENSENESS  RANGE OF STANDARD RANGE OF UNCONFINED	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH (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 COMPACTINESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
(N-VALUE) (TUNS/FIT)	WITH SOIL DESCRIPTION → OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4  LOOSE 4 TO 10	SOIL SYMBOL  OPT DMT 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 MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) DENSE 30 TO 50  VERY DENSE > 50	THAN ROADWAY EMBANKMENT TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25	── INFERRED SOIL BOUNDARY	(V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY   SOFT   2 TO 4   0.25 TO 0.5     SILT-CLAY   MEDIUM STIFF   4 TO 8   0.5 TO 1.0	INFERRED ROCK LINE MONITORING WELL TEST BORING	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</u> COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES,) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2	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 ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	→ → → → → → → → ALLUVIAL SOIL BOUNDARY \( \triangle \) INSTALLATION \( \triangle \) SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNCLASSIFIED EXCAVATION - TOTAL UNCLASSIFIED EXCAVATION -	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK.  SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNSUITABLE WASTE	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
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - SEED IN THE TOP 3 FEET OF ACCEPTABLE DEGRADABLE ROCK 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	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 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	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	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	CL CLAY  MOD MODERATELY  7 - UNIT WEIGHT  CPT - CONE PENETRATION TEST  NP - NON PLASTIC  7 - DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK, CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION GOIDE FOR FIELD MOISTORE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS  DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	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
LL _ LIQUID LIMIT	F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	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   SEMISOLID; REQUIRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(PI) PL PLASTIC LIMIT	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING  TERM SPACING TERM THICKNESS	BENCH MARK: BM #2 -BL- STA.16+97.48; 47.97' LEFT
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: 144.93 FEET
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE	
SL SHRINKAGE LIMIT	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE Ø.16 TO 1 FOOT VERY THINLY BEDDED Ø.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	FIAD - FILLED IN AFTER DRILLING
PLASTICITY	CORE SIZE:    8*HOLLOW AUGERS	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 0-5 VERY LOW	TUNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST X CASING W/ ADVANCER HAND TOOLS:	GENILE BLUW BY HAMMER DISINTEURATES SAMPLE.	
	POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE:	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	D BORTARI E HOICT D TRICONE SCREET TEETH H	BREAKS EASILY WHEN HIT WITH HAMMER.	
