PROJECT DESCRIPTION

REPLACEMENT OF STRUCTURE OVER FLATLICK RUN, WITH A PRECAST CONCRETE CULVERT.

HISTORIC RECORDS

NO HISTORICAL RECORDS WERE FOUND FOR THIS PROJECT.

GEOLOGY

THE SITE LIES WITHIN THE IRONTON PLATEAU NEAR THE TRANSITION WITH THE MUSKINGUM-PITTSBURGH PLATEAU. THE AREA IS DESCRIBED AS A DISSECTED PLATEAU WITH MODERATE RELIEF. WITHIN THE MAJOR DRAINAGE VALLEYS LACUSTRINE DEPOSITED SOILS ARE PREVALENT. BEDROCK FOUND WITHIN THE HILLSIDES AND VALLEYS IS PREDOMINATELY COMPRISED OF SHALE AND SANDSTONE OF THE ALLEGHENY AND POTTSVILLE GROUPS OF PENNSYLVANIAN AGE.

RECONNAISSANCE

FIELD RECONNAISSANCE WAS COMPLETED BY PERSONNEL FROM THE OFFICE OF GEOTECHNICAL ENGINEERING ON JULY 16, 2019. THE EXISTING SINGLE SPAN STRUCTURE IS IN POOR CONDITION WITH HEAVY SPALLING OF THE CONCRETE. THE EXISTING ROADWAY IS IN MODERATE CONDITION WITH CRACK SEALING DUE TO AGE. THE EXISTING STREAM BED HAS SCOUR ALONG THE STREAM BANKS AND ALONG THE HEADWALL/ABUTMENTS. THERE ARE SEDIMENT DEPOSITS IN THE CHANNEL AT THE UPSTREAM AREA. THERE ARE ROCK SLABS IN THE STREAM CHANNEL WITH POSSIBLY IN-PLACE WEATHERED BEDROCK. THE ADJACENT LAND USAGE IS WOODED EXCEPT THE NORTHWEST QUADRANT WHICH IS RURAL RESIDENTIAL.

SUBSURFACE EXPLORATION

TWO (2) BORINGS, B-001-0-19 AND B-002-0-19, WERE COMPLETED AS PART OF THE SUBSURFACE EXPLORATION ON JULY 29, 2019. THE BORINGS WERE COMPLETED WITH A TRUCK MOUNTED CME 55 ROTARY DRILL RIG USING 3 ¼-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. THE HAMMER SYSTEM USED WAS CALIBRATED ON APRIL 2, 2018, WITH AN AVERAGE DRILL ROD ENERGY RATIO (ER) OF 87%. THE BORINGS WERE ADVANCED INTO BEDROCK AND SAMPLED (AASHTO T225) USING AN N SERIES WIRELINE CORE BARREL, WATER METHOD.

EXPLORATION FINDINGS

BOTH BORINGS WERE COMPLETED WITH THE EXISTING PAVEMENT AND ENCOUNTERED ASPHALT BETWEEN 12 AND 14 INCHES IN THICKNESS. NON-COHESIVE SOILS WERE ENCOUNTERED BENEATH THE PAVEMENT CONSISTING OF STONE FRAGMENTS WITH SAND (A-1-b) AND STONE FRAGMENTS WITH SAND AND SILT (A-2-4) WHICH RANGED FROM LOOSE TO DENSE IN COMPACTNESS AND DAMP TO MOIST IN CONDITION. BEDROCK WAS ENCOUNTERED IN BOTH B-001 AND B-002 AT ELEVATION 658.2 AND 654.2 FEET, RESPECTIVELY. B-001 FIRST ENCOUNTERED MODERATELY WEATHERED WEAK SHALE WHICH EXTENDED TO ELEVATION 656.6 FEET UNDERLAIN BY MODERATELY WEATHERED SLIGHTLY STRONG SANDSTONE IN WHICH THE BORING WAS TERMINATED. B-002 FIRST ENCOUNTERED HIGHLY WEATHERED SLIGHTLY STRONG SANDSTONE WHICH BECAME MODERATELY WEATHERED AT APPROXIMATELY ELEVATION 652.6 FEET IN WHICH THE BORING WAS TERMINATED. UNCONFINED COMPRESSIVE STRENGTH TESTING RESULTS OF THE SANDSTONE RANGED FROM 2,990 TO 3,080 PSI AND SECOND CYCLE SLAKE DURABILITY TEST RESULTS RANGED FROM 80.3% TO 90.4%. BOTH BORINGS WERE REPORTED AS BEING DRY PRIOR TO CORING.

