REVISED DRAFT REPORT
STRUCTURE FOUNDATION EXPLORATION
NOISE BARRIERS
SUM IR 0077/8 09.75/0.00
SUMMIT COUNTY, OHIO
PID#: 113208

Prepared For:

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NEAS PROJECT 22-0033

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EXECUTIVE SUMMARY

The Ohio Department of Transportation (ODOT) has proposed noise abatement project (SUM IR 0077/8 09.75/0.00 PID 113208) along IR-77 between Waterloo Road / Central Interchange and the east side of SR-8 in Summit County, Ohio. The project consists of construction of seventeen noise barrier walls (Noise Barrier A – Noise Barrier Q). The overall project objective is to reduce noise from IR-77 and the referenced interchanges.

National Engineering and Architectural Services Inc. (NEAS) has been contracted to perform geotechnical engineering services for the project. The purpose of the geotechnical engineering services was to perform geotechnical explorations within the project limits to obtain information concerning the subsurface soil and groundwater conditions relevant to the design and construction of the project. Between November 29, 2022, and August 10, 2023, NEAS performed the site reconnaissance and exploration program for the project. The subsequent document presents the results of a structure foundation exploration with respect to seventeen noise barrier walls (Noise Barrier A – Noise Barrier Q).

The construction of noise walls along IR-77 is proposed to protect local noise-sensitive land from traffic. The proposed noise walls include the following: 1) Noise Barrier A, an approximate 530 ft long, maximum 14.5 ft tall noise wall along the west side of IR-77; 2) Noise Barrier B, an approximate 1,742 ft long, maximum 15.0 ft tall noise wall along the west side of IR-77; and 3) Noise Barrier C, an approximate 1,064 ft long, maximum 14.5 ft tall noise wall along the west side of IR-77; 4) Noise Barrier D, an approximate 1,561 ft long, maximum 20.0 ft tall noise wall along the west side of IR-77; 5) Noise Barrier E, an approximate 556 ft long, maximum 16.0 ft tall noise wall along the west side of IR-77; 6) Noise Barrier F, an approximate 692 ft long, maximum 17.0 ft tall noise wall along the west side of IR-77; 7) Noise Barrier G, an approximate 960 ft long, maximum 14.0 ft tall noise wall along the west side of IR-77; 8) Noise Barrier H, an approximate 946 ft long, maximum 16 ft tall noise wall along the west side of IR-77; 9) Noise Barrier I, an approximate 546 ft long, maximum 16.5 ft tall noise wall along the east side of IR-77; 10) Noise Barrier J, an approximate 1,430 ft long, maximum 17.5 ft tall noise wall along the east side of IR-77; 11) Noise Barrier K, an approximate 676 ft long, maximum 16.5 ft tall noise wall along the east side of IR-77; 12) Noise Barrier L, an approximate 632 ft long, maximum 16.5 ft tall noise wall along the east side of IR-77; 13) Noise Barrier M, an approximate 1,580 ft long, maximum 15.5 ft tall noise wall along the east side of IR-77; 14) Noise Barrier N, an approximate 550 ft long, maximum 14.5 ft tall noise along the east side of IR-77; 15) Noise Barrier O, an approximate 716 ft long, maximum 14.0 ft tall noise wall along the east side of IR-77; 16) Noise Barrier P, an approximate 1,080 ft long, maximum 15.5 ft tall noise wall along the east side of IR-77; 17) Noise Barrier Q, an approximate 952 ft long, maximum 17.0 ft tall noise wall along the east side of IR-77. The proposed noise wall foundations are assumed to be constructed using ODOT standard 30-inch diameter drilled shafts with a maximum length of 25 ft.

The subsurface profile at all seventeen noise wall sites consists of both fine-grained cohesive soils (A-4a, A-4b, A-6a, A-6b and A-7-6) and granular soils (A-1-b, A-2-4, A-3a, A-4a and A-4b) atop weathered bedrock. Bedrock elevations at the noise barrier sites were encountered range from 1034.0 ft to 1129.2 ft amsl, putting bedrock at a depth of 3.5 to 23.0 ft below ground surface (bgs). Bedrock was logged as slightly to highly weathered sandstone or severely to moderately weathered shale. It should be noted that black coal was encountered in the borings B-065-0-22 and B-067-0-22.

Based on our noise barrier foundation analyses, foundation soil conditions will provide adequate drilled shaft resistance assuming it is designed and constructed in accordance with the recommendations provided within this report, as well as all applicable standards and specifications (i.e., ODOT Geotechnical Design Manual) for noise wall design and construction.

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1. INTRODUCTION

1.1. General

NEAS presents our Structure Foundation Exploration Report for the proposed construction of seventeen noise barrier walls (Noise Barrier A – Noise Barrier Q) as part of the proposed project SUM IR 0077/8 09.75/0.00 (PID 113208). The referenced project will be located along IR-77 between Waterloo Road / Central Interchange and the east side of SR-8 in Summit County, Ohio. The overall project objective is to reduce noise from IR-77 and the referenced interchanges. This report presents a summary of the encountered surficial and subsurface conditions and our recommendations for noise barrier foundation design and construction in accordance with Load and Resistance Factor Design (LRFD) method as set forth in AASHTO's Publication *LRFD Bridge Design Specifications, 9th Edition* with 2020 interim revisions (BDS) (AASHTO, 2020), *ODOT's 2023 LRFD Bridge Design Manual* (BDM) (ODOT, 2023) and *ODOT's 2023 Geotechnical Design Manual* (GDM) (ODOT, 2023).

The exploration for noise barriers was conducted in general accordance with Barr Engineering, Inc.'s DBA NEAS, Inc. proposal to Arcadis U.S., Inc., dated May 3, 2022, and with the provisions of ODOT's *Specifications for Geotechnical Explorations* (SGE) (ODOT, 2022).

The scope of work performed by NEAS as part of the referenced project included: a review of published geotechnical information; performing 72 total test borings; laboratory testing of soil samples in accordance with the SGE; performing geotechnical engineering analysis to assess foundation design and construction considerations; and development of this summary report.

1.2. Proposed Construction

The construction of noise walls along IR-77 is proposed to protect local noise-sensitive land from traffic. The proposed noise walls include the following: 1) Noise Barrier A, an approximate 530 ft long, maximum 14.5 ft tall noise wall from Station 10+00 to Station 15+30 (Barrier A alignment) along the west side of IR-77; 2) Noise Barrier B, an approximate 1,742 ft long, maximum 15.0 ft tall noise wall from Station 10+00 to Station 27+42 (Barrier B alignment) along the west side of IR-77; and 3) Noise Barrier C, an approximate 1,046 ft long, maximum 14.5 ft tall noise wall from Station 10+00 to Station 20+46 (Barrier C alignment) along the west side of IR-77; 4) Noise Barrier D, an approximate 1,561 ft long, maximum 20.0 ft tall noise wall from Station 10+00 to Station 25+61 (Barrier D alignment) along the west side of IR-77; 5) Noise Barrier E, an approximate 556 ft long, maximum 16.0 ft tall noise wall from Station 10+00 to Station 15+56 (Barrier E alignment) along the west side of IR-77; 6) Noise Barrier F, an approximate 692 ft long, maximum 17.0 ft tall noise wall from Station 10+00 to Station 16+92 (Barrier F alignment) along the west side of IR-77; 7) Noise Barrier G, an approximate 960 ft long, maximum 14.0 ft tall noise wall from Station 10+00 to Station 19+60 (Barrier G alignment) along the west side of IR-77; 8) Noise Barrier H, an approximate 946 ft long, maximum 16 ft tall noise wall from Station 10+00 to Station 19+46 (Barrier H alignment) along the west side of IR-77; 9) Noise Barrier I, an approximate 546 ft long, maximum 16.5 ft tall noise wall from Station 10+00 to Station 15+46 (Barrier I alignment) along the east side of IR-77; 10) Noise Barrier J, an approximate 1,430 ft long, maximum 17.5 ft tall noise wall from Station 10+00 to Station 24+30 (Barrier J alignment) along the east side of IR-77; 11) Noise Barrier K, an approximate 676 ft long, maximum 16.5 ft tall noise wall from Station 10+00 to Station 16+76 (Barrier K alignment) along the east side of IR-77; 12) Noise Barrier L, an approximate 632 ft long, maximum 16.5 ft tall noise wall from Station 10+00 to Station 16+32 (Barrier L alignment)

along the east side of IR-77; 13) Noise Barrier M, an approximate 1,580 ft long, maximum 15.5 ft tall noise wall from Station 10+00 to Station 25+80 (Barrier M alignment) along the east side of IR-77; 14) Noise Barrier N, an approximate 550 ft long, maximum 14.5 ft tall noise wall from Station 10+00 to Station 15+50 (Barrier N alignment) along the east side of IR-77; 15) Noise Barrier O, an approximate 716 ft long, maximum 14.0 ft tall noise wall from Station 10+00 to Station 17+16 (Barrier O alignment) along the east side of IR-77; 16) Noise Barrier P, an approximate 1,080 ft long, maximum 15.5 ft tall noise wall from Station 10+00 to Station 20+80 (Barrier P alignment) along the east side of IR-77; 17) Noise Barrier Q, an approximate 952 ft long, maximum 17.0 ft tall noise wall from Station 10+00 to Station 19+52 (Barrier Q alignment) along the east side of IR-77.

The proposed noise wall foundations are assumed to be constructed using ODOT standard 30-inch diameter drilled shafts with a maximum length of 25 ft.

2. GEOLOGY AND OBSERVATIONS OF THE PROJECT

2.1. Geology and Physiography

The project site is located within the Akron-Canton Interlobate Plateau, part of the Glaciated Allegheny Plateaus (ODGS, 1998). This is a moderate relief, hummocky area between two converging glacial lobes dominated by kames, kame terraces, eskers, kettles, kettle lakes, and bogs/fens. Soils in this region are characteristically sandy Wisconsinan-age clay to loam till over Mississippian and Pennsylvanian-age shales, sandstones, conglomerates, and coals.

The geology at the project site is mapped as an average of 20 ft of Wisconsinan-age till underlain by Pennsylvanian-age Shale, Sandstone, Limestone, and Coal bedrock (ODGS, 2005). The till is described as an unsorted mix of clay, silt, sand, gravel, and boulders. May contain silt, sand, and gravel lenses. Till in deep buried valleys is noted as potentially being older than Wisconsinan.

The exception to this is a small area at the southern end of the project area that is mapped as an average of 300 ft of Wisconsinan-age sand and gravel underlain by Mississippian-age sandstone and shale bedrock (ODGS, 2005) the sand and gravel is described as interbedded sand and gravel commonly containing thin, discontinuous layers of silt and clay. The grains are well to moderately sorted, moderately to well rounded, finely stratified to massive, may be cross-bedded, and may locally contain organics. Sand and gravel in deep buried valleys is noted as potentially being older than Wisconsinan.

Based on the Bedrock Geologic Units Map of Ohio (USGS & ODGS, 2006), bedrock within the project area consists of shale, sandstone, limestone, and coal, of the Allegheny and Pottsville groups, undivided. This undivided group is comprised of Pennsylvanian-age shale, sandstone, limestone, and coal. The shale in this formation is described as black, gray, and olive in color, clayey to silty, and calcareous in part. The sandstone in this formation is described as light to medium gray and weathers to shades of yellow brown, mostly very fine to medium grained, locally quartzose and conglomeratic in the lower third of the unit, and thin to massive to cross bedded. The limestone in this formation is described as black to light gray in color, micritic to medium grained, locally grades to flint, thin to medium bedded. The coal in this formation is described as mostly banded bituminous, locally cannel, thin to locally as much as 12 ft thick. The bedrock appears to follow the natural topography of the site which slopes very gently from south to north. (ODGS, 2003). Based on the ODNR bedrock topography map of Ohio, bedrock elevations at the project site can be expected to be between 1000 to 1100 ft amsl, putting bedrock at a depth of about 5 to 40 ft below ground surface (bgs).

The soils at the project site have been mapped (Web Soil Survey) by the Natural Resources Conservation Service (USDA, 2015) as primarily Udorthents and Canfield-Urban land complex. Soils classified as Udorthents are soils that have been disturbed by cutting and filling and as such are not classified according to the AASHTO method of soil classification. Soils in the Canfield series are characterized as very deep, moderately well drained soils formed in Wisconsinan-age till on plains. The Canfield series is comprised of both coarse- and fine-grained soils and classifies as A-1, A-2, A-4, A-6, and A-7 type soils according to the AASHTO method of soil classification.

2.2. Hydrology/Hydrogeology

Groundwater at the project site can be expected at an elevation consistent with that of the nearby Little Cuyahoga River in the northern portion of the project and the Tuscarawas River in the southern portion of the project as they are the most dominant hydraulic influences in the vicinity of the project's boundaries. The water level of the two aforementioned rivers may be generally representative of the local groundwater table. However, it should be noted that perched groundwater systems may be existent in areas due to the presence of fine-grained soils making it difficult for groundwater to permeate to the phreatic surface.

The project site is not located within a regulatory flood hazard area based on available mapping by the Federal Emergency Management Agency's (FEMA) National Flood Hazard mapping program (FEMA, 2019).

2.3. Mining and Oil/Gas Production

One abandoned mine (ID# ST-OGS-019) located along IR-77 between E Wilbeth Rd. and E Catawba Ave. was noted on ODNR's Abandoned Underground Mine Locator in the vicinity of the project site. Note that the exact extents of this abandoned mine are unknown (ODNR [1], 2020).

One directionally drilled oil and gas well (ID# 3415322866) was noted on ODNR's Oil and Gas Well Locator in the vicinity of the project site (ODNR [1], 2020). The wellhead was located about 0.04 miles south and 0.04 miles west of where Beacon St. crosses under SR-8. The bottom of the well was located about 0.1 miles north and 0.02 miles east of the same point (ODNR [1], 2020).

2.4. Historical Records and Previous Phases of Project Exploration

The following reports/plans were available for review and evaluation for this report:

- SUM-IR76/77-8.42/09.74, IR-77 Roadway Cut Slope Exploration, Akron, Summit County, Ohio, by S&ME dated 2021

- Soil Profile Sheets, Structural Foundation Investigation Sheets, and Boring Logs for the Roadway Subsurface Investigation for Project SUM-8-0.63 dated February 10, 2000.

- Soil Profile Sheets, Structural Foundation Investigation Sheets, and Boring Logs for the Roadway Subsurface Investigation for Project SUM-8-10.00 dated 1961.

Historical soil borings associated with the above plans and the project SUM-IR76/77-8.42/09.74 borings were reviewed. Among them, seven of them were utilized in our design, as listed in Table 1 below. Those borings were represented in Appendix B.

Table 1: Historical Boring Summary

Boring Number	Location (Sta/Offset)	Reference Alignment	Latitude	Longitude	Elevation (ft)
B-006-5-60	9+88, 13' RT.	Noise Wall K	41.035944	-81.504678	1127.4
B-019-0-60	14+10, 10' RT.	Noise Wall K	41.037099	-81.504631	1125.3
B-021-0-60	16+34, 26' RT.	Noise Wall K	41.037712	-81.504558	1121.8
B-040-1-21	10+92, 18' LT.	Noise Wall H	41.052028	-81.505851	1108.0
B-042-1-21	15+00, 20' LT.	Noise Wall H	41.053147	-81.505816	1110.0
B-040-2-21	11+68, 13' RT.	Noise Wall Q	41.052208	-81.504793	1116.0
B-042-2-21	15+21, 12' RT.	Noise Wall Q	41.053176	-81.504764	1110.0

Notes:
1. *The historical logs are presented in Appendix B.*

2.5. Site Reconnaissance

A field reconnaissance visit for the overall project area was conducted between November 25, 2022, and December 1, 2022, along IR-77 between Johnston Street and Perkins Street. Site conditions were noted and photographed during the visit. Photographs of notable geotechnical and drainage observations were taken and a summary of our observations by roadway segment are provided below.

2.5.1. Land Use and Cover

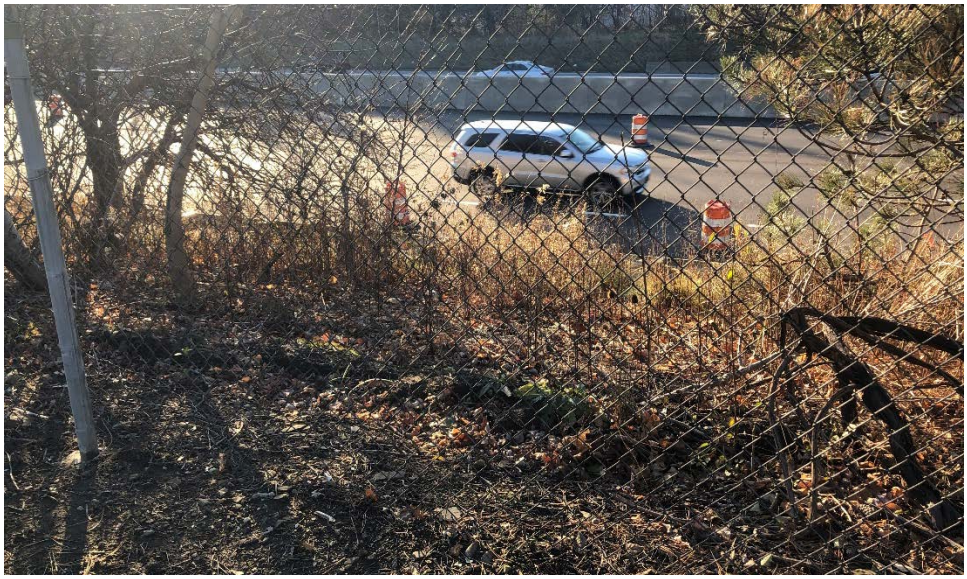
The land use of most of the project area consists of 1) Residential properties; 2) Commercial Properties; and 3) Institutional Properties.

2.5.2. Proposed Noise Wall on Allendale Ave.

The existing slopes at the southern end of the proposed noise wall were observed to be approximately 3H:1V (3 ft horizontal to 1 ft vertical). The slope itself had light vegetation. Allendale Avenue transitioned from below the grade of IR-77 to above IR-77 in this area (Photograph 1). Following this transition, Allendale Avenue was consistently observed to be above the grade of IR-77, with slopes of around 2H:1V (Photograph 2). The slopes appeared to be generally stable, although there were some signs of minor erosion due to water runoff observed.

Photograph 1: Proposed Location of Southern End of Noise Walls for Allendale Ave

Photograph 2: Northern Slope between Allendale Ave. and IR-77



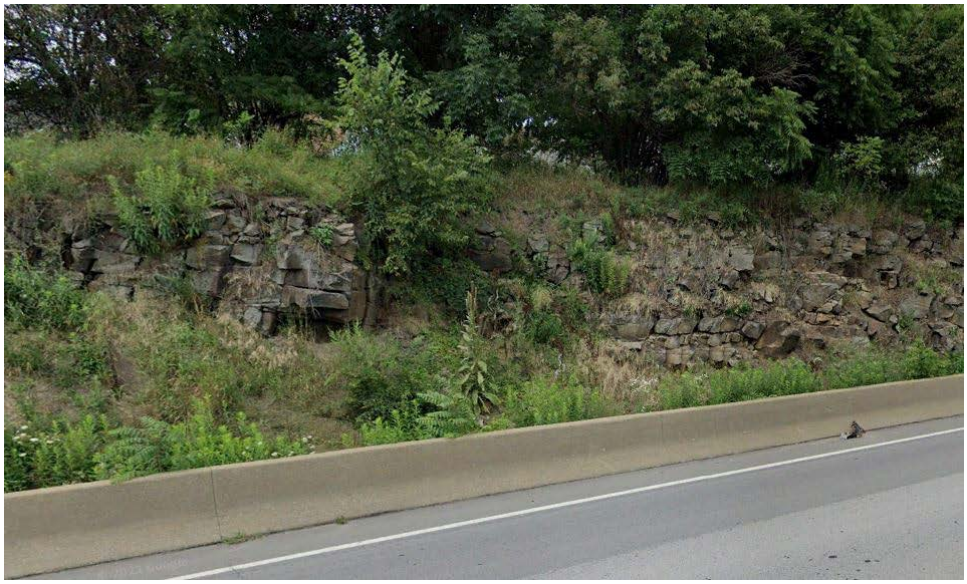
2.5.3. Proposed Noise Wall on Southern Portion of Coventry St.

The existing area at the southern end of the proposed noise wall starts at grade with IR-77 and then gradually rises above the grade of IR-77 with slopes of 3.5H:1V (3.5 ft horizontal to 1 ft vertical), transitioning to slopes of approximately 2H:1V towards the northern end of the proposed noise wall (Photograph 3). The slope itself was moderately to heavily vegetated. Following this transition, Allendale

Avenue was consistently observed to be above the grade of IR-77 with slopes of around 2H:1V. Rock outcroppings were noted in the northern section of the proposed noise wall (Photograph 4).

Photograph 3: Proposed Location of Southern End of Noise Wall for Coventry St.

Photograph 4: Rock Outcroppings Near Coventry St.



2.5.4. Proposed Noise Walls on IR-77 between Reed Ave. and Eva Ave.

The existing land around the proposed location of the noise wall begins at grade level with the surrounding land. It then gradually rises above the grade of the surrounding land, with IR-77 situated on an embankment featuring slopes of 3H:1V (3 ft horizontal to 1 ft vertical). This embankment subsequently transitions back to being level with the surrounding land near the northern end of the

proposed noise wall section. The slope itself was moderately to heavily vegetated, and the dense vegetation on these slopes posed challenges in identifying potential geotechnical issues.

2.5.5. Proposed Noise Walls on Northern Portion of Coventry St.

The existing area at the southern end of the proposed noise wall begins at grade level with IR-77 and then gradually rises above the grade of IR-77, featuring slopes of approximately 2H:1V (2 feet horizontal to 1 foot vertical) for the remainder of the distance towards the northern end of the proposed noise wall (Photograph 5). The slope itself was moderately to heavily vegetated. Additionally, rock outcroppings were observed in the northern section of the proposed noise wall location (Photograph 6).

Photograph 5: Slope between Northern Portion of Coventry St. and IR-77

Photograph 6: Rock Outcroppings in Slope between IR-77 and Coventry St.

2.5.6. Proposed Noise Walls on Burkhardt Ave.

The existing area at the southern end of the proposed noise wall begins at grade level with IR-77 and then gradually rises above the grade of IR-77, featuring slopes of approximately 2H:1V (2 feet horizontal to 1 foot vertical) for the remainder of the distance towards the northern end of the proposed noise wall (Photograph 7). The slope itself was moderately to heavily vegetated. Additionally, rock outcroppings were observed in the northern section of the proposed noise wall location, resembling the rock outcroppings seen near the northern portion of Coventry St.

Photograph 7: Slope between Burkhardt Ave. and IR-77

3. GEOTECHNICAL EXPLORATION

3.1. Field Exploration Program

The exploration for proposed noise walls was conducted by NEAS between November 29, 2022, and August 10, 2023, including 72 borings drilled to depths between 13.6 and 30.0 ft bgs. The boring locations were selected by NEAS in general accordance with the guidelines contained in the SGE with the intent to evaluate subsurface soil and groundwater conditions. Borings were typically located along/near the proposed wall alignments in locations that were not restricted by maintenance of traffic, underground utilities or dictated by terrain (i.e. steep embankment slopes). Each as-drilled project boring location and corresponding ground surface elevation was surveyed in the field by NEAS following completion. Each individual project boring log (included within Appendix B) includes the recorded boring latitude and longitude location (based on the surveyed Ohio State Plane North, NAD83, location) and the corresponding ground surface elevation. Stationing, offsets and elevations of the borings are shown on Table 2 below and the boring locations are shown on the boring plan provided in Appendix A.

It is worth noting that the target boring B-020-0-22 was cancelled due to the conflict with the construction activities during the drilling period. The nearby boring B-010-0-22 was utilized in our analyses to determine the shaft lengths from STA. 10+00 to STA. 12+28 of Noise Barrier J.

