

PROJECT DESCRIPTION

PROJECT TO ADDRESS FLOODING LOCATION BY IMPROVING DRAINAGE AND REALIGNING VERTICAL ROADWAY PROFILE AT ATH-56-0.90-1.10.

HISTORIC RECORDS

NO HISTORICAL GEOTECHNICAL RECORDS WERE FOUND FOR THIS PROJECT.

GEOLOGY

THE PROJECT IS LOCATED WITHIN THE NON-GLACIATED MUSKINGUM-PITTSBURGH PLATEAU PHYSIOGRAPHIC REGION WHICH IS CHARACTERIZED AS A MODERATE TO HIGH RELIEF DISSECTED PLATEAU WHICH HAVE BROAD MAJOR DRAINAGE VALLEYS. UNDERLYING THE OVERBURDEN SOILS PENNSYLVANIAN AGED SHALE, SILTSTONE, CLAYSTONE, SANDSTONE, LIMESTONE AND COAL BEDROCK ARE FOUND WITHIN THE PROJECT AREA. THE CONEMAUGH GROUP COMPRISES THE BEDROCK FOR THE HILLSIDES AND RIDGE TOPS AND THE ALLEGHENY AND POTTSVILLE GROUPS COMPRISES THE BEDROCK OF THE LOWER HILLSIDES AND VALLEY FLOORS.

RECONNAISSANCE

FIELD RECONNAISSANCE WAS COMPLETED BY PERSONNEL FROM THE DISTRICT AND OFFICE OF GEOTECHNICAL ENGINEERING (OGE) ON FEBRUARY 29, 2016. THE ROADWAY ELEVATION IS RELATIVELY FLAT WITH A SHARP HORIZONTAL CURVE WRAPPING AROUND THE NOSE OF A HILLSIDE. PAVEMENT WAS NOTED AS BEING FAIR CONDITION WITH A LONG MILL AND FILL PATCHING OF THE CURVE SECTION WITHIN THE WESTBOUND LANE. THE PROJECT AREA IS A STEEP WOODED HILLSIDE RISING ABOVE THE ROADWAY TO THE NORTH. LOCAL DRAINAGE FROM THE NORTH AND WEST PERIODICALLY FLOODS THE ROADWAY AT THE CURVE. THE WESTBOUND DITCH WAS PARTIALLY BLOCKED AND HELD STANDING WATER TO THE EDGE OF PAVEMENT. SOUTH OF THE ROADWAY IS LOW LYING GROUND AND WETLANDS. THE AREA WAS NOTED AS WELL VEGETATED WITH SHRUBS, TREES AND WETLAND VEGETATION. EVIDENCE OF ACID MINE DRAINAGE WAS NOTED WITHIN THE LOCAL DRAINAGE AND DITCHES.

ADDITIONAL FIELD RECONNAISSANCES WERE CARRIED OUT OCTOBER 3, 2023, BY OGE PERSONNEL FOR COMPLETION OF AN ADDITIONAL BORING. THE HILLSIDE WAS IN SIMILAR CONDITIONS AS NOTED DURING THE PREVIOUS RECONNAISSANCE WITH THE ROADWAY NOTED AS BEING IN VERY GOOD CONDITION DUE TO A RECENT RESURFACING PROJECT BEING COMPLETED. THE WESTBOUND DITCH WAS STILL NOT DRAINING PROPERLY AT THE CURVE AND HELD STANDING WATER TO THE EDGE OF PAVEMENT.

SUBSURFACE EXPLORATION

THIS GEOTECHNICAL EXPLORATION WAS COMPLETED IN TWO (2) PHASES. THE FIRST PHASE CONSISTED OF ONE (1) BORING, B-001-0-16, COMPLETED BETWEEN MARCH 15 AND 17, 2016, UTILIZING A TRACK MOUNTED CME 850 ROTARY DRILL RIG, USING 4.25-INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE BORINGS THROUGH THE SOIL. DISTURBED SAMPLES WERE COLLECTED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT 2.5-FOOT INTERVALS WITHIN THE OVERBURDEN SOILS AND INTO WEATHERED BEDROCK. THE HAMMER SYSTEM USED WAS CALIBRATED ON MAY 27, 2015, WITH AN AVERAGE DRILL ROD ENERGY RATIO (ER) OF 87%. THE BORING WAS ADVANCED INTO BEDROCK AND SAMPLED (AASHTO T225) USING AN N SERIES WIRELINE CORE BARREL, WATER METHOD.

THE SECOND PHASE OF THE EXPLORATION CONSISTED OF AN ADDITIONAL BORING, B-002-0-23, COMPLETED BETWEEN DECEMBER 5 AND 7, 2023, UTILIZING A TRACK MOUNTED CME 850 ROTARY DRILL RIG, USING 3.75-INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE BORING THROUGH THE SOIL. DISTURBED SAMPLES WERE COLLECTED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT 2.5-FOOT INTERVALS WITHIN THE OVERBURDEN SOILS AND INTO WEATHERED BEDROCK. THE HAMMER SYSTEM USED WAS CALIBRATED ON APRIL 25, 2023, WITH AN AVERAGE DRILL ROD ENERGY RATIO (ER) OF 89%. THE BORING WAS ADVANCED INTO BEDROCK AND SAMPLED (AASHTO T225) USING AN N SERIES WIRELINE CORE BARREL, WATER METHOD.

