PROJECT DESCRIPTION

THIS SOIL PROFILE HAS BEEN PREPARED FOR AN APPARENT LANDSLIDE OBSERVED WITHIN THE STATE ROUTE 2 (SR 2) SOUTHEASTERN EMBANKMENT JUST EAST OF THE STATE ROUTE 163 (SR 163) BRIDGE, IN PORT CLINTON, OTTAWA COUNTY, OHIO, DESIGNATED AS OTT-2-17.69, PID NO. 120413.

HISTORIC RECORDS

IN THE PROJECT AREA, TWO GEOTECHNICAL BORINGS WERE FOUND. THE APPROXIMATE LOCATION OF HISTORICAL BORING IS MARKED ON PLATE 2. THE SUMMARY OF BOTH BOREHOLES IS AS FOLLOWS:

HISTORICAL BORING, HB-004-0-61, WAS DRILLED IN APRIL 1961, AND WAS TERMINATED AT APPROXIMATE ELEVATION 530 FEET (TOTAL DRILLED LENGTH +/- 49 FEET). THE VISUAL SOIL CLASSIFICATION INDICATED FINE-GRAINED COHESIVE SOIL WITH VARYING AMOUNTS OF COARSE MATERIAL WAS RECORDED UP TO THE ELEVATION OF 537 FEET. THE UPPER 16 FEET EXHIBITED MOTTLED SOILS. BEDROCK CONSISTING OF A DOLOMITIC SHALE, WAS ENCOUNTERED AT APPROXIMATE ELEVATION 537 FEET (DEPTH +/- 42 FEET) AND CORED TO ELEVATION OF 529.5 FEET. THE ROCK CORE NOTED GYPSUM INTERBEDS AND WAS BROKEN IN PART. A CORE LOSS OF 5% WAS NOTED.

HISTORICAL BORING, HB-009-0-61, WAS DRILLED IN APRIL 1961, AND WAS TERMINATED AT APPROXIMATE ELEVATION 528 FEET (TOTAL DRILLED LENGTH +/- 49 FEET). THE VISUAL SOIL CLASSIFICATION INDICATED FINE-GRAINED COHESIVE SOIL WITH VARYING AMOUNTS OF COARSE MATERIAL WAS RECORDED UP TO APPROXIMATE ELEVATION OF 538 FEET. THE UPPER 4 FEET EXHIBITED MOTTLED SOILS. BEDROCK CONSISTING OF A DOLOMITIC SHALE, WAS ENCOUNTERED AT APPROXIMATE ELEVATION 538 FEET (DEPTH +/- 42 FEET) AND CORED TO ELEVATION OF 528 FEET. THE ROCK CORE NOTED GYPSUM INTERBEDS AND WAS BROKEN IN PART. A CORE LOSS OF 8 AND 7% WERE NOTED.

GEOLOGY

ACCORDING TO PUBLISHED GEOLOGIC MAPS FROM THE OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR), THE PROJECT SITE IS SITUATED WITHIN THE LAKE PLAINS PHYSIOGRAPHIC REGION. THIS AREA IS CHARACTERIZED BY FLAT TO GENTLY ROLLING TERRAIN AND WAS HISTORICALLY THE BED OF AN ANCIENT LAKE KNOWN AS LAKE MAUMEE, A PRECURSOR TO LAKE ERIE. THE REGION FEATURES SANDY BEACH RIDGES, DUNES, AND FERTILE BLACK SOILS FROM THE GREAT BLACK SWAMP, WHICH WAS DRAINED FOR AGRICULTURAL PURPOSES.

THE QUATERNARY DEPOSITS AT THE SITE CONSIST OF LATE WISCONSINAN-AGED LACUSTRINE CLAY (LC) DEPOSITED BY WATER, UNDERLAIN BY OVER-CONSOLIDATED CLAYEY TILL DEPOSITS. THE LACUSTRINE CLAY SOILS WERE FORMED IN THE CALM WATERS OF GLACIAL LAKES, ARE MOSTLY LAMINATED, AND ARE OCCASIONALLY COVERED WITH THIN ORGANIC DEPOSITS.

THE BEDROCK AT THE SITE COMPRISES UPPER AND LOWER SILURIAN-AGED DOLOMITE OF THE SALINA GROUP. THIS GROUP ALSO INCLUDES INTERBEDDED LAYERS OF ANHYDRITE, GYPSUM, SALT, AND SHALE. THE TYPICAL THICKNESS OF THIS BEDROCK UNIT RANGES FROM 235 TO 335 FEET. THE DOLOMITE BEDROCK MAY CONTAIN ARGILLACEOUS PARTINGS, BRECCIATED INTERVALS, ANHYDRITE/GYPSUM ZONES, AND ALGAL LAMINATION ZONES. ODNR REFERENCES INDICATE THAT THE TOP OF THE ROCK IS AT ELEVATIONS OF APPROXIMATELY 500 TO 520 FEET, WHICH IS ROUGHLY 50 TO 75 FEET BELOW THE EXISTING GRADES ALONG SR-2.

A REVIEW OF THE ODNR "OHIO KARST AREAS" MAP INDICATES THAT NO KARST FEATURES HAVE BEEN RECORDED IN THE IMMEDIATE SITE AREA. ADDITIONALLY, A REVIEW OF THE ODNR MAP OF MINES SHOWS NO HISTORIC MINING ACTIVITY WITHIN THE IMMEDIATE SITE AREA. HOWEVER, A SURFACE MINE OPERATED BY BROWNING FERRIS INDUSTRIES IS MAPPED ROUGHLY 1 MILE WEST OF THE SR-2 CENTERLINE.

RECONNAISSANCE

CT CONSULTANTS, INC. CONDUCTED SITE RECONNAISSANCE ON OCTOBER 22, 2024, AND FEBRUARY 11, 2025. THE PROJECT SITE IS SITUATED JUST NORTH OF THE SR-2 OVERPASS OVER SR-163 AND APPROXIMATELY 1,500 FEET EAST OF THE PORTAGE RIVER CAUSEWAY. AN APPARENT SLOPE FAILURE WAS OBSERVED OFF THE SHOULDER OF SR 2, MARKED BY CONSTRUCTION BARRELS AND A TEMPORARY CONCRETE BARRIER. AT THE TOP OF THE SLOPE NEAR THE EDGE OF THE SR2 PAVEMENT, THE GRADES FALL OFF ABRUPTLY WITH A STEEP, APPROXIMATELY 5-FOOT DROP, INDICATING THE POTENTIAL FOR ADDITIONAL PROGRESSIVE SLOUGHING OF THE NEAR-SURFACE SOILS. THE GUARDRAIL POST APPEARS TO BE MOSTLY UNDERMINED, WITH A SMALL SECTION SHOWING AN OUTWARD BEND. A BULGE AND SOME DEBRIS WERE ALSO NOTED ALONG THE TOE OF THE SLOPE.

VEGETATION ON THE SLOPE INCLUDES GRASS, LOW-LYING SHRUBS, AND A FEW MATURE TREES, WITH A SIGNIFICANT PRESENCE OF PHRAGMITES AT THE BASE. AN APPROXIMATELY 1 TO 2 FEET DEEP SWALE WAS OBSERVED ALONG THE TOE OF THE SLOPE, WHICH DID NOT CONTAIN PONDED WATER.