Table 2: Project Boring Summary

Boring ID	Alignment	Station	Offset	Latitude	Longitude	Elevation (ft)	Boring ID	Alignment	Station	Offset	Latitude	Longitude	Elevation (ft)
B-001-0-22	NW A	10+69	5', RT.	41.029645	-81.505167	1058.0	B-038-0-22	NW E	11+91	11', RT.	41.045351	-81.505729	1130.8
B-002-0-22	NW A	12+64	2', RT.	41.030172	-81.505294	1062.5	B-039-0-22	NW E	13+81	13', RT.	41.045870	-81.505710	1130.9
B-003-0-22	NW A	14+78	9', RT.	41.030758	-81.505338	1068.3	B-040-0-22	NW F	10+00	21', RT.	41.046886	-81.505657	1127.9
B-004-0-22	NW B	11+98	74', RT.	41.031255	-81.505348	1071.3	B-041-0-22	NW F	11+79	15', RT.	41.047377	-81.505665	1124.2
B-005-0-22	NW A	10+85	168', RT.	41.029775	-81.504596	1051.8	B-042-0-22	NW F	13+48	14', RT.	41.047841	-81.505660	1120.4
B-006-0-22	NW I	9+98	46', LT.	41.030171	-81.504716	1055.0	B-043-0-22	NW F	15+22	16', RT.	41.048313	-81.505641	1116.6
B-007-0-22	NW I	11+18	31', LT.	41.030505	-81.504768	1057.2	B-044-0-22	NW G	10+18	62', RT.	41.048931	-81.505640	1111.7
B-008-0-22	NW I	13+09	2', RT.	41.031040	-81.504771	1067.7	B-045-0-22	NW M	12+36	12', LT.	41.040625	-81.504610	1110.3
B-009-0-22	NW I	14+76	7', RT.	41.031497	-81.504815	1071.7	B-046-0-22	NW M	14+53	23', LT.	41.041206	-81.504773	1108.8
B-010-0-22	NW J	11+46	44', LT.	41.032033	-81.504885	1075.8	B-047-0-22	NW M	16+58	25', LT.	41.041762	-81.504897	1112.3
B-011-0-22	NW B	9+23	0', LT.	41.030506	-81.505633	1058.3	B-048-0-22	NW M	18+41	12', LT.	41.042255	-81.504988	1115.1
B-012-0-22	NW B	11+28	10', LT.	41.031067	-81.505655	1065.8	B-049-0-22	NW M	20+13	7', LT.	41.042724	-81.505078	1117.4
B-013-0-22	NW B	13+45	5', LT.	41.031663	-81.505624	1071.9	B-050-0-22	NW M	22+25	10', LT.	41.043302	-81.505168	1119.9
B-014-0-22	NW B	15+44	12', LT.	41.032211	-81.505639	1077.1	B-051-0-22	NW M	23+99	10', LT.	41.043779	-81.505237	1122.3
B-015-0-22	NW B	17+46	5', LT.	41.032762	-81.505600	1081.8	B-052-0-22	NW N	10+07	14', LT.	41.044848	-81.505344	1128.8
B-016-0-22	NW B	19+36	6', LT.	41.033284	-81.505594	1087.5	B-053-0-22	NW N	12+25	13', LT.	41.045442	-81.505303	1130.5
B-017-0-22	NW B	21+46	7', LT.	41.033859	-81.505584	1097.3	B-054-0-22	NW N	13+93	13', LT.	41.045905	-81.505295	1130.7
B-018-0-22	NW B	23+51	5', LT.	41.034422	-81.505567	1110.7	B-055-0-22	NW N	15+62	16', LT.	41.046364	-81.505310	1130.2
B-019-0-22	NW B	25+27	5', LT.	41.034906	-81.505555	1121.4	B-056-0-22	NW O	11+79	4', LT.	41.047368	-81.505227	1123.5
B-021-0-22	NW J	13+48	14', RT.	41.032600	-81.504676	1078.7	B-057-0-22	NW O	13+48	5', LT.	41.047832	-81.505218	1119.9
B-022-0-22	NW J	15+27	14', RT.	41.033091	-81.504671	1084.6	B-058-0-22	NW O	15+47	4', LT.	41.048378	-81.505204	1114.7
B-023-0-22	NW J	16+90	14', RT.	41.033538	-81.504667	1093.3	B-059-0-22	NW O	17+39	24', LT.	41.048904	-81.505201	1111.7
B-024-0-22	NW J	18+89	14', RT.	41.034083	-81.504660	1104.5	B-060-0-22	NW F	16+52	60', LT.	41.048673	-81.505905	1108.4
B-025-0-22	NW J	21+01	15', RT.	41.034664	-81.504652	1115.1	B-061-0-22	NW G	11+03	15', LT.	41.049169	-81.505915	1107.0
B-026-0-22	NW J	22+85	15', RT.	41.035170	-81.504645	1120.2	B-062-0-22	NW G	13+45	15', LT.	41.049834	-81.505896	1107.8
B-027-0-22	NW C	11+93	6', LT.	41.036251	-81.505528	1142.7	B-063-0-22	NW G	15+42	14', LT.	41.050373	-81.505879	1109.0
B-028-0-22	NW C	16+53	6', LT.	41.037515	-81.505501	1135.9	B-064-0-22	NW G	17+84	15', LT.	41.051037	-81.505863	1109.2
B-029-0-22	NW C	18+53	10', LT.	41.038062	-81.505506	1130.1	B-065-0-22	NW P	10+67	20', RT.	41.048728	-81.504855	1110.7
B-030-0-22	NW C	20+61	11', LT.	41.038633	-81.505495	1123.8	B-066-0-22	NW P	12+61	3', RT.	41.049261	-81.504906	1113.5
B-031-0-22	NW L	12+63	15', RT.	41.038626	-81.504683	1114.7	B-067-0-22	NW P	14+62	19', RT.	41.049810	-81.504834	1113.9
B-032-0-22	NW L	14+61	14', RT.	41.039166	-81.504611	1117.3	B-068-0-22	NW P	17+04	19', RT.	41.050475	-81.504819	1115.0
B-033-0-22	NW D	11+50	25', RT.	41.040436	-81.505559	1128.3	B-069-0-22	NW P	18+58	19', RT.	41.050899	-81.504809	1115.9
B-034-0-22	NW D	14+79	29', RT.	41.041345	-81.505525	1116.2	B-070-0-22	NW H	13+00	17', LT.	41.052598	-81.505824	1109.5
B-035-0-22	NW D	18+72	50', RT.	41.042404	-81.505577	1116.5	B-071-0-22	NW H	16+95	20', LT.	41.053682	-81.505800	1106.6
B-036-0-22	NW D	21+69	20', RT.	41.043218	-81.505656	1122.4	B-072-0-22	NW Q	13+52	15', RT.	41.052712	-81.504771	1114.9
B-037-0-22	NW D	24+77	13', RT.	41.044060	-81.505718	1127.0	B-073-0-22	NW Q	17+04	13', RT.	41.053680	-81.504749	1112.4

Borings were drilled using a CME 55X truck mounted drilling rig utilizing 3.25-inch diameter hollow stem augers. In general, soil samples for noise walls borings were recovered at intervals of 2.5-ft to end of boring (EOB) or top of rock surface (AASHTO T-206 "Standard Method for Penetration Test and Split Barrel Sampling of Soils."). The soil samples obtained from the exploration program were visually observed in the field by the NEAS field representative and preserved for review by a Geologist and possible laboratory testing. Standard penetration tests (SPT) were conducted using a CME 55X auto hammer that has been calibrated to be 79% (indicated on the boring logs) on January 24, 2022.

Field boring logs were prepared by drilling personnel, and included lithological description, SPT results recorded as blows per 6-inch increment of penetration and estimated unconfined shear strength values on specimens exhibiting cohesion (using a hand-penetrometer). Groundwater level observations were recorded both during and after the completion of drilling. These groundwater level observations are included on the individual boring logs. After completing the borings, the boreholes were backfilled with either auger cuttings, bentonite chips, or a combination of these materials.

3.2. Laboratory Testing Program

The laboratory testing program consisted of classification testing and moisture content determinations. Data from the laboratory-testing program were incorporated onto the boring logs (Appendix B). Soil samples will be retained at the laboratory until Stage 2 approval, after which they will be discarded.

3.2.1. Classification Testing

Representative soil samples were selected for index properties (Atterberg Limits) and gradation testing for classification purposes on approximately 33% of the samples. At each boring location, samples were selected for testing with the intent of identification and classification of all significant soil units. Soils not selected for testing were compared to laboratory tested samples/strata and classified visually. Moisture content testing was conducted on all samples. The laboratory testing was performed in general accordance with applicable AASHTO specifications.

A final classification of the soil strata was made in accordance with AASHTO M-145 “Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes,” as modified by ODOT “Classification of Soils” once laboratory test results became available. The results of the soil classification are presented on the boring logs provided in Appendix B.

3.2.2. Standard Penetration Test Results

Standard Penetration Tests (SPT) and split-barrel (commonly known as split-spoon) sampling of soils were performed at varying intervals (i.e., 2.5-ft or 5.0-ft intervals) in the project borings performed. To account for the high efficiency (automatic) hammers used during SPT sampling, field SPT N-values were converted based on the calibrated efficiency (energy ratio) of the specific drill rig's hammer. Field N-values were converted to an equivalent rod energy of 60% (N_{60}) for use in analysis or for correlation purposes. The resulting N_{60} values are presented on the boring logs provided in Appendix B.

4. GEOTECHNICAL FINDINGS

The subsurface conditions encountered during NEAS’s explorations are described in the following subsections and on each boring log presented in Appendix B. The boring logs represent NEAS’s interpretation of the subsurface conditions encountered at each boring location based on our site observations, field logs, visual review of the soil samples by NEAS's geologist, and laboratory test results. The lines designating the interfaces between various soil strata on the boring logs represent the approximate interface location; the actual transition between strata may be gradual and indistinct. The subsurface soil and groundwater characterizations included herein, including summary test data, are based on the subsurface findings from the geotechnical explorations performed by NEAS as part of the referenced project, and consideration of the geological history of the site.

4.1. Subsurface Conditions

The subsurface profile at all seventeen noise wall sites consists of both fine-grained cohesive soils (A-4a, A-4b, A-6a, A-6b and A-7-6) and granular soils (A-1-b, A-2-4, A-3a, A-4a and A-4b) atop weathered bedrock. Bedrock elevations at the noise barrier sites ranged from 1032.2 ft to 1128.8 ft amsl, placing bedrock at depths ranging from 3.5 to 23.0 ft below ground surface (bgs). Bedrock was logged as slightly

to highly weathered sandstone, severely to moderately weathered shale. It should be noted that black highly weathered coal was encountered in boring B-067-0-22.

4.1.1. Overburden Soil

1) At Barrier A site

Soils at the Barrier A site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils and then again coarse-grained granular soils / weathered bedrock. The granular soils extended to an elevation between 1055.0 ft and 1057.0 ft (3.0 ft to 5.5 ft below ground surface). Bedrock was only encountered at the north site of Barrier A on the boring B-003-0-22, characterized as highly weathered Sandstone and was found at a depth of 22.0 ft (elevation of 1046.3 ft above mean sea level).

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Gravel and Stone Fragments with Sand and Silt (A-2-4), and Coarse and Fine Sand (A-3a) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 17 blows per foot (bpf) to Standard Penetration Test (SPT) refusal. Natural moisture contents of the granular soils ranged from 5% to 11%.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), Silt (A-4b), and Silt and Clay (A-6a). In terms of soil strength, these fine-grained soils were described as having a very stiff to hard consistency, as indicated by N_{60} values ranging from 8 bpf to 37 bpf and unconfined compressive strengths (estimated using a hand penetrometer) of approximately 3.5 tsf to 4.5 tsf. The natural moisture content of the fine-grained cohesive material was from 4%.to 17%. Atterberg Limits tests performed on representative samples of the natural till soils revealed liquid limits between 20% and 29% and plastic limits between 14% and 22%.

2) At Barrier B site

Soils at Barrier B were generally composed of fine-grained cohesive soils and coarse-grained granular soils. Bedrock was encountered in six out of nine borings drilled at the site. The bedrock encountered consisted of primarily slightly to moderately weathered sandstone, with minor highly weathered shale found only in boring B-018-0-22. Bedrock was encountered at depths ranging from 9 ft to 23 ft below ground surface (at elevations between 1044.3 ft and 1102.9 ft). Bedrock recovery ranged from 80 % to 100%, and the rock quality designation (RQD) varied from 8% to 47%. The top of bedrock rises from the south end of Barrier B to the north end.

The natural fine-grained cohesive soils encountered at the Barrier B site, between elevations of 1044.3 ft and 1110.7 ft above mean sea level (amsl), were classified in the boring logs as Sandy Silt (A-4a), Silt (A-4b), and Silt and Clay (A-6a). Regarding soil strength, these fine-grained soils exhibited a soft to hard consistency, as indicated by N_{60} values ranging from 3 blows per foot (bpf) to Standard Penetration Test (SPT) refusal (where penetration of less than 6 inches is achieved for 50 blows) and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 2.0 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 11% to 19%. Atterberg Limits tests performed on representative samples of the natural till soils revealed liquid limits between 20% and 28% and plastic limits between 14% and 19%.

The granular soils encountered within this profile, generally between elevations of 1048.9 ft and 1121.4 ft amsl, were classified as Stone Fragments with Sand (A-1-b), Coarse and Fine Sand (A-3a), Gravel and

Stone Fragments with Sand and Silt (A-2-4), Gravel with Sand, Silt, and Clay (A-2-6), Silt (A-4b), or Sandy Silt (A-4a) based on laboratory testing results and visual sample inspection. In terms of soil strength, these soils were characterized as having a medium to very dense relative compactness, with correlations based on N_{60} values ranging from 3 bpf to SPT refusal (where penetration of less than 6 inches is achieved for 50 blows). Natural moisture contents of the granular soils ranged from 6% to 19%.

3) At Barrier C site

Soils at the Barrier C generally consisted of fine-grained cohesive soils overlaying coarse-grained granular soils or weathered bedrock. The exception was boring B-028-0-22, where granular soils were directly above weathered bedrock without any cohesive soils encountered, and in boring B-030-0-22, where granular soils were atop cohesive soils before reaching bedrock. Bedrock encountered at the Barrier C site included severely weathered to highly weathered shale and moderately to highly weathered sandstone. The bedrock was found at depths ranging from 8.5 ft to 13.5 ft (elevations between 1115.3 ft and 1129.2 ft above mean sea level) at the Barrier C site. The top of the bedrock decreased from the south end of Barrier C to the north end. Bedrock recovery ranged from 71% to 100%, and the rock quality designation (RQD) varied from 0% to 45% at the Barrier C site.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as either sandy silt (A-4a) or silt and clay (A-6a). In terms of soil strength, these fine-grained soils exhibited a very stiff to hard consistency, as indicated by N_{60} values ranging from 9 blows per foot (bpf) to 46 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 2.25 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 8% to 17%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 21% and 29% and plastic limits between 15% and 18%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Coarse and Fine Sand (A-3a), Gravel and Stone Fragments with Sand and Silt (A-2-4), Gravel with Sand, Silt, and Clay (A-2-6), or Sandy Silt (A-4a) based on laboratory testing results and visual sample inspection. In terms of soil strength, these soils were characterized as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 22 bpf to refusal. Natural moisture contents of the granular soils ranged from 7% to 13%.

4) At Barrier D site

Soils at the Barrier D site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils and then weathered bedrock. The granular soils extended to an elevation between 1112.7 ft and 1124.0 ft (3.0 ft to 8.0 ft below ground surface). Bedrock was encountered in four out of five project borings at the site of Barrier D except the boring B-037-0-22, characterized as highly to moderately weathered Shale and was found at a depth between 3.0 ft and 17.5 ft (elevation between 1104.92 ft and 1114.79 ft above mean sea level). The top of bedrock decreases from the south end of Barrier B to the north end.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b) and Coarse and Fine Sand (A-3a) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a loose to medium dense relative compactness, with correlations based on N_{60} values ranging from 8 blows per foot (bpf) to 28 bpf. The natural moisture contents of the granular soils ranged from 5% to 46%.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), Silt and Clay (A-6a), Silty Clay (A-6b) and Clay(A-7-6). In terms of soil strength,

these fine-grained soils were described as having a very stiff to hard consistency, as indicated by N_{60} values ranging from 8 bpf to 80 bpf and unconfined compressive strengths (estimated using a hand penetrometer) of approximately 2.25 tsf to 4.5 tsf. The natural moisture content of the fine-grained cohesive material was from 8%.to 31%. Atterberg Limits tests performed on representative samples of the natural till soils revealed liquid limits between 23% and 42% and plastic limits between 15% and 27%.

5) At Barrier E site

Soils at the Barrier E site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils. The granular soils extended to an elevation between 1125.4 ft and 1127.8 ft (3.0 ft to 5.5 ft below ground surface). Bedrock was not encountered in any of the project borings at the site of Barrier E.

The granular soils generally encountered within this profile were classified as Gravel and Stone Fragments with Sand and Silt (A-2-4) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 13 blows per foot (bpf) to 75 bpf. The natural moisture contents of the granular soils ranged from 7% to 10%.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), Silt (A-4b), and Silt and Clay (A-6a). In terms of soil strength, these fine-grained soils were described as having a very stiff to hard consistency, as indicated by N_{60} values ranging from 5 bpf to 34 bpf and unconfined compressive strengths (estimated using a hand penetrometer) of approximately 3.0 tsf to 4.5 tsf. The natural moisture content of the fine-grained cohesive material was from 9%.to 20%. Atterberg Limits tests performed on representative samples of the natural till soils revealed liquid limits between 22% and 28% and plastic limits between 15% and 19%.

6) At Barrier F site

Soils at the north end of Barrier C site was only comprised of fine-grained cohesive soils. Soils at the south end of Barrier C generally consisted of fine-grained cohesive soils overlaying coarse-grained granular soils. The granular soils encountered at the elevation of between 1087.3 ft and 1101.1 ft. Bedrock was not encountered in any of the project borings at the Barrier F site.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), Silt (A-4b), and Silt and Clay (A-6a). In terms of soil strength, these fine-grained soils exhibited a very stiff to hard consistency, as indicated by N_{60} values ranging from 7 blows per foot (bpf) to 43 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 3.0 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 5% to 19%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 23% and 28% and plastic limits between 15% and 18%.

The granular soils generally encountered within this profile were classified as Coarse and Fine Sand (A-3a), Gravel and Stone Fragments with Sand and Silt (A-2-4), and Silt (A-4b) based on laboratory testing results and visual sample inspection. In terms of soil strength, these soils were characterized as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 11 bpf to refusal. Natural moisture contents of the granular soils ranged from 7% to 18%.

7) At Barrier G site

Soils at the Barrier G generally consisted of fine-grained cohesive soils overlying coarse-grained granular soils or weathered bedrock. The exceptions were borings B-061-0-22 and B-063-0-22, in which granular soils were interbedded with cohesive soils. Bedrock encountered at the site included severely weathered to highly weathered shale and moderately weathered sandstone. The bedrock was found at depths ranging from 18.5 ft to 22.5 ft (elevations between 1085.8 ft and 1090.7 ft above mean sea level) at the Barrier G site. The top of the bedrock increased from the south end to the north end of Barrier G.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as either sandy silt (A-4a), silt (A-4b), or silt and clay (A-6a). Regarding soil strength, these fine-grained soils exhibited a stiff to hard consistency, with correlations based on N_{60} values ranging from 4 blows per foot (bpf) to 41 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 1.25 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 9% to 24%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 22% and 31% and plastic limits between 16% and 17%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Coarse and Fine Sand (A-3a), Gravel and Stone Fragments with Sand and Silt (A-2-4), Sandy Silt (A-4a), or Silt (A-4b) based on laboratory testing results and visual sample inspection. In terms of soil strength, these soils were described as having a dense to very dense relative compactness, with correlations based on N_{60} values ranging from 4 bpf to refusal. Natural moisture contents of the granular soils ranged from 7% to 16%.

8) At Barrier H site

Soils at the Barrier H were generally comprised of fine-grained cohesive soils overlying coarse-grained granular soils and then weathered bedrock. Bedrock encountered at the Barrier H site consisted of moderately weathered Sandstone and was found at a depth of 11.5 ft (elevation between 1095.1 ft and 1098.0 ft above mean sea level) at the Barrier H site. The top of bedrock decreased from the south end to the north end of Barrier H. Bedrock recovery ranged from 83% to 87%, and the rock quality designation (RQD) was at 0% at the Barrier H site.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as either sandy silt (A-4a) or silt and clay (A-6a). Concerning soil strength, these fine-grained soils exhibited a very stiff to hard consistency, as indicated by N_{60} values ranging from 8 blows per foot (bpf) to 17 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 3.0 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 14% to 16%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 24% and 28% and plastic limits between 15% and 17%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b) based on laboratory testing results and visual sample inspection. In terms of soil strength, these soils were described as having a dense to very dense relative compactness, with correlations based on N_{60} values ranging from 3 bpf to refusal. Natural moisture contents of the granular soils ranged from 8% to 10%.

9) At Barrier I site

Soils at the Barrier I site were generally comprised of fine-grained cohesive soils overlying coarse-grained granular soils and then weathered bedrock. The exception was boring B-008-0-22, in which

granular soils were interbedded with cohesive soils. Bedrock encountered at the site consisted of moderately weathered Sandstone and was found at depths ranging from 16.5 ft to 21.0 ft (elevations between 1034.0 ft and 1052.7 ft above mean sea level) at the site. The top of the bedrock increased from the south end to the north end of Barrier I.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as sandy silt (A-4a). In terms of soil strength, these fine-grained soils exhibited a stiff to hard consistency, with correlations based on N_{60} values ranging from 8 blows per foot (bpf) to 29 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 1.75 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 11% to 19%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 24% and 28% and plastic limits between 16% and 19%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Coarse and Fine Sand (A-3a), and Sandy Silt (A-4a) based on laboratory testing results and visual sample inspection. In terms of soil strength, these soils were described as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 20 bpf to refusal. Natural moisture contents of the granular soils ranged from 4% to 27%.

10) At Barrier J site

At the beginning of the Barrier J site, soils were generally comprised of fine-grained cohesive soils overlying coarse-grained granular soils and then weathered bedrock. For the remainder of the Barrier J site, the primary soils consisted of fine-grained cohesive soils atop weathered bedrock, with interbedded granular soils. Bedrock encountered at the site included moderately weathered to highly weathered Sandstone and interbedded Sandstone and Shale. The encountered bedrock was found at depths ranging from 3.5 ft to 22.5 ft (elevations between 1056.3 ft and 1102.6 ft above mean sea level) at the site. The top of the bedrock increased from the south end to the north end of Barrier J.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as either sandy silt (A-4a) or silt and clay (A-6a). Concerning soil strength, these fine-grained soils exhibited a stiff to hard consistency, as indicated by N_{60} values ranging from 11 blows per foot (bpf) to 105 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 1.50 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 8% to 29%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 22% and 33% and plastic limits between 15% and 20%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Coarse and Fine Sand (A-3a), Gravel and Stone Fragments with Sand and Silt (A-2-4), Sandy or Silt (A-4a) based on laboratory testing results and visual sample inspection. Regarding soil strength, these soils were described as having a loose to very dense relative compactness, with correlations based on N_{60} values ranging from 9 bpf to 67 bpf. Natural moisture contents of the granular soils ranged from 4% to 19%.

11) At Barrier K site

Soils at the Barrier K site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils and then weathered bedrock. The granular soils extended to an elevation of 1099.2 ft (15.5 ft below ground surface). Bedrock encountered at the site consisted of severely weathered Shale and was found at a depth of 19.0 ft (elevation of 1095.7 ft above mean sea level).

The granular soils generally encountered within this profile were classified as Gravel and Stone Fragments with Sand and Silt (A-2-4) and Sandy Silt (A-4a) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 17 blows per foot (bpf) to 63 bpf. Natural moisture contents of the granular soils ranged from 6% to 12%.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Silt (A-4b). In terms of soil strength, these fine-grained soils were described as having a hard consistency, as indicated by N_{60} values ranging from 104 bpf to Standard Penetration Test (SPT) refusal and unconfined compressive strengths (estimated using a hand penetrometer) of approximately 4.5 tsf. The natural moisture content of the fine-grained cohesive material was 9%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 30% and 20%, respectively.

12) At Barrier L site

Soils at the Barrier L site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils and then weathered bedrock. Bedrock encountered at the site included severely weathered to highly weathered Shale and was found at depths ranging from 13.5 ft to 19.0 ft (elevations between 1095.7 ft and 1115.3 ft above mean sea level). The top of the bedrock decreased from the south end to the north end of Barrier L.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a) and Silt and Clay (A-6a). Concerning soil strength, these fine-grained soils were described as having a very stiff to hard consistency, with correlations based on N_{60} values ranging from 18 blows per foot (bpf) to Standard Penetration Test (SPT) refusal and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 4.0 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 9% to 15%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 30% and 34% and plastic limits between 20% and 23%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Gravel and Stone Fragments with Sand and Silt (A-2-4), and Sandy Silt (A-4a) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 17 bpf to 63 bpf. Natural moisture contents of the granular soils ranged from 5% to 13%.

13) At Barrier M site

Soils at the Barrier M site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils and then weathered bedrock. Bedrock encountered at the site included highly weathered Shale and slightly to highly weathered Siltstone. The bedrock was encountered between the elevation of 1098.75 ft and 1106.13 ft (at depths ranging from 9.0 ft to 22.5 ft).

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), Silty Clay (A-6b) and Silt and Clay (A-6a). Concerning soil strength, these fine-grained soils were described as having a very stiff to hard consistency, with correlations based on N_{60} values ranging from 11 blows per foot (bpf) to Standard Penetration Test (SPT) refusal and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 3.75 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 9% to 19%. Atterberg Limits

tests conducted on representative samples of the natural till soils revealed liquid limits between 18% and 39% and plastic limits between 13% and 24%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Gravel and Stone Fragments with Sand and Silt (A-2-4), and Sandy Silt (A-4a) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a medium dense to very dense relative compactness, with correlations based on N_{60} values ranging from 5 bpf to SPT refusal. Natural moisture contents of the granular soils ranged from 3% to 12%.

14) At Barrier N site

Soils at the Barrier N site were only comprised of fine-grained cohesive soils. Bedrock was not encountered in any of the project borings at the site of Barrier N. The cohesive was encountered between the elevation of 1128.8 ft and 1105.2 ft.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), and Silty Clay (A-6b). Concerning soil strength, these fine-grained soils were described as having a very stiff to hard consistency, with correlations based on N_{60} values ranging from 13 blows per foot (bpf) to Standard Penetration Test (SPT) refusal and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 3.5 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 9% to 22%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 20% and 40% and plastic limits between 14% and 21%.

15) At Barrier O site

Soils at the Barrier O site were generally comprised of coarse-grained granular soils overlying fine-grained cohesive soils. Bedrock was not encountered in any of the project borings at the site of Barrier O. The exception is that on the boring B-059-0-22, cohesive and granular soils are interbedded with each other.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as Sandy Silt (A-4a), Silt (A-4b), and Silt and Clay (A-6a). Concerning soil strength, these fine-grained soils were described as having a very stiff to hard consistency, with correlations based on N_{60} values ranging from 7 blows per foot (bpf) to 30 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 2.5 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 12% to 19%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 23% and 31% and plastic limits between 15% and 23%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Gravel and Stone Fragments with Sand and Silt (A-2-4), and Coarse and Fine Sand (A-3a), based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a medium dense relative compactness, with correlations based on N_{60} values ranging from 17 bpf to 29 bpf. Natural moisture contents of the granular soils ranged from 12% to 25%.

16) At Barrier P site

Soils at the Barrier P site were generally comprised of fine-grained cohesive soils overlying coarse-grained granular soils or weathered bedrock, with the exception being boring B-065-0-22, in which the

granular soils (A-3a) were interbedded with cohesive soils. Bedrock encountered at the site included moderately to highly weathered Sandstone and moderately to highly weathered Coal. The encountered bedrock was found at depths ranging from 12.5 ft to 20.0 ft (elevations between 1090.7 ft and 1101.9 ft above mean sea level) at the Barrier P site. The top of the bedrock increased from the south end to the north end of Barrier P. Bedrock recovery was at 100%, and the rock quality designation (RQD) ranged from 29% to 43% at the Barrier P site.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as sandy silt (A-4a), silt (A-4b), silt and clay (A-6a), and clay (A-7-6). Concerning soil strength, these fine-grained soils were described as having a stiff to hard consistency, with correlations based on N_{60} values ranging from 5 blows per foot (bpf) to 34 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 1.5 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 12% to 34%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 22% and 59% and plastic limits between 16% and 23%.

The granular soils generally encountered within this profile were classified as Stone Fragments with Sand (A-1-b), Coarse and Fine Sand (A-3a), Gravel and Stone Fragments with Sand and Silt (A-2-4), Sandy Silt (A-4a), or Silt (A-4b) based on laboratory testing results and a visual review of the samples. Regarding soil strength, these soils were described as having a loose to very dense relative compactness, with correlations based on N_{60} values ranging from 7 bpf to refusal. Natural moisture contents of the granular soils ranged from 5% to 19%.

