

PROJECT DESCRIPTION

THIS GEOTECHNICAL PROFILE HAS BEEN PREPARED FOR THE CULVERT REPLACEMENTS ALONG US ROUTE 127 (US 127) NEAR WEST UNITY, WILLIAMS COUNTY, OHIO, DESIGNATED AS WIL-127-12.43. THE CULVERT (SFN 1806949) IS LOCATED APPROXIMATELY 2 MILES SOUTHWEST OF WEST UNITY AT STRAIGHT LINE MILE (SLM) 12.43 IN JEFFERSON TOWNSHIP

HISTORIC RECORDS

REVIEW OF ODOT RECORDS INDICATED THAT NO HISTORIC BORINGS WERE PERFORMED WITHIN THE PROJECT AREAS.

GEOLOGY

PUBLISHED GEOLOGIC MAPS FROM THE OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) INDICATE THAT THE PROJECT SITE IS LOCATED ON THE BORDER OF CENTRAL OHIO CLAYEY TILL PLAIN AND MAUMEE LAKE PLAINS PHYSIOGRAPHIC REGIONS. WITHIN THE CENTRAL OHIO CLAYEY TILL PLAIN REGION, THE GEOLOGIC DEPOSITS CONSIST OF WISCONSINAN-AGE GLACIAL TILL AND LACUSTRINE MATERIALS OVERLYING PALEOZOIC-AGE CARBONATE ROCKS. WITHIN THE MAUMEE LAKE PLAINS REGION, THE GEOLOGIC DEPOSITS CONSIST OF PLEISTOCENE-AGE SILT, CLAY, AND WAVE-PLANED CLAYEY TILL OVERLYING SILURIAN- AND DEVONIAN-AGE CARBONATE ROCKS AND SHALES.

THE GLACIAL TILL, ALSO REFERRED TO AS MORAINE, WAS DEPOSITED BY THE ADVANCE AND RETREAT OF GLACIAL ICE. DUE TO THE WEIGHT OF THE ICE MASS, THE TILL DEPOSITS ARE MODERATELY TO HIGHLY OVER-CONSOLIDATED, THAT IS, THE EXISTING SOIL DEPOSITS HAVE EXPERIENCED A PREVIOUS VERTICAL STRESS SIGNIFICANTLY HIGHER THAN THE PRESENT EFFECTIVE VERTICAL STRESS DUE TO THE REMAINING OVERLYING SOIL STRATA IN THE PROFILE. THE TILL MAY CONTAIN COBBLES AND/OR BOULDERS LEFT IN THE TILL SOIL MATRIX. ADDITIONALLY, SEAMS OF GRANULAR SOILS MAY ALSO BE ENCOUNTERED WITHIN GLACIAL TILLS. THESE GRANULAR SEAMS MAY OR MAY NOT BE WATER BEARING. THE LACUSTRINE SOILS CONSIST OF LAKE-LAID DEPOSITS THAT EXHIBIT MUCH LOWER PREVIOUS VERTICAL STRESS THAN THE TILL DEPOSITS.

BEDROCK IN THE PROJECT AREA IS BROADLY MAPPED ON THE “GEOLOGIC MAP OF OHIO” AS WAVERLY (SHALES, SANDSTONE AND LIMESTONE). TOP OF BEDROCK IS MAPPED TO BE AT APPROXIMATELT ELEV. 570, RESPECTIVELY. CORRESPONDING TO APPROXIMATELY 215 FEET BELOW ROADWAY GRADES, RESPECTIVELY.

REVIEW OF THE ODNR “OHIO KARST AREAS” MAP INDICATED THAT THE SITE IS NOT IN AN AREA OF PROBABLE KARST.

THE USDA SOIL CONSERVATION SERVICE (SCS) WEB SOIL SURVEY INDICATES THAT THE NEAR-SURFACE SOILS IN THE PROJECT AREA ARE MAPPED AS SHOALS LOAM. THESE SOILS ARE COMPRISED OF LOAMY ALLUVIUM FORMED ON FLOOD PLAINS. THE NEAR SURFACE SOILS

REVIEW OF THE OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) MAP OF MINES INDICATED NO HISTORIC MINING ACTIVITY IN THE VICINITY OF EITHER CULVERT SITE. THE CLOSEST INDICATED PREVIOUS MINING IS LOCATED APPROXIMATELY 3 MILES NORTHEAST OF THE SLM 12.43.

RECONNAISSANCE

CT PERFORMED SITE RECONNAISSANCE ON JUNE 27, 2024. THE SITE IN THE VICINITY OF THE CULVERT IS LOCATED IN A PREDOMINANTLY RURAL RESIDENTIAL AND AGRICULTURAL AREA. IN THE IMMEDIATE AREA OF THE CULVERT, PAVEMENT ALONG US 127 WAS OBSERVED TO GENERALLY BE IN GOOD CONDITION.