EXPLORATION FINDINGS

BOTH BORINGS WERE COMPLETED ALONG THE HILLSIDE LOCATED ABOVE THE CURRENT ROADWAY WITH B-001-0-16 DRILLED MID-SLOPE AND B-002-0-23 DRILLED NEAR THE TOP OF THE HILLSIDE. B-002-0-23 NOTED 4-INCHES OF TOPSOIL AT THE GROUND SURFACE. THE TOPSOIL WAS REMOVED AT B-001-0-16 DUE TO BENCHING FOR RIG ACCESS. OVERBURDEN SOILS CONSISTED OF RESIDUAL OR COLLUVIAL SOIL WHICH WERE VARIABLE. B-001-0-16 ENCOUNTERED MEDIUM DENSE STONE FRAGMENTS WITH SAND (A-1-b) AT THE GROUND SURFACE UNDERLAIN BY HARD SANDY SILT (A-4a) EXTENDING TO ELEVATION (EL.) 821.2 FEET (FT) WHEREAS B-002-0-23 ENCOUNTERED COARSE AND FINE SAND (A-3a) TO EL. 877.5 FT.

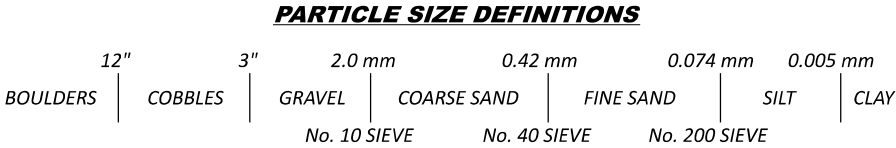
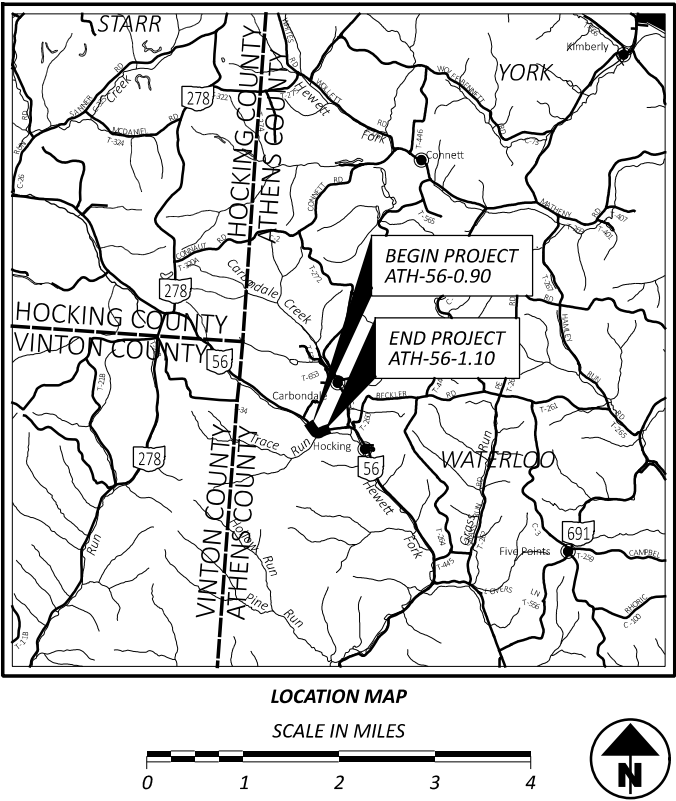
WITHIN B-002-0-23 THE SEVERELY WEATHERED SANDSTONE WAS INITIALLY SPLIT SPOON SAMPLED PRIOR TO CORING WHEN BECOMING HIGHLY WEATHERED. THE CORED SANDSTONE WAS DESCRIBED AS SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, AND MEDIUM TO THICK BEDDED WITH UNIT ROCK QUALITY DESIGNATION (RQD) OF 42% AND UNIT RECOVERY OF 91%. AT EL. 849.5 FT THE SANDSTONE BECAME SEVERELY WEATHERED AND WEAK TO SLIGHTLY STRONG WITH A UNIT RQD OF 14% AND UNIT RECOVERY OF 69% UNDERLAIN BY SILTSTONE IN MODERATELY WEATHERED CONDITION AND SLIGHTLY STRONG WITH A UNIT RQD OF 25% AND UNIT RECOVERY OF 97%.

BELOW EL. 836.8 FT B-002-0-23 PREDOMINANTLY ENCOUNTERED SANDSTONE IN A MODERATELY TO SLIGHTLY WEATHERED CONDITION AND MODERATELY STRONG TO VERY STRONG WITH UNIT RQD RANGING FROM 37% TO 88% AND UNIT RECOVERY RANGING FROM 84% TO 96%. CLAYSTONE WAS NOTED BETWEEN EL. 828.0 AND 824.1 FT AND AT EL. 814.0 FT INTO WHICH THE BORING WAS TERMINATED. THE CLAYSTONE WAS NOTED AS BEING IN MODERATELY WEATHERED CONDITION AND VERY WEAK WITH UNIT RQD RANGING FROM 0% TO 47% AND UNIT RECOVERY RANGING FROM 75% TO 92%. SHALE WAS ENCOUNTERED BETWEEN EL. 818.0 AND 816.2 FT IN HIGHLY WEATHERED CONDITION WITH A UNIT RQD OF 0% AND UNIT RECOVERY OF 100%.

EXPLORATION NOTES CONTINUED, SEE SHEET 2.