17) At Barrier Q site

Soils at the Barrier Q site were primarily comprised of fine-grained cohesive soils overlying weathered bedrock. Bedrock encountered at the site consisted of moderately weathered Sandstone and was found at depths ranging from 14.0 ft to 15.0 ft (elevations between 1098.4 ft and 1099.4 ft above mean sea level). The top of the bedrock decreased from the south end to the north end of Barrier Q. Bedrock recovery ranged from 80% to 93%, and the rock quality designation (RQD) ranged from 23% to 30% at the Barrier Q site.

The natural fine-grained cohesive soils encountered in this profile were classified in the boring logs as sandy silt (A-4a), silt (A-4b), silty clay (A-6b), and clay (A-7-6). Regarding soil strength, these fine-grained soils were described as having a stiff to hard consistency, with correlations based on N_{60} values ranging from 5 blows per foot (bpf) to 16 bpf and unconfined compressive strengths (estimated using a hand penetrometer) ranging from approximately 1.5 to 4.5 tsf. Natural moisture contents of the fine-grained cohesive material ranged from 14% to 22%. Atterberg Limits tests conducted on representative samples of the natural till soils revealed liquid limits between 23% and 41% and plastic limits between 17% and 19%.

4.1.2. Bedrock

Bedrock elevations at the noise barrier sites were encountered within a range of 1032.2 ft to 1128.8 ft above mean sea level (amsl), placing the bedrock at depths varying from 3.5 to 23.0 ft below ground surface (bgs). Bedrock was described as ranging from slightly to highly weathered sandstone to severely to moderately weathered shale. It's worth noting that a highly weathered black coal seam was encountered in the borings B-065-0-22 and B-067-0-22. A summary that includes bedrock elevation, recovery, and RQD is presented in Table 3 below.

Table 3: Bedrock Summary

Boring Number	Bedrock Type	Bedrock Depth (ft)	Bedrock Elevation (ft)	Bedrock Recovery Avg (%)	Bedrock RQD Avg (%)	Boring Number	Bedrock Type	Bedrock Depth (ft)	Bedrock Elevation (ft)	Bedrock Recovery Avg (%)	Bedrock RQD Avg (%)
B-003-0-22	Sandstone	22.0	1046.3	-	-	B-033-0-22	Shale	13.5	1114.8	98	0
B-004-0-22	Sandstone	20.0	1051.3	-	-	B-034-0-22	Shale	3.5	1112.7	100	8
B-006-0-22	Sandstone	21.0	1034.0	-	-	B-035-0-22	Shale	9.0	1107.5	95	34
B-007-0-22	Sandstone	16.5	1040.7	98	73	B-036-0-22	Shale	17.5	1104.9	-	-
B-008-0-22	Sandstone	20.5	1047.2	100	73	B-045-0-22	Shale	11.5	1098.8	93	27
B-009-0-22	Sandstone	19.0	1052.7	100	77	B-046-0-22	Shale	9.0	1099.8	100	28
B-010-0-22	Sandstone	19.5	1056.3	76	24	B-047-0-22	Shale	13.0	1099.3	-	-
B-011-0-22	Sandstone	14.0	1044.3	98	43	B-048-0-22	Shale	9.0	1106.1	-	-
B-012-0-22	Sandstone	15.5	1050.3	-	-	B-049-0-22	Siltstone	13.5	1103.9	-	-
B-013-0-22	Sandstone	23.0	1048.9	-	-	B-050-0-22	Siltstone	18.0	1101.9	-	-
B-017-0-22	Sandstone	9.0	1088.3	90	41	B-051-0-22	Shale	22.5	1099.8	-	-
B-018-0-22	Shale	13.5	1097.2	100	8	B-062-0-22	Sandstone	22.0	1085.8	-	-
B-019-0-22	Sandstone	18.5	1102.9	80	47	B-063-0-22	Sandstone	22.5	1086.5	-	-
B-021-0-22	Sandstone	13.0	1065.7	96	68	B-064-0-22	Shale	18.5	1090.7	100	17
B-022-0-22	Sandstone	14.0	1070.6	88	8	B-065-0-22	Sandstone and Coal	20.0	1090.7	-	-
B-023-0-22	Interbedded Sandstone and Shale	22.5	1070.8	78	0	B-066-0-22	Sandstone	20.0	1093.5	-	-
B-024-0-22	Sandstone	3.5	1101.0	90	57	B-067-0-22	Coal	18.0	1095.9	-	-
B-025-0-22	Shale and Sandstone	12.5	1102.6	62	23	B-068-0-22	Sandstone	12.5	1102.5	100	29
B-027-0-22	Sandstone	13.5	1129.2	100	45	B-069-0-22	Sandstone	14.0	1101.9	100	43
B-028-0-22	Sandstone	9.5	1126.4	100	28	B-070-0-22	Sandstone	11.5	1098.0	83	0
B-029-0-22	Shale	11.0	1119.1	71	0	B-071-0-22	Sandstone	11.5	1095.1	87	0
B-030-0-22	Shale	8.5	1115.3	97	0	B-072-0-22	Sandstone	15.0	1099.9	93	30
B-031-0-22	Shale	19.0	1095.7	-	-	B-073-0-22	Sandstone	14.0	1098.4	80	23
B-032-0-22	Shale	13.5	1103.8	-	-						

4.1.3. Groundwater

Groundwater measurements were taken during the boring drilling procedures and immediately following the completion of each borehole. Groundwater was encountered during drilling in 7 out of the 72 borings performed at the referenced noise wall sites. According to these borings, free water was encountered between depths of 11.0 and 21.0 ft bgs (equivalent to elevations between 1063.0 and 1094.2 ft amsl); static water was not encountered in any boring. It's important to note that groundwater levels can be influenced by various hydrologic characteristics in the area and may vary from those measured during the exploration. The groundwater summary is presented in Table 4 below, and specific groundwater readings can be found in the boring logs located in Appendix B.

Table 4: Groundwater Summary

Boring Number	Freewater Depth (ft)	Freewater Elevation (ft)
B-015-0-22	18.5	1063.0
B-016-0-22	11.0	1076.0
B-060-0-22	18.5	1089.3
B-062-0-22	18.5	1088.7
B-063-0-22	18.5	1089.7
B-065-0-22	16.0	1094.2
B-066-0-22	21.0	1091.7

5. ANALYSIS AND RECOMMENDATIONS

5.1. General Noise Wall Foundation Design

This section provides information required to complete the design of drilled shaft noise wall supports. Geotechnical information has been developed in accordance with the ODOT GDM, Section 1600. ODOT design methodology requires that the N_{60} values be corrected using a factor to account for the depth of each test (overburden), and the results analyzed to determine a mean (Average $N1_{60}$ values) along the length of drilled shaft. Subsequently, utilizing the referenced average of the corrected values (designated $N1_{60}$ values herein) in addition to: 1) the broad distinction between cohesive and granular soils; 2) the proposed wall geometry; 3) the ODOT GDM provided look-up tables; and 4) the site condition at the proposed wall location (cut or fill and cross slope), the depth of shaft required at that boring location can be determined. The ODOT GDM noise wall shaft design methodology for determining shaft depth is generally an iterative process before the design is to be optimized. The Noise Wall Drilled Shaft Design spreadsheet (Version 2023.02) downloaded from ODOT website was used for the SUM IR 0077/8 09.75/0.00 (PID 113208) noise walls foundation design.

At the project site, forty-seven (47) out of seventy-two (72) borings encountered bedrock between 3.5 ft and 23 ft below ground surface. Bedrock elevations at the noise barrier site were encountered range from 1032.2 ft to 1128.8 ft amsl. According to GDM Section 1603, if bedrock is anticipated within the drilled shaft length required by the standard design procedure and the bedrock has an unconfined compressive strength of less than 7500 psi, provide the shorter of either the required shaft length as calculated per the procedure or a shaft length including a 5-foot maximum rock socket length. It should be noted that the total drilled shaft length was rounded to 0.5 ft or 1.0 ft in the drilled shaft design. Based on our analyses, It is anticipated that the drilled shafts at the site of Barrier B near the boring B-012-0-22 and B-016-0-22 will end up into bedrock; at the site of Barrier C near the boring B-028-0-22, B-029-0-22 and B-030-0-22 will end up into bedrock; at the site of Barrier J near the boring B-025-0-22 will end up into bedrock; Barrier M near the boring B-048-0-22 and B-050-0-22 will end up into bedrock; at the site of Barrier P near the boring B-069-0-22 will end up into bedrock; at the site of Barrier Q near the boring B-073-0-22 will end up into bedrock. The drilled shaft lengths were divided into two types of quantities: drilled shaft (linear feet) above bedrock and drilled shaft into bedrock (linear feet). The field engineer on the site should verify the range of bedrock and adjust the shaft lengths above bedrock and into bedrock as needed.

5.2. Drilled Shaft Depth Recommendations

Utilizing the Noise Wall Drilled Shaft Design spreadsheet (Version 2023.02) downloaded from ODOT website and in accordance with Section 1600 *"Noise Barrier Foundation"* of the ODOT GDM, the drilled shaft design depths for Noise Barrier A – Noise Barrier Q were determined based on: 1) the soil and rock encountered at each boring location; and, 2) noise wall design information including post spacing, post location, noise wall height, and traverse ground slope provided by Arcadis U.S., Inc dated as July 7, 2023. Our recommendations for depth of drilled shaft foundations for each wall are presented in Table 5 through 21 below. The noise wall drilled shaft length analysis and design parameters for each wall can be found in Appendix C.

Table 5: Noise Barrier A Drilled Shaft Design Lengths

Noise Barrier A									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	8	10+00	11+46	B-001-0-22	8.5	1047.5		8.5	-
9	17	11+70	13+62	B-002-0-22	11.5	1049.0		11.5	-
18	24	13+86	15+30	B-003-0-22	6.5	1060.0	1046.3	6.5	-

Table 6: Noise Barrier B Drilled Shaft Design Lengths

Noise Barrier B									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	3	10+00	10+16	B-011-0-22	6.0	1055.5	1044.3	6.0	-
4	12	10+32	12+24	B-012-0-22	7.5	1057.5	1050.3	7.5	-
13	21	12+48	14+40	B-013-0-22	7.5	1064.0	1048.9	7.5	-
22	30	14+64	16+44	B-014-0-22	7.5	1068.5		7.5	-
31	38	16+68	18+36	B-015-0-22	10.0	1070.5		10.0	-
39	48	18+60	20+28	B-016-0-22	11.0	1075.5	1078.5	8.0	3.0
49	60	20+46	22+48	B-017-0-22	10.5	1086.0	1083.8	10.5	-
61	72	22+66	24+34	B-018-0-22	10.0	1098.0	1097.2	10.0	-
73	92	24+50	27+42	B-019-0-22	7.0	1112.0	1102.9	7.0	-

Table 7: Noise Barrier C Drilled Shaft Design Lengths

Noise Barrier C									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	20	10+00	14+20	B-027-0-22	9.5	1131.5	1129.2	9.5	-
21	36	14+44	17+38	B-028-0-22	11.5	1123.5	1126.4	8.6	2.9
37	46	17+56	19+36	B-029-0-22	8.5	1118.0	1119.1	7.4	1.1
47	52	19+60	20+64	B-030-0-22	12.0	1110.0	1115.3	6.7	5.3

Table 8: Noise Barrier D Drilled Shaft Design Lengths

Noise Barrier D									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	16	10+00	13+12	B-033-0-22	13.5	1119.7	1114.8	13.5	-
17	33	13+36	16+73	B-034-0-22	10.0	1118.2	1112.7	10.0	-
34	49	16+97	20+03	B-035-0-22	11.5	1122.2	1107.5	11.5	-
50	62	20+27	23+03	B-036-0-22	15.5	1114.2	1104.9	15.5	-
63	74	23+27	25+61	B-037-0-22	8.5	1116.2		8.5	-

Table 9: Noise Barrier E Drilled Shaft Design Lengths

Noise Barrier E									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	13	10+00	12+80	B-038-0-22	8.5	1119.0		8.5	-
14	25	13+04	15+56	B-039-0-22	8.5	1119.0		8.5	-

Table 10: Noise Barrier F Drilled Shaft Design Lengths

Noise Barrier F									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	5	10+00	10+80	B-040-0-22	6.5	1118.3		6.5	-
6	13	10+92	12+60	B-041-0-22	8.0	1112.7		8.0	-
14	20	12+84	14+28	B-042-0-22	8.0	1109.2		8.0	-
21	28	14+52	16+20	B-043-0-22	8.0	1106.2		8.0	-
29	31	16+44	16+92	B-044-0-22	10.0	1099.2		10.0	-

Table 11: Noise Barrier G Drilled Shaft Design Lengths

Noise Barrier G									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	2	10+00	10+10	B-060-0-22	7.5	1100.5		7.5	-
3	11	10+32	12+16	B-061-0-22	7.5	1100.0		7.5	-
12	20	12+40	14+32	B-062-0-22	12.5	1095.0	1085.8	12.5	-
21	29	14+56	16+48	B-063-0-22	7.5	1101.5	1086.5	7.5	-
30	43	16+72	19+60	B-064-0-22	8.0	1100.0	1090.7	8.0	-

Table 12: Noise Barrier H Drilled Shaft Design Lengths

Noise Barrier H									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	9	10+00	11+78	B-040-1-21	8.5	1100.0	1093.0	8.5	-
10	18	12+02	13+94	B-070-0-22	8.5	1099.5	1098.0	8.5	-
19	26	14+18	15+86	B-042-1-21	8.5	1099.5	1090.0	8.5	-
27	42	16+10	19+46	B-071-0-22	8.5	1096.0	1095.1	8.5	-

Table 13: Noise Barrier I Drilled Shaft Design Lengths

Noise Barrier I									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	4	10+00	10+48	B-006-0-22	10.0	1037.0	1034.0	10.0	-
5	14	10+60	12+04	B-007-0-22	10.0	1043.0	1040.7	10.0	-
15	23	12+16	13+84	B-008-0-22	12.5	1051.0	1047.2	12.5	-
24	31	13+96	15+46	B-009-0-22	10.5	1057.5	1052.7	10.5	-

Table 14: Noise Barrier J Drilled Shaft Design Lengths

Noise Barrier J									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	11	10+00	12+28	B-010-0-22	11.0	1062.0	1056.3	11.0	-
12	19	12+52	14+20	B-021-0-22	10.0	1069.0	1065.7	10.0	-
20	27	14+44	16+04	B-022-0-22	6.0	1077.5	1070.6	6.0	-
28	36	16+28	17+84	B-023-0-22	6.0	1084.0	1070.8	6.0	-
37	45	17+96	19+76	B-024-0-22	8.0	1101.0	1101.0	8.0	-
46	54	20+00	21+80	B-025-0-22	8.5	1101.5	1102.6	7.4	1.1
55	68	22+04	24+30	B-026-0-22	13.0	1101.5		13.0	-

Note:

1. The target boring B-020-0-22 was cancelled due to the conflict with the construction activities during the drilling period. The nearby boring B-010-0-22 was utilized in our analyses to determine the shaft lengths from STA. 10+00 to STA. 12+28 of Noise Barrier J.

Table 15: Noise Barrier K Drilled Shaft Design Lengths

Noise Barrier K									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	10	10+00	11+84	B-006-5-60	11.5	1109.5	1103.4	11.5	-
11	24	12+08	15+20	B-019-0-60	6.5	1111.0	1116.3	1.2	5.3
25	31	15+44	16+76	B-021-0-60	8.0	1104.0	1109.3	2.7	5.3

Table 16: Noise Barrier L Drilled Shaft Design Lengths

Noise Barrier L									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	17	10+00	13+58	B-031-0-22	13.0	1096.5	1095.7	13.0	-
18	30	13+82	16+32	B-032-0-22	8.5	1105.0	1103.8	8.5	-

Table 17: Noise Barrier M Drilled Shaft Design Lengths

Noise Barrier M									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	16	10+00	13+44	B-045-0-22	10.0	1102.5	1098.8	10.0	-
17	24	13+68	15+36	B-046-0-22	8.0	1103.5	1099.8	8.0	-
25	32	15+60	17+28	B-047-0-22	12.5	1102.5	1099.3	12.5	-
33	40	17+52	19+20	B-048-0-22	7.5	1108.5	1106.1	7.5	-
41	48	19+44	21+12	B-049-0-22	7.5	1109.0	1103.9	7.5	-
49	56	21+36	22+96	B-050-0-22	13.0	1103.5	1101.9	13.0	-
57	68	23+20	25+80	B-051-0-22	8.5	1111.0	1099.8	8.5	-

Table 18: Noise Barrier N Drilled Shaft Design Lengths

Noise Barrier N									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	5	10+00	10+96	B-052-0-22	8.5	1118.0		8.5	-
6	13	11+20	12+88	B-053-0-22	8.5	1119.5		8.5	-
14	20	13+12	14+56	B-054-0-22	6.5	1122.0		6.5	-
21	24	14+80	15+50	B-055-0-22	6.5	1123.0		6.5	-

Table 19: Noise Barrier O Drilled Shaft Design Lengths

Noise Barrier O									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	13	10+00	12+60	B-056-0-22	6.5	1115.0		6.5	-
14	20	12+84	14+28	B-057-0-22	6.5	1111.5		6.5	-
21	28	14+52	16+20	B-058-0-22	6.5	1106.5		6.5	-
29	32	16+44	17+16	B-059-0-22	6.5	1104.5		6.5	-

Table 20: Noise Barrier P Drilled Shaft Design Lengths

Noise Barrier P									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	9	10+00	11+60	B-065-0-22	6.0	1104.7	1090.7	6.0	-
10	17	11+84	13+52	B-066-0-22	6.0	1106.2	1093.5	6.0	-
18	26	13+76	15+68	B-067-0-22	10.5	1104.7	1095.9	10.5	-
27	34	15+92	17+60	B-068-0-22	8.0	1107.7	1102.5	8.0	-
35	48	17+84	20+80	B-069-0-22	10.0	1103.2	1101.9	10.0	-

Table 21: Noise Barrier Q Drilled Shaft Design Lengths

Noise Barrier Q									
From Post No.	To Post No.	From Drilled Shaft Station	To Drilled Shaft Station	Nearby Boring Utilized	Drilled Shaft Length (ft)	Bottom of Drilled Shaft Elevation (ft)	Rock Elevation (ft)	Shaft Length Above Bedrock (ft)	Shaft Length Into Bedrock (ft)
1	12	10+00	12+40	B-040-2-21	10.0	1105.0	1097.4	10.0	-
13	20	12+64	14+32	B-072-0-22	7.5	1107.0	1099.9	7.5	-
21	27	14+56	16+00	B-042-2-21	7.5	1107.0	1091.4	7.5	-
28	43	16+24	19+52	B-073-0-22	10.5	1098.5	1098.4	10.5	-

6. QUALIFICATIONS

This investigation was performed in accordance with accepted geotechnical engineering practice for the purpose of characterizing the subsurface conditions at the site of Noise Barrier A – Noise Barrier Q for the SUM IR 0077/8 09.75/0.00 project. This report has been prepared for Arcadis U.S., Inc., ODOT and their design consultants to be used solely in evaluating the soils underlying the noise barrier site and presenting geotechnical engineering recommendations specific to this project. The assessment of general site environmental conditions or the presence of pollutants in the soil, rock and groundwater of the site

was beyond the scope of this geotechnical exploration. Our recommendations are based on the results of our field explorations, laboratory tests results from representative soil samples, and geotechnical engineering analyses. The results of the field explorations and laboratory tests, which form the basis of our recommendations, are presented in the appendices as noted. This report does not reflect any variations that may occur between the borings or elsewhere on the site, or variations whose nature and extent may not become evident until a later stage of construction. In the event that any changes in the nature, design or location of the proposed retaining wall is made, the conclusions and recommendations contained in this report should not be considered valid until they are reviewed and have been modified or verified in writing by a geotechnical engineer.

It has been a pleasure to be of service to Arcadis U.S., Inc. in performing this geotechnical exploration for the SUM IR 0077/8 09.75/0.00 project. Please call if there are any questions, or if we can be of further service.

Respectfully Submitted,

National Engineering and Architectural Services Inc.

Chunmei (Melinda) He, Ph.D., P.E.
Project Manager

Zhao Mankoci, Ph.D., P.E.
Geotechnical Engineer

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APPENDIX A

SOIL BORING LOCATION PLAN

B-011-0-22
B-012-0-22
B-013-0-22
B-014-0-22
B-015-0-22
B-016-0-22
COVENTRY ST
LURIE AVE
PRENTISS AVE
P-033-0-18
ROADWAY, NO BLOW COUNT
P-031-0-18
B-004-0-22
B-023-0-18
B-001-0-22
B-003-0-22
B-002-0-22
H-043-0-61
H-044-0-61
P-029-0-18
B-022-0-18
P-034-0-18
H-042-0-61
B-009-0-22
B-010-0-22
B-024-0-18
P-030-0-18
B-025-0-18
-0-63 (LOW PROFILE)
H-041-0-61
B-021-0-18
B-008-0-22
B-007-0-22
P-032-0-18
B-035-0-18
ALLENDALE AVE
7.5 ft no blow count
B-020-0-22
B-021-0-22
B-022-0-22
B-006-0-22
B-005-0-22
B-XXX-0-60
(NO N VALUE)
P-036-0-18
P-037-0-18
LURIE AVE
PRENTISS AVE
ELBUR AVE

N

HORIZONTAL SCALE IN FEET
0 25 50 100

DRAWN CH
CHECKED

TARGET BORING PLAN
PID 113208 NOISE WALLS
SUM-77 / SR8-9.75 / 0

1 / 6

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CLINTON AVE

CLINTON AVE

E CATAWBA AVE

MISSION DR

B-017-0-22

B-018-0-22

COVENTRY ST

B-026-1-21
(10 FT)

B-019-0-22

B-027-1-21

B-006-1-60

B-006-2-60

B-027-0-22

B-028-1-21

B-028-0-22

P-027-0-18

H-047-1-61

B-026-0-18

B-027-0-18

B-063-3-61

B-046-0-61

B-028-0-18

H-047-0-61

P-026-0-18

H-045-0-61

B-006-4-60

B-006-5-60

P-028-0-18

H-047-1-61 (BW-17-0-60)
NO USE, TERMINATED HIGHER

P-025-0-18

H-048-0-61 (BW-19-0-60)

B-023-0-22

B-024-0-22

B-025-0-22

ALLENDALE AVE

B-026-0-22

THOREAU AVE

COOPER AVE

E CATAWBA AVE

INA AVE

BARBARA AVE

N

0 25 50 100
HORIZONTAL
SCALE IN FEET

DRAWN CH | CHECKED

TARGET BORING PLAN
PID 113208 NOISE WALLS
SUM-77 / SR8-9.75 / 0

2 / 6

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B-029-0-22
B-030-0-22
B-033-0-22
E3-005-0-20
B-034-0-22
B-005-1-60
H-052-1-60
P-022-0-18
B-005-2-60
H-054-0-61
B-032-0-18
P-024-0-18
B-030-0-18
H-051-0-61
B-005-3-60
B-031-0-18
H-053-0-61
B-029-0-18
B-031-0-22
B-047-0-22
P-023-0-18
B-046-0-22
B-005-4-60
B-005-5-60
B-032-0-22
H-050-0-61 (BW-23-0-60)
B-045-0-22
H-049-0-61 (BW-21-0-60)

PALMETTO AVE
E WILBETH RD
BURKHARDT AVE
CYPRESS AVE
COVENTRY ST
DONALD AVE
PALMETTO AVE
E WILBETH RD
ALLENDALE AVE

HORIZONTAL SCALE IN FEET
0 25 50 100

DRAWN CH
CHECKED

TARGET BORING PLAN
PID 113208 NOISE WALLS

SUM-77 / SR8-9.75 / 0

3 / 6

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ALLENDALE AVE

REED AVE

BURKHARDT AVE

E3-008-0-20

B-037-0-22

B-004-3-60

B-038-0-22

B-039-0-22

E3-007-0-20

B-036-0-22

B-035-0-22

B-034-0-18

B-004-10-60

B-004-7-60
B-004-8-60
B-004-9-60

B-058-0-61

B-004-1-60

H-056-0-61

H-057-0-61

B-004-5-60

B-035-0-18

B-004-2-60

H-055-0-61

P-021-0-18

B-051-0-22

B-052-0-22

B-053-0-22

B-054-0-22

B-033-0-18

B-050-0-22

B-049-0-22

COVENTRY ST

B-048-0-22

REED AVE

N FIRESTONE AVE

ALLENDALE AVE

HORIZONTAL SCALE IN FEET
0 25 50 100

DRAWN CH
CHECKED

TARGET BORING PLAN
PID 113208 NOISE WALLS
SUM-77 / SR8-9.75 / 0

4 / 6

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BURKHARDT AVE
ARCHWOOD AVE
CLIFFORD AVE
EVA AVE
COVENTRY ST

B-003-3-60
B-040-0-22
B-041-0-22
B-042-0-22
B-043-0-22
P-017-0-18
B-060-0-22
B-061-0-22
B-062-0-22
P-014-0-18
B-003-1-60
B-059-0-60
P-019-0-18
B-038-0-18
B-044-0-22
B-060-0-61
B-039-0-18
B-036-0-18
B-061-0-61
B-003-4-60
B-059-0-22
P-020-0-18
B-037-0-18
P-016-0-18
B-062-0-61
B-055-0-22
B-003-2-60
B-056-0-22
B-057-0-22
B-058-0-22
P-015-0-18
P-018-0-18
B-065-0-22
B-066-0-22
B-067-0-22

HORIZONTAL SCALE IN FEET
0 25 50 100

DRAWN CH
CHECKED

TARGET BORING PLAN
NOISE WALLS
PID 113208

SUM-77 / SR8-9.75 / 0

5 / 6

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B-063-0-22
B-064-0-22
B-002-1-60
B-002-2-60
B-040-1-21
B-070-0-22
B-042-1-21
B-071-0-22
B-001-1-60
B-040-0-18
P-011-0-18
B-063-0-61
B-042-0-18
P-012-0-18
B-002-3-61
B-043-
B-041-0-18
P-013-0-18
B-002-4-60
B-001-7-60
B-002-5-60
B-042-2-21
B-040-2-21
B-068-0-22
B-069-0-22
B-072-0-22
B-073-0-22
COLE AVE
STANTON AVE
LOVERS LN
BURKHARDT AVE
COVENTRY ST
ALLENDALE AVE

N

0 25 50 100
HORIZONTAL SCALE IN FEET

DRAWN CH
CHECKED

TARGET BORING PLAN
PID 113208 NOISE WALLS
SUM-77/SR8-9.75/0

6 / 6

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APPENDIX B

SOIL BORING LOGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 10+69, 5' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL A
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1058.0 (MSL) EOB: 25.0 ft.
START: 8/10/23 END: 8/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.029645, -81.505167