MODERATELY PLASTIC 16-25 MEDIUM	PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER	BREAKS EASILY WHEN HIT WITH HAMMER.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH  COLOR	PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER    TRICONE TUNG-CARB. SOUNDING ROD	BREAKS EASILY WHEN HIT WITH HAMMER.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER TRICONE TUNG-CARB. SQUADING POD	BREAKS EASILY WHEN HIT WITH HAMMER.  GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	DATE: 8-15-1







WBS 50473.1.FD1 TIP R-5719 COUNTY WAYNE GEOLOGIST SMITH, E. H.										 ⊔	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<b>BS</b> 5047	3 1 504			TIF	R-5719		COLINIT	TY WAYNE	<u> </u>		<u> </u>	GEOLOGIST SMITH, E	: ⊔					
SITE DESCRIPTION US 117 AND SR 1135 (COUNTRY CLUE							L			=		GEOLOGIST SWITH, E. I	GROUND WTR (ff)											.F		GEOLOGIST SWITH, E	GROUND W	/TP (ff		
		<b>O</b> . EB1-			STATION			LUB NC		68 ft LT			ALIGNMENT -L-	0 HR. 5.0	I -	ORING NO			III AI		ATION 38		LOB RO	OFFSET				ALIGNMENT -L-	0 HR.	5.0
					TOTAL D			т.							<del> </del>															
		LEV. 13							NORTH	NG 543,			<b>EASTING</b> 2,281,088	24 HR. FIAD	┥ ├─	OLLAR EL			- TE		TAL DEPT			NORTHIN				<b>EASTING</b> 2,281,088		FIAD
			FF./DATE						T			DD Mud	<u> </u>	AMMER TYPE Automatic	$\dashv$ $\longleftarrow$						IEDRICH D-5			T			DD Mud F	•	HAMMER TYPE Auto	matic
DRII		EKLUNI	,		START D					DATE 01			SURFACE WATER DEPTH	I N/A	┪┝━	RILLER E	1				ART DATE			COMP. DA			5   <u>5</u>	SURFACE WATER DEP	TH N/A	
ELEV (ft)	ELE\ (ft)		0.5ft 0.		t 0	25 		PER FOC		00 NO.	MOI	O E	SOIL AND ROCK	DESCRIPTION DEPTH (f	ELE (ft		DEPTH (ft)	'——	W COU	$\overline{}$	0 2		PER FOOT 50	75 100	SAMF NO.		O G	SOIL AND ROC	CK DESCRIPTION	
140															60	0	<u></u>		- <del>-</del> 4			Mato	ch Line		<u> </u>					
		<u> </u>								.			38.7 GROUND S 37.7 PAVEN COASTAL	IENT 1.	0		‡		4	4						Sat.		SAND WITH CLAY	VVN AND TAN, SILTY 'SEAMS (continued)	
135	135.2	2 7 3.5	6	5 5									ORANGE-RED AND G (MIDDENDORF		55	5 55.2	83.5	6	6	11	17					Sat.	33	BLACK-OLIVE AND	DARK GRAY, SILTY ELL FRAGMENTS	83.
	132.7	7  6.0	3	4 4	-   . <i>[</i>					.							Ŧ				1							(BLACK CREE	EK FORMATION)	
130	130.2	2 8.5						: : :		1 1	W	1	30.7 GRAY AND TAN	SILTY CAND	50	0 50.2	T 88.5				: : : /									
		Ŧ	2	3 3	<b>6</b> 6.					-	Sat.		GRAT AND TAN	, SILTT SAIND			Ŧ	8	10	14		24			1	Sat.	_			
		Ŧ								.			25.7	13.			Ŧ													
125	-	‡			; .			<u> </u>					GRAY AND TAN		45	5 45.2	93.5	9	10	16						Sat.				
		Ŧ								11							Ŧ													
120	120.2	18.5			]:					11		1:	20.7 ORANGE-RED, GRA	18.	<u> </u>	0 40.2	†   98.5					1,::::								
		Ŧ	1	2 4	<b>♦</b> 6.					1 1	Sat.	<del>                                     </del>	CLAYEY SAND, WI				‡	11	12	23		. •35	1		1	Sat.				
		Ŧ								.		<del>/,/,</del>					‡					<del>;</del> /::::								
115	115.2	2 23.5	4	1 3							Sat.	<del>                                      </del>	40.7	0.5		5 35.2	103.5	10	10	15		<i>j</i>				Sat.				
		‡			1 .					1 1	Jail		ORANGE, TAN, AND		4		‡									J Sat.				
110	110.0	, † <sub>20 E</sub>			: :					11			CLA	Y		0 30.2	† 108.5													
110		2 7 28.5	WOH W	он woi	<b>⋥</b> <del>[</del>			<del> </del>		-	w				30	0 30.2	100.5	10	10	14		24	1		1	Sat.				
		<u>†</u>								11							‡				!									
105	105.2	33.5	<u> </u>		_  [ : :	-									25	5 25.2	113.5													
		Ŧ	WOH W	OH   WOI	0					$\exists$	W						Ŧ	14	12	15		27				Sat.				
		Ŧ			\/. :					.							Ŧ					<i>[</i>	: : :							
100	100.2	2 7 38.5	1	2 4	6.			ļ			l w	9	99.2	39.	5 20	0 20.2	118.5	11	14	17		•31	ļ · · · ·		+	Sat.	18	7		120
		Ŧ								1 1	''		BROWN, RED-BROW SAND WITH C	N AND TAN, SILTY LAY SEAMS			‡					<b>♥</b> 31	1		+	- Juli	- 10	Boring Terminated	at Elevation 18.7 ft IN	120.