CONCRETE ASSOCIATED WITH THE CULVERT WAS SPALLING WITH EXPOSED STEEL REINFORCEMENT (REBAR). THE EXISTING CONCRETE BOX CULVERT WAS RECTANGULAR IN CROSS-SECTIONAL SHAPE. THE BOX CULVERT DIMENSIONS WERE APPROXIMATELY 10 FEET SPAN AND 9 FEET RISE. THE DITCH BOTTOM WAS APPROXIMATELY 9 TO 10 FEET BELOW THE ROAD SURFACE. AT THE TIME OF THIS RECONNAISSANCE, WATER LEVELS IN THE DITCH WERE APPROXIMATELY 6 TO 7 INCHES DEEP.

OVERHEAD UTILITY LINES WERE OBSERVED ALONG BOTH SIDES OF US 127, OFFSET APPROXIMATELY 10 TO 15 FEET FROM THE PAVEMENT EDGE.

SUBSURFACE EXPLORATION









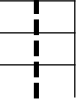
THE BORINGS WERE DRILLED BY DLZ UNDER THE DIRECTION OF CT CONSULTANTS ON JULY 2, 2024. THESE BORINGS ARE FULLY DESIGNATED AS BORINGS B-001-0-24, B-002-0-24. THE BORINGS ARE DESIGNATED IN ACCORDANCE WITH ODOT PROTOCOL, BUT THE -0-24 PORTION OF THE NOMENCLATURE IS GENERALLY OMITTED IN THE DISCUSSIONS BELOW. BORINGS WERE LOCATED BEYOND THE EXISTING ROADWAY SOUTHEAST OF THE ROADWAY NEAR THE INLET AND NORTHWEST OF THE ROADWAY NEAR THE OUTLET, RESPECTIVELY STATIONING AND OFFSETS WERE OBTAINED FROM PLANS PROVIDED BY ODOT DISTRICT 2. LATITUDE, LONGITUDE, AND GROUND SURFACE ELEVATIONS WERE SURVEYED BY CT USING A HAND-HELD GPS UNIT. THE ACCURACY FROM THE HANDHELD GPS DEVICE WAS GENERALLY FOUND TO BE APPROXIMATELY 2 TO 6 INCHES HORIZONTAL, AND APPROXIMATELY 4 TO 12 INCHES VERTICAL

THE TWO (2) TEST BORINGS PERFORMED DURING THIS EXPLORATION WERE DRILLED WITH A TRACK-MOUNTED CME 45 DRILL RIG UTILIZING 3¼-INCH INSIDE DIAMETER HOLLOW-STEM AUGERS. DURING AUGER ADVANCEMENT OF THE TEST BORINGS, SPLIT-SPOON DRIVE SAMPLES WERE GENERALLY TAKEN AT 2½-FOOT INTERVALS TO A DEPTH OF 30 FEET. THE CALIBRATED HAMMER/ROD ENERGY RATIO FOR THE CME 45 TRACK-MOUNTED DRILL RIG WAS 89.2 PERCENT, AND WAS LAST CALIBRATED ON FEBRUARY 1, 2024.

EXPLORATION FINDINGS

THE SURFACE MATERIALS ENCOUNTERED IN BORING B-001 CONSISTED OF APPROXIMATELY 5 INCHES OF TOPSOIL. DISTINCT SURFACE MATERIALS WERE NOT PRESENT AT THE LOCATION OF BORING B-002, WHICH WAS PERFORMED JUST BEYOND EDGE OF ROADWAY.

BASED ON THE RESULTS OF OUR FIELD AND LABORATORY TESTS, THE SUBSOILS ENCOUNTERED IN THE BORINGS UNDERLYING THE SURFACE MATERIALS CAN BE GENERALLY DESCRIBED AS PREDOMINANTLY COHESIVE SOILS WITH INTERBEDDED LAYERS OF GRANULAR SOIL ENCOUNTERED IN BORING B-001.

LEGEND			
DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
	FINE SAND	A-3	0 3
	COARSE AND FINE SAND	A-3A	0 2
	SANDY SILT	A-4A	2 6
	SILT AND CLAY	A-6A	6 5
	SILTY CLAY	A-6B	0 1
	TOTAL	8	17
	PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL	
	SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL	
	BORING LOCATION - PLAN VIEW.		
	DRIVE SAMPLE AND/OR 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.		
X/Y/Z/D"	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X = NUMBER OF BLOWS FOR FIRST 6 INCHES (UNCORRECTED) Y = NUMBER OF BLOWS FOR SECON 6 INCHES (UNCORRECTED) Z/D" = NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL		
SS	INDICATES A SPLIT-SPOON SAMPLE		
NP	INDICATES A NON-PLASTIC SAMPLE.		
QU	UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166 FOR SOIL)		

EXPLORATION FINDINGS (CONT.)