THE SURFACE ELEVATION AT THE HIGHLY VISIBLE AREA OF DISTRESS IS APPROXIMATELY 600 FEET MSL, WHICH IS ROUGHLY 25 TO 30 FEET HIGHER IN GRADE THAN THE TOE OF THE SLOPE. THE EXISTING EMBANKMENT SLOPE IS GENERALLY GRADED AT AN AVERAGE SLOPE OF APPROXIMATELY 2 HORIZONTAL TO 1 VERTICAL (2H:1V).

CT CONSULTANTS, INC., ALSO CONDUCTED A CURSORY REVIEW OF HISTORIC AERIAL IMAGERY AVAILABLE FROM GOOGLE EARTH AND NEARMAP. AERIAL PHOTOGRAPHS FROM MAY 2012, OCTOBER 2015, AND JUNE 2024 SHOWED A LACK OF VEGETATION IN THE AREA IMMEDIATELY WEST OF THE GUARDRAIL ON THE SR 2 SHOULDER. TRANSVERSE CRACKS WERE NOTED ON THE SR 2 SECTION IN THE PROJECT AREA IN THE 2012 AND 2015 IMAGERY. NO GUARDRAIL TILTING OR SIMILAR SLOPE MOVEMENT INDICATORS WERE OBSERVED IN THE SATELLITE IMAGERY. BY EXAMINING THE HISTORICAL IMAGERY, IT APPEARS THAT THE FAILURE INITIATED SOMEWHERE BETWEEN MARCH 2023 AND JUNE 2024.

CONT. TO SHEET 2.

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH.	CLASSIFIED VISUAL
SANDY SILT	A-4A	0	3
SILT AND CLAY	A-6A	5	24
SILTY CLAY	A-6B	8	32
CLAY	A-7-6	5	8
	TOTAL	18	67

PAVEMENT OR BASE = X = APPROXIMATE THICKNESS — VISUAL

SOD AND TOPSOIL = X = APPROXIMATE THICKNESS — VISUAL

BORING LOCATION - PLAN VIEW.

HISTORIC BORING LOCATION - PLAN VIEW.

WC — INDICATES WATER CONTENT IN PERCENT.

N — INDICATES STANDARD PENETRATION RESISTANCE (NO DRILL ROD CALIBRATION CORRECTION)

N_{60} — INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.

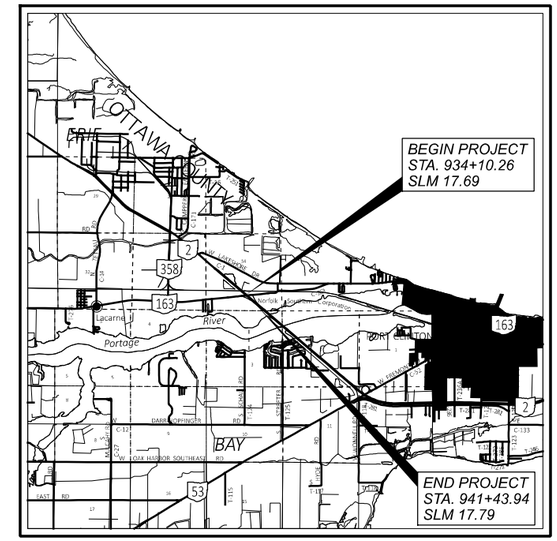
X/D" — NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT):
X/D" = NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL

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

W — INDICATES FREE WATER ELEVATION.

SS — INDICATES A NON-PLASTIC SAMPLE.

QU — UNCONFINED COMPRESSIVE STRENGTH (ASTM D 7012, METHOD C FOR ROCK)



LOCATION MAP

SCALE IN MILES

0 1 2 3 4

N

PARTICLE SIZE DEFINITIONS

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

HISTORIC CLASSIFICATION SUMMARY LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH.	CLASSIFIED VISUAL
GRAVEL AND STONE FRAGMENTS W/ SAND AND SILT	A-2-4	2	0
GRAVEL AND STONE FRAGMENTS W/ SAND, SILT AND CLAY	A-2-6	4	0
SANDY SILT	A-4A	6	0
SILT AND CLAY	A-6A	2	0
SILTY CLAY	A-6B	6	0
CLAY	A-7-6	0	1
	TOTAL	20	1

PAVEMENT OR BASE = X = APPROXIMATE THICKNESS — VISUAL

SOD AND TOPSOIL = X = APPROXIMATE THICKNESS — VISUAL

RECON. - IH 10/22/24 - 02/11/25
DRILLING - TB 11/04/24 - 11/05/24
DRAWN - TLS 3/25
REVIEWED - MI 3/25

GEOTECHNICAL PROFILE - LANDSLIDE

DESIGN AGENCY

DESIGNER TLS

REVIEWER MI 04/14/25

PROJECT ID 120413

SUBSET 1 | TOTAL 12

SHEET P.43 | TOTAL 53

OTT-2-17.69

MODEL: Sheet PAPERSIZE: 34x22 (in.) DATE: 4/14/2025 TIME: 11:25:13 AM USER: TSomogyi
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SUBSURFACE EXPLORATION

FOUR (4) TEST BORINGS AND ONE (1) HANDHOLE WERE DRILLED BY OUR DRILLING SUBCONTRACTOR ON NOVEMBER 4 AND 5 2024. THESE BORINGS ARE FULLY DESIGNATED AS BORINGS B-001-0-24 THROUGH B-005-0-24 IN ACCORDANCE WITH ODOT PROTOCOL. THE BORINGS HAVE BEEN IDENTIFIED IN ACCORDANCE WITH ODOT PROTOCOL, BUT THE "-0-24" PORTION OF THE NOMENCLATURE ARE GENERALLY OMITTED FOR DISCUSSION IN THIS REPORT.

THE BORINGS PERFORMED DURING THIS EXPLORATION WERE DRILLED WITH A DIEDRICH D70 TRACK DRILLING RIG UTILIZING 3¼-INCH INSIDE DIAMETER HOLLOW-STEM AUGERS. DURING AUGER ADVANCEMENT IN THE BORINGS SPLIT-SPOON DRIVE SAMPLES WERE GENERALLY OBTAINED CONTINUOUSLY UTILIZING AN 18-INCH SAMPLE DRIVE. THE SAMPLES WERE SEALED IN JARS AND TRANSPORTED TO OUR LABORATORY FOR FURTHER CLASSIFICATION AND TESTING.

EXPLORATION FINDINGS

THE SURFACE MATERIALS ENCOUNTERED IN BORINGS B-001AND B-004, PERFORMED ON SR 2 CONSISTED OF 10 AND 13 INCHES OF ASPHALT, UNDERLAIN BY 18 AND 12 INCHES OF AGGREGATE BASE, RESPECTIVELY. TOPSOIL, VARYING IN THICKNESS FROM 3 TO 5 INCHES, WAS ENCOUNTERED IN THE REST OF THE BORINGS.