EXPLORATION ID B-001-0-22

PAGE 1 OF 1

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
4.0" ASPHALT AND 8.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1058.0																	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP	1056.5		5 6 7	17	39	SS-1	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
HARD, BROWN AND GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1055.0		4 6 7	17	28	SS-2	4.50	7	8	19	43	23	29	18	11	14	A-6a (7)	
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, CONTAINS CONCRETE FRAGMENTS, DAMP	1052.5		3 4 10	18	17	SS-3	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
			6 6 8	18	100	SS-4	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
			7 9 10	25	100	SS-5	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
			5 6 5	14	100	SS-6	4.50	5	8	32	37	18	24	16	8	15	A-4a (4)	
	1040.0		3 4 8	16	83	SS-7	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			5 4 5	12	100	SS-8	3.00	0	5	29	41	25	27	16	11	16	A-6a (7)	
			5 6 7	17	100	SS-9	4.25	-	-	-	-	-	-	-	-	14	A-6a (V)	
	1033.0	EOB	4 5 12	22	100	SS-10	3.50	-	-	-	-	-	-	-	-	14	A-6a (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 12+64, 2' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL A
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1062.5 (MSL) EOB: 25.0 ft.
START: 8/10/23 END: 8/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.030172, -81.505294

EXPLORATION ID B-002-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1062.5	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
4.0" ASPHALT AND 7.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1061.1																	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, LITTLE GRAVEL, LITTLE CLAY, MOIST		1	12 12 10	29	11	SS-1	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
	1057.0	2																
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE TO SOME GRAVEL, LITTLE CLAY, DAMP TO MOIST		3																
		4	7 6 7	17	28	SS-2	-	18	10	42	18	12	NP	NP	NP	11	A-3a (0)	
		5																
		6																
		7	7 7 8	20	72	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	3 4 4	11	39	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		10																
		11																
		12	2 3 3	8	89	SS-5	4.50	-	-	-	-	-	-	-	-	4	A-4a (V)	
		13																
		14	3 4 6	13	100	SS-6	4.50	21	7	27	30	15	22	15	7	11	A-4a (2)	
		15																
		16																
		17	11 12 16	37	100	SS-7	4.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		18																
		19	6 8 10	24	100	SS-8	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
	1042.0	20																
DENSE TO VERY DENSE, MAROONSIH BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, RELIC ROCK, DAMP		21																
		22	5 9 20	38	50	SS-9	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
		23																
	1037.5	24	17 17 22	51	100	SS-10	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
	EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 14+78, 9' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL A
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1068.3 (MSL) EOB: 24.0 ft.
START: 8/10/23 END: 8/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.030758, -81.505338

EXPLORATION ID B-003-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1068.3	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
5.0" ASPHALT AND 5.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1067.0																	
HARD, BROWN AND DARK BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP TO MOIST	1060.3		4 5 7	16	56	SS-1	4.50	9	13	30	29	19	21	14	7	11	A-4a (3)	
			5 6 6	16	17	SS-2	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			7 6 7	17	22	SS-3	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY STIFF, BROWN, **SILT**, SOME CLAY, LITTLE SAND, TRACE GRAVEL, DAMP	1055.3		4 5 7	16	33	SS-4	4.00	5	4	10	59	22	26	22	4	20	A-4b (8)	
			6 4 7	14	33	SS-5	4.00	-	-	-	-	-	-	-	-	17	A-4b (V)	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP	1050.3		6 8 11	25	100	SS-6	4.50	15	11	24	37	13	20	16	4	13	A-4a (3)	
			9 7 15	29	100	SS-7	3.50	16	9	22	35	18	23	16	7	14	A-4a (4)	
VERY DENSE, BROWN AND MAROONISH BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, RELIC ROCK, DAMP	1046.3		26 31 48	104	100	SS-8	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
			21 36 50/5"	-	94	SS-9	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
SANDSTONE, MAROONISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG.	1044.3	TR																
		EOB	50	-	50	SS-10	-	-	-	-	-	-	-	-	-	4	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:00 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+98, 74' RT.	EXPLORATION ID B-004-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1071.3 (MSL) EOB: 23.9 ft.	PAGE 1 OF 1
START: 8/9/23 END: 8/9/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.031255, -81.505348	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1071.3	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
4.0" ASPHALT AND 5.0" CONCRETE AND 5.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1070.1																	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1068.3		3 4 8	16	67	SS-1	4.25	-	-	-	-	-	-	-	-	13	A-4a (V)	
VERY STIFF, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP	1063.3		3 4 6	13	100	SS-2	3.50	3	8	18	53	18	25	19	6	17	A-4b (7)	
			2 4 5	12	100	SS-3	3.00	-	-	-	-	-	-	-	-	18	A-4b (V)	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1055.8		5 10 16	34	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			9 19 19	50	100	SS-5	4.50	10	8	19	45	18	26	19	7	14	A-4a (6)	
			8 13 22	46	28	SS-6	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, DAMP	1051.3		4 13 28	54	28	SS-7	-	-	-	-	-	-	-	-	-	6	A-2-4 (V)	
			16 19 27	61	100	SS-8	-	-	-	-	-	-	-	-	-	5	A-2-4 (V)	
SANDSTONE, LIGHT BROWN AND ORANGISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG.	1047.4	TR	20 50	-	33	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		EOB	50/5"	-	60	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:00 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 10+85, 168' RT.	EXPLORATION ID B-005-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL A	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1051.8 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 1/11/23 END: 1/11/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.029775, -81.504596	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1051.8																	
VERY STIFF, BROWN, **SILT AND CLAY**, "AND" SAND, LITTLE GRAVEL, DAMP	1048.8	1	5 4 2	8	100	SS-1	2.25	16	11	26	29	18	28	16	12	15	A-6a (3)	
MEDIUM DENSE, BROWN AND GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, DAMP	1046.3	4	7 5 7	16	17	SS-2	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
STIFF TO HARD, BROWN AND DARK BROWNISH GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO SOME GRAVEL AND STONE FRAGMENTS, IRON STAINING, DAMP TO MOIST	1033.8	6	8 6 6	16	100	SS-3	3.50	3	7	33	38	19	25	16	9	15	A-4a (4)	
		9	2 3 3	8	100	SS-4	1.75	-	-	-	-	-	-	-	-	19	A-4a (V)	
		12	7 7 9	21	78	SS-5	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		15	5 5 8	17	100	SS-6	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
		17	4 8 9	22	100	SS-7	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, IRON STAINING, DAMP	1031.3	19	8 15 29	58	100	SS-8	-	23	17	26	25	9	NP	NP	NP	10	A-2-4 (0)	
HARD, GRAY, **SANDY SILT**, SOME STONE FRAGMENTS, LITTLE CLAY, IRON STAINING, DAMP	1028.8	22	6 9 14	30	100	SS-9	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
DENSE, BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, IRON STAINING, DAMP	1026.8	24	11 12 12	32	100	SS-10	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
		EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 9+98, 46' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL I
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1055.0 (MSL) EOB: 23.8 ft.
START: 1/11/23 END: 1/11/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.030171, -81.504716

EXPLORATION ID B-006-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1055.0																	
STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, IRON STAINING, MOIST TO DAMP		1	4 5 5	13	100	SS-1	1.75	7	8	27	38	20	25	17	8	17	A-4a (5)	
		2	2 3 6	12	100	SS-2	3.00	-	-	-	-	-	-	-	-	18	A-4a (V)	
		5	5 8 9	22	100	SS-3	4.25	-	-	-	-	-	-	-	-	15	A-4a (V)	
		9	2 3 8	14	100	SS-4	4.25	-	-	-	-	-	-	-	-	14	A-4a (V)	
	1044.5	10																
MEDIUM DENSE, BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE CLAY, DAMP		12	3 7 8	20	100	SS-5	-	13	11	29	36	11	NP	NP	NP	11	A-4a (2)	
	1042.0																	
DENSE TO VERY DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, LITTLE STONE FRAGMENTS, TRACE CLAY, RELIC ROCK STRUCTURE, DAMP		14	4 13 21	45	100	SS-6	-	12	12	44	26	6	NP	NP	NP	9	A-3a (0)	
		17	5 25 28	70	67	SS-7	-	-	-	-	-	-	-	-	-	4	A-3a (V)	
		19	33 27 26	70	100	SS-8	-	-	-	-	-	-	-	-	-	4	A-3a (V)	
	1034.0	20																
SANDSTONE, MAROONISH BROWN AND BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED.		TR 21	32 43 50/3"	-	27	SS-9	-	-	-	-	-	-	-	-	-	4	Rock (V)	
	1031.2	EOB 22	50/4"	-	75	SS-10	-	-	-	-	-	-	-	-	-	4	Rock (V)	
		23																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+18, 31' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL I
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1057.2 (MSL) EOB: 24.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.030505, -81.504768

EXPLORATION ID B-007-0-22

PAGE 1 OF 1

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
4.0" TOPSOIL (DRILLERS DESCRIPTION)	1057.2																	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1056.9		4 4 6	13	94	SS-1	3.25	4	12	24	40	20	25	16	9	16	A-4a (5)	
			5 7 8	20	83	SS-2	3.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE CLAY, TRACE GRAVEL, DAMP	1051.2		6 7 11	24	78	SS-3	-	3	15	48	24	10	NP	NP	NP	10	A-3a (0)	
MEDIUM DENSE, ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, IRON STAINING, DAMP	1049.2		11 11 9	26	67	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
MEDIUM DENSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE STONE FRAGMENTS, DAMP	1046.7		5 9 12	28	83	SS-5	-	8	11	32	38	11	NP	NP	NP	12	A-4a (3)	
VERY DENSE, MAROONISH BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, DAMP	1044.2		16 46 50/3"	-	53	SS-6	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
VERY DENSE, BROWN, **COARSE AND FINE SAND**, TRACE STONE FRAGMENTS, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, DAMP	1041.7		41 50/3"	-	78	SS-7	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
SANDSTONE, LIGHT BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED.	1040.7	TR	44 50/2"	-	75	SS-8	-	-	-	-	-	-	-	-	-	8	Rock (V)	
SANDSTONE, BROWN AND MAROONISH BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, VUGGY (WEATHERED OUT CONCRETIONS), BEDDING DISCONTINUITIES: LOW TO MODERATE ANGLE, FRACTURED TO SLIGHTLY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY, FAIR SURFACE CONDITION; RQD 73%, REC 98%.	1037.7		73		98	NQ2-1											CORE	
	1032.7	EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 2 BAGS BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+09, 2' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL I
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1067.7 (MSL) EOB: 26.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.031040, -81.504771

EXPLORATION ID B-008-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1067.7																	
4.0" TOPSOIL (DRILLERS DESCRIPTION)	1067.4																	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE CLAY, DAMP	1064.7	1 2 3	5 6 6	16	61	SS-1	3.75	17	16	27	28	12	25	18	7	13	A-4a (1)	
HARD, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, IRON STAINING, DAMP	1062.2	4 5	3 6 11	22	78	SS-2	4.50	3	6	12	49	30	28	19	9	17	A-4a (8)	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1059.7	6 7 8	5 8 10	24	78	SS-3	4.00	7	11	18	47	17	24	17	7	13	A-4a (6)	
MEDIUM DENSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE STONE FRAGMENTS, DAMP	1054.7	9 10 11 12	4 5 5	13	50	SS-4	-	9	15	26	37	13	NP	NP	NP	12	A-4a (3)	
			17 9 7	21	44	SS-5	-	-	-	-	-	-	-	-	-	7	A-4a (V)	
MEDIUM DENSE, BROWN AND LIGHT BROWN, **COARSE AND FINE SAND**, LITTLE SILT, LITTLE GRAVEL, TRACE GRAVEL, DAMP	1052.2	13 14 15	7 9 10	25	72	SS-6	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL AND STONE FRAGMENTS, STONE FRAGMENTS ARE FRIABLE SANDSTONE, MOIST	1047.2	16 17 18 19 20	7 7 6	17	78	SS-7	3.50	-	-	-	-	-	-	-	-	19	A-4a (V)	
			4 7 12	25	83	SS-8	3.50	-	-	-	-	-	-	-	-	18	A-4a (V)	
		TR																
SANDSTONE, LIGHT BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED.	1046.2	21	50/3"	-	67	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SANDSTONE, ORANGISH BROWN AND LIGHT BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO MEDIUM BEDDED, FRIABLE, VUGGY (WEATHERED OUT CONCRETIONS), BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 23.4'-23.6' AND 24.3'-24.4', HIGHLY FRACTURED TO SLIGHTLY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, INTACT TO BLOCKY/DISTURBED/SEAMY, FAIR SURFACE CONDITION; RQD 73%, REC 100%.	1041.2	22 23 24 25 26	73		100	NQ2-1											CORE	
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 2 BAGS BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:00 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 14+76, 7' RT.	EXPLORATION ID B-009-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL I	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1071.7 (MSL) EOB: 24.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.031497, -81.504815	

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
4.0" TOPSOIL (DRILLERS DESCRIPTION)	1071.7																	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE GRAVEL AND STONE FRAGMENTS, DAMP TO MOIST	1071.4	1	9 13 9	29	56	SS-1	4.00	5	13	25	38	19	24	16	8	11	A-4a (4)	
		2																
		3																
		4	4 6 6	16	67	SS-2	4.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		5																
		6																
		7	3 2 4	8	44	SS-3	3.75	-	-	-	-	-	-	-	-	15	A-4a (V)	
	1063.7	8																
DENSE, DARK GRAY, **SANDY SILT**, LITTLE STONE FRAGMENTS, TRACE CLAY, WET TO MOIST		9	33 15 22	49	78	SS-4	-	17	14	32	28	9	NP	NP	NP	27	A-4a (0)	
		10																
		11																
		12	7 16 9	33	72	SS-5	-	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1058.7	13																
MEDIUM DENSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP		14	6 8 9	22	78	SS-6	-	8	13	39	28	12	NP	NP	NP	12	A-4a (1)	
	1056.2	15																
DENSE TO VERY DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE CLAY, LITTLE SILT, TRACE STONE FRAGMENTS, STONE FRAGMENTS ARE FRIABLE SANDSTONE, DAMP		16																
		17	6 14 15	38	67	SS-7	-	1	5	65	13	16	NP	NP	NP	10	A-3a (0)	
	1052.7	18																
	TR	19	25 50/3"	-	67	SS-8	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
SANDSTONE, BROWN AND MAROONISH BROWN, SLIGHTLY TO MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO MEDIUM BEDDED, FRIABLE, VUGGY (WEATHERED OUT CONCRETIONS), 0.5" CLAY SEAM AT 19.7', 2.0" CLAY SEAM AT 20.2', BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO SLIGHTLY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, INTACT TO BLOCKY, FAIR TO VERY POOR SURFACE CONDITION; RQD 77%, REC 100%.	1047.2	20																
		21																
		22	77		100	NQ2-1											CORE	
		23																
	EOB	24																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 2 BAGS BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+46, 44' LT.	EXPLORATION ID B-010-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1075.8 (MSL) EOB: 25.5 ft.	PAGE 1 OF 1
START: 12/7/22 END: 12/7/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.032033, -81.504885	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1075.8																	
HARD, BROWN, **SANDY SILT**, LITTLE GRAVEL, TRACE CLAY, DAMP			3 4 7	14	100	SS-1	4.50	12	13	37	28	10	21	15	6	11	A-4a (1)	
	1072.8																	
LOOSE TO MEDIUM DENSE, GRAY, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP			4 4 4	11	39	SS-2	-	-	-	-	-	-	-	-	-	4	A-1-b (V)	
	1067.8		3 3 4	9	33	SS-3	-	-	-	-	-	-	-	-	-	4	A-1-b (V)	
LOOSE, BROWN, **COARSE AND FINE SAND**, TRACE SILT, TRACE CLAY, TRACE GRAVEL, WET			5 4 3	9	50	SS-4	-	-	-	-	-	-	-	-	-	19	A-3a (V)	
	1065.3																	
MEDIUM DENSE TO DENSE, BROWN AND GRAY, **SANDY SILT**, TRACE CLAY, TRACE GRAVEL AND STONE FRAGMENTS, IRON STAINING, CONTAINS INTERBEDDED 1.0" SILT SEAMS, MOIST TO DAMP			4 5 4	12	28	SS-5	-	-	-	-	-	-	-	-	-	14	A-4a (V)	
			9 13 15	37	100	SS-6	-	6	14	38	33	9	NP	NP	NP	13	A-4a (1)	
	1059.3		7 8 8	21	100	SS-7A	-	-	-	-	-	-	-	-	-	15	A-4a (V)	
						SS-7B	1.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	1057.8																	
VERY DENSE, BROWN AND GRAY, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, RELIC ROCK STRUCTURE, DAMP	1056.3		5 13 50/3"	-	80	SS-8	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
		TR																
SANDSTONE, BROWN, SLIGHTLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, FRIABLE.	1055.3		50/5"	-	80	SS-9	-	-	-	-	-	-	-	-	-	9	Rock (V)	
SANDSTONE, LIGHT BROWN AND ORANGISH BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, VUGGY (WEATHERED OUT CONCRETIONS), INTERBEDDED CLAY SEAMS <0.25", BEDDING DISCONTINUITIES: LOW TO MODERATE ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 20.5'-20.8', HIGHLY TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR TO POOR SURFACE CONDITION; RQD 24%, REC 76%.	1050.3	EOB	24		76	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 45 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 9+23, LT.	EXPLORATION ID B-011-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1058.3 (MSL) EOB: 23.0 ft.	PAGE 1 OF 1
START: 12/7/22 END: 12/7/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.030506, -81.505633	

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
VERY STIFF, BROWN, **SILT**, SOME CLAY, SOME SAND, TRACE GRAVEL, MOIST TO DAMP	1058.3		3 4 5	12	100	SS-1	2.50	-	-	-	-	-	-	-	-	18	A-4b (V)	
			3 3 5	11	100	SS-2	2.50	5	6	15	53	21	24	19	5	19	A-4b (8)	
			3 5 8	17	100	SS-3	3.50	-	-	-	-	-	-	-	-	15	A-4b (V)	
DENSE, GRAY, **SANDY SILT**, LITTLE STONE FRAGMENTS, TRACE CLAY, DAMP	1050.3		9 13 20	43	100	SS-4	-	-	-	-	-	-	-	-	-	12	A-4a (V)	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL AND STONE FRAGMENTS, DAMP	1047.8		8 10 14	32	100	SS-5	4.25	11	10	36	25	18	21	14	7	11	A-4a (2)	
SANDSTONE, LIGHT BROWN BECOMING MAROONISH BROWN, SLIGHTLY TO MODERATELY WEATHERED, SLIGHTLY STRONG TO STRONG, FINE TO MEDIUM GRAINED, FRIABLE.	1044.3	TR	25 50	-	83	SS-6	-	-	-	-	-	-	-	-	-	6	Rock (V)	
			28 39 50	117	100	SS-7	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1040.3		50/4"	-	75	SS-8	-	-	-	-	-	-	-	-	-	6	Rock (V)	
SANDSTONE, MAROONISH BROWN AND LIGHT BROWN, SLIGHTLY TO MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, THIN TO MEDIUM BEDDED, FRIABLE, VUGGY (WEATHERED OUT CONCRETIONS), BEDDING DISCONTINUITIES: LOW TO MODERATE ANGLE, JOINT DISCONTINUITIES: 19.0'-19.3', HIGHLY FRACTURED TO SLIGHTLY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH TO VERY ROUGH, BLOCKY/DISTURBED/SEAMY, GOOD TO FAIR SURFACE CONDITION; RQD 43%, REC 98%.	1035.3	EOB	43		98	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 40 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:00 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+28, 10' LT.	EXPLORATION ID B-012-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1065.8 (MSL) EOB: 23.9 ft.	PAGE 1 OF 1
START: 12/7/22 END: 12/7/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.031067, -81.505655	

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
LOOSE, BROWN, **GRAVEL WITH SAND**, TRACE SILT, TRACE CLAY, DAMP	1065.8		4 3 3	8	100	SS-1	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
SOFT, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, NO INTACT SOIL FOR HP READINGS, MOIST	1062.8		2 1 1	3	44	SS-2	-	13	16	28	30	13	21	16	5	17	A-4a (2)	
VERY STIFF, GRAY AND BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	1060.3		5 8 9	22	39	SS-3	2.50	-	-	-	-	-	-	-	-	15	A-6a (V)	
HARD, GRAY AND BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP	1057.8		7 12 10	29	100	SS-4	4.50	12	11	23	37	17	21	15	6	12	A-4a (4)	
			8 12 13	33	100	SS-5	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
VERY DENSE, ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, SOME SILT, TRACE CLAY, IRON STAINING, DAMP	1052.8		13 24 18	55	100	SS-6	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
SANDSTONE, LIGHT BROWN BECOMING MAROONISH AND ORANGISH BROWN, SLIGHTLY TO MODERATELY WEATHERED, WEAK TO STRONG, FINE TO MEDIUM GRAINED, FRIABLE.	1050.3	TR	14 19 20	51	100	SS-7	-	-	-	-	-	-	-	-	-	5	Rock (V)	
			15 4 1	7	33	SS-8	-	-	-	-	-	-	-	-	-	4	Rock (V)	
SS-9 CONTAINS A 1.0" GRAY A-6A SEAM			2 1 4	7	28	SS-9	-	-	-	-	-	-	-	-	-	7	Rock (V)	
	1041.9	EOB	50/5"	-	60	SS-10	-	-	-	-	-	-	-	-	-	10	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:00 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+45, 5' LT.	EXPLORATION ID B-013-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1071.9 (MSL) EOB: 23.9 ft.	PAGE 1 OF 1
START: 12/6/22 END: 12/6/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.031663, -81.505624	

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
STIFF TO HARD, BROWN AND ORANGISH BROWN BECOMING GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE GRAVEL, IRON STAINING, DAMP	1071.9																	
		1	3 4 3	9	100	SS-1	4.00	-	-	-	-	-	-	-	-	16	A-4a (V)	
		2																
		3																
		4	4 6 11	22	100	SS-2	3.50	6	8	21	49	16	23	18	5	16	A-4a (6)	
		5																
		6																
		7	4 5 9	18	100	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	8 10 13	30	100	SS-4	2.00	-	-	-	-	-	-	-	-	16	A-4a (V)	
		10																
		11																
		12	9 10 15	33	100	SS-5	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
		13																
		14	31 20 19	51	100	SS-6	4.50	5	8	11	49	27	28	19	9	16	A-4a (8)	
	1056.4	15																
HARD, GRAY, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP		16																
		17	21 29 22	67	100	SS-7	4.50	16	12	16	33	23	28	17	11	17	A-6a (5)	
		18																
		19	10 50	-	92	SS-8	4.50	-	-	-	-	-	-	-	-	12	A-6a (V)	
	1051.4	20																
MEDIUM DENSE, ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, IRON STAINING, DAMP		21																
		22	2 4 10	18	100	SS-9	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
	1048.9																	
SANDSTONE, LIGHT BROWN, SLIGHTLY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, FRIABLE.	1048.0	TR 23 EOB	50/5"	-	80	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:00 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 15+44, 12' LT.	EXPLORATION ID B-014-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1077.1 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/6/22 END: 12/6/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.032211, -81.505639	

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
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1077.1		6 7 7	18	100	SS-1	4.50	6	8	23	42	21	28	19	9	11	A-4a (6)	
			50/1"	-	100	SS-2	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
	1071.6																	
STIFF TO VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, IRON STAINING, CONTAINS NO INTACT SOIL FOR HP READINGS, DAMP			6 5 10	20	100	SS-3	-	6	8	24	45	17	23	17	6	13	A-4a (5)	
			4 3 4	9	100	SS-4	-	-	-	-	-	-	-	-	-	15	A-4a (V)	
			7 6 5	14	100	SS-5	-	-	-	-	-	-	-	-	-	15	A-4a (V)	
			5 10 6	21	100	SS-6	-	-	-	-	-	-	-	-	-	16	A-4a (V)	
	1059.1		3 7 7	18	100	SS-7	-	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY DENSE, DARK BROWN AND ORANGISH BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, IRON STAINING, DAMP			6 50	-	83	SS-8	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
	1056.6																	
VERY DENSE, BROWNISH GRAY, **GRAVEL AND STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, IRON STAINING, DAMP			50	-	83	SS-9	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
	1052.1	EOB	11 27 50	101	44	SS-10	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 17+46, 5' LT.	EXPLORATION ID B-015-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1081.8 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/2/22 END: 12/2/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.032762, -81.505600	

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
LOOSE TO MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE TO LITTLE CLAY, TRACE GRAVEL, IRON STAINING, WET TO MOIST	1081.8																	
		1																
		2	2 2 3	7	100	SS-1	-	9	9	47	23	12	NP	NP	NP	15	A-3a (0)	
		3																
		4	7 6 8	18	100	SS-2	-	-	-	-	-	-	-	-	-	13	A-3a (V)	
		5																
		6	5 11 12	30	100	SS-3	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
		7																
		8																
		9	5 6 8	18	100	SS-4	-	-	-	-	-	-	-	-	-	12	A-3a (V)	
	1071.3	10																
MEDIUM DENSE TO DENSE, BROWN BECOMING ORANGISH BROWN AND GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, IRON STAINING, DAMP		11																
		12	8 18 11	38	83	SS-5	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
		13																
		14	3 3 8	14	17	SS-6	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
		15																
		16	20 22 15	49	100	SS-7	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
	1063.8	17																
MEDIUM DENSE, GRAY, **SANDY SILT**, LITTLE STONE FRAGMENTS, LITTLE CLAY, MOIST TO DAMP	W 1063.3	18																
		19	6 6 7	17	100	SS-8	-	16	11	35	27	11	NP	NP	NP	11	A-4a (1)	
		20																
		21	4 9 8	22	100	SS-9	-	-	-	-	-	-	-	-	-	14	A-4a (V)	
		22																
		23																
	1056.8	24	3 3 7	13	100	SS-10	-	-	-	-	-	-	-	-	-	10	A-4a (V)	
	EOB	25																

NOTES: GROUNDWATER ENCOUNTERED AT 18.5' DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 19+36, 6' LT.	EXPLORATION ID B-016-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1087.5 (MSL) EOB: 30.0 ft.	PAGE 1 OF 1
START: 12/2/22 END: 12/2/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.033284, -81.505594	