UNDERLYING THE TOPSOIL IN BORING B-001, LOOSE GRANULAR SOILS WERE ENCOUNTERED TO A DEPTH OF 3½ FEET (ELEV. 778±). THE GRANULAR SOIL CONSISTED OF FINE SAND (A-3).

IN THE UPPER PROFILE OF BORING B-002, FROM THE SURFACE TO A DEPTH OF 6 FEET (ELEV. 778±), PREDOMINANTLY SOFT TO MEDIUM STIFF COHESIVE SOILS WERE ENCOUNTERED. THESE COHESIVE SOILS CONSISTED OF SANDY SILT (A-4A) AS WELL AS SILT AND CLAY (A-6A).

A LAYER OF PREDOMINANTLY VERY STIFF TO HARD COHESIVE SOILS WAS ENCOUNTERED UNDERLYING THE LAYER OF GRANULAR SOILS IN BORING B-001 AND UNDERLYING THE LAYER OF SOFT TO MEDIUM STIFF COHESIVE SOILS IN BORING B-002. THIS COHESIVE LAYER EXTENDED TO DEPTHS OF APPROXIMATELY 19 FEET (ELEV. 762±) IN BORING B-001, AS WELL AS TO A DEPTH OF 23½ FEET (ELEV. 760±) IN BORING B-002. THESE COHESIVE SOILS CONSISTED OF SANDY SILT (A-4A), SILT AND CLAY (A-6A), AND SILTY CLAY (A-6B).

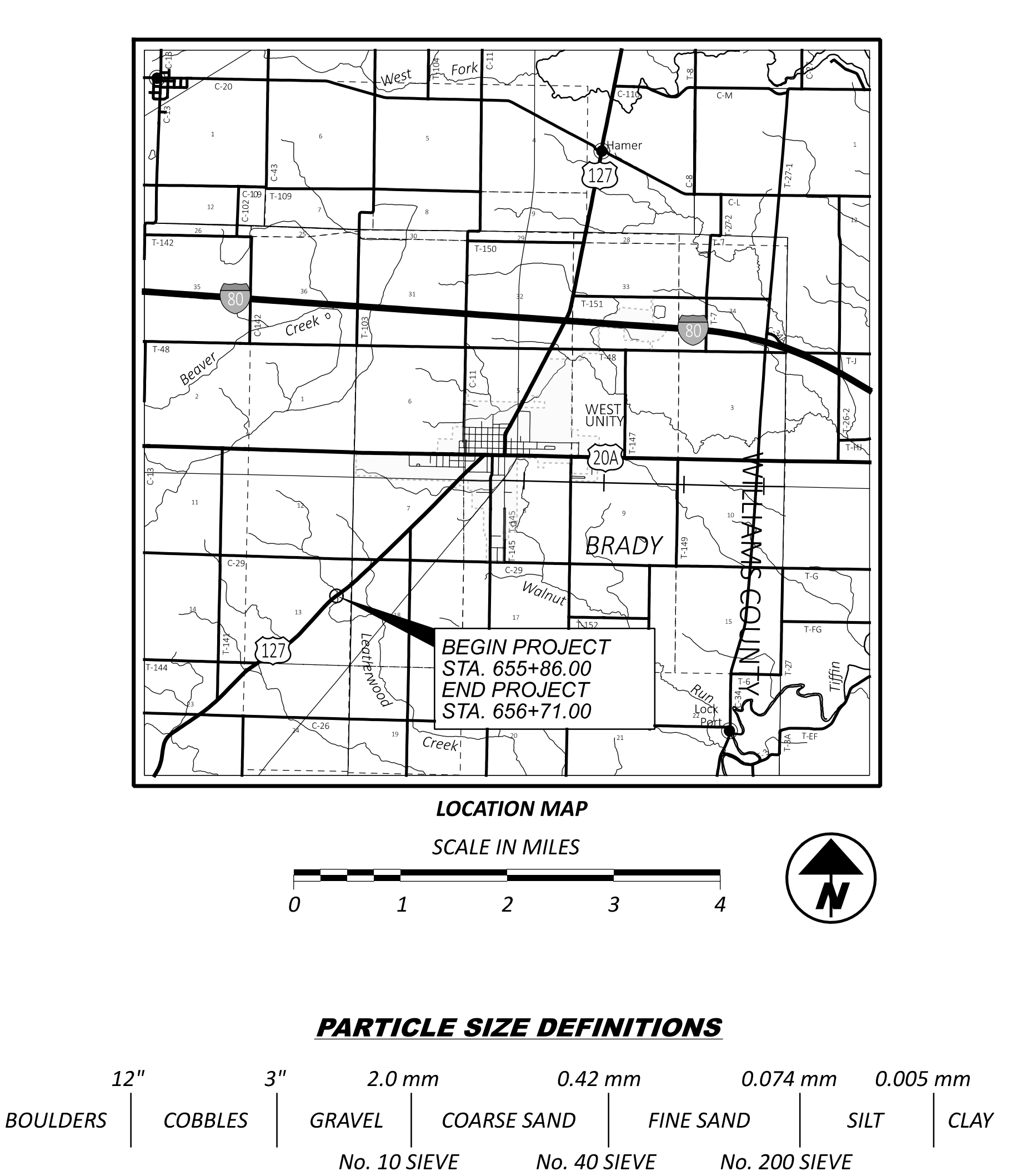
UNDERLYING THE VERY STIFF TO HARD COHESIVE SOILS, HARD COHESIVE SOILS WERE ENCOUNTERED TO A DEPTH OF 23½ FEET (ELEV. 758±) IN BORING B-001 AND TO TERMINATION AT A DEPTH OF 30 FEET (ELEV. 754±) IN BORING B-002. THESE COHESIVE SOILS CONSISTED OF SANDY SILT (A-4A). A ZONE OF MEDIUM DENSE GRANULAR SOILS WAS ENCOUNTERED WITHIN THIS LAYER IN BORING B-001 FROM APPROXIMATELY 19 TO 21 FEET (ELEV. 760±).