LEGEND		ODOT CLASS	CLASSIFIED MECH./VISUAL	
DESCRIPTION				
	STONE FRAGMENTS WITH SAND	A-1-b	-	1
	COARSE AND FINE SAND	A-3a	-	1
	SANDY SILT	A-4a	1	-
		TOTAL		
	CLAYSTONE	VISUAL		
	COAL	VISUAL		
	LIMESTONE	VISUAL		
	SANDSTONE	VISUAL		
	SHALE	VISUAL		
	SILTSTONE	VISUAL		
	TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL		
	BORING LOCATION - PLAN VIEW.			
	DRIVE SAMPLE AND ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.			
WC	INDICATES WATER CONTENT IN PERCENT.			
N <sub>60</sub>	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.			
γ	INDICATES UNIT WEIGHT OF ROCK.			
Id <sub>2</sub>	INDICATES SLAKE DURABILITY TEST, ASTM D4644.			
NP	INDICATES A NON-PLASTIC SAMPLE.			
NQ	"N" SERIES ROCK CORE BARREL OF "Q" WIRELINE BIT SIZE.			
Qu	INDICATES UNCONFINED COMPRESSION TEST, ASTM D7012.			
Sc	INDICATES POINT LOAD STRENGTH VALUE, ASTM D5731.			
SS	INDICATES A SPLIT SPOON SAMPLE.			
TR	INDICATES TOP OF ROCK ELEVATION.			

INDEX OF SHEETS			
EXPLORATION NOTES (CONT.), SHEET 2.			
LOCATION FROM STA. TO STA.		PLAN VIEW	CROSS SECTION
CONST. S.R. 56			
48+50	56+50	3	-
53+00		-	4
BORING LOGS, SHEETS 5-8.			
ROCK CORE PHOTOS, SHEETS 9-17.			



RECON. -	PPP	02/29/16
	PPP	10/03/23
DRILLING -	DML	03/15-17/16
	JAS	12/05-07/23
DRAWN -	ARR	02/27/25
REVIEWED -	SAT	02/28/25

EXPLORATION FINDINGS, CONT.

B-001-0-16, COMPLETED MID-SLOPE, FIRST ENCOUNTERED HIGHLY WEATHERED SHALE WHICH WAS SPLIT SPOON SAMPLED PRIOR TO ENCOUNTERING LIMESTONE BETWEEN EL. 819.7 AND 816.9 FT IN HIGHLY WEATHERED CONDITION HAVE A UNIT RQD OF 26% AND UNIT RECOVERY OF 100%. SHALE WAS ENCOUNTERED BETWEEN EL. 816.9 AND 801.8 FT IN SEVERELY TO MODERATELY WEATHERED CONDITIONS AND WEAK TO MODERATELY STRONG WITH UNIT RQD RANGING FROM 13% TO 26% AND UNIT RECOVERY RANGING FROM 44% TO 71%. SANDSTONE WAS ENCOUNTERED BETWEEN EL. 808.3 AND 806.1 FT IN MODERATELY WEATHERED CONDITION WITH A UNIT RQD OF 69% AND UNIT RECOVERY OF 100%.

BELOW EL. 801.8 FT B-001-0-16 PREDOMINATELY ENCOUNTERED SANDSTONE IN MODERATELY TO SLIGHTLY WEATHERED CONDITIONS AND FROM SLIGHTLY TO MODERATELY STRONG WITH UNIT RQD RANGING FROM 78% TO 100% AND UNIT RECOVERY RANGING FROM 97% TO 100%. SILTSTONE WAS ENCOUNTERED BETWEEN EL. 785.3 AND 779.0 FT IN MODERATELY WEATHERED CONDITION AND COAL WAS ENCOUNTERED BETWEEN EL. 759.8 AND 756.2 FT. BORING B-001-0-16 WAS TERMINATED IN SANDSTONE BEDRCOK.

BEDROCK TESTING FOR STRENGTH AND SLAKE DURABILITY WERE COMPLETED WITHIN EACH DESIGN UNIT. TESTING RESULTS ARE PRESENTED ON THE BORING LOGS AND SUMMARIZED TABULAR FORM, SEE THE BEDROCK TEST SUMMARY TABLE.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JULY 2016.