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 JANUARY 2019.

AVAILABLE INFORMATION

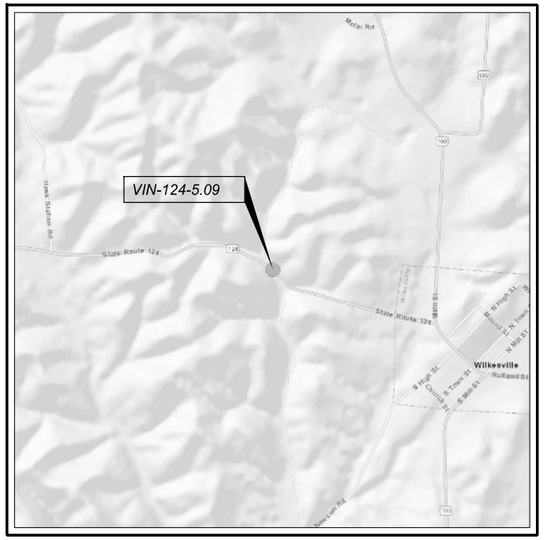
THE SOIL, BEDROCK, AND GROUNDWATER INFORMATION COLLECTED FOR THIS SUBSURFACE EXPLORATION THAT CAN BE CONVENIENTLY DISPLAYED ON THE SOIL PROFILE SHEETS HAS BEEN PRESENTED. GEOTECHNICAL REPORTS, IF PREPARED, ARE AVAILABLE FOR REVIEW ON THE OFFICE OF CONTRACT SALES WEBSITE.

LEGEND

	DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
	STONE FRAGMENTS WITH SAND	A-1-b	1	1
	GRAVEL & STONE FRAGS. WITH SAND & SILT	A-2-4	4	1
		TOTAL	5	2
	SANDSTONE	VISUAL		
	SHALE	VISUAL		
	PAVEMENT = X = APPROXIMATE THICKNESS	VISUAL		
	BORING LOCATION - PLAN VIEW.			
	DRIVE SAMPLE & ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.			
WC	INDICATES WATER CONTENT IN PERCENT.			
N_{60}	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.			
X/Y/D"	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (*SPT*): X = NUMBER OF BLOWS FOR 6 INCHES (UNCORRECTED). Y/D" = NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL.			
γ	INDICATES UNIT WEIGHT OF ROCK.			
Id2	INDICATES SLAKE DURABILITY TEST, ASTM D4644.			
NP	INDICATES A NON-PLASTIC SAMPLE.			
NQ	INDICATES A ROCK CORE SAMPLE.			
Qu	INDICATES UNCONFINED COMPRESSION TEST, ASTM D7012.			
SS	INDICATES A SPLIT SPOON SAMPLE.			
TR	INDICATES TOP OF ROCK ELEVATION.			

BEDROCK TEST SUMMARY

BORING NO.	SAMPLE	SAMPLE ELEVATION	DEPTH	Qu (PSI)
B-001-0-19	S-1	655.2'	9.2' - 9.5'	3,080
B-002-0-19	S-1	647.2'	16.4' - 16.8'	2,990