95	95.2	43.5				- 1		1	I				0, 11 E WIII 1 O	E ( OE WO			‡												IN (SILTY SAND)	
	33.2	+ 75.5	3	3 3	●6.			<b> </b>		.	Sat.					-	‡											Other Samples: ST-1 (13.5 - 15.5)		
		‡			† :					1 1							‡											( 1 1 1 1 )		
90	90.2	48.5	2	3 3				<u> </u>		_							‡										<u> </u>			
/28/16		‡			<b>●</b> 6.	- 1				:	Sat.						‡													
7 TO		<u> </u>				- 1				.							‡													
85 85	85.2	53.5	3	3 4	<b>1 1 1 1 1 7</b>			1			Sat.						<u>†</u>										<u> </u>			
DG_D		Ī			-  -	.				.		::::: <u>-</u>					Ŧ										F			
N 80	80.2	58.5				- 1		1	I	1 1							Ŧ										F			
H.GPJ	1	Ŧ	2	3 4	7	- 1				-	Sat.						Ŧ										F			
JG_B		‡			:';	.				.							Ŧ													
H 75	75.2	63.5	4	6 6	$\frac{1}{1}$			<b>_</b>		<u> </u>	804						‡													
GEO		‡		_	: .					:	Sat.						‡													
219	70.0	‡				- 1		1	I								‡													
757 70	/0.2	68.5	3	6 7	⊣					:	Sat.					-	‡										-			
UBLI		<u> </u>			[	.				.							‡													
ОО ш 65	65.2	73.5			1 1	- 1				1 1							±										F			
BOR		Ŧ	3	5   5	. •1					. ] [	Sat.						f										F			
DOT		Ŧ			:;					.							Ŧ										F			
징 60	60.2	78.5			11:1:	• •											İ													



WDC	50472 4	ED1			I <b>P</b> R-5719	Ω			WAYN				GEOLOGIST SMITH, E. H.		\A/E	<b>39</b> 5047	3 1 5 5 4			TIF	<b>P</b> R-5719		COLINIT	Y WAYNE	:			ECLOGIST SMITH, E. H.	
WBS         50473.1.FD1         TIP         R-5719         CC           SITE DESCRIPTION         US 117 AND SR 1135 (COUNTRY CLUB										•		GEOLOGIST SWITH, E. H.	GROUND WTR (ft)								INTRV C	l			`=	١٩	SWITH, E. H.	GROUND WTR (	
	ING NO.		03 117 A		TATION 3		CLUE		OFFSET				ALIGNMENT -L-	<b>⊣</b> ``1		RING NO			117 AI		ATION 38		LUB KU/	OFFSET				LIGNMENT -L-	0 HR. 7
							. 0 6	-						-  ·						_			6						
	LAR ELEV				OTAL DEP				NORTHIN				<b>EASTING</b> 2,281,167	24 HR. FIAD		LLAR EL					TAL DEPT			NORTHIN				<b>ASTING</b> 2,281,167	<b>24 HR</b> . FIA
					DIEDRICH D								<del>, '</del>	MER TYPE Automatic							DIEDRICH D-5			1			OD Mud R	·	MMER TYPE Automatic
	LER EK				TART DAT				COMP. D				SURFACE WATER DEPTH N	I/A	DR	RILLER E					ART DATE			COMP. DA			5   S	URFACE WATER DEPTH	N/A
ELEV (ft)	DRIVE ELEV (ft)	EPTH 0.	.5ft 0.5ft		    0	BLOW 25	'S PER 50		75 10	SAMP.		0	SOIL AND ROCK DES	CRIPTION  DEPTH (ft)	ELE (ft)		DEPTH (ft)	0.5ft	0.5ft		0 2		PER FOOT 50	Г 75 100	SAMF NO.		OII G	SOIL AND ROCK DE	ESCRIPTION
	(11)			1						1	7 IVIO	) G	ELEV. (II)	DEPTH (II)		(11)							1		1	· V IVIO	, G		
140													_		60		<u> </u>					Matc	h Line	<del> </del>	<u>                                     </u>	_			
	137.5	1.0											138.5 GROUND SURF				‡	4	6	8	14					Sat.		BLACK-OLIVE AND GRA (BLACK CREEK FORMA	
405	İ		3 5	7	i						D		RED-BROWN TO TAN-BR CLAY	OWN, SANDY			#				:::\								
135	135.0	3.5	5 3	4	<b>4</b> 7	1 : : :			1	$\exists \bot$	М		- (MIDDENDORF FOR	MATION)	55	55.0	83.5	12	14	15	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	29			1	Sat.			