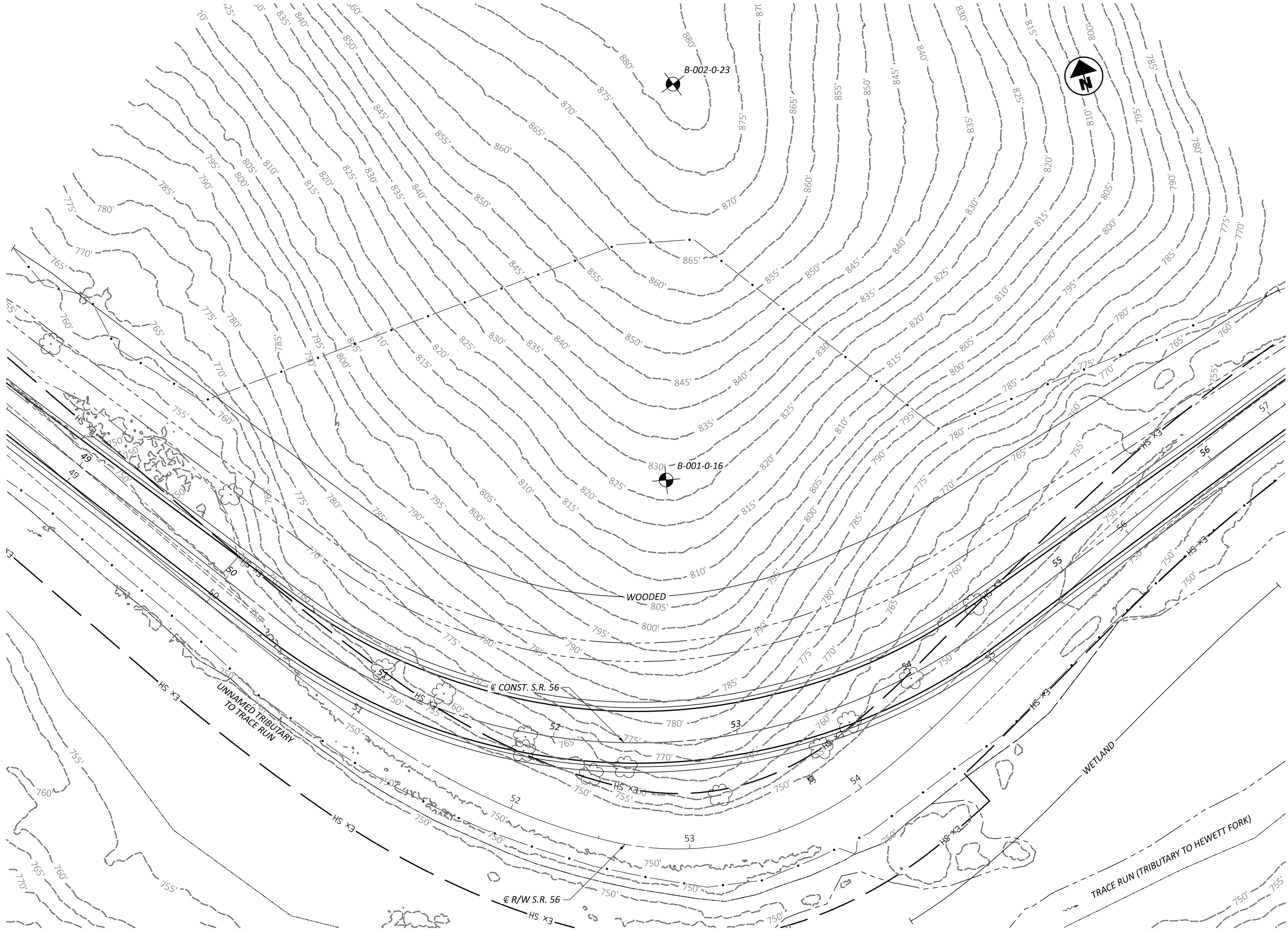
AVAILABLE INFORMATION

THE SOIL, BEDROCK, AND GROUNDWATER INFORMATION COLLECTED FOR THIS SUBSURFACE EXPLORATION THAT CAN BE CONVENIENTLY DISPLAYED ON THE GEOTECHNICAL PROFILE SHEETS HAS BEEN PRESENTED. GEOTECHNICAL REPORTS, IF PREPARED, ARE AVAILABLE FOR REVIEW ON THE OFFICE OF CONTRACT SALES WEBSITE.

BEDROCK TEST SUMMARY							
BORING ID	SAMPLE ELEVATION	SAMPLE DEPTH	Id2		Sc (PSI)	Qu (PSI)	LITHOLOGY
			(%)	TYPE			
B-001-0-16	819.0' - 818.5'	8.2' - 8.7'	-	-	6,430	-	LIMESTONE
	810.2' - 809.9'	17.0' - 17.3'	-	-	-	6,136	SHALE
	796.5' - 796.2'	30.7' - 31.0'	-	-	-	7,141	SANDSTONE
	790.4' - 790.1'	36.8' - 37.1'	-	-	-	2,649	SANDSTONE
	774.1' - 773.5'	53.1' - 53.7'	86.4	II	-	-	SANDSTONE
	761.7' - 761.4'	65.5' - 65.8'	-	-	-	4,034	SANDSTONE
	756.2' - 755.9'	71.0' - 71.3'	-	-	-	1,683	SANDSTONE
	754.9' - 754.2'	72.3' - 73.0'	94.4	II	-	-	SANDSTONE
	753.8' - 753.5'	73.4' - 73.7'	-	-	-	7,800	SANDSTONE
	749.2' - 748.9'	78.0' - 78.3'	-	-	-	6,849	SANDSTONE
	743.3' - 742.3'	83.9' - 84.9'	53.7	III	-	-	SANDSTONE
	740.4' - 739.5'	86.8' - 87.7'	98.0	I	-	-	SANDSTONE
	740.3' - 740.0'	86.9' - 87.2'	-	-	-	6,784	SANDSTONE
	734.0' - 733.7'	93.2' - 93.5'	-	-	-	8,664	SANDSTONE
B-002-0-23	865.5' - 865.1'	15.5' - 15.9'	-	-	-	3,252	SANDSTONE
	865.2' - 864.3'	15.8' - 16.7'	89.8	I	-	-	SANDSTONE
	863.7' - 863.4'	17.3' - 17.6'	-	-	-	2,650	SANDSTONE
	862.8' - 862.4'	18.2' - 18.6'	-	-	-	2,952	SANDSTONE
	857.4' - 856.5'	23.6' - 24.5'	76.8	I	-	-	SANDSTONE
	853.9' - 853.5'	27.1' - 27.5'	-	-	-	3,016	SANDSTONE
	848.0' - 846.8'	33.0' - 34.2'	67.5	I	-	-	SANDSTONE
	847.3' - 846.9'	33.7' - 34.1'	-	-	-	1,502	SANDSTONE
	844.2' - 841.6'	36.8' - 39.4'	90.0	I	-	-	SILTSTONE
	841.9' - 838.5'	39.1' - 42.5'	-	-	1,799	-	SILTSTONE
	836.8' - 836.4'	44.2' - 44.6'	-	-	-	3,652	SANDSTONE
	835.2' - 834.8'	45.8' - 46.2'	94.4	I	-	-	SANDSTONE
	827.8' - 826.3'	53.2' - 54.7'	2.4	III	-	-	CLAYSTONE
	823.3' - 822.8'	57.7' - 58.2'	-	-	-	4,955	SANDSTONE
	822.4' - 822.0'	58.6' - 59.0'	92.3	II	-	-	SANDSTONE
	818.0' - 814.2'	63.0' - 66.8'	76.7	II	-	-	SHALE
	818.0' - 815.6'	63.0' - 65.4'	-	-	1,662	-	SHALE
	815.3' - 814.9'	65.7' - 66.1'	-	-	-	17,391	SANDSTONE
	812.6' - 812.2'	68.4' - 68.8'	-	-	-	7,892	LIMESTONE
	810.9' - 808.4'	70.1' - 72.6'	25.6	III	-	-	CLAYSTONE