UNDERLYING THE HARD COHESIVE SOILS IN BORING B-001, DENSE TO VERY DENSE GRANULAR SOILS WERE ENCOUNTERED TO TERMINATION AT A DEPTH OF 30 FEET (ELEV. 751±). THE GRANULAR SOIL CONSISTED OF COARSE AND FINE SAND (A-3A) AND FINE SAND (A-3).

DURING OUR SITE RECONNAISSANCE ON JUNE 27, 2024, WATER WAS PRESENT IN THE WATERWAY AT APPROXIMATE ELEV. 775 TO 774. DURING THIS EXPLORATION, GROUNDWATER WAS INITIALLY ENCOUNTERED DURING DRILLING AND AT THE COMPLETION OF DRILLING AT ELEV. 755.9 IN BORING B-001. GROUNDWATER WAS NOT ENCOUNTERED DURING DRILLING IN BORING B-002.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS (SGE), DATED JULY 2024.



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.

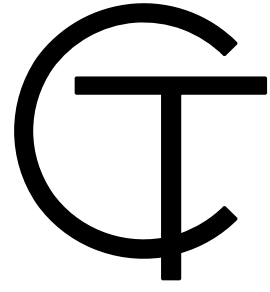
RECON. - BS- 6/27/24

DRILLING - VAUL 7/2/24 TO 7/3/24

DRAWN - TLS - 6/26

REVIEWED - CPI - 6/26

DESIGN AGENCY



DESIGNER

TLS

REVIEWER

CPI 06/03/26

PROJECT ID

114748

SUBSET TOTAL

1 3

SHEET TOTAL

P.O. 0



PROJECT DESCRIPTION

THIS GEOTECHNICAL PROFILE HAS BEEN PREPARED FOR THE CULVERT REPLACEMENTS ALONG US ROUTE 127 (US 127) NEAR WEST UNITY, WILLIAMS COUNTY, OHIO, DESIGNATED AS WIL-127-15.09 PID 114748. THE CULVERT (SFN 181325) IS LOCATED APPROXIMATELY ¼ MILE NORTHEAST OF WEST UNITY AT SLM 15.09 IN BRADY TOWNSHIP.

HISTORIC RECORDS

REVIEW OF ODOT RECORDS INDICATED THAT NO HISTORIC BORINGS WERE PERFORMED WITHIN THE PROJECT AREAS.

GEOLOGY

PUBLISHED GEOLOGIC MAPS FROM THE OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) INDICATE THAT THE PROJECT SITE IS LOCATED ON THE BORDER OF CENTRAL OHIO CLAYEY TILL PLAIN AND MAUMEE LAKE PLAINS PHYSIOGRAPHIC REGIONS. WITHIN THE CENTRAL OHIO CLAYEY TILL PLAIN REGION, THE GEOLOGIC DEPOSITS CONSIST OF WISCONSINAN-AGE GLACIAL TILL AND LACUSTRINE MATERIALS OVERLYING PALEOZOIC-AGE CARBONATE ROCKS. WITHIN THE MAUMEE LAKE PLAINS REGION, THE GEOLOGIC DEPOSITS CONSIST OF PLEISTOCENE-AGE SILT, CLAY, AND WAVE-PLANED CLAYEY TILL OVERLYING SILURIAN- AND DEVONIAN-AGE CARBONATE ROCKS AND SHALES.