	132.5	6.0	2 3	3													‡					7		.					
130	130.0	8.5			<b>9</b> 6				<u> </u>				130.5 TAN-BROWN AND GRAY	8.0	50	50.0	88.5					· j. · ·							
	+		3 2	2	<b>•</b> 4 · · ·						Sat.		TAIN-BROWN AND GRAY	, SILIT SAND			+	12	18	18		- 36				Sat.			
					{ : : :		.   .						126.5	12.0			Ŧ					:/: : :		.					
125	125.0	13.5	2 2	3					ļ · · · ·	41	,,,		TAN-BROWN AND GRAY	, SANDY SILT	45	45.0	93.5	8	11	16		<i>į</i>			-	0-4			
	‡				<b>♦</b> 5· · ·			: : :			W						‡		''	"		<b>●</b> 27 · · · · <b> </b> · · · · ·				Sat.			
120	1,000				[								120.5	18.0	40		‡					1							
120	120.0	18.5	1 1	1	<b>1</b> 2	+ : : :			<del> </del>	$\dashv$	w		ORANGE, TAN AND BRO	WN, CLAYEY	40	40.0	98.5	10	11	17		28	1	<del></del>	1	Sat.			
					$  \overline{i}\cdot\cdot\cdot $		: :					<u></u>	0/1110				‡					[· · · ·		.					
115	115.0	23.5										·//-			35	35.0	103.5					i		.					
	Ŧ		1 2	3	<b>∳</b> 5· · ·						Sat.	· 🔀	113.5	25.0			Ŧ	9	10	16		26 · · ·				Sat.			
	‡				¦::::		.   .						ORANGE, TAN, AND BRO CLAY	OWN, SANDY			Ŧ					<i>Y</i>							
110	110.0	28.5	3 2	1	1					41	l		<u>-</u>		30	30.0	108.5	12	20	26		/.			-				
	‡		3   2	"	<b>•</b> 6			: : :			W						‡	12	20	20			46			Sat.			
																	‡					:: <b>,/</b> ::							
105	105.0	33.5	1 2	1	3	+	+-		<del> </del>	$\dashv$	l w		_		25	25.0	113.5	10	13	19		32 · ·			-	Sat.	23.	5	11
					<b> </b>		.   .										+					<b>₩</b> 32				-	-	Boring Terminated at Ele COASTAL PLAIN (S	
100	100.0	38 5			:::::												Ŧ										F	COASTAL PLAIN (S	BILTY SAND)
	100.0		2 1	2	<b>Q</b> 3 · · ·	- 1					w		-			-	Ŧ										1 F		
	‡				\; : : :	- 1	.   .						96.5	42.0			‡												
95	95.0		2 5	-			• •	• • •		41	_		ORANGE, TAN AND BROW	/N, SILTY SAND			‡												
	‡		3 5	0	:   11 :						Sat.						‡												
	‡				[ ] : <u> </u>		.   .										‡												
90	90.0	48.5	3 4	4	1	<del> </del>			+	+1	Sat.		-			-	<u>†</u>										1 -		
4/28/	<del> </del>				-		.   .										f										F		
10g 85	85.0	53.5			:;;:												Ŧ										F		
).TO(	7		4 5	7	12	- 1			1	7	Sat.		-			-	Ŧ										F		
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	‡				::;::	1	.   .										‡										‡		
80	80.0		2 1	-	•   • •		-   -		: : : :				_			-	‡												
BH.C	‡		3   4	5	: • 9 : :						Sat.						‡												
SDG	‡				:¦: : :		.   .										‡												
监 75	75.0	63.5	3 3	3	•6				+	+1	Sat.		-			-	±										-		
HE I					-\[ \ \ \ \ \		.   .				) Jai.						Ŧ										F		
72 70 70 70 70 70 70 70 70 70 70 70 70 70	70.0	38 5			: :												Ŧ										F		
щ	70.0	.0.0	4 6	6	- 12				1	11	Sat.		-			-	‡												
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о Щ 65	65.0			<u> </u>	<u>  :                                 </u>	- 1				_			_				‡										<u> </u>		
BOF	±		3   4	4	:• 8 : :						Sat.						‡										1		
100					: ( : :		.   .					<u> </u>	60.5	70.0			<u>†</u>										-		
원 60	60.0	78.5			$  \cdot,\cdot $ .						1		0.00	78.0			T										1		



<b>WBS</b> 50473.1	1.FD1		TIP R-5719 COUNTY WAYNE GEOLOGIST SMITH, E. H.								Н.		WBS	50473	3.1.FD1					COUNTY WAYNE				GEOLOGIST SMITH, E. H.						