THE SUBSOILS ENCOUNTERED UNDERLYING THE SURFACE MATERIALS CAN BE GENERALLY CHARACTERIZED AS PREDOMINANTLY COHESIVE EMBANKMENT FILL UNDERLAIN BY NATIVE COHESIVE LACUSTRINE SOILS UNDERLAIN BY NATIVE COHESIVE TILL SOILS. ACCORDING TO HISTORICAL DATA FROM THE ODOT TIMS WEBSITE, SHALE BEDROCK WAS FOUND AT AN ELEVATION OF AROUND 537 TO 538 FEET, APPROXIMATELY 60 TO 65 FEET BELOW SR-2 ROADWAY GRADES

EMBANKMENT FILL MATERIAL WAS ENCOUNTERED IN BORING B-002, WHICH CEASED AT THIS LAYER DUE TO PRACTICAL AUGER REFUSAL AT 3 FEET. SIMILARLY, RELATIVELY THINNER FILL MATERIAL WAS OBSERVED IN BORINGS B-003 AND B-005, EXTENDING TO DEPTHS OF 2½ FEET (ELEVATION 577.5±) AND 6½ FEET (ELEVATION 574.5±), RESPECTIVELY

UNDERLYING THE EMBANKMENT FILL MATERIALS, THE SUBSOILS CONSISTED OF PREDOMINANTLY VERY STIFF TO HARD COHESIVE SOILS. HOWEVER, ZONES EXHIBITING STIFF TO VERY STIFF CONSISTENCY WERE ALSO ENCOUNTERED. THESE DEPOSITS EXTENDED TO DEPTH GENERALLY RANGING FROM 9 TO 30½ FEET BELOW EXISTING GRADES (ELEVS. 572± TO 567.5±). BORINGS B-001 AND B-004 WERE TERMINATED WITHIN THIS STRATUM AT THEIR PLANNED TERMINATION DEPTH.

UNDERLYING THE NATIVE LACUSTRINE SOILS IN BORINGS B-003 AND B-005, PREDOMINANTLY STIFF TO VERY STIFF COHESIVE SOILS WERE ENCOUNTERED TO THE PLANNED BORING TERMINATION DEPTHS AT 36 AND 20 FEET (ELEVS. 544± AND 561±), RESPECTIVELY. ZONES EXHIBITING HARD CONSISTENCY WERE ALSO ENCOUNTERED WITHIN THE LOWER SOILS PROFILE.

GROUNDWATER WAS INITIALLY ENCOUNTERED DURING DRILLING AT 35½ FEET AND 12½ FEET (ELEV. 543.2± AND 569.1±) IN BORINGS B-003 AND B-005, RESPECTIVELY. GROUNDWATER WAS NOT OBSERVED UPON COMPLETION OF DRILLING OPERATIONS IN EITHER BORING. WATER WAS INTRODUCED FOR ROCK CORING UPON ENCOUNTERING AUGER REFUSAL. IT SHOULD BE NOTED THAT THE BOREHOLES WERE DRILLED AND SEALED WITHIN ONE TO TWO DAYS, AND STABILIZED WATER LEVELS MAY HAVE NOT OCCURRED OVER THIS LIMITED TIME PERIOD.

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 JANUARY 2025.

AVAILABLE INFORMATION

THE SOILAND 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.

GEOTECHNICAL PROFILE - LANDSLIDE
EXPLORATION NOTES (CONT.)

DESIGN AGENCY

DESIGNER
TLS

REVIEWER
MI 04/14/25

PROJECT ID
120413

SUBSET	TOTAL
2	12

SHEET	TOTAL
P.44	53

MODEL: Sheet PAPERSIZE: 34x22 (in.) DATE: 4/14/2025 TIME: 11:25:15 AM USER: TSomogyi
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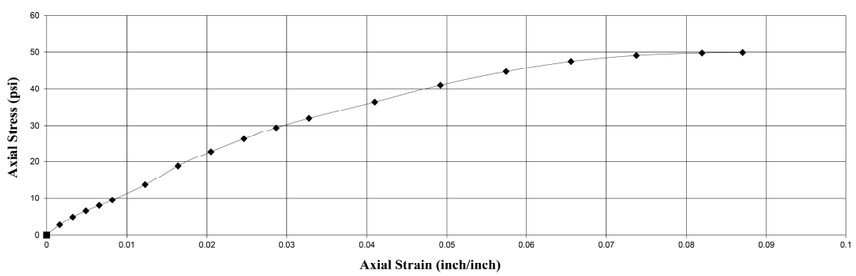
Unconsolidated - Undrained Triaxial Shear Strength Test

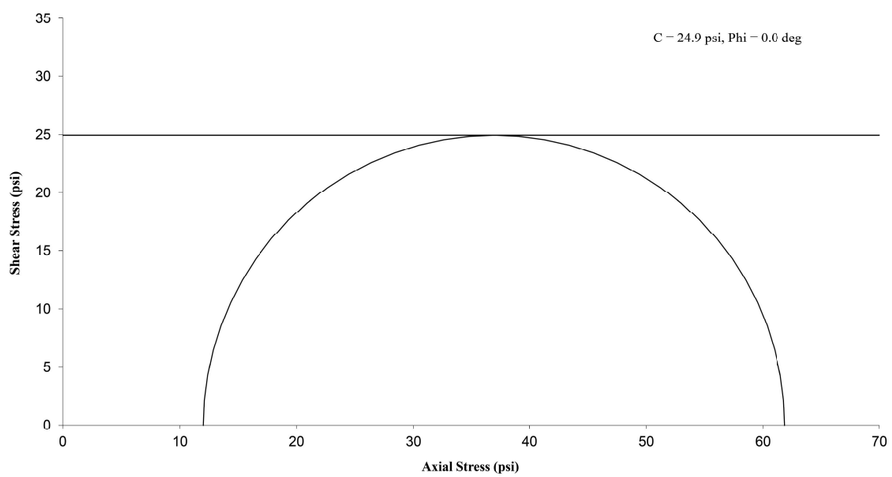
ASTM D 2850

General Sample Data		Triaxial Specimen Data			
Project No.:	242532	Symbol	◆	■	●
Project:	OTT-2	Init. Specimen Height (in.)	6.10	-	-
Sample ID:	B-004-0-24 ST-9	Init. Specimen Diameter (in.)	2.78	-	-
Sample Interval:	13.0 - 15.0'	Init. Moisture Content* (%)	14.7	-	-
Soil Description:	Gray/Brown SILT and CLAY, Some Sand, Trace Gravel, Trace Calcite Stain Seam A-6a (9)	Init. Dry Unit Weight (pcf)	114.1	-	-
Liquid Limit:	34	Init. Void Ratio	0.50	-	-
Plastic Limit:	19	Init. Degree of Saturation (%)	81	-	-
Plasticity Index:	15	Minor Principal Stress (psi)	12.0	-	-
Specific Gravity:	2.75 (Assumed)	Deviator Stress at Failure (psi)	49.9	-	-
Rate of Strain:	0.03 Inches per Minute	Major Principal Stress (psi)	61.9	-	-
Failure Criteria:	Peak Deviator Stress or Deviator Stress at 15% Axial Strain	Axial Strain at Failure (%)	8.7	-	-

Stress/Strain



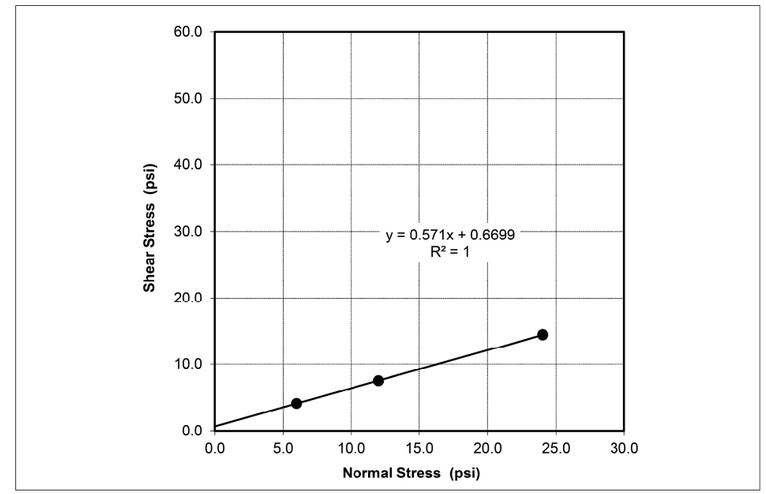
Mohr Circle Plot



DIRECT SHEAR TEST DATA

ASTM D 3080

Project Number:	242532	Boring Number.:	B-004-0-24
Project Name:	OTT-2	Sample Number:	ST-9
Project Location:	Ottawa County, OH	Sample Depth:	13.0 - 15.0'