THE GLACIAL TILL, ALSO REFERRED TO AS MORAINE, WAS DEPOSITED BY THE ADVANCE AND RETREAT OF GLACIAL ICE. DUE TO THE WEIGHT OF THE ICE MASS, THE TILL DEPOSITS ARE MODERATELY TO HIGHLY OVER-CONSOLIDATED, THAT IS, THE EXISTING SOIL DEPOSITS HAVE EXPERIENCED A PREVIOUS VERTICAL STRESS SIGNIFICANTLY HIGHER THAN THE PRESENT EFFECTIVE VERTICAL STRESS DUE TO THE REMAINING OVERLYING SOIL STRATA IN THE PROFILE. THE TILL MAY CONTAIN COBBLES AND/OR BOULDERS LEFT IN THE TILL SOIL MATRIX. ADDITIONALLY, SEAMS OF GRANULAR SOILS MAY ALSO BE ENCOUNTERED WITHIN GLACIAL TILLS. THESE GRANULAR SEAMS MAY OR MAY NOT BE WATER BEARING. THE LACUSTRINE SOILS CONSIST OF LAKE-LAID DEPOSITS THAT EXHIBIT MUCH LOWER PREVIOUS VERTICAL STRESS THAN THE TILL DEPOSITS.

BEDROCK IN THE PROJECT AREA IS BROADLY MAPPED ON THE “GEOLOGIC MAP OF OHIO” AS WAVERLY (SHALES, SANDSTONE AND LIMESTONE). TOP OF BEDROCK IS MAPPED TO BE AT APPROXIMATELT ELEV. 600, RESPECTIVELY. CORRESPONDING TO APPROXIMATELY 185 FEET BELOW ROADWAY GRADES, RESPECTIVELY.

REVIEW OF THE ODNR “OHIO KARST AREAS” MAP INDICATED THAT THE SITE IS NOT IN AN AREA OF PROBABLE KARST.

THE USDA SOIL CONSERVATION SERVICE (SCS) WEB SOIL SURVEY INDICATES THAT THE NEAR-SURFACE SOILS IN THE PROJECT AREA ARE MAPPED AS MILLGROVE LOAM. THESE SOILS ARE COMPRISED OF OUTWASH FORMED ON FLATS.

REVIEW OF THE OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) MAP OF MINES INDICATED NO HISTORIC MINING ACTIVITY IN THE VICINITY OF EITHER CULVERT SITE. THE CLOSEST INDICATED PREVIOUS MINING IS LOCATED APPROXIMATELY MORE THAN 1 MILE SOUTHEAST OF SITE.

RECONNAISSANCE

CT PERFORMED SITE RECONNAISSANCE ON JUNE 27, 2024. THE SITE IN THE VICINITY OF THE CULVERT CONSISTS OF PREDOMINANTLY RURAL RESIDENTIAL AREA.

IN THE IMMEDIATE AREA OF THE CULVERT, PAVEMENT ALONG US 127 WAS OBSERVED TO BE IN GENERALLY FAIR CONDITION, ALBEIT HEAVILY WEATHERED. PAVEMENT DISTRESSES WERE GENERALLY LIMITED TO A FEW TRANSVERSE CRACKS EITHER SIDE OF THE CULVERT, AND LONGITUDINAL CRACKS ALONG THE EDGES OF THE PAVEMENT. APPROXIMATELY 1 TO 2 INCHES OF SEPARATION WAS OBSERVED FOR SOME CRACKS AT THE EDGE OF PAVEMENT. THE OBSERVED CRACKS WERE NOT SEALED.

THE SLOPES FROM THE ROAD TO THE DITCH HAD MULTIPLE AREAS OF EROSION RILLS FROM RUNOFF. RIPRAP WAS PRESENT AT THE SOUTHWESTERN QUADRANT OF THE CULVERT LOCATION.

THE EXISTING CONCRETE BOX CULVERT WAS RECTANGULAR IN CROSS-SECTIONAL SHAPE. THE BOX CULVERT DIMENSIONS WERE APPROXIMATELY 7 FEET SPAN AND BY 9½ FEET RISE.










THE DITCH BOTTOM WAS APPROXIMATELY 9% TO 10 FEET BELOW THE ROAD SURFACE. AT THE TIME OF THIS RECONNAISSANCE, WATER LEVELS IN THE DITCH WERE GENERALLY 8 TO 9 INCHES DEEP.

OVERHEAD UTILITY LINES WERE OBSERVED ALONG THE BOTH SIDE OF US 127, OFFSET APPROXIMATELY 10 TO 15 FEET FROM THE PAVEMENT EDGE.