			US 117 AND SR 1135 (COUNTRY CLUB ROAD) INTERCHANGE GROUND V						GROUND WT	R (ft)	<b>-</b>	SITE DESCRIPTION US 117 AND SR 1135 (COUNTRY CLUB ROAD) INTERCHANGE																		
BORING NO.				_	ATION 3				OFFSET				ALIGNMENT -L-	0 HR.	8.0	BOR	BORING NO. EB2-A STATION 39+81								OFFSET	15 ft LT	-	ALIGN	IMENT -L-	<b>0 HR.</b> 8.0
COLLAR ELEV	<b>/</b> . 13	7.6 ft		то	TAL DEP	TH 11	15.0 ft		NORTHING	<b>G</b> 543,	207		<b>EASTING</b> 2,281,157	24 HR.	FIAD	COL	COLLAR ELEV. 137.6 ft TOTAL DEPTH 115.0 ft						NORTHIN	<b>G</b> 543,	207	EAST	<b>NG</b> 2,281,157	<b>24 HR</b> . FIAD		
DRILL RIG/HAMI	MER EI	FF./DATE	TER	346 DI	IEDRICH D	-50 93%	6 09/19/20	015		DRILL	METHO	DD Muc	d Rotary	HAMMER TYPE Autom	natic	DRILI	L RIG/HA	MMER E	FF./DAT	E TE	R346 DI	IEDRICH D	-50 93% 0	9/19/2015	1	DRILL	METHOD	Mud Rotary	[1	HAMMER TYPE Automatic
DRILLER EK	LUND	, M. A.		ST	ART DAT	E 02/0	01/16		COMP. DA	TE 02	2/01/16		SURFACE WATER DEPT	H N/A		DRIL	LER E	KLUND	), M. A.		STA	ART DAT	E 02/01/	′16	COMP. DA	TE 02	/01/16	SURF	ACE WATER DEPT	H N/A
ELEV DRIVE D	DEPTH	BLOW	COUN	IT		BLO'	WS PER	FOOT		SAMF	· 🔻	1 [	SOIL AND ROCK	/ DECORIDEION		ELEV	DRIVE ELEV			w cou				PER FOO	T	SAMP	. / !		COIL AND DOCK	/ DECORIDION
(ft) ELEV (ft)	(ft)	0.5ft (	).5ft 0	).5ft	0	25	50	7	75 100	NO.	МС	O I G	ELEV. (ft)		PTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	MOI	O G	SOIL AND ROCK	DESCRIPTION
140												1 L				60		L	1				Mat	ch Line		<b>∐</b>	.L_J_	_ <b>L</b>		
1 1 ±												1 E	137.6 GROUND	SURFACE	0.0		59.1	78.5	4	6	9			.			Sat.		BLACK AND GRA	
	1.0	5	9	6							1		COASTA					ł						.					•	,
135	3.5				15	<del>                                     </del>			<del> </del>	1	D		(MIDDENDORF			55	54.1	83.5				<u> </u>	<b>\</b>	<del></del>	<del></del>	-				
+		2	5	3	. •8						М							ł	3	12	21		33.				Sat.			