DESIGNER	
ARR	
REVIEWER	
SAT	02/28/25
PROJECT ID	
119908	
SUBSET	TOTAL
2	17
SHEET	TOTAL
P.52	67



GEOTECHNICAL PROFILE - ROADWAY  
STA. 48+50 TO STA. 56+50 CONST. S.R. 56

DESIGN AGENCY



DESIGNER

ARR

REVIEWER

SAT 02/28/25

PROJECT ID

119908

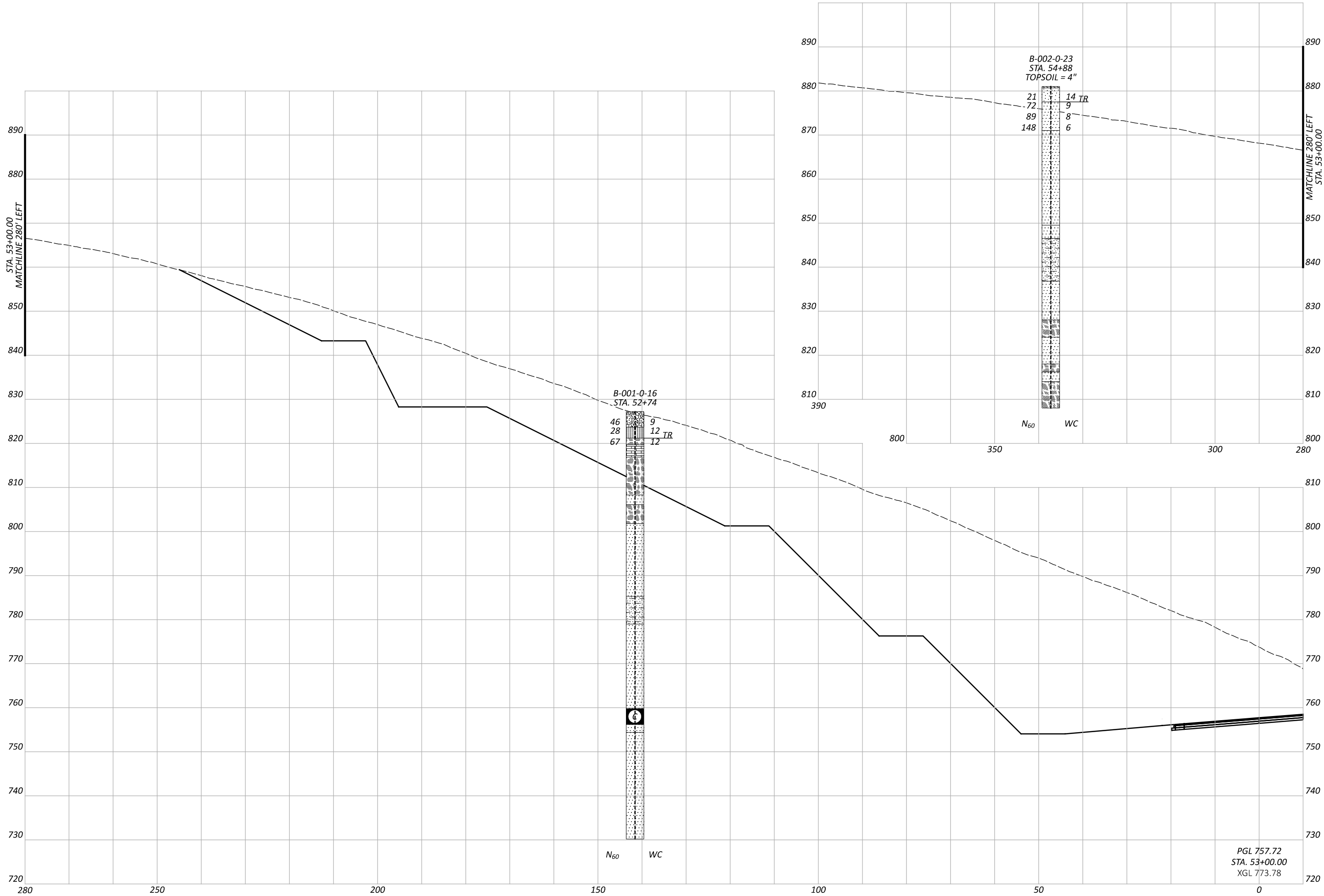
SUBSET

3 17

SHEET

P.53 67





GEOTECHNICAL PROFILE - ROADWAY  
CROSS SECTION STA. 53+00 CONST. S.R. 56

DESIGN AGENCY



DESIGNER

ARR

REVIEWER

SAT 02/28/25

PROJECT ID

119908

SUBSET TOTAL

4 17

SHEET TOTAL

P.54 67

ATH-56-0-90

MODEL: B-001-0-16 1of2 PAPER SIZE: 17x11 (in.) DATE: 3/3/2025 TIME: 10:30:06 AM USER: arcoss3  
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PROJECT: ATH-56-00.90			DRILLING FIRM / OPERATOR:			STATION / OFFSET: 52+74, 142' LT.			EXPLORATION ID											
TYPE: ROADWAY			SAMPLING FIRM / LOGGER:			ALIGNMENT: CL CONST SR 56			B-001-0-16											
PID: 119908 SFN: N/A			DRILLING METHOD: 4.25" HSA / NQ2			ELEVATION: 827.2 (ft) EOB: 97.0 ft.			PAGE											
START: 3/15/16 END: 3/17/16			SAMPLING METHOD: SPT / NQ2			LAT / LONG: 39.370692, -82.274988			1 OF 2											
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)			ODOT CLASS (gl)			ABAN- DONED				
			827.2							GR	CS	FS	SI	CL	LL	PL	PI	WC		
MEDIUM DENSE, DARK BROWN, <b>STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP		827.2	1																	
			2																	
			3																	
			4																	
			5																	
			6																	
			7																	
			8																	
			9																	
			10																	
HARD, YELLOWISH BROWN, <b>SANDY SILT</b> , LITTLE STONE FRAGMENTS, LITTLE CLAY, DAMP		823.7	11																	
			12																	
			13																	
			14																	
			15																	
			16																	
			17																	
			18																	
			19																	
			20																	
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK TO WEAK, THINLY LAMINATED.		821.2	21																	
			22																	
			23																	
			24																	
			25																	
			26																	
			27																	
			28																	
			29																	
			30																	
LIMESTONE, BROWNISH GRAY, HIGHLY WEATHERED, MODERATELY STRONG, THICK BEDDED, JOINT, FRACTURED, OPEN, SLIGHTLY ROUGH; RQD 26%, REC 100%.		819.7	31																	
			32																	
			33																	
			34																	
			35																	
			36																	
			37																	
			38																	
			39																	
			40																	
SHALE, BROWNISH GRAY WITH YELLOWISH ORANGE. SEVERELY WEATHERED, MODERATELY STRONG, MEDIUM BEDDED, CALCAREOUS, JOINT, FRACTURED TO MODERATELY FRACTURED, TIGHT, SLIGHTLY ROUGH; CONTAINS VERY THIN LIMESTONE LAYERS; RQD 26%, REC 71%.		816.9	41																	
			42																	
			43																	
			44																	
			45																	
			46																	
			47																	
			48																	
			49																	
			50																	