LOCATION MAP

PARTICLE SIZE DEFINITIONS

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

RECON. - BKL 07/16/19
DRILLING - KAM 07/29/19
DRAWN - ARR 02/21/20
REVIEWED - BKL 02/21/20

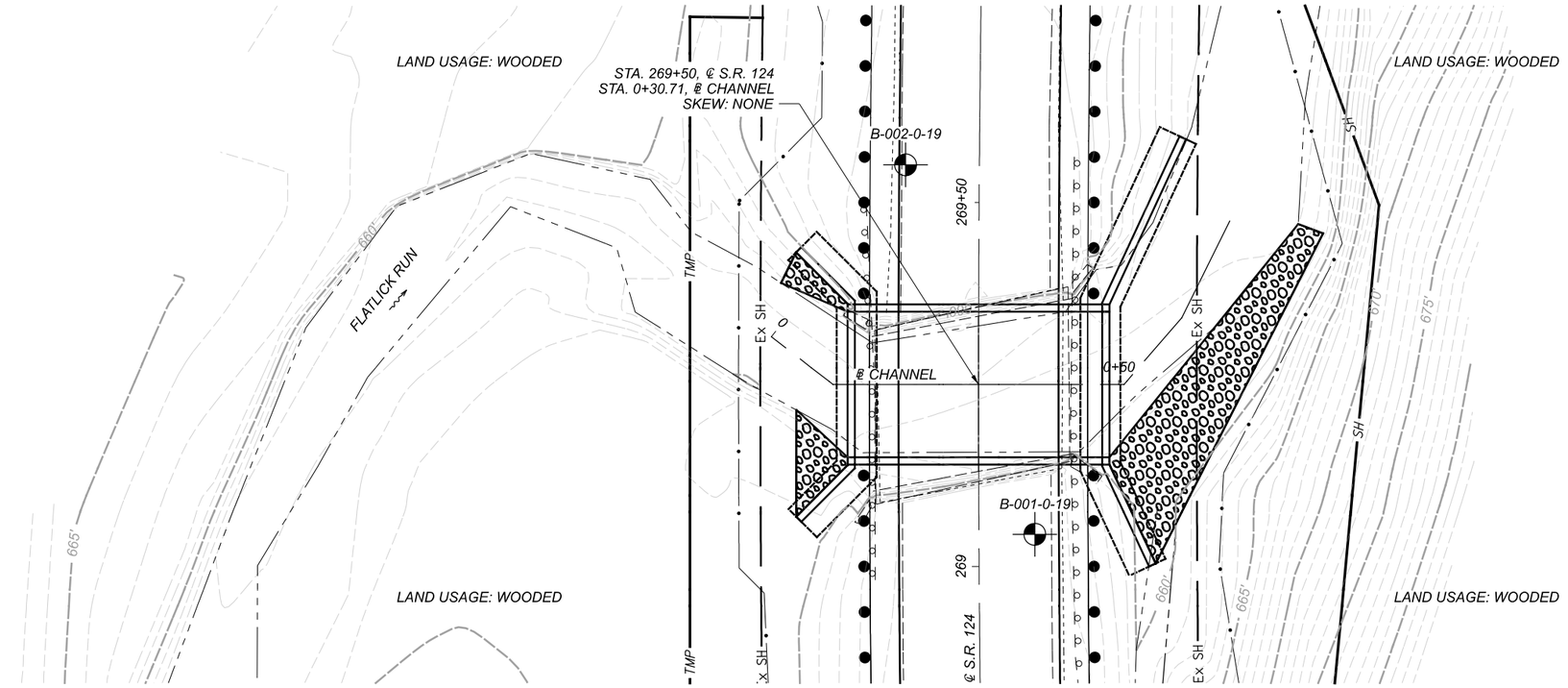
SOIL PROFILE - CULVERT
CULVERT VIN-124-0509 OVER FLATLICK RUN

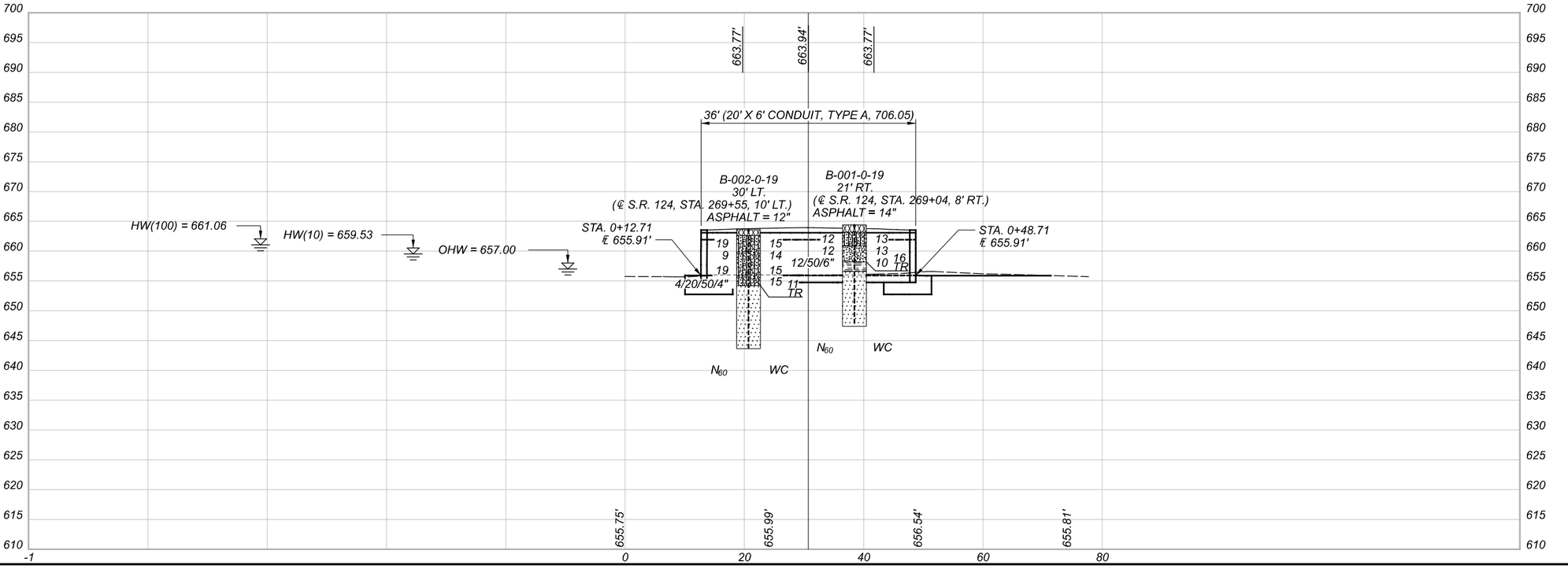
DESIGN AGENCY

DESIGNER ARR
REVIEWER BKL 02/21/20
PROJECT ID 111023
SUBSET 1 TOTAL 3
SHEET P.23 TOTAL 25

VIN-124-5.09

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 4/16/2020 TIME: 8:55:12 AM USER: blogston
pw:\\OhioDOT-pw.bentley.com:OhioDOT-pw-02\Documents\01Active Projects\District 10\Vinton\111023\400-Engineering\Geotechnical\Sheets\111023_ZC00l.dgn





SOIL PROFILE - CULVERT
CULVERT VIN-124-0509
OVER FLATLICK RUN

HORIZONTAL SCALE IN FEET
0 5 10 20

SFN 8201294 (P)
DESIGN AGENCY
DESIGNER ARR
REVIEWER BKL 02/21/20
PROJECT ID 111023
SUBSET 2 TOTAL 3
SHEET P.24 TOTAL 25

VIN-124-5.09