130		3	3	4	• 7								129.6		8.0	50		Ŧ					7::							
129.1	8.5	2	3	4	.]		.				l w	TO STATE OF	TAN AND GRA	Y, SANDY SILT	0.0		49.1	88.5	9	11	17		28.				Sat.			
1   ‡					7	: :					"	F						Ŧ				: : : :	T20: :				J Cat.			
125	13.5				<del>                                     </del>	ļ : :				-		F				45	44 1	93.5					<u> </u>	<u> </u>		-				
1		2	2	1	<b>•</b> 3 · · ·	: :					w	F						-	11	11	18		<b>●</b> 29 .				Sat.			
120						: :										40		‡												
119.1	18.5	1	1	2	1	1	.			1	Sat.	:::::L	0RANGE, TAN, AND	GRAY, SILTY SAND	18.0		39.1	98.5	27	12	17		j			1	Sat.			
1   ‡				_	•3 · · ·						Sal.							‡	-				<b>•</b> 29 · ·				Sal.			
115	22.5				1	ļ	· ·   ·	• • •		-						35		103.5					1			-				
1 1 1 1	23.5	2	2	3	5			: : :			Sat.						34.1	103.5	13	15	15		♦30 -				Sat.			
140													110.6		27.0			‡						.						
110 109.1	28.5				<u> </u>	+				1			ORANGE, TAN, AND	GRAY, SANDY CLAY		30	29.1	108.5	40	40	47		<del>                                     </del>			1				
1 1 ±		2	2	3	5		.				l w							<u> </u>	13	13	17		30 -	.			Sat.			
105					ļ											25	_	ł					1							
104.1	33.5	1	1	2	j		.				l w						24.1	113.5	8	15	18		33.				Sat.	22.6		115.0
1 1 ±					T° i i													İ											Boring Terminated a	t Elevation 22.6 ft IN
100 99.1	38.5				ļ	+ : :				-							_	Ŧ										F	COASTAL PLAIN	(CLATET SAND)
<del> </del>		1	2	1	<b>•</b> 3 · · ·		.				w							Ŧ										F		
95					[: : : :	: :												Ŧ										F		
94.1	43.5	2	2	2	j						Sat.		93.6	ADK ODAY OLAVEY	44.0		-	Ŧ										F		
1   ‡					1		.				J Gat.		BLACK-OLIVE AND D SA	ND				Ŧ										F		
φ 90 89.1 ±	48.5				1	<u> </u>				-		·/·/	(BLACK CREEK	(FORMATION)			_	‡										F		
7/28/	10.0	2	3	4	7						Sat.	<del>\</del>						Ŧ										F		
89.1					:  : : :							<b>*</b>						‡										F		
84.1	53.5	2	3	3	1					1	2-1						-	Ŧ										F		
<u>ا</u> دِّ		_	_	_	6						Sat.							‡										ļ		
3 80 704	50.5				1			• • •				<u></u>					-	‡										<u>L</u>		
연 79.1	58.5	2	3	4	7			: : :			Sat.	<del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>						‡										ļ.		
90 + 75 +					: ', : :			: : :									:	‡										ţ		
m 75 O 74.1	63.5	_				+ : :			<u> </u>	1		<del>////</del>					-	‡										F		
		5	8	9	• 1	7					Sat.						:	‡										<u> </u>		
70					· · · / ·		· ·   ·										-	‡										<u>L</u>		
	68.5	2	5	7	1		:: :				Sat.		67.6		70.0		:	‡										<u> </u>		
													BLACK AND GR	AY, SILTY SAND				‡										t		
97 65 64.1 64.1	73.5					+			<del> </del>	1							-	†										-		
		5	6	8	• 14						Sat.							ŧ										Ł		
60 HCDOT					• • • •	: :			: : : :			i::::F					-	+										F		



WBS 5									ITY WAYNE GEOLOGIST SMITH, E. H. WB:						WBS 50473.1.FD1 TIP R-5719 COUNTY V										GEOLOGIST SMITH, E. H.		