SANDSTONE, GRAY AND BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY CALCAREOUS, VERY BLOCKY, FAIR; JOINT, MODERATELY FRACTURED, NARROW, VERY ROUGH; RQD 69%, REC 100%.		808.3	51																	
			52																	
			53																	
			54																	
			55																	
			56																	
			57																	
			58																	
			59																	
			60																	
SHALE, GRAY, MODERATELY WEATHERED, WEAK, LAMINATED TO VERY THIN BEDDED, SLIGHTLY CALCAREOUS, POORLY FISSILE, JOINT, FRACTURED, NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, POOR; RQD 13%, REC 44%.		806.1	61																	
			62																	
			63																	
			64																	
			65																	
			66																	
			67																	
			68																	
			69																	
			70																	
SANDSTONE, BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY MICACEOUS, JOINT, SLIGHTLY FRACTURED, NARROW TO OPEN, VERY ROUGH, BLOCKY, FAIR; RQD 78%, REC 97%.		801.8	71																	
			72																	
			73																	
			74																	
			75																	
			76																	
			77																	
			78																	
			79																	
			80																	
SANDSTONE, BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY MICACEOUS, JOINT, SLIGHTLY FRACTURED, NARROW TO OPEN, VERY ROUGH, BLOCKY, FAIR; RQD 78%, REC 97%.		801.8	81																	
			82																	
			83																	
			84																	
			85																	
			86																	
			87																	
			88																	
			89																	
			90																	
SANDSTONE, BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY MICACEOUS, JOINT, SLIGHTLY FRACTURED, NARROW TO OPEN, VERY ROUGH, BLOCKY, FAIR; RQD 78%, REC 97%.		801.8	91																	
			92																	
			93																	
			94																	
			95																	
			96																	
			97																	
			98																	
			99																	
			100																	
SANDSTONE, BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY MICACEOUS, JOINT, SLIGHTLY FRACTURED, NARROW TO OPEN, VERY ROUGH, BLOCKY, FAIR; RQD 78%, REC 97%.		801.8	101																	
			102																	
			103																	
			104																	
			105																	
			106																	
			107																	
			108																	
			109																	
			110																	
SANDSTONE, BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY MICACEOUS, JOINT, SLIGHTLY FRACTURED, NARROW TO OPEN, VERY ROUGH, BLOCKY, FAIR; RQD 78%, REC 97%.		801.8	111																	
			112																	
			113																	
			114																	
			115																	
			116																	
			117																	
			118																	
			119																	
			120																	
SANDSTONE, BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE TO COARSE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY MICACEOUS, JOINT, SLIGHTLY FRACTURED, NARROW TO OPEN, VERY ROUGH, BLOCKY, FAIR; RQD 78%, REC 97%.		801.8	121																	
			122																	
			123																	
			124										</							