MODEL: Profile [Sheet] PAPERSIZE: 17x11(in.) DATE: 4/16/2020 TIME: 8:56:00 AM USER: blogston
pw:\\Ohio001-pw.bentley.com:Ohio001-pw-02\Documents\Active Projects\District 10\Vinton\111023\400-Engineering\Geotechnical\Sheets\111023_ZP001.dgn

MODEL: Sheet PAPERSIZE: 17x11 (In.) DATE: 4/16/2020 TIME: 8:56:08 AM USER: blogston
pw:\\OhioDOT-pw.bentley.com:OhioDOT-pw-02\Documents\01 Active Projects\District 10\Vinton\111023\400-Engineering\Geotechnical\Sheets\111023_ZL001.dgn

PROJECT: VIN-124-5.09 | DRILLING FIRM / OPERATOR: ODOT / CAREY | DRILL RIG: CME 55 TRUCK | STATION / OFFSET: 269+04, 8' RT. | EXPLORATION ID B-001-0-19
TYPE: BRIDGE | SAMPLING FIRM / LOGGER: ODOT / MCLEISH | HAMMER: CME AUTOMATIC | ALIGNMENT: CL SR 124 | PAGE 1 OF 1
PID: 111023 SFN: 8201294 (P) | DRILLING METHOD: 3.25" HSA / NQ2 | CALIBRATION DATE: 4/2/18 | ELEVATION: 664.4 (ft) EOB: 17.0 ft.
START: 7/29/19 END: 7/29/19 | SAMPLING METHOD: SPT / NQ2 | ENERGY RATIO (%): 87 | LAT / LONG: 39.080285, -82.341077