Trial Number	Normal Stress (psi)	Shear Stress (psi)	ϕ' (degrees)	c psf
1	6.0	4.1	29.7	96.47
2	12.0	7.5		
3	24.0	14.4		

Maximum Dry Density*: pcf (Michigan Cone Test)

Optimum Moisture Content: %

Atterberg Limits:

Liquid Limit: 34

Plastic Limit: 19

Plasticity Index: 15

Particle Size Analysis:

% Gravel: 9

% Sand: 20

% Silt: 25

% Clay: 46

Soil Classification: Gray/Brown SILT and CLAY, Some Sand, Trace Gravel A-6a (9)

GEOTECHNICAL PROFILE - LANDSLIDE
SHEAR STRESS INFORMATION

DESIGN AGENCY

DESIGNER TLS

REVIEWER MI 04/14/25

PROJECT ID 120413

SUBSET 3 TOTAL 12

SHEET P.45 TOTAL 53

OTT-2-17.69

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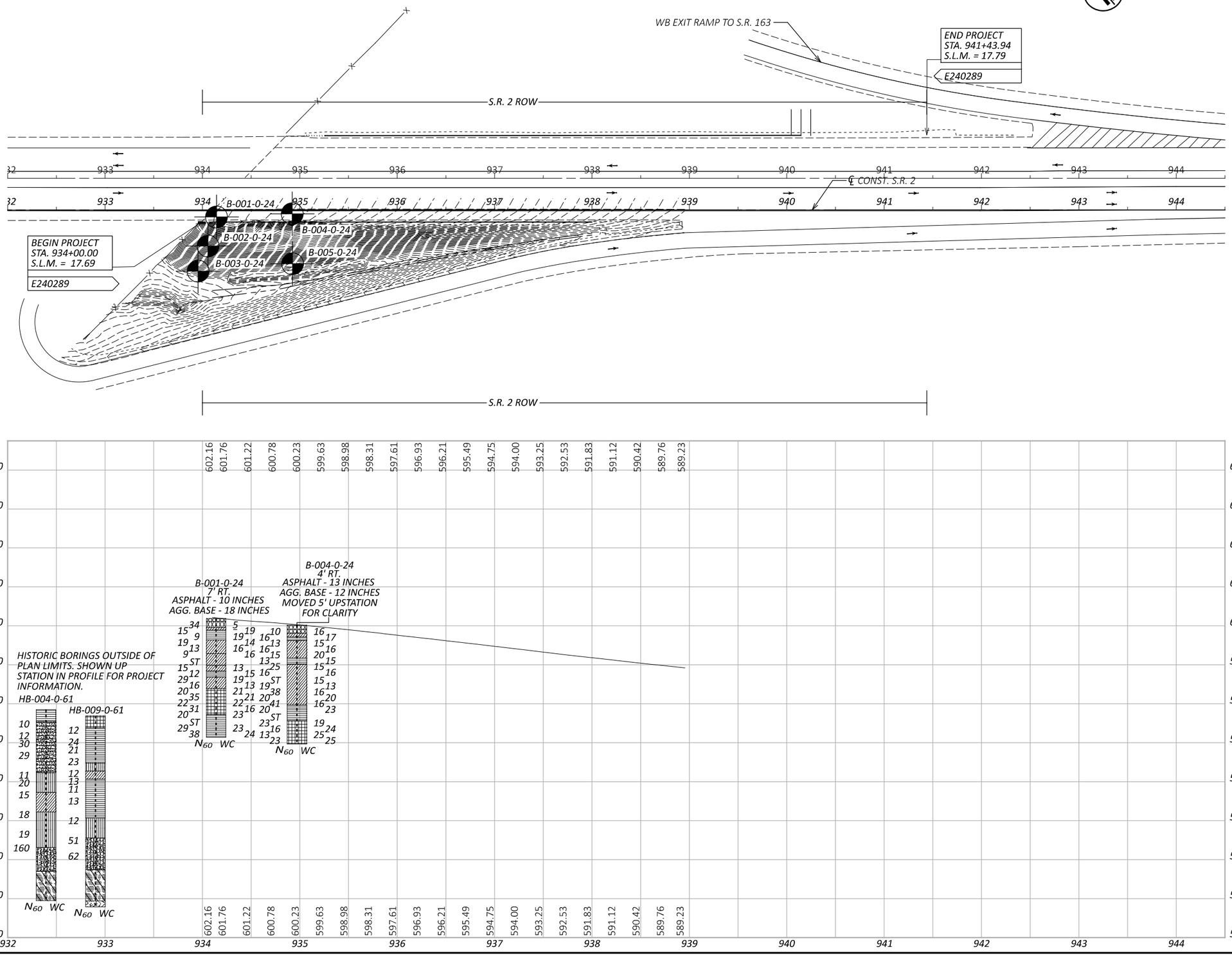

HORIZONTAL SCALE IN FEET
0 25 50 100

GEOTECHNICAL PROFILE - LANDSLIDE
PLAN AND PROFILE S.R. 2 (STA. 932+00 TO 944+50)