PID:	119908	SFN:	N/A	PROJECT:	ATH-56-00-90	STATION / OFFSET:		52+74.142 LT.	START: 3/15/16			END: 3/17/16			PG 2 OF 2			B-001-0-16								
MATERIAL DESCRIPTION AND NOTES						ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)			GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (gl)	ABANDONED
<b>SANDSTONE</b> , GRAY, MODERATELY WEATHERED, MODERATELY STRONG, VERY FINE GRAINED TO FINE GRAINED, THIN TO MEDIUM BEDDED, SLIGHTLY ARGILLACEOUS, JOINT, MODERATELY FRACTURED, NARROW TO OPEN, VERY ROUGH; BLOCKY, GOOD; RQD 93%, REC 100%. <i>(continued)</i>  @58.4'; ARGILLACEOUS @65.3' - 65.5'; SHALE BED @65.5'; MEDIUM COARSE GRAINED, CONTAINS COAL STRINGERS @ 65.5' - 65.8'; <b>γ</b> = 148 pcf; Qu = 4,034 psi @67.3'; 0.1' FERRIC LAYER <b>COAL</b> , BLACK, SLIGHTLY WEATHERED, CLEATED; RQD 40%, REC 98%.  @70.5'; BECOMES IMPURE <b>SANDSTONE</b> , GRAY, SLIGHTLY WEATHERED, SLIGHTLY STRONG, VERY FINE GRAINED TO FINE GRAINED, MEDIUM BEDDED, ARGILLACEOUS, INTACT; RQD 100%, REC 100%. @ 71.0' - 71.3'; <b>γ</b> = 161 pcf; Qu = 1,683 psi @ 72.3' - 73.0'; Id2 = 94.4% <b>SANDSTONE</b> , GRAY AND DARK GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG TO STRONG, VERY FINE GRAINED TO FINE GRAINED, LAMINATED TO VERY THIN BEDDED, SLIGHTLY ARENACEOUS, MICACEOUS; RQD 95%, REC 100%. @ 73.4' - 73.7'; <b>γ</b> = 161 pcf; Qu = 7,800 psi  @77.4'; LOW ANGLE FRACTURE @ 78.0' - 78.3'; <b>γ</b> = 154 pcf; Qu = 6,849 psi  @83.9' - 85.3'; SHALE LAYER, FRACTURED @ 83.9' - 84.9'; Id2 = 53.7%  @85.3' - 87.6'; ARGILLACEOUS, SLIGHTLY FOSSILIFEROUS  @ 86.8' - 87.7'; Id2 = 98.0% @ 86.9' - 87.2'; <b>γ</b> = 164 pcf; Qu = 6,784 psi  @89.9' - 90.1'; LOW ANGLE FRACTURES  @ 93.2' - 93.5'; <b>γ</b> = 158 pcf; Qu = 8,664 psi	767.2	61																								
		62																								
		63																								
		64																								
		65																								
		66																								
	759.8	67					74		99	NQ2-7																CORE
		68																								
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STANDARD ODOT BORING LOG (11 X 17) - OH DOT.GDT - 2/25/25 12:43 - X:\GINT\PROJECTS\2016 COMPLETE\600204.GPJ

NOTES: S<sub>c</sub> = POINT LOAD STRENGTH VALUES AS PER ASTM D 5731. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.  
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: _____ ATH-56-0-90			DRILLING FIRM / OPERATOR: _____ ODOT / LEWIS			DRILL RIG: CME 850R TRACKED			STATION / OFFSET: 54+88, 337' LT.			EXPLORATION ID								
TYPE: _____ ROADWAY			SAMPLING FIRM / LOGGER: _____ ODOT / SPROUSE			HAMMER: CME AUTOMATIC			ALIGNMENT: CL CONST SR 56			B-002-0-23								
PID: 119908 SFN: N/A			DRILLING METHOD: 3.75" HSA / NQ2			CALIBRATION DATE: 4/25/23			ELEVATION: 881.0 (ft) EOB: 73.0 ft.			PAGE								
START: 12/5/23 END: 12/7/23			SAMPLING METHOD: SPT / NQ2			ENERGY RATIO (%): 89			LAT / LONG: 39.371256, -82.274770			1 OF 2								
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	WC	ODOT CLASS (gl)	HOLE SEALED		
TOPSOIL (4") MEDIUM DENSE, REDDISH BROWN, COARSE AND FINE SAND, SOME STONE FRAGMENTS, LITTLE CLAY, LITTLE SILT, MOIST		880.7	TR	1																
				2	3	21	61	SS-1	-	20	0	49	14	17	NP	NP	14	A-3a (0)		
				3																
				4	13	72	94	SS-2	-	-	-	-	-	-	-	-	9	Rock (V)		
				5																
				6																
				7	16	24	36													
				8																
				9	26	47	53													
				10																
@6.0'; LIGHT BROWN AND REDDISH BROWN, HIGHLY WEATHERED.		877.5	TR	11	0		53	NQ2-1										CORE		
				12																
				13																
				14																
				15	53		100	NQ2-2												CORE
				16																
				17																
				18																
				19																
				20																
@8.5'; GRAYISH BROWN AND BROWN, VERY FINE GRAINED, SLIGHTLY ARGILLACEOUS.		871.0	TR	21																
				22																
				23																
				24																
				25																
				26																
				27																
				28																
				29																
				30																
@13.4'-13.7'; CLAY SEAM		849.5	TR	31																
				32																
				33																
				34																
				35																
				36																
				37																
				38																
				39																
				40																
@14.6'; MODERATELY WEATHERED, SLIGHTLY FRACTURED		846.5	TR	41																
				42																
				43																
				44																
				45																
				46																
				47																
				48																
				49																
				50																
@15.5' - 15.9'; γ = 135 pcf; Qu = 3,252 psi @15.8' - 16.7'; Id2 = 89.8%		836.8	TR	51																
				52																
				53																
				54																
				55																
				56																
				57																
				58																
				59																
				60																
@17.3' - 17.6'; γ = 133 pcf; Qu = 2,650 psi @18.2' - 18.6'; γ = 137 pcf; Qu = 2,952 psi		828.0	TR	61																
				62																
				63																
				64																
				65																
				66																
				67																
				68																
				69																
				70																
@20.3' - 22.8'; HIGH ANGLE FRACTURE, SEVERELY TO HIGHLY WEATHERED, HIGHLY FRACTURED, CONTAINS CLAY INFILLING AND LOSS		824.1	TR	71																
				72																
				73																
				74																
				75																
				76																
				77																
				78																
				79																
				80																
@22.8'; YELLOWISH BROWN WITH OLIVE BLACK, HIGHLY WEATHERED, HIGHLY FRACTURED @23.6' - 24.5'; Id2 = 76.8%		824.1	TR	81																
				82																
				83																
				84																
				85																
				86																
				87																
				88																
				89																
				90																
@23.8'; HIGHLY TO MODERATELY WEATHERED, MODERATELY FRACTURED		824.1	TR	91																
				92																
				93																
				94																
				95																
				96																
				97																
				98																
				99																
				100																
@27.1' - 27.5'; γ = 135 pcf; Qu = 3,016 psi		824.1	TR	101																
				102																
				103																
				104																
				105																
				106																
				107																
				108																
				109																
				110																
SANDSTONE, YELLOWISH BROWN AND REDDISH BROWN, SEVERELY WEATHERED, WEAK TO SLIGHTLY STRONG, COARSE GRAINED, THIN BEDDED, FRIABLE, FERRIFEROUS, JOINT, FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH; BLOCKY, FAIR; RQD 14%, REC 69% @33.0' - 34.2'; Id2 = 67.5% @33.7' - 34.1'; γ = 135 pcf; Qu = 1,502 psi		824.1	TR	111																
				112																
				113																
				114																
				115																
				116																
				117																
				118																
				119																
				120																
SILTSTONE, BLuish GRAY, MODERATELY WEATHERED, SLIGHTLY STRONG, VERY THIN TO THIN BEDDED, ARGILLACEOUS, SLIGHTLY ARENACEOUS, MICACEOUS, JOINT, FRACTURED TO MODERATELY FRACTURED, OPEN TO MARROW, SLIGHTLY ROUGH; BLOCKY, POOR; RQD 25%, REC 97% @36.8' - 39.4'; Id2 = 90.0% @37.6' - 38.4'; SEVERELY WEATHERED, HIGHLY FRACTURED @39.1' - 42.5'; S <sub>u</sub> = 1,799 psi @39.7' - 40.9'; HIGH ANGLE FRACTURE WITH RUST STAINING		824.1	TR	121																
				122																
				123																
				124																
				125																
				126																
				127																
				128																
				129																
				130																
@43.6' - 44.2'; CLAY SEAM		824.1	TR	131																
				132																
				133																
				134																
				135																
				136																
				137																
				138																
				139																
				140																