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ASPHALT (14")	664.4 / 663.2	1																
MEDIUM DENSE, BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, LITTLE CLAY, DAMP	660.9	2–3	3 4 4	12	67	SS-1	-	44	3	20	24	9	21	16	5	13	A-2-4 (0)	
MEDIUM DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	658.2	4–5	4 3 5	12	100	SS-2	-	55	7	18	13	7	NP	NP	NP	13	A-1-b (0)	
SHALE, DARK GRAY, MODERATELY WEATHERED, WEAK, LAMINATED, ARENACEOUS, BLOCKY, GOOD TO FAIR; RQD 0%, REC 75%.	656.6	TR 6–7	12 50	-	100	SS-3A SS-3B	- -	- -	- -	- -	- -	- -	- -	- -	- -	16 10	A-1-b (V) Rock (V)	
SANDSTONE, OLIVE GRAY, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE GRAINED, THIN BEDDED, MICACEOUS, VERY BLOCKY, GOOD; RQD 87%, REC 100%. @ 7.8' - 8.3'; Id2 = 80.3% @ 9.2' - 9.5'; γ = 140 pcf; Qu = 3,080 psi @9.6'; SLIGHTLY WEATHERED.		7–12	70		97	NQ-1											CORE
		12–17	92		100	NQ-2												CORE
	647.4	EOB 17																

NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 20 LB. BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/13/20 15:07 - X:\GINT\PROJECTS\2019 COMPLETE\600664.GPJ

PROJECT: VIN-124-5.09 | DRILLING FIRM / OPERATOR: ODOT / CAREY | DRILL RIG: CME 55 TRUCK | STATION / OFFSET: 269+55, 10' LT. | EXPLORATION ID B-002-0-19
TYPE: BRIDGE | SAMPLING FIRM / LOGGER: ODOT / MCLEISH | HAMMER: CME AUTOMATIC | ALIGNMENT: CL SR 124 | PAGE 1 OF 1
PID: 111023 SFN: 8201294 (P) | DRILLING METHOD: 3.25" HSA / NQ2 | CALIBRATION DATE: 4/2/18 | ELEVATION: 663.6 (ft) EOB: 20.0 ft.
START: 7/29/19 END: 7/29/19 | SAMPLING METHOD: SPT / NQ2 | ENERGY RATIO (%): 87 | LAT / LONG: 39.080239, -82.340897

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ASPHALT (12")	663.6 / 662.6	1																
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, MOIST		2–3	3 6 7	19	67	SS-1	-	44	5	21	21	9	22	16	6	15	A-2-4 (0)	
@3.5'; LOOSE		4–5	4 3 3	9	78	SS-2	-	-	-	-	-	-	-	-	-	14	A-2-4 (V)	
@6.0'; MEDIUM DENSE		6–7	5 6 7	19	100	SS-3	-	32	8	35	21	4	NP	NP	NP	15	A-2-4 (0)	
@8.5'; VERY DENSE	654.2	TR 9	4 20 50/4"	-	100	SS-4A SS-4B	- -	40 -	6 -	27 -	19 -	8 -	NP -	NP -	NP -	15 11	A-2-4 (0) Rock (V)	
SANDSTONE, YELLOWISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, THIN BEDDED, MICACEOUS, VERY BLOCKY, FAIR; RQD 80%, REC 100%. @ 10.2' - 10.7'; Id2 = 81.8% @11.0'; LIGHT GRAY, MODERATELY WEATHERED, BLOCKY, GOOD. @ 11.2' - 11.7'; Id2 = 90.4%		10–15	60		100	NQ-1											CORE
@ 16.4' - 16.8'; γ = 141 pcf; Qu = 2,990 psi		15–20	100		100	NQ-2											CORE
	643.6	EOB 20																

NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 20 LB. BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/13/20 15:07 - X:\GINT\PROJECTS\2019 COMPLETE\600664.GPJ

SHEET	SUBSET	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
P 25 / TOTAL 25	3 / TOTAL 3	111023	BKL 02/21/20	ARR	

SOIL PROFILE - CULVERT
CULVERT VIN-124-0509 OVER FLATLICK RUN
BORING LOGS B-001-0-19 & B-002-0-19