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
MEDIUM DENSE, BROWN AND DARK BROWN, **GRAVEL WITH SAND, SILT, AND CLAY**, SLIGHTLY ORGANIC, MOIST	1087.5		5 9 10	25	100	SS-1	-	-	-	-	-	-	-	-	-	19	A-2-6 (V)	
			6 5 7	16	72	SS-2	-	-	-	-	-	-	-	-	-	19	A-2-6 (V)	
	1082.0																	
VERY LOOSE TO MEDIUM DENSE, BROWN AND ORANGISH BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP			2 1 1	3	22	SS-3	-	-	-	-	-	-	-	-	-	6	A-3a (V)	
			7 7 9	21	100	SS-4	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		W 1076.5																
SS-5 BECOMES WET			4 6 6	16	100	SS-5	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
	1074.5																	
VERY STIFF TO HARD, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP			4 6 7	17	78	SS-6	4.50	6	9	26	38	21	20	14	6	11	A-4a (5)	
			6 13 8	28	100	SS-7	3.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
			3 5 6	14	22	SS-8	3.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			2 4 6	13	100	SS-9	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
	1064.5																	
HARD, GRAY, **SILT**, SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			5 5 7	16	100	SS-10	4.50	1	0	2	76	21	24	19	5	20	A-4b (8)	
	1057.5	EOB																

NOTES: GROUNDWATER ENCOUNTERED AT 11.0' DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 21+46, 7' LT.	EXPLORATION ID B-017-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1097.3 (MSL) EOB: 15.0 ft.	PAGE 1 OF 1
START: 12/1/22 END: 12/1/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.033859, -81.505584	

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
STIFF TO VERY STIFF, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, IRON STAINING, DAMP	1097.3		3 2 4	8	100	SS-1	2.00	8	6	17	45	24	24	17	7	17	A-4a (7)	
HARD, BROWN, **SILT**, SOME CLAY, SOME SAND, TRACE GRAVEL, IRON STAINING, DAMP	1094.3		4 5 8	17	100	SS-2	4.50	2	6	18	51	23	25	17	8	12	A-4b (8)	
DENSE TO VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, RELIC ROCK STRUCTURE, DAMP	1090.8		6 19 15	45	100	SS-3A	4.50	-	-	-	-	-	-	-	-	13	A-4b (V)	
						SS-3B	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
SANDSTONE, BROWN, HIGHLY WEATHERED, STRONG, FINE TO MEDIUM GRAINED.	1088.3	TR	8 50/4"	-	50	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
SANDSTONE, LIGHT BROWN AND ORANGISH BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, CONTAINS INTERBEDDED CLAY SEAMS <0.25", BEDDING DISCONTINUITIES LOW TO MODERATE ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 12.1'-12.4' AND 14.4'-14.6', HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR TO POOR SURFACE CONDITION; RQD 41%, REC 90%.	1087.3		50/4"	-	75	SS-5	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1082.3	EOB	41		90	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 20 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 23+51, 5' LT.	EXPLORATION ID B-018-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1110.7 (MSL) EOB: 21.5 ft.	PAGE 1 OF 1
START: 12/1/22 END: 12/1/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.034422, -81.505567	

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
VERY STIFF, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, IRON STAINING, SS-2 AND SS-3 CONTAIN NO INTACT SOIL FOR HP READINGS, DAMP TO MOIST	1110.7		3 2 2	5	100	SS-1	3.25	2	5	21	46	26	23	18	5	14	A-4a (7)	
			0 0 1	1	17	SS-2	-	-	-	-	-	-	-	-	-	16	A-4a (V)	
	1102.7		2 2 3	7	11	SS-3	-	-	-	-	-	-	-	-	-	19	A-4a (V)	
VERY DENSE, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, RELIC ROCK STRUCTURE, DAMP	1100.2		12 20 26	61	100	SS-4	-	3	5	24	52	16	NP	NP	NP	7	A-4b (7)	
VERY DENSE, BROWNISH GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, LITTLE CLAY, RELIC ROCK STRUCTURE, DAMP	1097.2		12 22 50/3"	-	93	SS-5	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
SHALE, GRAY, HIGHLY WEATHERED, SLIGHTLY STRONG.		TR	50	-	83	SS-6	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1094.2		50/5"	-	100	SS-7	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK TO SLIGHTLY STRONG, LAMINATED TO VERY THIN BEDDED, CONTAINS CLAY SEAMS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 16.5-17.6', 20.2-20.4', AND 20.8-21.0', HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH TO SLICKENSIDED, DISINTIGRATED TO BLOCKY/DISTURBED/SEAMY, FAIR TO POOR SURFACE CONDITION; RQD 8%, REC 100%.	1089.2	EOB	8		100	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 35 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 25+27, 5' LT.	EXPLORATION ID B-019-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL B	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1121.4 (MSL) EOB: 24.0 ft.	PAGE 1 OF 1
START: 12/1/22 END: 12/1/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.034906, -81.505555	

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
MEDIUM DENSE TO VERY DENSE, BROWN AND ORANGISH BROWN, **COARSE AND FINE SAND**, TRACE TO LITTLE STONE FRAGMENTS, TRACE SILT, TRACE CLAY, IRON STAINING, MOIST TO DAMP	1121.4		20 14 11	33	100	SS-1	-	1	32	49	10	8	NP	NP	NP	8	A-3a (0)	
			15 35 21	74	89	SS-2	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
			13 9 8	22	100	SS-3	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
			9 13 18/3"	-	120	SS-4	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
			13 12 50	82	72	SS-5	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
			15 19 32	67	100	SS-6	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
			14 14 16	40	100	SS-7	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
	1102.9	TR																
SANDSTONE, GRAY, HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, FRIABLE.	1102.4		50/3"	-	100	SS-8	-	-	-	-	-	-	-	-	-	8	Rock (V)	
SANDSTONE, LIGHT BROWN AND ORANGISH BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, VUGGY (WEATHERED OUT CONCRETIONS), BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 22.1-22.3', 23.4-24.0', HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH TO VERY ROUGH, BLOCKY BECOMING DISINTIGRATED, FAIR SURFACE CONDITION; RQD 47%, REC 80%.	1097.4	EOB	47		80	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 45 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+48, 14' RT.	EXPLORATION ID B-021-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / JL	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1078.7 (MSL) EOB: 19.0 ft.	PAGE 1 OF 1
START: 12/8/22 END: 12/8/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.032600, -81.504676	

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
7.0" CONCRETE AND 11.0" BASE (DRILLERS DESCRIPTION)	1078.7																	
	1077.2																	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, CONTAINS NO INTACT SOIL FOR HP READINGS, DAMP	1075.7	1	5 6 9	20	22	SS-1	-	14	18	27	26	15	24	15	9	13	A-4a (1)	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE TO SOME SILT, TRACE GRAVEL, TRACE CLAY, MOIST		2																
		3																
		4	4 7 10	22	78	SS-2	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
		5																
		6																
	1070.7	7	8 9 12	28	89	SS-3	-	-	-	-	-	-	-	-	-	16	A-3a (V)	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, DAMP		8																
	1068.2	9	8 9 13	29	33	SS-4	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP		10																
	1065.7	11	7 10 14	32	44	SS-5	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
		12																
SANDSTONE, ORANGISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, FRIABLE.	1064.7	TR 13	50/4"	-	100	SS-6	-	-	-	-	-	-	-	-	-	9	Rock (V)	
SANDSTONE, GRAY AND ORANGISH BROWN, MODERATELY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, BEDDING DISCONTINUITIES: MODERATE ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 14.7-15.1', HIGHLY TO SLIGHTLY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH TO VERY ROUGH, BLOCKY, FAIR SURFACE CONDITION; RQD 68%, REC 96%.	1059.7	14 15 16 17 18 EOB 19	68		96	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 15+27, 14' RT.	EXPLORATION ID B-022-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / JL	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1084.6 (MSL) EOB: 19.5 ft.	PAGE 1 OF 1
START: 12/8/22 END: 12/8/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.033091, -81.504671	

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
8.5" CONCRETE AND 9.5" BASE (DRILLERS DESCRIPTION)	1084.6																	
	1083.1																	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		1	6	25	67	SS-1	4.50	6	9	27	33	25	25	16	9	12	A-4a (5)	
	1081.6	2	8															
		3	11															
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		4	7	18	61	SS-2	3.75	6	10	25	32	27	27	16	11	12	A-6a (5)	
		5	7															
	1078.4	6	7															
MEDIUM DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST		7	6	17	44	SS-3	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
	1076.6	8	7															
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		9	7	24	50	SS-4	2.50	3	8	31	32	26	25	16	9	15	A-4a (5)	
		10	8															
		11	10															
		12	11	40	72	SS-5	2.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
	1071.0	13	13															
			17															
VERY DENSE, LIGHT BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST	1070.6	14	19	-	50	SS-6	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
			50															
SANDSTONE, GRAY AND ORANGISH BROWN, MODERATELY TO HIGHLY WEATHERED, MODERATELY STRONG TO STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, CONTAINS INTERBEDDED CLAY SEAMS, BEDDING DISCONTINUITIES: LOW ANGLE, INTERBEDDED HIGH ANGLE JOINT DISCONTINUITIES, HIGHLY TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY TO DISINTIGRATED, FAIR TO POOR SURFACE CONDITION; RQD 8%, REC 88%.		15															
		16																
		17	8		88	NQ2-1											CORE	
		18																
	1065.1	19																
		EOB																

TR

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 16+90, 14' RT.	EXPLORATION ID B-023-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / JL	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1093.3 (MSL) EOB: 27.7 ft.	PAGE 1 OF 1
START: 12/8/22 END: 12/8/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.033538, -81.504667	

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
11.0" CONCRETE AND 7.0" BASE (DRILLERS DESCRIPTION)	1093.3																	
	1091.8	1	5 6 7	17	44	SS-1	3.50	2	7	33	29	29	26	15	11	15	A-6a (5)	
VERY STIFF, ORANGISH BROWN MOTTLED WITH GRAY, **SILT AND CLAY**, "AND" SAND, TRACE GRAVEL, IRON STAINING, DAMP	1090.9	2																
		3																
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST	1088.8	4	5 6 8	18	67	SS-2A	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
		5				SS-2B	4.00	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE TO LITTLE GRAVEL, DAMP		6	6 6 8	18	72	SS-3	4.50	6	6	22	35	31	28	17	11	14	A-6a (7)	
		7																
		8																
	1082.8	9	6 8 17	33	78	SS-4	4.25	11	8	26	27	28	29	17	12	14	A-6a (5)	
VERY STIFF TO HARD, GRAY, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		10																
		11	7 8 14	29	83	SS-5	4.50	5	11	32	30	22	25	16	9	11	A-4a (3)	
		12																
		13																
		14	5 7 7	18	78	SS-6	3.75	-	-	-	-	-	-	-	-	12	A-4a (V)	
		15																
	1075.3	16	4 8 9	22	83	SS-7	4.00	-	-	-	-	-	-	-	-	11	A-4a (V)	
MEDIUM DENSE, GRAY, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST		17																
	1072.8	18	17 8 11	25	67	SS-8	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
DENSE, DARK GRAY, **SANDY SILT**, SOME STONE FRAGMENTS, LITTLE CLAY, RELIC ROCK STRUCTURE, DAMP		19																
	1070.8	20	11 10 14	32	89	SS-9	-	-	-	-	-	-	-	-	-	8	A-4a (V)	
SS-10 CONTAINS NO RECOVERY		TR	50/2"	-	0	SS-10	-	-	-	-	-	-	-	-	-	-		
INTERBEDDED SANDSTONE (51%) AND SHALE (49%), BRECCIATED FROM 22.7-23.2', BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY TO DISINTIGRATED, FAIR TO POOR SURFACE CONDITION, RQD 0%, REC. 78%; **SANDSTONE**, LIGHT GRAY, SLIGHTLY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, LAMINATED TO THIN BEDDED; **SHALE**, GRAY, HIGHLY WEATHERED, WEAK, FISSILE.		21																
		22																
		23																
		24																
		25	0		78	NQ2-1											CORE	
	1065.6	26																
		EOB 27																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 18+89, 14' RT.	EXPLORATION ID B-024-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1104.5 (MSL) EOB: 13.6 ft.	PAGE 1 OF 1
START: 12/8/22 END: 12/8/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.034083, -81.504660	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1104.5	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
11.0" CONCRETE AND 7.0" BASE (DRILLERS DESCRIPTION)	1103.0																	
VERY STIFF, BROWN, **SILT AND CLAY**, "AND" SAND, TRACE GRAVEL, CONTAINS NO INTACT SOIL FOR HP READINGS, DAMP	1101.0	1 2 3	6 4 6	13	67	SS-1	-	9	12	26	28	25	28	15	13	12	A-6a (5)	
SANDSTONE, LIGHT BROWN BECOMING ORANGISH BROWN, MODERATELY TO HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, FRIABLE. SS-2 CONTAINS NO RECOVERY	1095.9	TR 4 5 6 7 8	50/1"	-	0	SS-2	-	-	-	-	-	-	-	-	-	-		
			50/4"	-	100	SS-3	-	-	-	-	-	-	-	-	-	6	Rock (V)	
SANDSTONE, LIGHT BROWN AND ORANGISH BROWN, HIGHLY WEATHERED, STRONG, FINE TO MEDIUM GRAINED, FRIABLE, CONTAINS CONCRETIONS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 8.9-9.4' AND 10.5-10.7', HIGHLY FRACTURED TO SLIGHTLY FRACTURED, OPEN TO TIGHT, SLIGHTLY ROUGH TO VERY ROUGH, BLOCKY, FAIR SURFACE CONDITION; RQD 57%, REC 90%.	1090.9	9 10 11 12 13 EOB	50/1"	-	100	SS-4	-	-	-	-	-	-	-	-	-	4	Rock (V)	
			57		90	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 21+01, 15' RT.	EXPLORATION ID B-025-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1115.1 (MSL) EOB: 17.7 ft.	PAGE 1 OF 1
START: 12/9/22 END: 12/9/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.034664, -81.504652	

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
9.5" CONCRETE AND 8.5" BASE (DRILLERS DESCRIPTION)	1115.1																	
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO SOME GRAVEL AND STONE FRAGMENTS, SS-3 CONTAINS IRON STAINING, DAMP	1113.6	1	7 8 10	24	33	SS-1	4.50	-	-	-	-	-	-	-	-	10	A-4a (V)	
		2																
		3																
		4	8 8 9	22	44	SS-2	4.50	7	13	34	26	20	24	15	9	10	A-4a (2)	
		5																
		6																
		7	11 10 13	30	56	SS-3	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		8																
		9	9 14 22	47	61	SS-4	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
	1104.6	10																
VERY DENSE, BROWN, **SANDY SILT**, LITTLE STONE FRAGMENTS, LITTLE CLAY, DAMP		11	11 21 27	63	44	SS-5	-	19	10	32	26	13	NP	NP	NP	8	A-4a (1)	
	1102.6	12																
SHALE, GRAY, SEVERELY WEATHERED, WEAK, FISSILE.	1102.4	TR	50/2"	-	50	SS-6	-	-	-	-	-	-	-	-	-	9	Rock (V)	
SANDSTONE, BROWN AND ORANGISH BROWN, MODERATELY TO HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 12.9'-13.4' AND 13.4'-13.6', HIGHLY TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR SURFACE CONDITION; RQD 23%, REC 62%.		13																
		14																
		15	23		62	NQ2-1											CORE	
		16																
	1097.4	17																
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 22+85, 15' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL J
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1120.2 (MSL) EOB: 25.0 ft.
START: 12/9/22 END: 12/9/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.035170, -81.504645

EXPLORATION ID B-026-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1120.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
9.5" CONCRETE AND 8.5" BASE (DRILLERS DESCRIPTION)	1118.7	1																
MEDIUM DENSE, BROWN AND ORANGISH BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, SS-2 CONTAINS IRON STAINING, MOIST TO DAMP		2	3 3 5	11	39	SS-1	-	2	8	38	36	16	22	16	6	20	A-4a (3)	
	1114.7	3																
DENSE TO VERY DENSE, ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, IRON STAINING, DAMP		4	3 4 5	12	56	SS-2	-	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1109.7	5																
MEDIUM DENSE, BROWN AND ORANGISH BROWN, **STONE FRAGMENTS WITH SAND AND SILT**, LITTLE CLAY, IRON STAINING, DAMP		6	21 18 33	67	78	SS-3	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	1107.2	7																
HARD, ORANGISH BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, LITTLE TO SOME STONE FRAGMENTS, DAMP		8	20 17 16	43	83	SS-4	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
	1102.2	9																
HARD, ORANGISH BROWN AND GRAY, **SILT AND CLAY**, TRACE TO LITTLE SAND, TRACE TO LITTLE STONE FRAGMENTS, MOIST TO DAMP		10	7 6 8	18	50	SS-5	-	-	-	-	-	-	-	-	-	15	A-2-4 (V)	
		11																
		12	6 30 50	105	78	SS-6	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		13																
		14	12 15 16	41	67	SS-7	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
		15																
		16	6 10 11	28	72	SS-8	4.50	3	3	6	53	35	33	20	13	29	A-6a (9)	
		17																
SS-9 AND SS-10 CONTAINS A RELIC ROCK STRUCTURE		18	7 9 18	36	61	SS-9	4.50	-	-	-	-	-	-	-	-	8	A-6a (V)	
		19																
		20	18 29 31	79	83	SS-10	4.50	-	-	-	-	-	-	-	-	9	A-6a (V)	
	1095.2 EOB	21																
		22																
		23																
		24																
		25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+93, 6' LT.	EXPLORATION ID B-027-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL C	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1142.7 (MSL) EOB: 19.0 ft.	PAGE 1 OF 1
START: 11/30/22 END: 11/30/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.036251, -81.505528	

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
VERY STIFF, BROWN AND ORANGISH BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, IRON STAINING, MOIST	1142.7		3 3 5	11	100	SS-1	2.50	3	6	43	33	15	21	15	6	17	A-4a (3)	
MEDIUM DENSE, BROWN AND ORANGISH BROWN, **COARSE AND FINE SAND**, LITTLE SILT, LITTLE CLAY, TRACE GRAVEL, IRON STAINING, MOIST	1139.7		6 8 9	22	100	SS-2	-	1	10	62	16	11	NP	NP	NP	11	A-3a (0)	
DENSE, BROWN AND ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, IRON STAINING, MOIST	1137.2		10 17 17	45	100	SS-3	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
MEDIUM DENSE, GRAY, **STONE FRAGMENTS WITH SAND, SILT, AND CLAY**, DAMP	1134.7		9 12 11	30	100	SS-4	-	-	-	-	-	-	-	-	-	11	A-2-6 (V)	
MEDIUM DENSE, BROWN AND ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, IRON STAINING, DAMP	1132.2		9 6 13	25	100	SS-5	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
	1129.2																	
SANDSTONE, ORANGISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, FRIABLE.	1128.7	TR	50	-	100	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
SANDSTONE, BROWN AND DARK BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG TO STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, BEDDING DISCONTINUITIES: LOW TO MODERATE ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 14.4'-15.0', HIGHLY FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH, BLOCKY, FAIR SURFACE CONDITION; RQD 45%, REC 100%.	1123.7	EOB	45		100	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 16+53, 6' LT.	EXPLORATION ID B-028-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL C	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1135.9 (MSL) EOB: 19.0 ft.	PAGE 1 OF 1
START: 11/30/22 END: 11/30/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.037515, -81.505501	

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
DENSE TO VERY DENSE, BROWN AND ORANGISH BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE TO LITTLE STONE FRAGMENTS, TRACE CLAY, IRON STAINING, DAMP	1135.9		6 21 34	72	100	SS-1	-	7	14	51	18	10	NP	NP	NP	7	A-3a (0)	
		1																
		2																
		3																
		4	7 10 14	32	22	SS-2	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		5																
		6																
		7	10 11 16	36	100	SS-3	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		8																
	1126.4	9	20 50/5"	-	64	SS-4	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
		TR																
SANDSTONE, ORANGISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, FRIABLE.		10																
		11	50/3"	-	100	SS-5	-	-	-	-	-	-	-	-	-	11	Rock (V)	
		12																
		13																
	1121.9	14	50/3"	-	67	SS-6	-	-	-	-	-	-	-	-	-	6	Rock (V)	
SANDSTONE, BROWN AND DARK BROWN, MODERATELY TO HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO MEDIUM GRAINED, VERY THIN TO MEDIUM BEDDED, FRIABLE, CARBONACEOUS IN AREAS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 14.8'-15.4', 17.6'-19.0', HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCK/DISTURBED/SEAMY TO DISINTIGRATED, POOR SURFACE CONDITION; RQD 28%, REC 100%.		15	28		100	NQ2-1												CORE	
		16																
		17																
		18																
	1116.9	19																
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 18+53, 10' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL C
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1130.1 (MSL) EOB: 22.5 ft.
START: 11/30/22 END: 11/30/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.038062, -81.505507

EXPLORATION ID B-029-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1130.1																	
10.0" CONCRETE AND 4.0" BASE (DRILLERS DESCRIPTION)	1128.9																	
VERY STIFF, BROWN MOTTLED WITH ORANGISH BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, IRON STAINING, DAMP	1124.6	1	6 4 5	12	39	SS-1	3.50	6	10	19	44	21	26	17	9	15	A-4a (6)	
		2																
		3																
		4	4 5 8	17	89	SS-2	3.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		5																
HARD, LIGHT GRAY BECOMING PINKISH GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1119.1	6	4 6 10	21	100	SS-3	4.50	2	5	19	44	30	29	18	11	10	A-6a (8)	
		7																
		8																
		9	10 17 18	46	100	SS-4	4.50	-	-	-	-	-	-	-	-	8	A-6a (V)	
		10																
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.	1112.6	TR 11	16 50	-	100	SS-5	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		12																
		13																
		14	50	-	83	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		15																
		16	50/5"	-	100	SS-7	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		17																
SHALE, GRAY, MODERATELY WEATHERED, VERY WEAK TO WEAK, LAMINATED, FISSILE, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED, NARROW TO TIGHT, SLIGHTLY ROUGH, LAMINATED, FAIR SURFACE CONDITION; RQD 0%, REC 71%.	1107.6	18	0		71	NQ2-1											CORE	
		19																
		20																
		21																
		EOB 22																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 35 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 20+61, 11' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL C
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1123.8 (MSL) EOB: 20.0 ft.
START: 11/29/22 END: 11/29/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.038633, -81.505495

EXPLORATION ID B-030-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
9.0" CONCRETE AND 4.0" BASE (DRILLERS DESCRIPTION)	1123.8																	
	1122.7																	
MEDIUM DENSE, ORANGISH BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, IRON STAINING, DAMP		1	3 4 6	13	83	SS-1	-	4	13	40	30	13	NP	NP	NP	13	A-4a (2)	
	1120.8	2																
MEDIUM DENSE, BROWN AND ORANGISH BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, IRON STAINING, DAMP		3																
	1118.3	4	14 7 8	20	33	SS-2	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP		5																
	1115.3	6	4 3 4	9	100	SS-3	2.25	11	9	20	44	16	23	18	5	17	A-4a (5)	
SHALE, GRAY AND BLACK, SEVERELY TO HIGHLY WEATHERED, EXTREMELY WEAK TO VERY WEAK, FISSILE.		7																
		8																
		TR 9	14 13 16	38	100	SS-4	-	-	-	-	-	-	-	-	-	9	Rock (V)	
		10																
		11	6 50	-	83	SS-5	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		12																
		13																
	1108.8	14	10 50/5"	-	73	SS-6	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SHALE, GRAY AND LIGHT GRAY, HIGHLY TO MODERATELY WEATHERED, VERY WEAK TO SLIGHTLY STRONG, LAMINATED, FISSILE, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO FRACTURED, NARROW TO TIGHT, SLIGHTLY ROUGH TO SLICKENSIDED, LAMINATED, POOR SURFACE CONDITION; RQD 0%, REC 97%.		15																
		16																
		17																
		18	0		97	NQ2-1											CORE	
		19																
	1103.8	EOB 20																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 35 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 12+63, 15' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL L
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1114.7 (MSL) EOB: 25.0 ft.
START: 1/10/23 END: 1/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.038626, -81.504683

EXPLORATION ID B-031-0-22

PAGE 1 OF 1

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
2.0" ASPHALT AND 12.0" CONCRETE AND 4.0" BASE (DRILLERS DESCRIPTION)	1114.7																	
	1113.2																	
MEDIUM DENSE TO DENSE, GRAY, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE GRAVEL, DAMP		1																
		2	9 16 18	45	100	SS-1	-	14	13	34	28	11	NP	NP	NP	9	A-4a (1)	
		3																
		4	7 7 6	17	100	SS-2	-	5	10	21	48	16	NP	NP	NP	12	A-4a (6)	
	1109.2	5																
MEDIUM DENSE TO VERY DENSE, GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, LITTLE CLAY, RELIC ROCK STRUCTURE, IRON STAINING, DAMP		6																
		7	5 6 9	20	100	SS-3	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
		8																
		9	3 15 33	63	100	SS-4	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
		10																
		11	17 22 23	59	100	SS-5	-	-	-	-	-	-	-	-	-	6	A-2-4 (V)	
		12																
		13	12 17 18	46	100	SS-6	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
	1099.2	14																
HARD, GRAY, **SILT**, SOME CLAY, LITTLE SAND, TRACE GRAVEL, RELIC ROCK STRUCTURE, IRON STAINING, DAMP		15																
		16	13 29 50	104	28	SS-7	4.50	9	7	11	51	22	30	20	10	9	A-4b (8)	
	1095.7	17																
SHALE, GRAY, SEVERELY WEATHERED, VERY WEAK.		18																
		19	10 42 50/3"	-	87	SS-8	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		20																
		21																
		22	10 25 37	82	83	SS-9	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		23																
		24	35 38 50	116	50	SS-10	-	-	-	-	-	-	-	-	-	6	Rock (V)	
	1089.7	25																
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 14+61, 14' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL L
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1117.3 (MSL) EOB: 24.0 ft.
START: 1/10/23 END: 1/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.039166, -81.504611

EXPLORATION ID B-032-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1117.3																	
12.0" CONCRETE AND 5.0" BASE (DRILLERS DESCRIPTION)	1115.9																	
DENSE TO VERY DENSE, GRAY, **STONE FRAGMENTS WITH SAND**, SOME SILT, TRACE CLAY, CONTAINS CONCRETE FRAGMENTS, DAMP TO MOIST	1111.8	1	12 27 20	62	100	SS-1	-	26	24	25	21	4	NP	NP	NP	5	A-1-b (0)	
		2																
		3																
		4	5 16 10	34	56	SS-2	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
		5																
HARD, BROWN AND GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	1109.3	6	5 6 8	18	100	SS-3	4.50	1	5	10	44	40	34	21	13	15	A-6a (9)	
		7																
		8																
VERY STIFF TO HARD, ORANGISH BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, IRON STAINING, DAMP		9	6 12 14	34	100	SS-4	4.00	1	12	19	44	24	33	23	10	15	A-4a (7)	
		10																
		11	6 7 7	18	100	SS-5	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
	1103.8	12																
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		TR 13																
		14	13 22 24	61	100	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		15																
		16	13 21 50	93	100	SS-7	-	-	-	-	-	-	-	-	-	9	Rock (V)	
		17																
		18																
		19	23 47 50	128	78	SS-8	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		20																
		21	38 50	-	75	SS-9	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		22																
		23																
	1093.3	EOB 24	50	-	100	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:01 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+50, 25' RT.	EXPLORATION ID B-033-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL D	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1128.3 (MSL) EOB: 19.0 ft.	PAGE 1 OF 1
START: 1/13/23 END: 1/13/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.040436, -81.505559	