SITE DE	SITE DESCRIPTION US 117 AND SR 1135 (COUNTRY CLU							AD) INTER	CHANGE		I		G	ROUND WTR (ft)	SITE	E DESCI	RIPTION	US 117	AND S	R 1135 (	COUNTRY	CLUB RO	AD) INTERC	HANGE	<u> </u>	·	GROUND WTR (ft)
BORING	NO.	EB2-B		s	TATION 3	39+50		OFFSET	80 ft RT		ALIGNI	MENT -L-	0	HR. N/A	BOR	RING NO	<b>)</b> . EB2-	В	s	TATION	39+50		OFFSET	80 ft RT	-	ALIGNMENT -L-	0 HR. N/A
COLLA	R ELEV	136.	9 ft	Т	OTAL DEP	<b>TH</b> 120	.0 ft	NORTHIN	<b>IG</b> 543,1	60	EASTIN	<b>EASTING</b> 2,281,245 <b>24 HR.</b> 3.3			COL	LAR EL	<b>.EV</b> . 13	6.9 ft	Т	OTAL D	<b>EPTH</b> 120	.0 ft	NORTHING	<b>3</b> 543,1	160	<b>EASTING</b> 2,281,245	<b>24 HR.</b> 3.3
DRILL RI	G/HAMM	ER EFF	./DATE	TER346	DIEDRICH D	-50 93% (	09/19/2015		DRILL N	IETHOI	D Mud Rotary	Mud Rotary HAMMER TYPE Automatic				L RIG/HA	AMMER EI	FF./DATE	TER346	DIEDRICH	HD-50 93%	09/19/2015		DRILL I	METHOD N	Mud Rotary HAMMER TYPE Automatic	
DRILLE		UND, I	M. A.	s	TART DAT	<b>E</b> 01/27	7/16	COMP. D			SURFA	CE WATER D	<b>EPTH</b> N/A		DRIL		EKLUND	, M. A.	s	TART D	ATE 01/27	7/16	COMP. DA			SURFACE WATER DEPT	H N/A
	1 <b>–</b> V – I	·· ···⊢	BLOW C			BLOW:	S PER FOC 50	OT 75 10	SAMP. NO.	MOI	O BLEV. (ft)	SOIL AND F	ROCK DESCRI	PTION DEPTH (ft	ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft 0.5		-	BLOW 25	S PER FOO	T 75 100	SAMP.	MOI G	SOIL AND ROC	K DESCRIPTION
	(11)								1	VIVIOI	G ELEV. (II)			DEFTH (III		(11)								1	7 WOI G		
140															60						Ma	atch Line					
	Ŧ										E					58.4	78.5	8 9	) 10							BLACK-OLIVE AND SAND WITH SHELL	DARK GRAY, SILTY FRAGMENTS AND
	35.9	1.0			<del>                                     </del>	Τ			+		136.9 135.9		UND SURFACE PAVEMENT				Ī		,   10		• 19 · · ·				Sat.		continued)
135	+		4 3	4	7	+			+1				ED COASTAL P RAY, SANDY C		55	F2.4	+ + 83.5				<u> </u>				8 ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° °	_	
	1		2 2	2	4					М		5,	,			55.4	+ 0.33	3 6	3 19	†  : : :	25				Sat.	_	
130	30.9	6.0	1 2	2	4					w	130.9		ASTAL PLAIN	6.0	50		‡ ∣				· · \ <u>`</u> · · ·				6 3 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	_	
_1	28.4	8.5	4 5	5						w	<b></b>		.Y, SANDY SILT DORF FORMAT			48.4	88.5	9 1	7 20	<b>{  : : :</b> :	· ·   ·\· ·				Sat.	-	
125	‡				· <b>7</b> <sup>10</sup> ·					VV					45		‡				· ·   · • · · / ·				Jai.	-	
	23.4 + <i>2</i>	3.5			<del>                                   </del>				11		_				45	43.4	93.5				/				6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	<del>-</del> -	
	+		2 2	2	¶ • 4					w	‡						+	8 1	3 15	] :::	28.				Sat.	<del>-</del> -	
120	‡					<u> </u>			41		L.				40	╡.	‡				<u> </u>					<u>-</u>	
_1	18.4 † 1	8.5	2 2	1	j: : : :					l w						38.4	† 98.5 †	8 1	2 16						Sat.	<del>-</del>	
115	‡				🐧 : : :						114.9			22.0	35		‡				<b>\</b> \					<del>-</del>	