DESIGN AGENCY

DESIGNER: TLS
REVIEWER: MI 04/14/25
PROJECT ID: 120413
SUBSET: 4 TOTAL: 12
SHEET: P.46 TOTAL: 53

OTT-2-17.69

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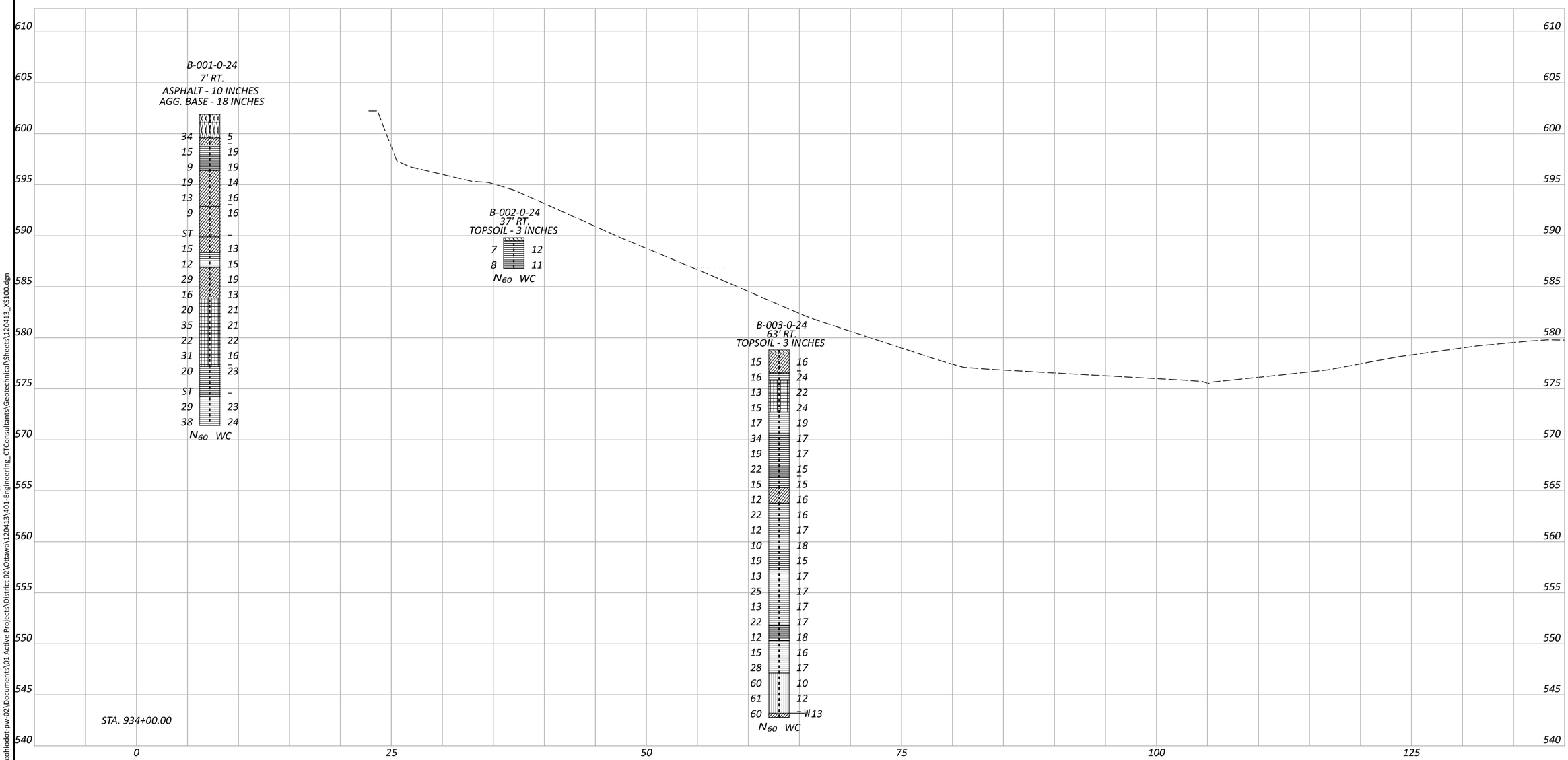

GEOTECHNIAL PROFILE - LANDSLIDE CROSS SECTION (STA. 934+00)

DESIGN AGENCY

DESIGNER
TLS

REVIEWER
MI 04/14/25

PROJECT ID
120413

SUBSET 5 | TOTAL 12

SHEET P.47 | TOTAL 53

OTT-2-17.69

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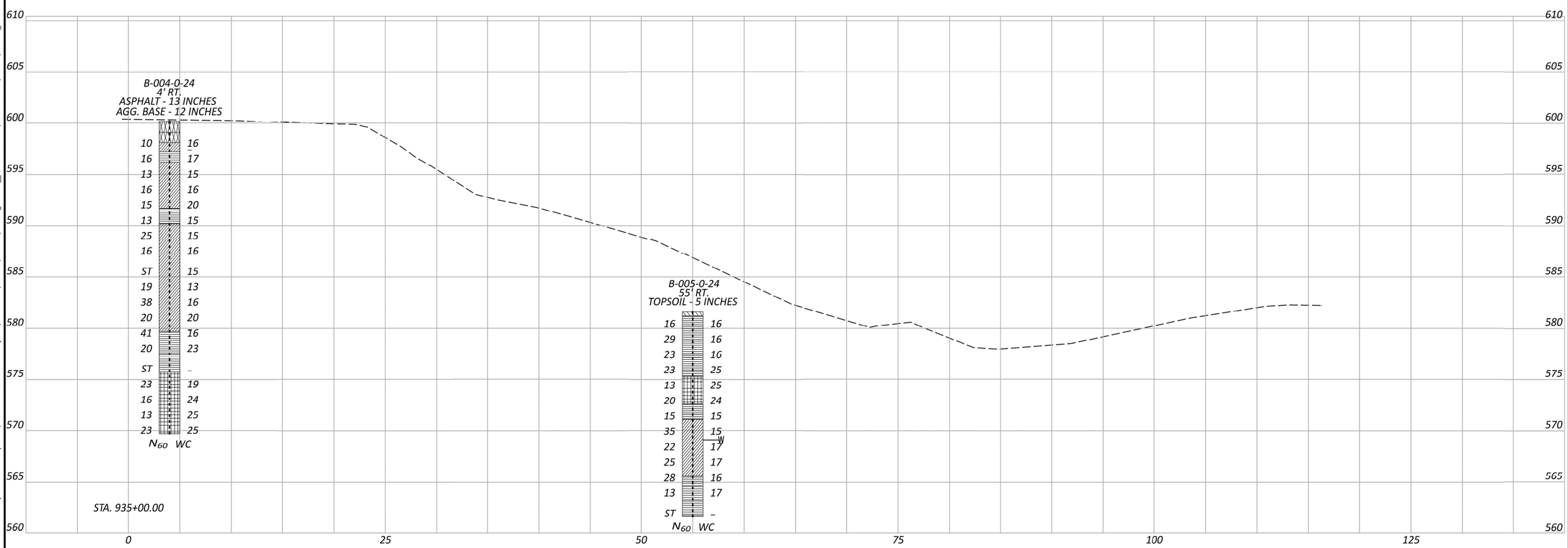

GEOTECHNICAL PROFILE - LANDSLIDE
CROSS SECTION (STA. 935+00)

DESIGN AGENCY

DESIGNER
TLS

REVIEWER
MI 04/14/25

PROJECT ID
120413

SUBSET 6 | TOTAL 12

SHEET P.48 | TOTAL 53

OTT-2-17.69

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PROJECT: OTT-2-17.69-	DRILLING FIRM / OPERATOR: TTL / TB	DRILL RIG: DIEDRICH D70 TRACK	STATION / OFFSET: 934+14, 40' RT.	EXPLORATION ID B-001-0-24
TYPE: LANDSLIDE	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: SR-2	
PID: 120413 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/11/24	ELEVATION: 601.9 (NAVD88) EOB: 30.5 ft.	PAGE 1 OF 2
START: 11/4/24 END: 11/4/24	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 87.4	LAT / LONG: 41.518337, -83.000455	