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
3.0" ASPHALT AND 9.0" CONCRETE AND 5.0" BASE (DRILLERS DESCRIPTION)	1128.3																	
	1126.9	1																
LOOSE TO MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP		2	3 3 4	9	72	SS-1	-	19	35	20	18	8	NP	NP	NP	7	A-3a (0)	
		3																
		4	4 5 5	13	100	SS-2	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
	1122.8	5																
HARD, DARK GRAY AND BLACK, **CLAY**, "AND" SILT, TRACE TO LITTLE SAND, TRACE TO LITTLE GRAVEL, SS-5 CONTAINS A RELIC ROCK STRUCTURE, DAMP		6	2 2 4	8	22	SS-3	4.50	-	-	-	-	-	-	-	-	17	A-7-6 (V)	
		7																
		8	6 8 13	28	100	SS-4	4.50	1	0	4	53	42	42	20	22	13	A-7-6 (13)	
		9																
		10																
		11	7 12 22	45	100	SS-5	4.50	-	-	-	-	-	-	-	-	13	A-7-6 (V)	
	1114.8	12																
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK, ARENACEOUS.	1114.3	13 TR																
SHALE, GRAY, MODERATELY WEATHERED, VERY WEAK TO WEAK, LAMINATED, FISSILE, CONTAINS INTERBEDDED CLAY SEAMS, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, POOR SURFACE CONDITION; RQD 0%, REC 98%.		14	50/4"	-	100	SS-6	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		15																
		16																
		17	0		98	NQ2-1											CORE	
		18																
	1109.3	19 EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 14+79, 29' RT.	EXPLORATION ID B-034-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL D	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1116.2 (MSL) EOB: 14.0 ft.	PAGE 1 OF 1
START: 1/13/23 END: 1/13/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.041345, -81.505525	

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
	1116.2																	
3.0" ASPHALT AND 10.0" CONCRETE AND 6.0" BASE (DRILLERS DESCRIPTION)	1114.6																	
MEDIUM DENSE, BROWN, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST	1112.7	1 2 3	8 13 8	28	22	SS-1	-	29	27	29	11	4	NP	NP	NP	13	A-1-b (0)	
SHALE, GRAY AND DARK GRAY, SEVERELY WEATHERED, VERY WEAK, FISSILE.		TR 4 5 6	16 50	-	58	SS-2	-	-	-	-	-	-	-	-	-	9	Rock (V)	
		7	28 50	-	67	SS-3	-	-	-	-	-	-	-	-	-	7	Rock (V)	
	1107.2	8 9	50/3"	-	100	SS-4	-	-	-	-	-	-	-	-	-	6	Rock (V)	
SHALE, GRAY AND DARK GRAY, HIGHLY TO MODERATELY WEATHERED, VERY WEAK TO WEAK, LAMINATED, FISSILE, CONTAINS INTERBEDDED CLAY SEAMS, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR TO POOR SURFACE CONDITION; RQD 8%, REC 100%.	1102.2	10 11 12 13 EOB 14	8		100	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 18+72, 50' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL D
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1116.5 (MSL) EOB: 16.5 ft.
START: 1/12/23 END: 1/12/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.042404, -81.505577

EXPLORATION ID B-035-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
2.0" ASPHALT AND 10.0" CONCRETE AND 6.0" BASE (DRILLERS DESCRIPTION)	1116.5																	
	1115.0																	
VERY STIFF TO HARD, BROWN AND GRAY BECOMING DARK GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, SS-1 CONTAINS NO INTACT SOIL FOR HP READINGS, DAMP		1	6 6 8	18	100	SS-1	-	7	15	14	35	29	37	19	18	15	A-6b (9)	
		2																
		3																
		4	9 7 5	16	39	SS-2	2.25	4	10	11	40	35	39	19	20	18	A-6b (12)	
		5																
		6	5 6 6	16	100	SS-3	4.25	-	-	-	-	-	-	-	-	15	A-6b (V)	
		7																
	1107.5	8																
SHALE, DARK GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		TR 9	3 18 50/4"	-	88	SS-4	-	-	-	-	-	-	-	-	-	6	Rock (V)	
	1105.0	10																
SHALE, GRAY AND DARK GRAY, MODERATELY WEATHERED, WEAK TO SLIGHTLY STRONG, LAMINATED TO THIN BEDDED, FISSILE, SILTY, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR SURFACE CONDITION; RQD 34%, REC 95%.		11	50	-	100	SS-5	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		12																
		13																
		14	34		95	NQ2-1											CORE	
		15																
	1100.0	EOB 16																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 21+69, 20' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL D
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1122.4 (MSL) EOB: 24.0 ft.
START: 8/9/23 END: 8/9/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.043218, -81.505656

EXPLORATION ID B-036-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1122.4																	
6.0" ASPHALT AND 5.0" CONCRETE AND 7.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1120.9																	
VERY STIFF, BROWN, **SILT AND CLAY**, "AND" SAND, SOME GRAVEL, DAMP	1119.4		6 4 5	12	39	SS-1	4.00	21	7	32	22	18	33	22	11	22	A-6a (1)	
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, WET	1114.4		5 4 3	9	100	SS-2	-	-	-	-	-	-	-	-	-	46	A-3a (V)	
			3 3 3	8	100	SS-3	-	-	-	-	-	-	-	-	-	37	A-3a (V)	
VERY STIFF, BROWN, **CLAY**, SOME SAND, SOME SILT, TRACE GRAVEL, MOIST	1111.9		4 6 14	26	100	SS-4	2.25	9	6	27	26	32	42	27	15	31	A-7-6 (7)	
HARD, DARK GRAY, **CLAY**, "AND" SILT, LITTLE STONE FRAGMENTS, TRACE SAND, RELIC ROCK, DAMP	1104.9		14 19 20	51	33	SS-5	4.50	-	-	-	-	-	-	-	-	8	A-7-6 (V)	
			13 13 22	46	39	SS-6	4.50	13	1	4	46	36	42	22	20	10	A-7-6 (12)	
			16 29 32	80	33	SS-7	4.50	-	-	-	-	-	-	-	-	10	A-7-6 (V)	
SHALE, DARK GRAY, MODERATELY WEATHERED, VERY WEAK.		TR	50	-	67	SS-8	-	-	-	-	-	-	-	-	-	7	Rock (V)	
			50	-	83	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1098.4	EOB	50	-	100	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 24+77, 13' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL D
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1127.0 (MSL) EOB: 25.0 ft.
START: 8/8/23 END: 8/8/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.044060, -81.505718

EXPLORATION ID B-037-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1127.0	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
6.0" ASPHALT AND 6.0" CONCRETE AND 5.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1125.6																	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, LITTLE GRAVEL, TRACE CLAY, DAMP	1124.0		6 6 7	17	67	SS-1	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
VERY STIFF TO HARD, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, MOIST TO DAMP			6 5 5	13	33	SS-2	4.50	-	-	-	-	-	-	-	-	19	A-4a (V)	
			2 3 5	11	28	SS-3	4.50	5	8	28	38	21	23	15	8	14	A-4a (5)	
			4 6 9	20	28	SS-4	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
			3 6 10	21	44	SS-5	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
			4 4 8	16	17	SS-6	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
	1109.0		3 4 10	18	28	SS-7	3.00	5	9	32	33	21	23	15	8	14	A-4a (4)	
VERY STIFF, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP			3 2 3	7	50	SS-8	3.00	-	-	-	-	-	-	-	-	17	A-4b (V)	
			2 2 3	7	33	SS-9	3.25	5	8	18	50	19	23	18	5	17	A-4b (7)	
	1102.0	EOB	3 3 3	8	100	SS-10	3.25	-	-	-	-	-	-	-	-	18	A-4b (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+91, 11' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL E
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1130.8 (MSL) EOB: 25.0 ft.
START: 8/8/23 END: 8/8/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.045351, -81.505729

EXPLORATION ID B-038-0-22

PAGE 1 OF 1

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
5.0" ASPHALT AND 6.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1130.8																	
	1129.4																	
MEDIUM DENSE, BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP	1127.8	1	6 6 4	13	28	SS-1	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, DAMP		2																
		3																
		4	4 5 7	16	44	SS-2	4.00	11	9	20	39	21	25	16	9	15	A-4a (5)	
		5																
		6	3 6 8	18	39	SS-3	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
	1122.8	7																
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP		8																
	1120.3	9	4 6 6	16	50	SS-4	3.00	11	9	20	39	21	27	16	11	15	A-6a (5)	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		10																
		11	8 4 9	17	100	SS-5	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		12																
		13																
		14	6 9 10	25	89	SS-6	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		15																
		16																
		17	3 11 15	34	56	SS-7	4.50	6	8	22	42	22	26	17	9	12	A-4a (6)	
		18																
		19	5 8 10	24	100	SS-8	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
		20																
		21																
		22	3 8 13	28	100	SS-9	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
		23																
	1105.8	24	11 11 12	30	100	SS-10	3.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+81, 13' RT.	EXPLORATION ID B-039-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL E	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1130.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/8/23 END: 8/8/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.045870, -81.505710	

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
6.0" ASPHALT AND 7.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1130.9																	
	1129.3																	
MEDIUM DENSE TO VERY DENSE, BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP		1	12 8 8	21	33	SS-1	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
		2																
		3																
		4	8 30 27	75	28	SS-2	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
	1125.4	5																
VERY STIFF TO HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP TO MOIST		6																
		7	10 13 12	33	100	SS-3	4.25	-	-	-	-	-	-	-	-	9	A-4a (V)	
		8																
		9	6 6 5	14	28	SS-4	4.25	14	15	26	29	16	22	15	7	9	A-4a (2)	
		10																
		11	4 5 6	14	33	SS-5	4.25	-	-	-	-	-	-	-	-	13	A-4a (V)	
		12																
		13	4 3 8	14	83	SS-6	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		14																
		15	3 7 9	21	89	SS-7	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		16																
		17	2 2 3	7	39	SS-8	4.00	-	-	-	-	-	-	-	-	17	A-4a (V)	
	1110.4	18																
VERY STIFF, BROWN, **SILT**, SOME CLAY, SOME SAND, TRACE GRAVEL, MOIST		19	3 2 2	5	100	SS-9	3.00	4	5	17	51	23	28	18	10	20	A-4b (8)	
	1107.9	20																
VERY STIFF, BLACK AND BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE CLAY, DAMP		21	2 3 3	8	100	SS-10	3.00	19	15	16	35	15	27	19	8	17	A-4a (3)	
	1105.9	22																
	EOB	23																
		24																
		25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 10+00, 21' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL F
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1127.9 (MSL) EOB: 25.0 ft.
START: 8/8/23 END: 8/8/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.046887, -81.505657

EXPLORATION ID B-040-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1127.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6.0" ASPHALT AND 5.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1126.5																	
VERY STIFF TO HARD, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		1	5 5 6	14	33	SS-1	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
		2																
		3																
		4	4 6 9	20	28	SS-2	4.50	4	7	19	46	24	25	16	9	12	A-4a (7)	
		5																
		6																
		7	2 6 9	20	22	SS-3	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		8																
		9	5 9 12	28	39	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		10																
		11																
		12	9 12 13	33	78	SS-5	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
	1114.9	13																
VERY STIFF TO HARD, BROWN AND GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		14	4 5 6	14	28	SS-6	4.50	5	8	19	43	25	27	16	11	12	A-6a (7)	
		15																
		16																
		17	4 12 11	30	33	SS-7	4.25	-	-	-	-	-	-	-	-	5	A-6a (V)	
		18																
		19	4 5 7	16	28	SS-8	4.00	-	-	-	-	-	-	-	-	12	A-6a (V)	
		20																
		21																
		22	8 16 17	43	33	SS-9	4.50	-	-	-	-	-	-	-	-	12	A-6a (V)	
		23																
	1102.9	24	16 10 15	33	33	SS-10	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
	EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+79, 15' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL F
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1124.2 (MSL) EOB: 25.0 ft.
START: 8/3/23 END: 8/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.047377, -81.505665

EXPLORATION ID B-041-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1124.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
5.0" ASPHALT AND 6.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1122.8																	
HARD, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST		1	5 4 6	13	44	SS-1	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		2																
		3																
		4	7 6 9	20	33	SS-2	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		5																
		6																
		7	4 9 21	40	28	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	3 4 5	12	33	SS-4	4.50	10	7	22	39	22	26	16	10	12	A-4a (5)	
		10																
		11																
		12	4 5 9	18	22	SS-5	4.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
		13																
		14	3 4 6	13	33	SS-6	4.50	-	-	-	-	-	-	-	-	18	A-4a (V)	
		15																
		16																
		17	4 4 5	12	50	SS-7	4.50	-	-	-	-	-	-	-	-	18	A-4a (V)	
	1106.2	18																
HARD, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP		19	3 4 5	12	100	SS-8	4.25	-	-	-	-	-	-	-	-	15	A-4b (V)	
		20																
		21	4 4 5	12	100	SS-9	4.25	6	6	17	52	19	24	18	6	15	A-4b (7)	
		22																
		23																
		24	3 4 6	13	100	SS-10	4.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
	1099.2 EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+48, 14' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL F
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1120.4 (MSL) EOB: 25.0 ft.
START: 8/3/23 END: 8/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.047841, -81.505660

EXPLORATION ID B-042-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1120.4	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
6.0" ASPHALT AND 6.0" CONCRETE AND 5.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1119.0																	
VERY STIFF TO HARD, BROWN AND DARK GRAY, **SILT AND CLAY**, SOME SAND, TRACE TO LITTLE GRAVEL, DAMP			3 3 5	11	44	SS-1	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
			5 4 6	13	44	SS-2	4.50	12	9	22	35	22	27	16	11	15	A-6a (5)	
			4 6 7	17	39	SS-3	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
	1109.9		3 8 7	20	100	SS-4	3.50	8	7	17	44	24	28	17	11	15	A-6a (7)	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP			6 9 15	32	61	SS-5	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
			4 5 8	17	89	SS-6	4.25	-	-	-	-	-	-	-	-	16	A-4a (V)	
	1102.4		3 8 9	22	100	SS-7	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY STIFF, BROWNISH GRAY, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP			3 3 2	7	100	SS-8	3.00	8	6	17	51	18	23	18	5	17	A-4b (7)	
			3 3 3	8	100	SS-9	3.25	-	-	-	-	-	-	-	-	13	A-4b (V)	
	1095.4	EOB	2 3 4	9	100	SS-10	3.00	-	-	-	-	-	-	-	-	17	A-4b (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 15+22, 16' RT.	EXPLORATION ID B-043-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL F	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1116.6 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/3/23 END: 8/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.048313, -81.505641	

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
6.0" ASPHALT AND 12.0" CONCRETE AND 6.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1116.6																	
	1114.6		8 7 7	18	28	SS-1	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP	1113.6																	
HARD, BROWN WITH DARK BROWN AND GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST			4 4 5	12	100	SS-2	4.50	11	8	20	39	22	26	16	10	15	A-4a (5)	
			3 4 11	20	100	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
			5 5 7	16	100	SS-4	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
			4 7 9	21	100	SS-5	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
	1101.1		4 7 6	17	100	SS-6	4.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
MEDIUM DENSE, BROWN WITH DARK BROWN AND GRAY, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP			2 3 5	11	100	SS-7	-	6	5	18	56	15	NP	NP	NP	18	A-4b (7)	
			6 5 7	16	100	SS-8	-	-	-	-	-	-	-	-	-	15	A-4b (V)	
			5 7 9	21	100	SS-9	-	-	-	-	-	-	-	-	-	13	A-4b (V)	
	1091.6	EOB	6 8 10	24	100	SS-10	-	-	-	-	-	-	-	-	-	13	A-4b (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 10+18, 62' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL G
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1111.7 (MSL) EOB: 24.4 ft.
START: 8/3/23 END: 8/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.048931, -81.505640

EXPLORATION ID B-044-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1111.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6.0" ASPHALT AND 12.0" CONCRETE AND 5.0" GRANULAR BASE (DRILLERS DESCRIPTION)	1109.8	1	5 4 5	12	33	SS-1	4.00	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY STIFF TO HARD, BROWN AND ORANGISH BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, IRON STAINING, DAMP TO MOIST		2																
		3	3 3 3	8	28	SS-2	4.50	6	8	22	42	22	23	15	8	13	A-4a (6)	
		4																
		5																
		6	2 2 8	13	100	SS-3	4.25	-	-	-	-	-	-	-	-	19	A-4a (V)	
	1103.7	7																
VERY STIFF TO HARD, BROWN AND GRAY, **SILT**, SOME SAND, SOME CLAY, TRACE GRAVEL, DAMP TO MOIST		8																
		9	2 4 4	11	100	SS-4	4.00	4	6	19	50	21	25	17	8	18	A-4b (7)	
		10																
		11	3 3 4	9	100	SS-5	4.00	-	-	-	-	-	-	-	-	17	A-4b (V)	
		12																
		13																
		14	3 4 3	9	28	SS-6	4.00	3	5	20	51	21	27	17	10	19	A-4b (7)	
		15																
		16																
		17	2 4 2	8	89	SS-7	4.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
		18																
		19	2 3 5	11	100	SS-8	4.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
	1091.2	20																
MEDIUM DENSE TO VERY DENSE, GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, DAMP		21																
		22	5 8 11	25	44	SS-9	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
		23																
	1087.3	24	20 50/5"	-	45	SS-10	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 12+36, 12' LT.	EXPLORATION ID B-045-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL M	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1110.3 (MSL) EOB: 19.5 ft.	PAGE 1 OF 1
START: 1/11/23 END: 1/11/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.040625, -81.504610	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
LOOSE TO MEDIUM DENSE, BROWN, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1110.3		4 3 2	7	100	SS-1	-	44	16	19	16	5	NP	NP	NP	7	A-1-b (0)	
		1																
		2																
		3																
		4	4 4 4	11	100	SS-2	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
	1104.8	5																
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP		6																
		7	7 6 8	18	28	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	3 3 5	11	100	SS-4	4.25	3	10	24	45	18	20	15	5	13	A-4a (6)	
		10																
	1098.8	11																
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		TR 12	5 17 38	72	100	SS-5	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		13																
	1095.8	14	17 50/5"	-	91	SS-6	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SHALE, GRAY, SLIGHTLY TO MODERATELY WEATHERED, WEAK TO SLIGHTLY STRONG, LAMINATED, FISSILE, CONTAINS 1/8" CLAY SEAMS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 17.3'-18.0', HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, POOR TO FAIR SURFACE CONDITION; RQD 27%, REC 93%.		15															
		16																
		17	27		93	NQ2-1											CORE	
		18																
	1090.8	19 EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 14+53, 23' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL M
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1108.8 (MSL) EOB: 16.5 ft.
START: 1/12/23 END: 1/12/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.041206, -81.504773

EXPLORATION ID B-046-0-22

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MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1108.8																	
8.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1107.8																	
HARD, BROWN, **SANDY SILT**, LITTLE STONE FRAGMENTS, LITTLE CLAY, DAMP		1	19 32 39	93	100	SS-1	4.50	16	19	24	30	11	32	24	8	11	A-4a (1)	
		2																
		3																
		4	6 10 8	24	100	SS-2	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
	1103.3	5																
HARD, BROWN, **SILT AND CLAY**, "AND" SAND, TRACE STONE FRAGMENTS, DAMP		6																
		7	4 5 6	14	100	SS-3	4.25	10	23	15	32	20	35	22	13	15	A-6a (5)	
	1099.8	8																
SHALE, DARK GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		TR 9	8 21 31	68	100	SS-4	-	-	-	-	-	-	-	-	-	10	Rock (V)	
		10																
	1097.3	11	50	-	100	SS-5	-	-	-	-	-	-	-	-	-	7	Rock (V)	
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK TO WEAK, LAMINATED, FISSILE, CONTAINS 1/8" CLAY SEAMS, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, POOR TO FAIR SURFACE CONDITION; RQD 28%, REC 100%.		12																
		13																
		14	28		100	NQ2-1											CORE	
		15																
	1092.3	16 EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 16+58, 25' LT.	EXPLORATION ID B-047-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL M	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1112.3 (MSL) EOB: 24.2 ft.	PAGE 1 OF 1
START: 1/10/23 END: 1/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.041762, -81.504897	

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
9.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1112.3																	
	1111.2																	
VERY DENSE, BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP	1109.8	1	13 50	-	58	SS-1	-	11	20	26	32	11	NP	NP	NP	9	A-4a (2)	
LOOSE TO MEDIUM DENSE, BROWN AND GRAY, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		2 3 4	4 6 5	14	89	SS-2	-	27	32	20	15	6	NP	NP	NP	8	A-1-b (0)	
	1104.3	5 6 7	2 2 4	8	33	SS-3	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
HARD, ORANGISH BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE STONE FRAGMENTS, RELIC ROCK STRUCTURE, DAMP	1099.3	8 9 10 11 12	10 7 12	25	33	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			22 30 50/2"	-	57	SS-5	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
SHALE, DARK GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		TR 13 14 15 16	23 50	-	75	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
			22 50/4"	-	80	SS-7	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		17 18 19 20	8 50	-	83	SS-8	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		21 22 23	17 50	-	58	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1088.1	EOB 24	32 50/2"	-	50	SS-10	-	-	-	-	-	-	-	-	-	4	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00
TYPE: NOISE WALL
PID: 113208 SFN:
START: 7/31/23 END: 7/31/23

DRILLING FIRM / OPERATOR: NEAS / J. HODGES
SAMPLING FIRM / LOGGER: NEAS / J. HODGES
DRILLING METHOD: 3.25" HSA / NQ2
SAMPLING METHOD: SPT / NQ2

DRILL RIG: CME 55X
HAMMER: CME AUTOMATIC
CALIBRATION DATE: 1/24/22
ENERGY RATIO (%): 79

STATION / OFFSET: 18+41, 12' LT.
ALIGNMENT: NOISE WALL M
ELEVATION: 1115.1 (MSL) EOB: 16.5 ft.
LAT / LONG: 41.042255, -81.504988

EXPLORATION ID B-048-0-22
PAGE 1 OF 1

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)	HOLE SEALED
9.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1115.1																	
LOOSE, BROWN, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1113.9	1	7 4 3	9	17	SS-1	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1112.1	2 3 4 5	3 4 4	11	100	SS-2	3.75	8	7	19	45	21	22	16	6	15	A-4a (6)	
		6 7 8	3 6 8	18	100	SS-3	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
	1106.1	TR 9	25 50/5"	-	91	SS-4	4.50	-	-	-	-	-	-	-	-	7	A-4a (V)	
SILTSTONE, DARK GRAY, HIGHLY WEATHERED, VERY WEAK.	1103.6	10 11	50/4"	-	75	SS-5	-	-	-	-	-	-	-	-	-	4	Rock (V)	
SILTSTONE, DARK GRAY AND LIGHT GRAY, MODERATELY WEATHERED, HIGHLY WEATHERED FROM 14.5'-16.5', WEAK TO SLIGHTLY STRONG, LAMINATED, CONTAINS ARGILLACEOUS LAMINATIONS, CONTAINS COAL LENSES FROM 14.5'-16.5', BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, LAMINATED, FAIR SURFACE CONDITION; RQD 8%, REC 75%.	1098.6	12 13 14 15 16 EOB	8		75	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 50 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 20+13, 7' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL M
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1117.4 (MSL) EOB: 21.5 ft.
START: 7/31/23 END: 7/31/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.042724, -81.505078

EXPLORATION ID B-049-0-22

PAGE 1 OF 1

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)	HOLE SEALED
1117.4																		
9.0" ASPHALT AND 6.0" BASE (DRILLERS DESCRIPTION)	1116.1																	
MEDIUM DENSE, BROWN, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1114.4	1	7 6 5	14	22	SS-1	-	-	-	-	-	-	-	-	-	3	A-1-b (V)	
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE TO SOME GRAVEL, LITTLE CLAY, DAMP		2																
		3																
		4	6 4 4	11	100	SS-2	4.50	22	10	20	33	15	21	16	5	13	A-4a (3)	
		5																
		6																
		7	5 4 4	11	44	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	7 7 11	24	100	SS-4	4.50	13	8	34	27	18	18	13	5	9	A-4a (2)	
		10																
		11																
		12	6 11 14	33	56	SS-5	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
	1103.9	13																
SILTSTONE, GRAY, HIGHLY WEATHERED, SLIGHTLY STRONG.		TR 14	9 50/3"	-	56	SS-6	-	-	-	-	-	-	-	-	-	3	Rock (V)	
	1100.9	15																
		16	50/4"	-	75	SS-7	-	-	-	-	-	-	-	-	-	4	Rock (V)	
SILTSTONE, GRAY AND LIGHT GRAY, SLIGHTLY TO MODERATELY WEATHERED, SLIGHTLY STRONG, LAMINATED, CONTAINS ARGILLACEOUS LAMINATIONS, CONTAINS COAL LENSES FROM 21.0'-21.5', BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH, LAMINATED, GOOD TO FAIR SURFACE CONDITION; RQD 21%, REC 100%.		17																
		18																
		19	21		100	NQ2-1											CORE	
		20																
	1095.9	21 EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 50 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 22+25, 10' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL M
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1119.9 (MSL) EOB: 24.0 ft.
START: 7/31/23 END: 7/31/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.043302, -81.505168