SUBSURFACE EXPLORATION

THE BORINGS WERE DRILLED BY DLZ UNDER THE DIRECTION OF CT CONSULTANTS ON JULY 3, 2024. THESE BORINGS ARE FULLY DESIGNATED AS BORINGS B-003-0-24 AND B-004-0-24. THE BORINGS ARE DESIGNATED IN ACCORDANCE WITH ODOT PROTOCOL, BUT THE -0-24 PORTION OF THE NOMENCLATURE IS GENERALLY OMITTED IN THE DISCUSSIONS BELOW. BORINGS B-003 AND B-004 WERE PERFORMED IN THE NORTHBOUND LANE, SOUTH OF THE CULVERT, AND IN THE SOUTHBOUND LANE, NORTH OF THE CULVERT, RESPECTIVELY. STATIONING AND OFFSETS WERE OBTAINED FROM PLANS PROVIDED BY ODOT DISTRICT 2. LATITUDE, LONGITUDE, AND GROUND SURFACE ELEVATIONS WERE SURVEYED BY CT USING A HAND-HELD GPS UNIT. THE ACCURACY FROM THE HANDHELD GPS DEVICE WAS GENERALLY FOUND TO BE APPROXIMATELY 2 TO 6 INCHES HORIZONTAL, AND APPROXIMATELY 4 TO 12 INCHES VERTICAL

THE TWO (2) TEST BORINGS PERFORMED DURING THIS EXPLORATION WERE DRILLED WITH A TRACK-MOUNTED CME 45 DRILL RIG UTILIZING 3¼-INCH INSIDE DIAMETER HOLLOW-STEM AUGERS. DURING AUGER ADVANCEMENT OF THE TEST BORINGS, SPLIT-SPOON DRIVE SAMPLES WERE GENERALLY TAKEN AT 2½-FOOT INTERVALS TO A DEPTH OF 30 FEET. THE CALIBRATED HAMMER/ROD ENERGY RATIO FOR THE CME 45 TRACK-MOUNTED DRILL RIG WAS 89.2 PERCENT, AND WAS LAST CALIBRATED ON FEBRUARY 1, 2024.

LEGEND			
DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
 FINE SAND	A-3	0	4
 COARSE AND FINE SAND	A-3A	0	6
 SANDY SILT	A-4A	4	3
 SILT AND CLAY	A-6A	1	4
 SILTY CLAY	A-6B	1	2
	TOTAL	6	19
 PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
 SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL		
 BORING LOCATION - PLAN VIEW.			
 DRIVE SAMPLE AND/OR 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.		
X/Y/Z/D"	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X = NUMBER OF BLOWS FOR FIRST 6 INCHES (UNCORRECTED) Y = NUMBER OF BLOWS FOR SECOND 6 INCHES (UNCORRECTED) Z/D" = NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL		
SS	INDICATES A SPLIT-SPOON SAMPLE		
NP	INDICATES A NON-PLASTIC SAMPLE.		
QU	UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166 FOR SOIL)		

EXPLORATION FINDINGS

THE SURFACE MATERIALS ENCOUNTERED IN BORINGS B-003 AND B-004 CONSISTED OF APPROXIMATELY 8 INCHES AND 9 INCHES OF ASPHALT, RESPECTIVELY, UNDERLAIN BY 1 INCH AND 3 INCHES OF AGGREGATE BASE MATERIALS, RESPECTIVELY.

BASED ON THE RESULTS OF OUR FIELD AND LABORATORY TESTS, THE SUBSOILS ENCOUNTERED IN THE BORINGS UNDERLYING THE PAVEMENT MATERIALS CAN BE GENERALLY DESCRIBED AS INTERBEDDED LAYERS OF GRANULAR AND COHESIVE SOILS.

LAYERS OF VERY LOOSE TO MEDIUM DENSE GRANULAR SOILS INTERBEDDED WITH MEDIUM STIFF TO STIFF COHESIVE SOIL WERE ENCOUNTERED UNDERLYING THE PAVEMENT MATERIALS IN BORINGS B-003 AND B-004 TO DEPTHS OF 21 FEET (ELEV. 766±) AND 18½ FEET (ELEV. 768±), RESPECTIVELY. THE GRANULAR SOILS CONSISTED OF COARSE AND FINE SAND (A-3A), NON-PLASTIC SANDY SILT (A-4A), AND FINE SAND (A-3). THE COHESIVE SOILS CONSISTED OF SILT AND CLAY (A-6A), AND SILTY CLAY (A-6B).