MATERIAL DESCRIPTION AND NOTES	ELEV. 601.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
ASPHALT - 10 INCHES	601.1																		
AGGREGATE BASE - 18 INCHES	599.6	1	22 18 5	34	83	SS-1	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	-	
HARD, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST	598.9	2				SS-2A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
HARD, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, FILL, MOIST @4': VERY STIFF. SOME SAND	596.4	3 4	4 6	15	89	SS-2B	4.50	5	7	10	22	56	35	17	18	19	A-6b (11)	-	
		5	3 3 3	9	100	SS-3	3.00	2	7	17	24	50	35	18	17	19	A-6b (11)	-	
HARD, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST		6	4 6 7	19	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
@7': GRAY/BROWN	592.9	7 8	4 4 5	13	56	SS-5	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
						SS-6A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
HARD, GRAY, **SILT AND CLAY**, LITTLE GRAVEL, LITTLE SAND, FILL, MOIST	589.9	9	2 3 3	9	83	SS-6B	4.25	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		10 11			79	ST-7	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST Qu = 65.4 PSI = 9,420 PSF	588.4	12 13	4 4 6	15	100	SS-8	4.50	3	7	19	25	46	30	16	14	13	A-6a (9)	-	
HARD, BROWN/GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST	586.9	14	2 3 5	12	100	SS-9	4.50	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, FILL, MOIST		15 16	9 9 11	29	100	SS-10	4.00	-	-	-	-	-	-	-	-	19	A-6a (V)	-	
@16.5': GRAY, SOME SAND	583.9	17	4 4 7	16	100	SS-11	4.50	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
HARD, GRAY/BROWN, **CLAY**, SOME SILT. LITTLE SAND, TRACE GRAVEL, MOIST		18 19	4 6 8	20	100	SS-12	3.50	2	4	10	24	60	41	21	20	21	A-7-6 (12)	-	
		20	8 11 13	35	100	SS-13	4.50	-	-	-	-	-	-	-	-	21	A-7-6 (V)	-	

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

PID: 120413	SFN:	PROJECT: OTT-2-17.69-	STATION / OFFSET: 934+14, 40' RT.	START: 11/4/24	END: 11/4/24	PG 2 OF 2	B-001-0-24

MATERIAL DESCRIPTION AND NOTES	ELEV. 580.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
HARD, GRAY/BROWN, **CLAY**, SOME SILT. LITTLE SAND, TRACE GRAVEL, MOIST *(continued)* @21': BROWN. SOME SAND, Qu = 23.8 PSI = 3,425 PSF		22	5 7 8	22	100	SS-14	4.50	-	-	-	-	-	-	-	-	22	A-7-6 (V)	-	
		23	8 10 11	31	100	SS-15	4.50	-	-	-	-	-	-	-	-	16	A-7-6 (V)	-	
	577.2	24	4 5 9	20	100	SS-16A	-	-	-	-	-	-	-	-	-	-	A-7-6 (V)	-	
VERY STIFF TO HARD, BROWN/GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST		25				SS-16B	3.25	-	-	-	-	-	-	-	-	23	A-6b (V)	-	
		26 27			100	ST-17	-	-	-	-	-	-	-	-	-	-	A-6b (V)	-	
@28': TRACE SAND		28	7 9 11	29	100	SS-18	4.00	-	-	-	-	-	-	-	-	23	A-6b (V)	-	
@29': GRAY/BROWN	571.4	29 30 EOB	9 12 14	38	100	SS-19	4.25	-	-	-	-	-	-	-	-	24	A-6b (V)	-	

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; PUMPED 9 CF CEMENT-BENTONITE GROUT

GEOTECHNICAL PROFILE - LANDSLIDE
BORING LOG B-001-0-24

PROJECT: OTT-2-17.69-	DRILLING FIRM / OPERATOR: TTL / TB	DRILL RIG: MOBILE B-53 Y TRAILER	STATION / OFFSET: 934+06, 70' RT.	EXPLORATION ID B-002-0-24
TYPE: LANDSLIDE	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: SAFETY HAMMER	ALIGNMENT: SR-2	
PID: 120413 SFN:	DRILLING METHOD: HAND AUGER	CALIBRATION DATE: N/A	ELEVATION: 589.8 (NAVD88) EOB: 3.0 ft.	PAGE 1 OF 1
START: 11/5/24 END: 11/5/24	SAMPLING METHOD: SPT	ENERGY RATIO (%): 60	LAT / LONG: 41.518289, -83.000549	

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)	SO4 ppm	BACK FILL
TOPSOIL - 3 INCHES	589.8 / 589.5																		
HARD, DARK BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, TRACE ORGANICS, FILL, MOIST		1	4 4 3	7	89	SS-1	-	-	-	-	-	-	-	-	-	12	A-6b (V)	-	
@2': BROWN/GRAY		2	3 3 5	8	72	SS-2	4.50	5	7	12	20	56	37	18	19	11	A-6b (12)	-	
	586.8	EOB 3																	

NOTES: BORING WAS TERMINATED AT APPROXIMATELY 3 FEET DUE TO PRACTICAL HAND AUGER REFUSAL.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

PROJECT: OTT-2-17.69-	DRILLING FIRM / OPERATOR: TTL / TB	DRILL RIG: DIEDRICH D70 TRACK	STATION / OFFSET: 933+96, 95' RT.	EXPLORATION ID B-003-0-24
TYPE: LANDSLIDE	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: SR-2	
PID: 120413 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/11/24	ELEVATION: 578.8 (NAVD88) EOB: 36.0 ft.	PAGE 1 OF 2
START: 11/5/24 END: 11/5/24	SAMPLING METHOD: SPT	ENERGY RATIO (%): 87.4	LAT / LONG: 41.518254, -83.000639	

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)	SO4 ppm	HOLE SEALED
TOPSOIL - 3 INCHES	578.8 / 578.5																		
HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, TRACE BRICK FRAGMENTS, TRACE ORGANICS, MOIST FILL		1	4 5 5	15	72	SS-1	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
	576.6	2	4 5 6	16	78	SS-2A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
VERY STIFF, BROWN, **SILTY CLAY**, TRACE SAND, MOIST	575.8					SS-2B	4.00	-	-	-	-	-	-	-	-	24	A-6b (V)	-	
VERY STIFF, BROWN, **CLAY**, SOME SILT, TRACE SAND, TRACE ORGANICS, MOIST	574.3	3	3 4 5	13	100	SS-3	4.00	0	1	2	24	73	53	25	28	22	A-7-6 (18)	-	
VERY STIFF, BROWN, **CLAY**, SOME SILT, TRACE SAND, MOIST Qu = 23.4 PSI = 3,370 PSF	572.8	5	4 4 6	15	100	SS-4	4.00	0	1	2	24	73	49	23	26	24	A-7-6 (16)	-	
HARD, GRAY/BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST		7	3 4 8	17	100	SS-5	4.50	-	-	-	-	-	-	-	-	19	A-6b (V)	-	
@7.7': BROWN		8	11 10 13	34	100	SS-6	4.50	2	9	13	24	52	37	19	18	17	A-6b (11)	-	
		10	3 4 9	19	100	SS-7	4.50	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
@10.5': LITTLE GRAVEL		11	6 7 8	22	100	SS-8	4.50	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
	566.3	12				SS-9A	-	-	-	-	-	-	-	-	-	-	A-6b (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	565.3	13	3 5 5	15	100	SS-9B	3.75	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
VERY STIFF, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	563.8	14	2 4 4	12	100	SS-10	2.75	9	7	14	24	46	29	16	13	16	A-6a (8)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	562.3	16	6 7 8	22	100	SS-11	3.25	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST		17	2 4 4	12	100	SS-12	3.00	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
@18': LITTLE SAND	559.3	19	2 2 5	10	100	SS-13	3.00	-	-	-	-	-	-	-	-	18	A-6b (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE GRAVEL, LITTLE SAND, MOIST		20	5 5 8	19	100	SS-14	2.50	-	-	-	-	-	-	-	-	15	A-6b (V)	-	

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

GEOTECHNICAL PROFILE - LANDSLIDE
BORING LOGS B-002-0-24 & B-003-0-24

PID: 120413 | SFN: | PROJECT: OTT-2-17.69- | STATION / OFFSET: 933+96, 95' RT. | START: 11/5/24 | END: 11/5/24 | PG 2 OF 2 | B-003-0-24