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 2/28/25 06:33 - X:\GINT\PROJECTS\2024 COMPLETE\1106.GPJ

PID: 119908	SFN:	N/A	PROJECT:	ATH-56-0-90	STATION / OFFSET:		54+88.337' LT.	START: 12/5/23			END: 12/7/23			PG 2 OF 2			B-002-0-23
MATERIAL DESCRIPTION AND NOTES																	
<p><b>SANDSTONE</b>, GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG, FINE TO MEDIUM GRAINED, THIN BEDDED, ARGILLACEOUS, MICACEOUS, JOINT, FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH; BLOCKY, GOOD; RQD 74%, REC 96%. <i>(continued)</i> @57.7' - 58.2'; <math>\gamma</math> = 162 pcf; Qu = 4,955 psi @58.6' - 59.0'; <math>\gamma</math> = 92.3%</p> <p><b>SHALE</b>, GRAYISH BLACK, HIGHLY WEATHERED, SLIGHTLY STRONG, LAMINATED, ARENACEOUS, JOINT, HIGHLY FRACTURED, OPEN, SLIGHTLY ROUGH; BLOCKY, POOR; RQD 0%, REC 100%. @63.0' - 66.8'; <math>\gamma</math> = 76.7% @63.0' - 65.4'; <math>S_u</math> = 1,662 psi</p> <p><b>SANDSTONE</b>, LIGHT GRAY, MODERATELY WEATHERED, VERY STRONG, FINE GRAINED, THIN BEDDED, MICACEOUS, JOINT, FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH; BLOCKY, GOOD; RQD 37%, REC 84%. @65.7' - 66.1'; <math>\gamma</math> = 174 pcf; Qu = 17,391 psi @66.7'; ARGILLACEOUS</p> <p><b>CLAYSTONE</b>, DARK GRAY, MODERATELY WEATHERED, WEAK TO SLIGHTLY STRONG, THIN TO MEDIUM BEDDED, CALCAREOUS, JOINT, FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH; BLOCKY, POOR; RQD 47%, REC 92%.</p> <p>@68.3' - 69.3'; STRONG LIMESTONE @68.4' - 68.8'; LIMESTONE <math>\gamma</math> = 166 pcf; Qu = 7,892 psi @70.1' - 72.6'; <math>\gamma</math> = 25.6% @71.2' - 71.4'; STRONG, LIMESTONE, NON-MARINE @72.5'; SILTSTONE LAYER</p>	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	REC SAMPLE ID	HP (tsf)	GRADATION (%)			ATTERBERG			ODOT CLASS (gl)	HOLE SEALED		
	821.0																
		61	40		95	NQ2-11											
	818.0	62															
		63															
	816.2	64															
		65	23		88	NQ2-12											
	814.0	66															
		67															
		68															
		69															
		70	47		92	NQ2-13											
		71															
		72															
		808.0	73														

NOTES: S<sub>c</sub> = POINT LOAD STRENGTH VALUES AS PER ASTM D 5731. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.  
ABANDONMENT METHODS, MATERIALS, QUANTITIES: TREMIED 120 GAL. BENTONITE GROUT; SLUFF

DESIGN AGENCY

DESIGNER

ARR

REVIEWER

SAT 02/28/25

PROJECT ID

119908

SUBSET

8

TOTAL

17

SHEET

P.58

TOTAL

67

GEOTECHNICAL PROFILE - ROADWAY  
BORING LOG FOR B-002-0-23 (CONT.)