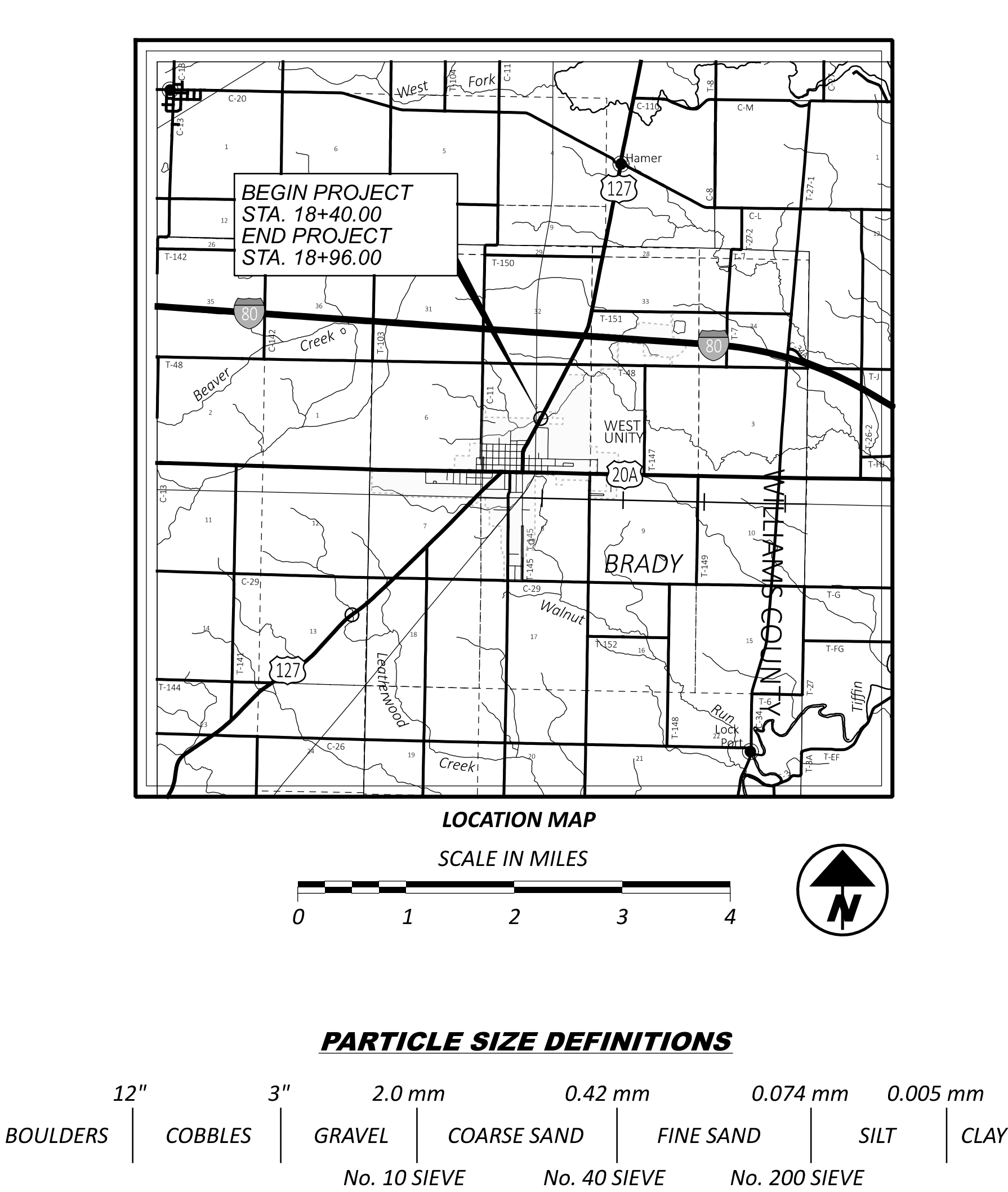
UNDERLYING THE INTERBEDDED LOOSE TO MEDIUM DENSE GRANULAR SOILS AND MEDIUM STIFF TO STIFF COHESIVE SOILS, A LAYER OF PREDOMINANTLY DENSE TO VERY DENSE GRANULAR SOILS WAS ENCOUNTERED TO DEPTHS OF 26 FEET (ELEV. 762±) IN BORING B-003 AND APPROXIMATELY 27 FEET (ELEV. 760±) IN BORING B-004. THE GRANULAR SOILS CONSISTED OF COARSE AND FINE SAND (A-3A), FINE SAND (A-3), AND NON-PLASTIC SANDY SILT (A-4A).

UNDERLYING THE DENSE TO VERY DENSE GRANULAR SOILS, A LAYER OF PREDOMINANTLY HARD COHESIVE SOIL WAS ENCOUNTERED IN BORINGS B-003 AND B-004 TO TERMINATION AT A DEPTH OF 30 FEET (ELEV. 758± TO 757±). THESE COHESIVE SOILS CONSISTED OF SANDY SILT (A-4A), AS WELL AS SILT AND CLAY (A-6A).

DURING OUR SITE RECONNAISSANCE ON JUNE 27, 2024, WATER WAS PRESENT IN THE WATERWAY AT APPROXIMATE ELEV. 778. DURING THIS EXPLORATION, GROUNDWATER WAS INITIALLY ENCOUNTERED DURING DRILLING AND OBSERVED UPON COMPLETION OF DRILLING AT ELEV. 771.1 IN BORING B-003. GROUNDWATER WAS NOT ENCOUNTERED DURING DRILLING IN BORING B-004.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS (SGE), DATED JULY 2024.