MATERIAL DESCRIPTION AND NOTES	ELEV. 557.8	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE GRAVEL, LITTLE SAND, MOIST *(continued)* @21': STIFF, TRACE GRAVEL, Qu = 17.8 PSI = 2,565 PSF @22.5': SOME SAND		22	3 3 6	13	100	SS-15	2.50	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
		23	5 7 10	25	100	SS-16	3.25	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
		24 25	2 4 5	13	100	SS-17	3.00	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
@25.5': LITTLE SAND	551.8	26 27	4 6 9	22	100	SS-18	2.75	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	550.3	28	3 3 5	12	100	SS-19	2.50	-	-	-	-	-	-	-	-	18	A-6b (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST		29 30	3 4 6	15	100	SS-20	3.50	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
	547.1	31	5 7 12	28	100	SS-21	3.50	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
HARD, GRAY, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, MOIST		32 33	17 23 18	60	100	SS-22	4.50	-	-	-	-	-	-	-	-	10	A-4a (V)	-	
		34	13 15 27	61	100	SS-23	-	-	-	-	-	-	-	-	-	12	A-4a (V)	-	
	543.2	35 W 543.2	3 6 35	60	100	SS-24A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, LITTLE DOLOMITE FRAGMENTS, MOIST	542.8	EOB 36				SS-24B	4.50	-	-	-	-	-	-	-	-	13	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 10 CF CEMENT-BENTONITE GROUT

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

PROJECT: OTT-2-17.69- | TYPE: LANDSLIDE | PID: 120413 | SFN: | START: 11/4/24 | END: 11/4/24

DRILLING FIRM / OPERATOR: TTL / TB | SAMPLING FIRM / LOGGER: TTL / KKC | DRILLING METHOD: 3.25" HSA | SAMPLING METHOD: SPT / ST

DRILL RIG: DIEDRICH D70 TRACK | HAMMER: DIEDRICH AUTOMATIC | CALIBRATION DATE: 6/11/24 | ENERGY RATIO (%): 87.4

STATION / OFFSET: 934+92, 36' RT. | ALIGNMENT: SR-2 | ELEVATION: 600.2 (NAVD88) | EOB: 30.5 ft. | LAT / LONG: 41.518206, -83.000232

EXPLORATION ID B-004-0-24 | PAGE 1 OF 2

MATERIAL DESCRIPTION AND NOTES	ELEV. 600.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
ASPHALT - 13 INCHES	599.1																		
AGGREGATE BASE - 12 INCHES	598.1	1 2	9 3 4	10	78	SS-1	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
VERY STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, FILL, MOIST	597.2					SS-2A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
VERY STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, FILL, MOIST	596.2	3	5 5 6	16	89	SS-2B	4.00	2	6	9	26	57	38	19	19	17	A-6b (12)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST		4 5	3 4 5	13	100	SS-3	4.50	3	8	12	22	55	33	18	15	15	A-6a (10)	-	
@5.5': VERY STIFF, BROWN/GRAY		6	4 5 6	16	100	SS-4	3.75	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
@7': HARD, GRAY	591.7	7 8	3 5 5	15	78	SS-5	4.25	-	-	-	-	-	-	-	-	20	A-6a (V)	-	
VERY STIFF, BROWN/GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, FILL, MOIST Qu = 35.5 PSI = 5,110 PSF	590.2	9	4 4 5	13	83	SS-6	3.00	2	8	8	22	60	34	18	16	15	A-6b (10)	-	
HARD, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST		10 11	6 8 9	25	100	SS-7	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		12	3 4 7	16	100	SS-8	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
@13': UU TRIAXIAL TEST - C - 24.9 PSI		13 14			54	ST-9	-	9	7	13	25	46	34	19	15	15	A-6a (9)	-	
@16': GRAY		15 16	3 6 7	19	100	SS-10	4.50	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
@16.5': BROWN/GRAY		17 18	12 13 13	38	100	SS-11	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
@18.5': BROWN, LITTLE SAND		19	4 6 8	20	100	SS-12	4.50	-	-	-	-	-	-	-	-	20	A-6a (V)	-	
@19.5': SOME SAND	579.7	20	10 12 16	41	100	SS-13A	4.50	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
						SS-13B	-	-	-	-	-	-	-	-	-	16	A-6b (V)	-	

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

GEOTECHNICAL PROFILE - LANDSLIDE
BORING LOGS B-003-0-24 (CONT.) & B-004-0-24

PID: 120413 | SFN: | PROJECT: OTT-2-17.69- | STATION / OFFSET: 934+92, 36' RT. | START: 11/4/24 | END: 11/4/24 | PG 2 OF 2 | B-004-0-24

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)	SO4 ppm	HOLE SEALED
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST *(continued)*	579.2	22	3 5 9	20	100	SS-14	4.00	-	-	-	-	-	-	-	-	23	A-6b (V)	-	
		23 24			13	ST-15	-	-	-	-	-	-	-	-	-	-	A-6b (V)	-	
HARD, BROWN, **CLAY**, SOME SILT, LITTLE SAND, TRACE GRAVEL, MOIST	575.7	25	4 6 10	23	100	SS-16	4.50	-	-	-	-	-	-	-	-	19	A-7-6 (V)	-	
@26': VERY STIFF, GRAY, TRACE SAND, Qu = 31.5 PSI = 4,535 PSF		26 27	5 5 6	16	100	SS-17	4.00	-	-	-	-	-	-	-	-	24	A-7-6 (V)	-	
@27.5': BROWN		28 29	3 4 5	13	100	SS-18	3.75	0	2	2	23	73	54	25	29	25	A-7-6 (18)	-	
	569.7	30 EOB	4 7 9	23	100	SS-19	3.25	-	-	-	-	-	-	-	-	25	A-7-6 (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH. PUMPED 9 CF CEMENT-BENTONITE GROUT

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

PROJECT: OTT-2-17.69- | DRILLING FIRM / OPERATOR: TTL / TB | DRILL RIG: DIEDRICH D70 TRACK | STATION / OFFSET: 934+93, 88' RT. | EXPLORATION ID B-005-0-24
TYPE: LANDSLIDE | SAMPLING FIRM / LOGGER: TTL / KKC | HAMMER: DIEDRICH AUTOMATIC | ALIGNMENT: SR-2
PID: 120413 SFN: | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 6/11/24 | ELEVATION: 581.6 (NAVD88) | EOB: 20.0 ft. | PAGE 1 OF 1
START: 11/5/24 END: 11/5/24 | SAMPLING METHOD: SPT / ST | ENERGY RATIO (%): 87.4 | LAT / LONG: 41.518096, -83.000351