	13.4 + 2	23.5			]   1		: : : :		1		114.9	GRAY	Y, SILTY SAND			33.4	103.5			]		:   : : :	: : : : :		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-	
	‡		3 3	5	. 8					Sat.							‡	9 1	4 18		32.				Sat.	<del>-</del>	
110	‡				<del>                                   </del>	ļ · · · ·			41		109.9	OPANGE.	-TAN, SANDY (	27.0	30	-	‡				1				6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<del>-</del>	
1	08.4 † 2	28.5	2 2	1	1 2					w		ONANGL-	- IAN, SANDI C	DEAT		28.4	108.5	9 1	1 16	<del> </del>  ::::	j				Sat.	<del>-</del> -	
105	Ŧ														25		‡				· ·   <del>    · · ·</del>				0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-	
	03.4	3.5	Д,	1	ļ <u> </u>				71							23.4	113.5			]					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
	Ŧ		1   1	1	2					W	100.9			36.0			Ŧ	9 9	18		<b>♦</b> 27				Sat.		
100	Ŧ											BLACK-OLIVE AN	ND DARK GRA		20	-	<b>∔</b> ∣								0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
	98.4 † 3	88.5	2 2	1	1		.			Sat.	<del>, , , , , , , , , , , , , , , , , , , </del>	(BLACK CF	REEK FORMAT	TION)		18.4	† 118.5 †	10 1	3 15	:::	<b>↓</b> 28.				Sat.	T 16.9	120.0
95	Ŧ										, , , , , , , , , , , , , , , , , , ,						-									Boring Terminated a	t Elevation 16.9 ft IN N (SILTY SAND)
	93.4 <u>T</u>	3.5	2 1	1			1										Ŧ									Other Samples:	(0.2.1 0/1.12)
	Ŧ		2   1	2	<b>                   </b>					Sat.							<u> </u>									ST-2 (15.0 - 17.4)	
90	. I					+	+ : :		+		<del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>						<u>†</u>										
R5719_GEO_BRDG_BH.GPJ_NC_DOT.GDT_4/28/16	38.4 ‡ 4	8.5	2 2	2	4		1			Sat.							<u>†</u>									<u>-</u>	
EGD 85	1				1	<u> </u>											<u>†</u>									<u>-</u>	
	33.4 + 5	3.5	2 3	3						C-4							‡									<u> </u>	
ON ON	‡		_   "		6					Sat.							‡									<u>-</u> -	
- 80 - 80	78.4 + <u>!</u>	<sub>18 5</sub>				+			+		<del>, , , , , , , , , , , , , , , , , , , </del>						‡									<u></u>	
B 00 B	<u> </u>	~	4 4	4	]					Sat.	<del>, , , , , , , , , , , , , , , , , , , </del>						‡									<b>-</b> -	
G 75	‡				-: ::						<del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>						‡									<del>-</del>	
GEO	73.4 ‡ 6	3.5	3 4	4			1			Sat.	<del>,,,,</del>						‡									<del>-</del> -	
70 719	‡				: <b>\</b> \\ : : :		1			Jal.	70.9	DI ACK OLIVE	AND DADY OF	66.0			‡									<del> </del>  -	
	58.4 + 6	88.5			] <del> \.</del> .				1			BLACK-OLIVE A SAND WITH SH	HELL FRAGME	AT, SILTY ENTS AND			‡									-	
OUBI	1		4 7	9	16	3				Sat.			LIGNITE				‡									-	
65 E	‡				/.				$\perp$								‡									<u> </u>	
1 180	3.4 + 7	3.5	7 10	12	{ :::; <b>i</b>					Sat.							‡									-	
NCDOT BORE DOUBLE	‡				::::;					) Jul.							‡									-	