EXPLORATION ID B-050-0-22

PAGE 1 OF 1

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)	HOLE SEALED
10.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1119.9																	
	1118.6	1																
MEDIUM DENSE TO DENSE, BROWN, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		2	8 8 9	22	44	SS-1	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
		3																
		4	6 12 13	33	89	SS-2	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
	1114.4	5																
LOOSE, BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP		6	3 2 2	5	100	SS-3	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
	1111.9	7																
VERY STIFF TO HARD, BROWN AND DARK GRAY, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP TO MOIST		8																
		9	4 6 7	17	28	SS-4	4.00	-	-	-	-	-	-	-	-	13	A-4a (V)	
		10																
		11	2 4 6	13	100	SS-5	4.00	7	8	38	29	18	19	13	6	14	A-4a (2)	
		12																
		13	3 9 8	22	100	SS-6	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
		14																
		15																
		16	4 11 23	45	100	SS-7	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
	1101.9	17																
SILTSTONE, GRAY, HIGHLY WEATHERED, SLIGHTLY STRONG.	1100.9	TR 18	50/2"	-	50	SS-8	-	-	-	-	-	-	-	-	-	3	Rock (V)	
SILTSTONE, LIGHT GRAY AND GRAY, SLIGHTLY TO MODERATELY WEATHERED, SLIGHTLY STRONG, LAMINATED, CONTAINS ARGILLACEOUS LAMINATIONS, BEDDING DISCONTINUITIES: LOW ANGLE, HIGHLY FRACTURED TO FRACTURED, NARROW, SLIGHTLY ROUGH, LAMINATED, GOOD TO FAIR SURFACE CONDITION; RQD 0%, REC 100%.		19																
		20																
		21																
		22	0		100	NQ2-1											CORE	
		23																
	1095.9	EOB 24																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 50 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 23+99, 10' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL M
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1122.3 (MSL) EOB: 25.0 ft.
START: 7/31/23 END: 7/31/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.043779, -81.505237

EXPLORATION ID: B-051-0-22

PAGE: 1 OF 1

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
9.0" ASPHALT AND 7.0" BASE (DRILLERS DESCRIPTION)	1122.3																	
	1121.0	1																
HARD, BROWN AND DARK BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		2	8 14 11	33	28	SS-1	4.50	-	-	-	-	-	-	-	-	11	A-6a (V)	
		3																
		4	6 7 7	18	44	SS-2	4.50	5	6	22	46	21	29	18	11	14	A-6a (7)	
	1116.8	5																
MEDIUM DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		6																
		7	2 5 11	21	33	SS-3	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
	1114.3	8																
HARD, BROWN AND DARK BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		9	5 8 12	26	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		10																
		11	4 8 10	24	100	SS-5	4.50	5	7	22	44	22	27	17	10	13	A-4a (6)	
		12																
		13	2 5 6	14	100	SS-6	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
	1106.8	14																
HARD, DARK BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP		15																
		16	5 6 8	18	100	SS-7	4.50	4	4	12	40	40	39	21	18	19	A-6b (11)	
	1104.3	17																
HARD, BROWN AND DARK BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		18																
		19	3 5 9	18	100	SS-8	4.50	9	6	27	37	21	25	17	8	14	A-4a (5)	
		20																
		21																
	1099.8	22	19 28 39	88	100	SS-9	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
SHALE, DARK GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		TR 23																
		24	23 41 50	120	100	SS-10	-	-	-	-	-	-	-	-	-	6	Rock (V)	
	1097.3	EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 9/25/23 15:56 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET:	EXPLORATION ID B-051-022	
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT:		
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 0.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1	
START: 7/31/23 END: 7/31/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	COORD: Not Recorded		

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
9.0" ASPHALT AND 7.0" BASE (DRILLERS DESCRIPTION)	0.0																	
HARD, BROWN AND DARK BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	-1.3	1	8 14 11	33	28	SS-1	4.50	-	-	-	-	-	-	-	-	11	A-6a (V)	
		2																
		3																
		4	6 7 7	18	44	SS-2	4.50	5	6	22	46	21	29	18	11	14	A-6a (7)	
	-5.5	5																
MEDIUM DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		6	2 5 11	21	33	SS-3	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
	-8.0	7																
HARD, BROWN AND DARK BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		8																
		9	5 8 12	26	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		10																
		11																
		12	4 8 10	24	100	SS-5	4.50	5	7	22	44	22	27	17	10	13	A-4a (6)	
		13																
		14	2 5 6	14	100	SS-6	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
	-15.5	15																
HARD, DARK BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP		16																
		17	5 6 8	18	100	SS-7	4.50	4	4	12	40	40	39	21	18	19	A-6b (11)	
	-18.0	18																
HARD, BROWN AND DARK BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		19	3 5 9	18	100	SS-8	4.50	9	6	27	37	21	25	17	8	14	A-4a (5)	
		20																
		21																
		22	19 28 39	88	100	SS-9	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
	-22.5	TR																
SHALE, DARK GRAY, HIGHLY WEATHERED, VERY WEAK, FISSILE.		23																
	-25.0	EOB 24 25	23 41 50	120	100	SS-10	-	-	-	-	-	-	-	-	-	6	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 10+07, 14' LT.	EXPLORATION ID B-052-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL N	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1128.8 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/1/23 END: 8/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.044848, -81.505344	

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
9.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1128.8																	
	1127.6																	
HARD, BROWN AND DARK GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO SOME GRAVEL, DAMP		1	8 10 10	26	50	SS-1	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
		2																
		3																
		4	9 16 12	37	100	SS-2	4.50	15	13	23	33	16	20	14	6	12	A-4a (3)	
		5																
		6	6 12 12	32	94	SS-3	4.50	-	-	-	-	-	-	-	-	10	A-4a (V)	
		7																
		8																
		9	5 5 6	14	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		10																
		11	6 7 10	22	100	SS-5	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		12																
		13																
		14	8 9 13	29	100	SS-6	4.50	8	7	19	43	23	27	17	10	11	A-4a (6)	
		15																
SS-7 POUNDED ON SANDSTONE COBBLE		16	7 13 28	54	33	SS-7	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
		17																
		18																
		19	6 5 5	13	100	SS-8	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
		20																
		21																
		22	4 4 6	13	100	SS-9	4.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
		23																
		24	7 17 18	46	100	SS-10	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1103.8	EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 12+25, 13' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL N
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1130.5 (MSL) EOB: 25.0 ft.
START: 8/1/23 END: 8/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.045442, -81.505303

EXPLORATION ID B-053-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1130.5																	
10.0" ASPHALT AND 6.0" BASE (DRILLERS DESCRIPTION)	1129.2																	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP **(FILL)**		1	5 9 9	24	33	SS-1	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		2																
		3																
		4	6 8 11	25	100	SS-2	4.50	9	6	20	42	23	26	17	9	13	A-4a (6)	
		5																
SS-3 POUNDED ON CONCRETE FRAGMENT		6	20 50/2"	-	63	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1122.5	7																
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		8																
		9	6 15 10	33	33	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		10																
		11	7 7 10	22	33	SS-5	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		12																
		13																
		14	6 10 9	25	61	SS-6	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		15																
		16	8 7 10	22	100	SS-7	4.50	10	7	23	39	21	24	16	8	12	A-4a (5)	
		17																
		18																
		19	7 11 10	28	28	SS-8	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		20																
		21																
		22	6 9 10	25	100	SS-9	4.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		23																
		24	8 10 10	26	100	SS-10	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
	1105.5	EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+93, 13' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL N
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1130.7 (MSL) EOB: 25.0 ft.
START: 8/1/23 END: 8/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.045905, -81.505295

EXPLORATION ID B-054-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1130.7																	
10.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1129.4																	
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		1	6 7 9	21	28	SS-1	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		2																
		3																
		4	10 10 8	24	39	SS-2	4.50	6	8	19	46	21	24	16	8	13	A-4a (6)	
		5																
		6	6 8 7/0"	-	225	SS-3	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		7																
		8																
		9	5 8 11	25	39	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		10																
		11	5 6 16	29	100	SS-5	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
		12																
		13																
		14	5 6 8	18	44	SS-6	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		15																
		16	6 9 10	25	89	SS-7	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		17																
		18																
		19	8 9 10	25	28	SS-8	4.50	17	9	21	32	21	25	16	9	11	A-4a (4)	
		20																
		21	7 7 11	24	100	SS-9	4.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
		22																
		23																
	1105.7	24	4 9 13	29	100	SS-10	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 15+62, 16' LT.	EXPLORATION ID B-055-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL N	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1130.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/1/23 END: 8/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.046364, -81.505310	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
9.0" ASPHALT AND 6.0" BASE (DRILLERS DESCRIPTION)	1130.2																	
	1128.9																	
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE GRAVEL, DAMP		1	6 8 8	21	28	SS-1	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
		2																
		3																
		4	9 12 12	32	78	SS-2	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
		5																
		6																
		7	4 4 6	13	100	SS-3	4.50	6	9	20	46	19	22	16	6	13	A-4a (6)	
		8																
		9	4 6 9	20	33	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		10																
		11																
		12	6 7 12	25	100	SS-5	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		13																
		14	4 6 13	25	100	SS-6	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
	1114.2	15																
VERY STIFF TO HARD, BROWN AND GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP TO MOIST		16																
		17	5 7 5	16	100	SS-7	4.50	-	-	-	-	-	-	-	-	21	A-6b (V)	
		18																
		19	4 5 8	17	100	SS-8	3.50	3	3	11	49	34	40	21	19	22	A-6b (12)	
	1109.7	20																
HARD, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		21																
		22	3 6 10	21	100	SS-9	4.50	8	5	18	48	21	27	18	9	14	A-4a (7)	
		23																
		24	5 9 12	28	100	SS-10	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
	1105.2	EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+79, 4' LT.	EXPLORATION ID B-056-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL O	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1123.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/2/23 END: 8/2/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.047368, -81.505227	

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
11.0" ASPHALT AND 13.0" BASE (DRILLERS DESCRIPTION)	1123.5																	
MEDIUM DENSE, GRAY, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1121.5		7 7 9	21	44	SS-1	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
VERY STIFF TO HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST	1120.5		3 4 5	12	28	SS-2	4.50	10	9	20	42	19	23	16	7	13	A-4a (5)	
			5 4 4	11	44	SS-3	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			5 6 6	16	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			6 5 5	13	100	SS-5	4.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
			5 4 4	11	39	SS-6	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
			2 3 5	11	100	SS-7	4.50	13	9	21	37	20	25	16	9	14	A-4a (4)	
			3 6 9	20	100	SS-8	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
			4 8 11	25	100	SS-9	4.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
	1098.5	EOB	3 4 6	13	100	SS-10	4.00	-	-	-	-	-	-	-	-	19	A-4a (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+48, 5' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL O
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1119.9 (MSL) EOB: 25.0 ft.
START: 8/2/23 END: 8/2/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.047832, -81.505218

EXPLORATION ID B-057-0-22

PAGE 1 OF 1

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
10.0" ASPHALT AND 12.0" BASE (DRILLERS DESCRIPTION)	1119.9																	
	1118.1		5 7 8	20	56	SS-1	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
MEDIUM DENSE, GRAY, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1116.9																	
HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP			5 4 6	13	100	SS-2	4.50	9	10	20	41	20	23	15	8	13	A-4a (5)	
			3 3 4	9	100	SS-3	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
			4 4 4	11	72	SS-4	4.25	-	-	-	-	-	-	-	-	15	A-4a (V)	
	1106.9		4 6 8	18	100	SS-5	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
VERY STIFF TO HARD, BROWN AND GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			7 9 9	24	83	SS-6	4.50	4	7	20	45	24	28	17	11	15	A-6a (7)	
			6 9 12	28	100	SS-7	4.50	-	-	-	-	-	-	-	-	12	A-6a (V)	
			7 9 14	30	100	SS-8	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
	1096.9		3 6 8	18	100	SS-9	4.00	-	-	-	-	-	-	-	-	17	A-6a (V)	
VERY STIFF, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP	1094.9		8 8 7	20	100	SS-10	3.00	6	7	18	52	17	23	17	6	16	A-4b (7)	
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 15+47, 4' LT.	EXPLORATION ID B-058-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL O	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1114.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/2/23 END: 8/2/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.048378, -81.505204	

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
9.0" ASPHALT AND 12.0" BASE (DRILLERS DESCRIPTION)	1114.7																	
MEDIUM DENSE, GRAY, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1112.9	1	7 9 10	25	72	SS-1	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
HARD, BROWN, **SANDY SILT**, LITTLE GRAVEL, TRACE CLAY, DAMP	1111.7	2																
		3																
		4	9 10 6	21	39	SS-2	4.50	15	24	21	30	10	29	23	6	15	A-4a (1)	
		5																
		6																
		7	5 7 6	17	100	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1106.7	8																
VERY STIFF TO HARD, BROWN AND GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP TO MOIST		9	3 4 7	14	28	SS-4	3.50	2	4	15	50	29	31	19	12	19	A-6a (9)	
		10																
		11																
		12	5 9 9	24	100	SS-5	4.50	-	-	-	-	-	-	-	-	25	A-6a (V)	
	1101.7	13																
VERY STIFF TO HARD, BROWN AND GRAY, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP TO MOIST		14	3 10 12	29	100	SS-6	4.50	-	-	-	-	-	-	-	-	13	A-4b (V)	
		15																
		16																
		17	4 5 4	12	100	SS-7	4.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
		18																
		19	2 2 3	7	100	SS-8	3.00	5	7	21	50	17	23	17	6	18	A-4b (6)	
		20																
		21																
		22	3 4 5	12	39	SS-9	2.50	-	-	-	-	-	-	-	-	14	A-4b (V)	
		23																
		24	3 2 4	8	33	SS-10	2.50	-	-	-	-	-	-	-	-	14	A-4b (V)	
	1089.7 EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 17+39, 24' LT.	EXPLORATION ID B-059-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL O	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1111.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 8/2/23 END: 8/2/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.048904, -81.505201	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1111.7	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
10.0" ASPHALT AND 13.0" BASE (DRILLERS DESCRIPTION)	1109.8	1																
MEDIUM DENSE, GRAY, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, RESEMBLES GRANULAR BASE, DAMP	1108.7	2	9 8 9	22	72	SS-1	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
HARD, BROWN, **SILT**, SOME CLAY, LITTLE SAND, TRACE GRAVEL, DAMP		3																
		4	10 8 8	21	100	SS-2	4.50	-	-	-	-	-	-	-	-	17	A-4b (V)	
		5																
		6																
		7	8 8 7	20	100	SS-3	4.50	4	2	10	59	25	29	19	10	18	A-4b (8)	
	1101.2	8																
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE GRAVEL, TRACE SILT, TRACE CLAY, DAMP	1098.7	9	7 7 5	16	100	SS-4	4.50	-	-	-	-	-	-	-	-	17	A-4b (V)	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1096.2	10																
		11																
		12	4 6 7	17	100	SS-5	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
		13																
		14	7 9 9	24	100	SS-6	4.50	9	8	12	48	23	28	19	9	14	A-4a (7)	
MEDIUM DENSE, BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST	1093.7	15																
		16																
		17	8 12 9	28	100	SS-7	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		18																
		19	2 3 2	7	22	SS-8	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
		20																
		21																
		22	2 4 3	9	17	SS-9	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
	1088.7	23																
MEDIUM DENSE, GRAY, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST	1086.7	24	3 8 14	29	28	SS-10	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)	
EOB		25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 16+52, 60' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL F
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1108.4 (MSL) EOB: 25.0 ft.
START: 12/16/22 END: 12/16/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.048673, -81.505905

EXPLORATION ID B-060-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1108.4	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
7.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1107.5																	
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN BECOMING BROWN, **SILT**, SOME SAND, SOME CLAY, TRACE GRAVEL, SS-1 CONTAINS IRON STAINING, DAMP TO MOIST	1097.9	1 2 3 4 5 6 7 8 9 10	2 5 6	14	100	SS-1	4.25	1	6	20	50	23	27	17	10	16	A-4b (8)	
			5 5 7	16	78	SS-2	4.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
			2 6 6	16	100	SS-3	4.00	-	-	-	-	-	-	-	-	18	A-4b (V)	
			3 3 4	9	33	SS-4	4.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
LOOSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1095.4	11 12	3 2 3	7	28	SS-5	-	4	8	32	42	14	NP	NP	NP	13	A-4a (4)	
VERY STIFF, GRAY, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST	1087.9	13 14 15 16 17 18 W 1089.9 19 20	2 3 5	11	100	SS-6	2.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
			2 3 4	9	100	SS-7	2.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
			2 2 6	11	100	SS-8	2.50	-	-	-	-	-	-	-	-	19	A-4a (V)	
DENSE, GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, MOIST	1083.4	21 22	3 16 18	45	100	SS-9	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
	EOB	23 24 25	3 13 19	42	100	SS-10	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	

NOTES: GROUNDWATER ENCOUNTERED AT 18.5' DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 11+03, 15' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL G
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1107.0 (MSL) EOB: 24.5 ft.
START: 12/16/22 END: 12/16/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.049169, -81.505915

EXPLORATION ID B-061-0-22

PAGE 1 OF 1

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
8.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1107.0 1106.0																	
STIFF TO VERY STIFF, BROWN BECOMING GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, SS-1 CONTAINS A 2.5" STONE FRAGMENT, DAMP TO WET		1	5 5 6	14	28	SS-1	2.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		2																
		3																
		4	3 3 3	8	100	SS-2	2.50	6	10	22	45	17	22	16	6	16	A-4a (5)	
		5																
		6																
		7	3 4 6	13	100	SS-3	2.75	-	-	-	-	-	-	-	-	21	A-4a (V)	
		8																
		9	4 5 7	16	100	SS-4	3.00	-	-	-	-	-	-	-	-	21	A-4a (V)	
		10																
		11																
		12	3 4 5	12	100	SS-5	1.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		13																
		14																
		15	3 3 3	8	100	SS-6	2.00	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1091.0																	
MEDIUM DENSE TO DENSE, GRAY, **COARSE AND FINE SAND**, SOME SILT, TRACE CLAY, TRACE STONE FRAGMENTS, STONE FRAGMENTS ARE FRIABLE SANDSTONE, MOIST TO DAMP		16																
		17	3 4 16	26	83	SS-7	-	6	7	56	21	10	NP	NP	NP	12	A-3a (0)	
		18																
		19	2 12 15	36	94	SS-8	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
	1086.5	20																
HARD, GRAY, **SANDY SILT**, SOME GRAVEL AND STONE FRAGMENTS, LITTLE CLAY, DAMP		21																
		22	7 13 18	41	100	SS-9	4.50	-	-	-	-	-	-	-	-	9	A-4a (V)	
	1084.0	23																
VERY DENSE, GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, DAMP	1082.5	24	10 50	-	50	SS-10	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	

ETR3

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+45, 15' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL G
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1107.8 (MSL) EOB: 23.9 ft.
START: 12/13/22 END: 12/13/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.049834, -81.505896

EXPLORATION ID B-062-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1107.8	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1106.9																	
VERY STIFF, DARK GRAY AND BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, SLIGHTLY ORGANIC, MOIST	1104.8	1	2 4 3	9	100	SS-1	3.00	4	5	16	48	27	31	17	14	19	A-6a (10)	
VERY STIFF TO HARD, BROWN BECOMING GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST		2																
		3	3 4 4	11	100	SS-2	4.00	2	7	22	49	20	21	16	5	16	A-4a (7)	
		4																
		5																
		6	2 3 4	9	100	SS-3	3.50	-	-	-	-	-	-	-	-	19	A-4a (V)	
		7																
		8																
		9	2 1 2	4	100	SS-4	3.25	-	-	-	-	-	-	-	-	16	A-4a (V)	
		10																
		11																
		12	1 2 3	7	100	SS-5	4.00	-	-	-	-	-	-	-	-	17	A-4a (V)	
		13																
		14	3 3 4	9	100	SS-6	4.25	-	-	-	-	-	-	-	-	14	A-4a (V)	
	1092.3	15																
VERY LOOSE, GRAY, **SANDY SILT**, LITTLE GRAVEL, LITTLE CLAY, MOIST	1089.8	16																
		17	2 2 1	4	100	SS-7	-	13	12	24	39	12	NP	NP	NP	13	A-4a (3)	
MEDIUM DENSE TO VERY DENSE, GRAY AND ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, IRON STAINING, STONE FRAGMENTS ARE FRIABLE SANDSTONE, WET		W 1089.3 18																
		19	2 8 9	22	100	SS-8	-	-	-	-	-	-	-	-	-	15	A-1-b (V)	
	1085.8	20																
		21																
SANDSTONE, ORANGISH BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, FRIABLE.		TR 22	20 31 32	83	100	SS-9	-	-	-	-	-	-	-	-	-	15	A-1-b (V)	
	1083.9	23																
		EOB	50/5"	-	100	SS-10	-	-	-	-	-	-	-	-	-	14	Rock (V)	

NOTES: GROUNDWATER ENCOUNTERED AT 18.5' DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 15+42, 14' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL G
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1109.0 (MSL) EOB: 24.0 ft.
START: 12/13/22 END: 12/13/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.050373, -81.505879

EXPLORATION ID B-063-0-22

PAGE 1 OF 1

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
6.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1109.0 1108.2																	
VERY STIFF, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, **SILT AND CLAY**, LITTLE TO SOME SAND, TRACE GRAVEL, IRON STAINING, MOIST TO DAMP	1103.5	1 2 3 4 5	4 2 4	8	100	SS-1	2.50	-	-	-	-	-	-	-	-	24	A-6a (V)	
			5 5 9	18	89	SS-2	3.00	6	8	23	38	25	28	16	12	16	A-6a (6)	
VERY STIFF, BROWN, **SILT**, SOME SAND, SOME CLAY, TRACE GRAVEL, DAMP	1101.0	6 7 8	4 4 5	12	100	SS-3	3.75	2	6	20	51	21	25	17	8	16	A-4b (7)	
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP	1098.5	9 10	3 4 3	9	100	SS-4	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
VERY STIFF, BROWN BECOMING GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO SOME STONE FRAGMENTS, DAMP	1091.5	11 12 13 14 15 16 17	2 2 2	5	100	SS-5	3.50	4	8	21	49	18	23	17	6	17	A-4a (6)	
			3 4 6	13	44	SS-6	3.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
			4 6 8	18	39	SS-7	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
VERY DENSE, GRAY AND ORANGISH BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, IRON STAINING, STONE FRAGMENTS ARE FRIABLE SANDSTONE, MOIST TO WET	1086.5	W 1090.5 18 19 20 21 22	9 16 27	57	100	SS-8	-	-	-	-	-	-	-	-	-	14	A-1-b (V)	
			21 21 28	65	100	SS-9	-	-	-	-	-	-	-	-	-	16	A-1-b (V)	
SANDSTONE, ORANGISH BROWN AND GRAY, MODERATELY WEATHERED, SLIGHTLY STRONG, FRIABLE.	1085.0	TR EOB 23 24	50	-	83	SS-10	-	-	-	-	-	-	-	-	-	15	Rock (V)	

NOTES: GROUNDWATER ENCOUNTERED AT 18.5' DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 17+84, 15' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL G
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1109.2 (MSL) EOB: 25.4 ft.
START: 12/13/22 END: 12/13/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.051037, -81.505863

EXPLORATION ID B-064-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1109.2																	
8.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1108.2																	
STIFF TO HARD, BROWN BECOMING GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE GRAVEL, SS-3 CONTAINS IRON STAINING, DAMP		1	13 6 7	17	100	SS-1	3.25	9	9	22	42	18	24	17	7	15	A-4a (5)	
		2																
		3																
		4	4 6 7	17	17	SS-2	3.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		5																
		6																
		7	4 5 6	14	100	SS-3	3.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
		8																
		9	3 2 3	7	100	SS-4	1.25	-	-	-	-	-	-	-	-	17	A-4a (V)	
		10																
		11																
		12	2 3 5	11	100	SS-5	3.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
		13																
		14																
		15	3 5 7	16	100	SS-6	4.25	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1093.7																	
MEDIUM DENSE, GRAY, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP		16																
		17	5 5 6	14	100	SS-7	-	3	7	15	58	17	NP	NP	NP	15	A-4b (8)	
	1090.7	18																
SHALE, GRAY, SEVERELY WEATHERED, VERY WEAK, FISSILE.		TR 19	4 11 29	53	100	SS-8	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1088.8	20	50/5"	-	100	SS-9	-	-	-	-	-	-	-	-	-	4	Rock (V)	
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK TO WEAK, LAMINATED, FISSILE, CONTAINS INTERBEDDED CLAY SEAMS, SILTY FROM 20.4'-21.0', BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 20.4'-20.7', HIGHLY FRACTURED TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, LAMINATED, POOR SURFACE CONDITION; RQD 17%, REC 100%.		21																
		22																
		23	17		100	NQ2-1											CORE	
		24																
	1083.8	EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 50 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:03 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 10+67, 20' RT.	EXPLORATION ID B-065-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL P	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1110.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.048728, -81.504855	

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
7.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1110.7																	
VERY STIFF, ORANGISH BROWN MOTTLED WITH GRAY, **CLAY**, "AND" SILT, SOME SAND, TRACE GRAVEL, IRON STAINING, MOIST	1109.8		5 4 6	13	100	SS-1	3.00	6	6	21	40	27	41	16	25	19	A-7-6 (13)	
HARD, ORANGISH BROWN MOTTLED WITH GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, IRON STAINING, DAMP	1107.7		3 8 8	21	100	SS-2	4.50	1	4	18	52	25	29	17	12	17	A-6a (9)	
MEDIUM DENSE, ORANGISH BROWN MOTTLED WITH GRAY, **COARSE AND FINE SAND**, SOME SILT, LITTLE CLAY, TRACE GRAVEL, IRON STAINING, MOIST	1105.2		3 5 8	17	100	SS-3	-	-	-	-	-	-	-	-	-	19	A-3a (V)	
STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1102.7		2 3 3	8	100	SS-4	1.50	3	9	28	41	19	25	16	9	16	A-4a (5)	
VERY STIFF TO HARD, BROWN BECOMING GRAY, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP	1100.2		2 2 3	7	100	SS-5	-	6	8	17	52	17	24	20	4	17	A-4b (7)	
	1095.2		2 3 4	9	100	SS-6	-	-	-	-	-	-	-	-	-	12	A-4b (V)	
LOOSE, GRAY, **STONE FRAGMENTS WITH SAND AND SILT**, LITTLE CLAY, MOIST	1092.7	W 1094.7	1 2 3	7	100	SS-7	-	-	-	-	-	-	-	-	-	15	A-2-4 (V)	
MEDIUM DENSE, GRAY, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, MOIST	1090.7	TR	15 8 15	30	100	SS-8	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
SANDSTONE, GRAY AND BLACK, HIGHLY TO MODERATELY WEATHERED, SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, FRIABLE, CONTAINS INTERBEDDED COAL LENSES.	1087.7		10 14 20	45	100	SS-9	-	-	-	-	-	-	-	-	-	16	Rock (V)	
COAL, BLACK, MODERATELY WEATHERED, VERY WEAK, FOSSILIFEROUS.	1085.7	EOB	3 5 6	14	100	SS-10	-	-	-	-	-	-	-	-	-	18	Rock (V)	