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)	SO4 ppm	HOLE SEALED
TOPSOIL - 5 INCHES	581.2																		
HARD, BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, FILL, MOIST		1	3 4 7	16	78	SS-1	4.50	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
		2	7 9 11	29	78	SS-2	4.50	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
		3 4	4 7 9	23	100	SS-3	4.50	4	7	13	20	56	35	18	17	16	A-6b (11)	-	
@5.3': VERY STIFF, TRACE SAND		5	6 7 9	23	89	SS-4	3.00	-	-	-	-	-	-	-	-	25	A-6b (V)	-	
VERY STIFF, BROWN/GRAY, **CLAY**, SOME SILT, TRACE SAND, FILL, MOIST Qu - 27.0 PSI	575.3	6 7	3 4 5	13	100	SS-5	3.25	0	1	3	23	73	55	26	29	25	A-7-6 (19)	-	
@7.5': LITTLE SAND		8	7 7 7	20	100	SS-6	3.75	-	-	-	-	-	-	-	-	24	A-7-6 (V)	-	
HARD, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	572.6	9 10	2 4 6	15	100	SS-7	4.50	3	10	9	23	55	37	19	18	15	A-6b (11)	-	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	571.1	11 12	6 10 14	35	100	SS-8	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
@12.5': VERY STIFF, LITTLE SAND, Qu - 36.2 PSI		W 569.1 13	8 6 9	22	100	SS-9	4.00	7	8	8	22	55	33	18	15	17	A-6a (10)	-	
@13.5': HARD		14 15	8 8 9	25	100	SS-10	4.50	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
	565.6	16	9 9 10	28	100	SS-11	2.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST		17 18	2 4 5	13	100	SS-12	2.25	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
		19			100	ST-13	-	-	-	-	-	-	-	-	-	-	A-6b (V)	-	
	561.6	20 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 5 CF CEMENT-BENTONITE GROUT

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 3/13/25 11:57 - X:\PROJECTS\242532.GPJ

GEOTECHNICAL PROFILE - LANDSLIDE
BORING LOGS B-004-0-24 (CONT.) & B-005-0-24

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 3-29-61 Sampler Type SS Dia 1 3/8" Water Elev
Date Completed 3-29-61 Casing Length NONE Dia

Project Identification OTTAWA
OTT-2-16.47
OTT-2-1777
OVER SR 163

Boring No B-4 Station & Offset 88+48, 48' RT (REAR PIER) Surface Elev 578.5

Elev	Depth	Std Pen (N)	Rec ft	Loss ft	Description	Field No.	Lab Nos. Sa	% Agg	% C.S	% F.S	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
578.5	0															
576.0	2															
	4	4/6			Mottled Brownish-Gray Silty Clay	1	4328	0	2	3	32	63	38	19	27	
573.5	6	4/8			Mottled Brownish-Gray Sandy Clay	2	4329	13	5	10	30	42	34	15	23	
571.0	8	10/20			Mottled Brownish-Gray Gravelly Sandy Clay	3	4330	18	7	14	27	34	29	12	16	
568.5	10	12/17			Mottled Brownish-Gray Sandy Gravelly Clay	4	4331	23	5	10	27	35	28	13	17	
	12															
	14															
563.5	16	4/7			Gray Sandy Gravelly Clay	5	4332	19	7	12	26	36	26	12	22	
561.0	18	11/9			Gray Sandy Gravelly Silt	6	4333	22	6	11	24	37	25	10	17	
558.5	20	6/9			Gray Sandy Gravelly Clay	7	4334	V	I	S	U A	L	26	11	31	
	22															
	24															
553.5	26	7/11			Gray Sandy Gravelly Silt	8	4335	18	7	11	24	40	27	9	18	
	28															
548.5	30	8/11			Gray Gravelly Sandy Silt	9	4336	15	5	11	27	42	27	9	17	
	32															
	34															
543.5	36	60/*			Gray Sandy Silt Brown, Sandy Clayey Silt, with gravel, stone fragments and few cobbles.	10	4337	10	5	11	41	33	22	4	12	

Particle Sizes: Agg= >2.00mm, Coarse Sand=2.00-0.42mm, Fine Sand=0.42-0.074mm, Silt=0.074-0.005mm, Clay= <0.005mm
*REFUSAL

SHEET 6 of 13 sheets

Boring No. B-4 Station & Offset 88+48, 48' RT Surface Elev 578.5 Project OTT-2-1777

Elev	Depth	Rec ft	Loss ft	Description
	38	3.3	1.2	Brown, sandy clayey silt, with gravel, stone fragments and few cobbles.
	40			
537.0				TOP OF HARD ROCK
	42	3.5	1.5	
	44			
	46	3.6	0.4	Shale, gray, very dense, dolomitic, hard to firm, with few gypsum interbeds, broken in part. Core loss: 5%
	48			
529.5				BOTTOM OF BORING
	50			
	52			
	54			
	56			
	58			
	60			
	62			
	64			
	66			
	68			
	70			
	72			
	74			
	76			
	78			
	80			

Form TT-24

SHEET 7 of 13 Sheets

GEOTECHNICAL PROFILE - LANDSLIDE
HISTORIC BORING LOG HB-004-0-61

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 3-30-61 Sampler Type SS Dia. 1 3/8" Water Elev.
Date Completed 3-30-61 Casing: Length None Dia.

Project Identification: OTTAWA
OTT-2-16.47
OTT-2-1777
OVER SR 163

Boring No. B-9 Station & Offset 90+08, 43'LT (FORWARD PIER) Surface Elev. 576.9

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class
576.9	0															
574.4	2															
	4	6/6			Mottled Brownish-Gray Clay	1	4317	0	0	2	34	64	52	26	26	
571.9	6	10/14			Brown Sandy Clay	2	4318	11	7	13	27	42	33	15	16	
569.4	8	8/13			Brown Sandy Clay	3	4319	0	9	11	28	52	38	17	23	
566.9	10	10/13			Brown Sandy Clay	4	4320	14	6	12	27	41	35	19	20	
564.4	12															
	14	5/7			Gray Sandy Silt	5	4321	8	6	12	31	43	28	10	17	
561.9	16	5/8			Gray Gravelly Sandy Silt	6	4322	15	6	12	22	45	25	10	18	
559.4	18	5/6			Gray Sandy Clay	7	4323	13	6	12	26	43	28	11	19	
556.9	20	5/8			Gray Sandy Clay	8	4324	11	7	10	28	44	35	22	19	
	22															
	24															
551.9	26	5/7			Gray Sandy Silt	9	4325	11	6	12	28	43	24	10	18	
	28															
546.9	30	21/30			Gray Sandy Silt	10	4326	13	7	14	31	35	24	9	11	
	32															
	34		3.4	0.6	Brown sandy silt w/gravel and stone fragments											
541.9	36	20/42			Gray Sandy Gravelly Silt w/Stone Fragments	11	4327	27	8	11	30	24	20	5	12	

Particle Sizes: Agg.= >2.00mm, Coarse Sand=2.00-0.42mm, Fine Sand=0.42-0.074mm, Silt=0.074-0.005mm, Clay= <0.005mm

SHEET 8 of 13 sheets

Boring No. B-9 Station & Offset 90+08, 43'LT Surface Elev. 576.9 Project OTT-2-1777

Elev.	Depth	Rec. ft.	Loss ft.	Description
538.4	38	3.1	0.7	
	40			TOP OF HARD ROCK
	42	5.0	0.0	
	44			Shale, gray, very dense, dolomitic, hard, with few gypsum interbeds, grading to dolomite at base. Core loss: 8%
	46			
529.3	48	3.7	0.3	
527.9				Gypsum, interbedded with thin beds of dolomite (comprises 35% of interval) Core loss: 7%
	50			BOTTOM OF BORING
	52			
	54			
	56			
	58			
	60			
	62			
	64			
	66			
	68			
	70			
	72			
	74			
	76			
	78			
	80			

SHEET 9 of 13 Sheets

GEOTECHNICAL PROFILE - LANDSLIDE
HISTORIC BORING LOG HB-009-0-61