RECON. - BS- 6/27/24  
DRILLING - VAUL 7/2/24 TO 7/3/24  
DRAWN - TLS - 6/26  
REVIEWED - CPI - 6/26





**WIL-127-15.09**

MODEL: Sheet PAPERSIZE: 34x22 (in.) DATE: 6/4/2026 TIME: 8:49:57 AM PUTDRV: OHDOT\_PDF.plcfig PENTBL: OHDOT Pen.tbl USER: tsomogyi@cticonsultants.com WORKSPACE: OHDOTCEV02 WORKSET: 114748 PRODUCT: OpenRoadsDesigner 24.00.00.20505  
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STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/24/25 08:20 - X:\PROJECTS\241804.GPJ

NOTES: NONE


ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; PUMPED 8 CF BENTONITE GROUT

PROJECT: WIL-127-12.43/15.09			DRILLING FIRM / OPERATOR:			DLZ / VAUL			DRILL RIG:			STATION / OFFSET:			EXPLORATION N		
TYPE: CULVERT			SAMPLING FIRM / LOGGER:			DLZ / KKC			HAMMER: CME AUTOMATIC			ALIGNMENT: US 127 CL			B-004-0-24		
PID: 114748 SFN: 1806949/1861325			DRILLING METHOD: 3.25" HSA			SPT			CALIBRATION DATE: 2/1/24			ELEVATION: 787.1 (NAVD88) EOB: 29.8 ft			PAGE		
START: 7/2/24 END: 7/2/24			SAMPLING METHOD: SPT			SPT/ RQD			ENERGY RATIO (%): 89.2			LAT / LONG: 41.593927, -84.428562			1 OF 1		
MATERIAL DESCRIPTION AND NOTES						ELEV.		DEPTHS		REC SAMPLE		GRADATION (%)		ATTERBERG		SO4	
ASPHALT - 9 INCHES						787.1		1		N <sub>60</sub>		GR		LL		HOLE	
						786.3		2		ID		CS		PL		SEAL	
AGGREGATE BASE - 3 INCHES						786.1		3		SS-1		FS		PI		SO4	
						786.1		4		SS-2		SI		PP		PPM	
MEDIUM STIFF TO STIFF, BROWN, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, MOIST						783.6		5		SS-2		- - -		- - -		-	
						783.6		6		SS-3		- - -		- - -		-	
VERY LOOSE, BROWN, COARSE AND FINE SAND, LITTLE CLAY, TRACE GRAVEL, TRACE SILT, MOIST						778.6		7		SS-3		- - -		- - -		-	
						778.6		8		SS-4		- - -		- - -		-	
MEDIUM DENSE, BROWN, SANDY SILT, TRACE CLAY, TRACE GRAVEL, MOIST						776.1		9		SS-4		41		NP		-	
						776.1		10		SS-5		- - -		- - -		-	
MEDIUM STIFF TO STIFF, GRAY, SANDY SILT, "AND"CLAY, WET						776.1		11		SS-5		6		NP		-	
						776.1		12		SS-6		- - -		- - -		-	
@13.5' LITTLE CLAY, Qu =12.6 PSI =1815 PSF						776.1		13		SS-6		41		NP		-	
						776.1		14		SS-7		- - -		- - -		-	
@16': LITTLE GRAVEL, DAMP						768.6		15		SS-7		27		NP		-	
						768.6		16		SS-8		- - -		- - -		-	
DENSE GRAY, COARSE AND FINE SAND, LITTLE CLAY, LITTLE SILT, MOIST						766.1		17		SS-8		40		NP		-	
						766.1		18		SS-9		- - -		- - -		-	
VERY DENSE, GRAY, FINE SAND, TRACE SILT, TRACE CLAY, MOIST						761.1		19		SS-9		20		NP		-	
						761.1		20		SS-10		- - -		- - -		-	
MEDIUM DENSE, GRAY, FINE SAND, TRACE SILT, TRACE CLAY, MOIST						759.9		21		SS-10		21		NP		-	
						759.9		22		SS-11A		- - -		- - -		-	
VERY STIFF TO HARD, GRAY, SILT AND CLAY, TRACE SAND, MOIST						758.6		23		SS-11B		22		NP		-	
						758.6		24		SS-12		- - -		- - -		-	
HARD, GRAY, SANDY SILT, LITTLE CLAY, MOIST						757.3		25		SS-12		23		NP		-	
						757.3		26		SS-13		- - -		- - -		-	

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/24/25 08:20 - X:\PROJECTS\241804.GPJ

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; PUMPED 8 CF BENTONITE GROUT

DESIGN AGENCY	
	
DESIGNER	
TLS	
REVIEWER	
CPI 06/03/26	
PROJECT ID	
114748	
SUBSET	TOTAL
3	3
SHEET	TOTAL
P.0	0

GEOTECHNICAL PROFILE - CULVERT  
BORING LOGS B-003-0-24 & B-004-0-24