NOTES: GROUNDWATER ENCOUNTERED AT 16.0' DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:03 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 12+61, 3' RT.	EXPLORATION ID B-066-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL P	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1113.5 (MSL) EOB: 24.3 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.049261, -81.504906	

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
VERY STIFF, BROWN, **SILT**, SOME SAND, SOME CLAY, TRACE GRAVEL, DAMP TO MOIST	1113.5		7 18 8	34	100	SS-1	3.25	2	6	19	50	23	28	18	10	18	A-4b (8)	
			2 3 3	8	100	SS-2	3.00	-	-	-	-	-	-	-	-	20	A-4b (V)	
			2 5 6	14	100	SS-3	3.25	-	-	-	-	-	-	-	-	16	A-4b (V)	
MEDIUM DENSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1105.5		2 5 7	16	100	SS-4	-	8	13	29	39	11	NP	NP	NP	14	A-4a (3)	
VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, RELIC ROCK, DAMP TO MOIST	1103.0		3 19 39	76	39	SS-5	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			10 22 45	88	100	SS-6	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			10 29 50	104	100	SS-7	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	1093.5		20 25 21	61	100	SS-8	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
SANDSTONE, BROWN, MODERATELY WEATHERED, WEAK TO SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, FRIABLE.		TR W 1092.5	14 15 15	40	100	SS-9	-	-	-	-	-	-	-	-	-	20	Rock (V)	
	1089.2	EOB	21 50/3"	-	89	SS-10	-	-	-	-	-	-	-	-	-	17	Rock (V)	

NOTES: GROUNDWATER ENCOUNTERED AT 21.0' DURING DRILLING. HOLE DID NOT CAVE. BORING OFFSET 24' WEST.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 14+62, 19' RT.	EXPLORATION ID B-067-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL P	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/24/22	ELEVATION: 1113.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 41.049810, -81.504834	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
5.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1113.1																	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1110.9		4 7 8	20	100	SS-1	4.50	3	7	21	49	20	24	17	7	14	A-4a (7)	
MEDIUM DENSE, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, MOIST	1108.4		4 4 5	12	100	SS-2	-	5	9	25	50	11	NP	NP	NP	16	A-4b (5)	
MEDIUM DENSE, BROWN, **SANDY SILT**, SOME STONE FRAGMENTS, LITTLE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, DAMP	1105.9		4 5 11	21	100	SS-3	-	21	10	22	34	13	NP	NP	NP	13	A-4a (2)	
MEDIUM DENSE TO DENSE, BROWN AND GRAY, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, RELIC ROCK, DAMP	1095.9		3 8 15	30	100	SS-4	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			16 15 14	38	100	SS-5	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
			30 16 16	42	100	SS-6	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
			16 10 7	22	100	SS-7	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
COAL, BLACK, HIGHLY WEATHERED, VERY WEAK, FOSSILIFEROUS.	1093.4	TR	8 4 7	14	100	SS-8	-	-	-	-	-	-	-	-	-	13	Rock (V)	
HARD, GRAY WITH ORANGISH BROWN AND BLACK, **CLAY** (UNDERCLAY), SOME SAND, SOME STONE FRAGMENTS, LITTLE SILT, IRON STAINING, CONTAINS NO INTACT SOIL FOR HP READINGS, DAMP	1090.9		14 9 50	78	83	SS-9	-	-	-	-	-	-	-	-	-	17	A-7-6 (V)	
COAL, BLACK, HIGHLY WEATHERED, VERY WEAK TO WEAK, FOSSILIFEROUS.	1088.9	EOB	25 25 34	78	100	SS-10	-	-	-	-	-	-	-	-	-	8	Rock (V)	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:03 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 17+04, 19' RT.	EXPLORATION ID B-068-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL P	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1115.0 (MSL) EOB: 20.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.050475, -81.504819	

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
6.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1115.0 1114.1																	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST		1 2 3 4 5 6 7	9 6 7	17	100	SS-1	4.25	3	7	21	49	20	22	17	5	14	A-4a (7)	
			5 6 7	17	100	SS-2	4.25	4	8	19	49	20	24	17	7	15	A-4a (7)	
	1107.0		4 4 5	12	100	SS-3	3.50	-	-	-	-	-	-	-	-	18	A-4a (V)	
MEDIUM DENSE TO VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, RELIC ROCK, DAMP		8 9 10 11 12	6 7 7	18	100	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	1102.5		13 22 28	66	100	SS-5	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
SANDSTONE, BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, FRIABLE.		TR 13 14	50	-	83	SS-6	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	1099.5	15	50	-	83	SS-7	-	-	-	-	-	-	-	-	-	8	Rock (V)	
SANDSTONE, LIGHT BROWN AND BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, LAMINATED TO THIN BEDDED, CONCRETIONS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 15.5-16.0', 18.8-19.8', AND 20.0-20.4', HIGHLY TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR SURFACE CONDITION; RQD 29%, REC 100%.	1094.5	16 17 18 19 20 EOB	29		100	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 18+58, 19' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL P
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1115.9 (MSL) EOB: 19.5 ft.
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.050899, -81.504809

EXPLORATION ID B-069-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
7.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1115.9 1114.9																	
VERY STIFF, BROWN MOTTLED WITH GRAY, **CLAY**, "AND" SILT, LITTLE SAND, TRACE GRAVEL, MOIST	1114.6		5 3 2	7	100	SS-1A SS-1B	2.50 3.75	1 6	3 8	8 18	39 47	49 21	59 25	23 17	36 8	34 14	A-7-6 (20) A-4a (7)	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1110.4		2 2 2	5	100	SS-2	3.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	1107.9		3 6 8	18	100	SS-3	3.00	3	8	19	44	26	31	16	15	17	A-6a (9)	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1102.9		4 3 5	11	100	SS-4	3.25	3	12	25	46	14	23	17	6	16	A-4a (5)	
			2 3 9	16	100	SS-5	3.00	-	-	-	-	-	-	-	-	15	A-4a (V)	
VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, RELIC ROCK, DAMP	1101.9	TR	14 50	-	83	SS-6	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
SANDSTONE, LIGHT BROWN AND BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, LAMINATED TO THIN BEDDED, FRIABLE, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 17.7-18.2', 18.4-15.5', AND 18.7-19.0', HIGHLY TO MODERATELY FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR SURFACE CONDITION; RQD 43%, REC 100%.	1096.4	EOB	43		100	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/3/23 16:03 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\SUM-77-SR8-9.75-0.00 (113208)\GINT FILES\SUM-77-SR8-9.75-0.00.GPJ

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+00, 17' LT.	EXPLORATION ID B-070-0-22
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL H	
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1109.5 (MSL) EOB: 17.5 ft.	PAGE 1 OF 1
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.052598, -81.505824	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	1109.5																	
8.0" ASPHALT AND 3.0" BASE (DRILLERS DESCRIPTION)	1108.6																	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1106.5	1	3 5 8	17	100	SS-1	3.50	3	6	21	46	24	28	17	11	15	A-6a (7)	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1101.5	2 3 4	4 5 7	16	100	SS-2	3.25	4	7	20	47	22	24	17	7	16	A-4a (7)	
		5 6 7	4 5 6	14	100	SS-3	3.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
DENSE TO VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, RELIC ROCK, DAMP	1098.0	8 9 10	4 13 12	33	100	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
		11	20 50	-	58	SS-5	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
SANDSTONE, LIGHT BROWN AND BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, FINE TO COARSE GRAINED, LAMINATED TO THIN BEDDED, MICACEOUS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 14.0-14.4', 14.7-15.0', AND 15.3-16.3', HIGHLY FRACTURED TO FRACTURED, OPEN TO NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY TO DISINTIGRATED, FAIR SURFACE CONDITION; RQD 0%, REC 83%.	1092.0	TR 12 13 14 15 16 17 EOB	0		83	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 16+95, 20' LT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL H
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1106.6 (MSL) EOB: 17.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.053682, -81.505800

EXPLORATION ID B-071-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
9.0" ASPHALT AND 3.0" BASE (DRILLERS DESCRIPTION)	1106.6 1105.6																	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE GRAVEL, DAMP			2 2 4	8	100	SS-1	3.00	6	10	31	35	18	25	15	10	15	A-4a (4)	
			3 5 6	14	100	SS-2	4.50	4	9	22	43	22	26	16	10	16	A-4a (6)	
	1098.6		4 5 5	13	100	SS-3	3.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
DENSE TO VERY DENSE, BROWN, **STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE FRIABLE SANDSTONE, RELIC ROCK, DAMP	1095.1		11 19 17	47	100	SS-4	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
SANDSTONE, BROWN AND LIGHT BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG TO WEAK, MEDIUM TO COARSE GRAINED, THIN BEDDED, FRIABLE, CONTAINS CONCRETIONS, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 14.3-14.6', 15.4-15.8', 17.0'-17.5', HIGHLY FRACTURED TO FRACTURED, NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR SURFACE CONDITION; RQD 0%, REC 87%.		TR	12 50/5"	-	91	SS-5	-	-	-	-	-	-	-	-	-	10	Rock (V)	
	1089.1	EOB	0		87	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 13+52, 15' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL Q
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1114.9 (MSL) EOB: 20.3 ft.
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.052712, -81.504771

EXPLORATION ID B-072-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
7.0" ASPHALT AND 4.0" BASE (DRILLERS DESCRIPTION)	1114.9																	
	1114.0																	
VERY STIFF, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, **CLAY**, "AND" SILT, SOME SAND, TRACE GRAVEL, IRON STAINING, MOIST		1	7 8 3	14	56	SS-1	2.25	4	8	18	41	29	41	17	24	22	A-7-6 (13)	
	1111.9	2																
VERY STIFF TO HARD, BROWN AND GRAY, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP		3																
		4	5 3 7	13	39	SS-2	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
		5																
		6	4 4 5	12	100	SS-3	2.50	9	8	21	43	19	23	17	6	15	A-4a (5)	
	1106.9	7																
STIFF TO VERY STIFF, BROWN, **SILT**, SOME SAND, LITTLE CLAY, TRACE TO LITTLE GRAVEL, DAMP		8	4 4 4	11	72	SS-4	4.00	-	-	-	-	-	-	-	-	15	A-4b (V)	
		9																
		10	3 4 5	12	100	SS-5	2.00	5	7	18	51	19	26	19	7	17	A-4b (7)	
		11																
		12	4 5 7	16	44	SS-6	1.50	-	-	-	-	-	-	-	-	17	A-4b (V)	
	1099.9	13																
SANDSTONE, LIGHT BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, VERY THIN TO THIN BEDDED, FRIABLE, CONTAINS INTERBEDDED COAL LENSES FROM 19.8-20.3', BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 15.9-16.5', HIGHLY FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH, BLOCKY, FAIR TO POOR SURFACE CONDITION; RQD 30%, REC 93%.		TR 14																
		15	50/3"	-	67	SS-7	-	-	-	-	-	-	-	-	-	8	Rock (V)	
		16																
		17																
		18	30		93	NQ2-1											CORE	
		19																
	1094.6	EOB 20																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

PROJECT: SUM-IR-77/SR8-9.75/0.00	DRILLING FIRM / OPERATOR: NEAS / J. HODGES	DRILL RIG: CME 55X	STATION / OFFSET: 17+04, 13' RT.
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: NEAS / J. HODGES	HAMMER: CME AUTOMATIC	ALIGNMENT: NOISE WALL Q
PID: 113208 SFN:	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 1/24/22	ELEVATION: 1112.4 (MSL) EOB: 19.5 ft.
START: 12/16/22 END: 12/16/22	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 79	LAT / LONG: 41.053680, -81.504749

EXPLORATION ID B-073-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6.0" ASPHALT AND 5.0" BASE (DRILLERS DESCRIPTION)	1112.4 1111.5																	
HARD, BROWN AND GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1109.4		4 4 5	12	100	SS-1	4.25	3	7	18	43	29	34	18	16	18	A-6b (10)	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP TO MOIST			4 5 6	14	100	SS-2	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
			3 4 6	13	100	SS-3	4.25	4	8	20	45	23	25	17	8	15	A-4a (7)	
			3 4 4	11	100	SS-4	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
	1098.4		2 2 2	5	44	SS-5	4.25	-	-	-	-	-	-	-	-	19	A-4a (V)	
SANDSTONE, LIGHT BROWN AND ORANGISH BROWN, MODERATELY WEATHERED, SLIGHTLY STRONG, MEDIUM TO COARSE GRAINED, THIN BEDDED, FRIABLE, CONTAINS COAL LENSES, BEDDING DISCONTINUITIES: LOW ANGLE, JOINT DISCONTINUITIES: HIGH ANGLE FROM 14.5-15.6', FRACTURED TO MODERATELY FRACTURED, NARROW, SLIGHTLY ROUGH, BLOCKY/DISTURBED/SEAMY, FAIR TO POOR SURFACE CONDITION; RQD 23%, REC 80%.		TR	11 50	-	33	SS-6	-	-	-	-	-	-	-	-	-	9	Rock (V)	
	1092.9	EOB	23		80	NQ2-1											CORE	

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING. HOLE DID NOT CAVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; PUMPED 25 GAL. BENTONITE GROUT; SHOVELED SOIL CUTTINGS

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-007-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	19.5’	24.5’	59”	98%	44”	73%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-008-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	21.5'	26.5'	60"	100%	44"	73%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-009-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	19.5'	24.5'	60"	100%	46"	77%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-010-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	20.5'	25.5'	45.5"	76%	15.5"	24%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-011-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	18.0'	23.0'	58.5"	98%	25.5"	43%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-017-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	10.0'	15.0'	54"	90%	24.75"	41%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-018-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	16.5'	21.5'	60"	100%	5"	8%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-019-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	19.0'	24.0'	48"	80%	28"	47%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-021-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.0'	19.0'	57.5"	96%	41.0"	68%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-022-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.5'	19.5'	52.5"	88%	4.75"	8%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-023-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	22.7'	27.7'	46.5"	78%	0"	0%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-024-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	8.6’	13.6’	54”	90%	34”	57%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-025-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	12.7'	17.7'	37"	62%	14"	23%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-027-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.0'	19.0'	60"	100%	27"	45%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-028-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.0'	19.0'	60"	100%	17"	28%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-029-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	17.5'	22.5	42.5"	71%	0"	0%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-030-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	15.0'	20.0'	58"	97%	0"	0%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-035-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	11.5	16.5	57”	95%	20.5”	34%
SUM-77/SR8-9.75/0.00 PID: 113208						

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-045-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.5’	19.5’	56”	93%	16”	27%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-046-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	11.5'	16.5'	60"	100%	17"	28%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-064-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	20.4'	25.4'	60"	100%	10"	17%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-068-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	15.5'	20.5'	60"	100%	17.5"	29%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-069-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.5'	19.5'	60"	100%	26"	43%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-070-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	12.5'	17.5'	50"	83%	0"	0%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-071-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	12.5'	17.5'	52"	87%	0"	0%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-072-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	15.3'	20.3'	56"	93%	18"	30%

SUM-77/SR8-9.75/0.00 PID: 113208

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

Office of Geotechnical Engineering

B-073-0-22

Run #:	Depth		Recovery		RQD	
NQ2-1	14.5'	19.5'	48"	80%	13.5"	23%

SUM-77/SR8-9.75/0.00 PID: 113208

S&ME JOB: 1179-20-041

PROJECT: SUM-IR76/77-8.42/09.74	DRILLING FIRM / OPERATOR: S&ME / T. FROST	DRILL RIG: S&ME ATV D50 (R-61)	STATION / OFFSET: 398+04, -137' LT	EXPLORATION ID B-040-1-21
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / A. MAINS	HAMMER: CME AUTOMATIC	ALIGNMENT: I.R. 77	
PID: 102329 BR ID: N/A	DRILLING METHOD: 2.25" HSA / NQ2	CALIBRATION DATE: 9/12/19	ELEVATION: 1108.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 3/31/21 END: 3/31/21	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 75.1	LAT / LONG: 41.052028 N, -81.505851 W	

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 - 7 INCHES	1107.4																	
AGGREGATE BASE - 5 INCHES	1107.0																	
Stiff to very-stiff brown **SANDY SILT**, some clay, little fine to coarse gravel, moist to wet.		W 1106.0	2 2 2	5	100	SS-1	2.5	-	-	-	-	-	-	-	-	17	A-4a (V)	
			1 1 1	3	72	SS-2	2.0	13	5	20	41	21	24	15	9	22	A-4a (5)	
			2 1 3	5	100	SS-3	1.0	-	-	-	-	-	-	-	-	15	A-4a (V)	
	1099.5																	
Very-dense brown **COARSE AND FINE SAND**, some fine to coarse gravel, little silt, trace clay, damp.			12 16 42	73	100	SS-4	-	29	2	53	11	5	NP	NP	NP	8	A-3a (0)	
			50-2"	-	100	SS-5	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
	1093.0	TR																
SANDSTONE, brown becoming gray at 20.1', slightly weathered, strong, medium to coarse-grained, moderately fractured, ferriferous.			55		100	NQ2-6											CORE	
			58		100	NQ2-7											CORE	
	1083.0	EOB																

NOTES:
- Seepage noted at 2.0' during drilling.
- Borehole was observed to be dry prior to rock coring.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; SOIL CUTTINGS

S&ME ODOT LOG (8.5X11) - SGE 01/2019 - OH DOT.GDT - 7/29/21 15:55 - T:\CS\RESOURCES\CLEVELAND\01 - LABORATORY\02 - GINT\WPROJECTS\1179-20-041.GPJ

PLATE 16

S&ME JOB: 1179-20-041

PROJECT: SUM-IR76/77-8.42/09.74	DRILLING FIRM / OPERATOR: S&ME / T. FROST	DRILL RIG: S&ME ATV D50 (R-61)	STATION / OFFSET: 398+75, 154' RT	EXPLORATION ID B-040-2-21
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / A. MAINS	HAMMER: CME AUTOMATIC	ALIGNMENT: I.R. 77	
PID: 102329 BR ID: N/A	DRILLING METHOD: 2.25" HSA / NQ2	CALIBRATION DATE: 9/12/19	ELEVATION: 1116.0 (MSL) EOB: 35.0 ft.	PAGE 1 OF 2
START: 4/9/21 END: 4/9/21	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 75.1	LAT / LONG: 41.052208 N, -81.504793 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1116.0	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 - 5 INCHES	1115.6																	
AGGREGATE BASE - 7 INCHES	1115.0																	
Very-stiff to hard brown **SANDY SILT**, little to some clay, little fine to coarse gravel, damp.		1	7 6 7	16	100	SS-1	4.5	-	-	-	-	-	-	-	-	15	A-4a (V)	
		4	3 1 6	9	100	SS-2	4.5	-	-	-	-	-	-	-	-	16	A-4a (V)	
		7	3 3 3	8	100	SS-3	3.0	-	-	-	-	-	-	-	-	16	A-4a (V)	
		9	2 3 6	11	100	SS-7	3.5	11	5	16	48	20	24	18	6	18	A-4a (7)	
		14	23 50-2"	-	100	SS-5	4.5	-	-	-	-	-	-	-	-	20	A-4a (V)	
	1097.4	TR																
SANDSTONE, gray, slightly weathered, strong, medium-grained, moderately fractured.		19	50-1"	-	100	SS-6	-	-	-	-	-	-	-	-	-	10	A-4a (V)	
		20	53		89	NQ2-7											CORE	
		24	57		93	NQ2-8											CORE	
		29	80		100	NQ2-9											CORE	

S&ME ODOT LOG (8.5X11) - SGE 01/2019 - OH DOT.GDT - 7/29/21 15:20 - T:\CS\RESOURCES\CLEVELAND\01 - LABORATORY\02 - GINT\WPROJECTS\1179-20-041.GPJ

PLATE 17

S&ME JOB: 1179-20-041

PID: 102329	BR ID: N/A	PROJECT: SUM-IR76/77-8.42/09.74	STATION / OFFSET: 398+75, 154' RT	START: 4/9/21	END: 4/9/21	PG 2 OF 2	**B-040-2-21**

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
SANDSTONE, gray, slightly weathered, strong, medium-grained, moderately fractured. *(continued)*	1086.0	31																
		32																
	1082.6	33	66		100	NQ2-10											CORE	
COAL, black, moderately weathered, slightly strong, fractured. C	1082.1	34																
SANDSTONE, gray, slightly weathered, strong, medium-grained, fractured, conglomeritic, carbonaceous.	1081.0	EOB 35																

NOTES:
- No seepage or groundwater noted during drilling.
- Borehole was observed to be dry prior to rock coring.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; SOIL CUTTINGS

PLATE 18

S&ME JOB: 1179-20-041

PROJECT: SUM-IR76/77-8.42/09.74	DRILLING FIRM / OPERATOR: S&ME / T. FROST	DRILL RIG: S&ME ATV D50 (R-61)	STATION / OFFSET: 402+13, -134' LT	EXPLORATION ID B-042-1-21
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / A. MAINS	HAMMER: CME AUTOMATIC	ALIGNMENT: I.R. 77	
PID: 102329 BR ID: N/A	DRILLING METHOD: 2.25" HSA / NQ2	CALIBRATION DATE: 9/12/19	ELEVATION: 1110.0 (MSL) EOB: 29.0 ft.	PAGE 1 OF 2
START: 3/30/21 END: 3/31/21	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 75.1	LAT / LONG: 41.053147 N, -81.505816 W	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1110.0	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 - 6 INCHES	1109.5																	
AGGREGATE BASE - 6 INCHES	1109.0																	
Very-stiff to hard brown **SANDY SILT**, little clay, trace fine to coarse gravel, damp.		1	5 3 3	8	100	SS-1	4.5	-	-	-	-	-	-	-	-	15	A-4a (V)	
		2																
		3																
		4	1 2 3	6	67	SS-2	2.0	-	-	-	-	-	-	-	-	17	A-4a (V)	
		5																
		6																
		7	3 3 4	9	100	SS-3	4.5	9	6	19	48	18	22	16	6	15	A-4a (6)	
		8																
		9	3 4 5	11	44	SS-4	4.0	-	-	-	-	-	-	-	-	15	A-4a (V)	
		10																
		11																
		12																
	1096.5	13																
Dense to very-dense brown and gray **FINE SAND**, trace silt, trace clay, similar to highly weathered sandstone, damp.		14	23 11 25	45	11	SS-5	-	-	-	-	-	-	-	-	-	5	A-3 (V)	
		15																
		16																
		17																
		18																
		19	47 50-3"	-	67	SS-6	-	-	-	-	-	-	-	-	-	8	A-3 (V)	
	1090.0	20 TR																
SANDSTONE, gray with brown, moderately weathered, storng, fine to medium-grained, fractured.		21																
		22																
		23	33		100	NQ2-7											CORE	
		24																
		25																
		26																
		27	13		75	NQ2-8											CORE	
		28																
	1081.0	29 EOB																

S&ME ODOT LOG (8.5X11) - SGE 01/2019 - OH DOT.GDT - 7/29/21 15:20 - T:\CS\RESOURCES\CLEVELAND\01 - LABORATORY\02 - GINT\WPROJECTS\1179-20-041.GPJ

PLATE 19

PID: 102329	BR ID: N/A	PROJECT: SUM-IR76/77-8.42/09.74	STATION / OFFSET: 402+13, -134' LT	START: 3/30/21	END: 3/31/21	PG 2 OF 2	**B-042-1-21**

MATERIAL DESCRIPTION AND NOTES	ELEV. 1080.0	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

NOTES:
- No seepage or groundwater noted during drilling.
- Borehole was observed to be dry prior to rock coring.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; SOIL CUTTINGS

S&ME JOB: 1179-20-041

PROJECT: SUM-IR76/77-8.42/09.74	DRILLING FIRM / OPERATOR: S&ME / T. FROST	DRILL RIG: S&ME ATV D50 (R-61)	STATION / OFFSET: 402+24, 156' RT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / A. MAINS	HAMMER: CME AUTOMATIC	ALIGNMENT: I.R. 77
PID: 102329 BR ID: N/A	DRILLING METHOD: 2.25" HSA / NQ2	CALIBRATION DATE: 9/12/19	ELEVATION: 1110.0 (MSL) EOB: 36.2 ft.
START: 4/9/21 END: 4/9/21	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 75.1	LAT / LONG: 41.053176 N, -81.504764 W

EXPLORATION ID **B-042-2-21**

MATERIAL DESCRIPTION AND NOTES	ELEV. 1110.0	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 - 5 INCHES	1109.6																	
AGGREGATE BASE - 7 INCHES	1109.0																	
Hard brown **SANDY SILT**, some clay, little fine to coarse gravel, damp.		1	5 4 5	11	100	SS-1	4.5	-	-	-	-	-	-	-	-	13	A-4a (V)	
		2																
		3																
		4	4 4 7	14	67	SS-2	4.5	-	-	-	-	-	-	-	-	15	A-4a (V)	
		5																
		6																
		7	4 4 5	11	100	SS-3	4.0	11	5	16	44	24	24	17	7	15	A-4a (7)	
		8																
		9	3 6 7	16	50	SS-4	4.5	-	-	-	-	-	-	-	-	16	A-4a (V)	
		10																
		11																
		12																
	1096.5	13																
Very-soft gray **SILT AND CLAY**, trace fine to coarse sand, moist.		14	0 4 16	25	100	SS-5	0.5	-	-	-	-	-	-	-	-	19	A-6a (V)	
	1091.4	15																
		16																
		17																
		18																
		TR	50-1"	-	100	SS-6	-	-	-	-	-	-	-	-	-	20	A-6a (V)	
SANDSTONE, gray, slightly weathered, strong, fine to medium-grained, moderately fractured.		19	30		63	NQ2-7											CORE	
		20																
		21																
		22																
		23	72		100	NQ2-8											CORE	
		24																
	1084.3	25																
INTERBEDDED SANDSTONE (65%) AND SHALE (35%). Sandstone, gray, slightly weathered, strong, fine to medium-grained, moderately fractured. Shale, dark-gray, moderately weathered, weak, laminated, highly fractured, argillaceous.	1082.2	26																
		27																
		28	40		100	NQ2-9											CORE	
SANDSTONE, brown, severely weathered, very weak, similar to loose fine to coarse sand.		29																

PLATE 21

S&ME JOB: 1179-20-041

PID: 102329	BR ID: N/A	PROJECT: SUM-IR76/77-8.42/09.74	STATION / OFFSET: 402+24, 156' RT	START: 4/9/21	END: 4/9/21	PG 2 OF 2	**B-042-2-21**

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
SANDSTONE, brown, severely weathered, very weak, similar to loose fine to coarse sand. *(continued)*	1080.0	31																
	1077.0	32																
SHALE, dark-gray, moderately weathered, weak, laminated, highly fractured, argillaceous.		33	30		100	NQ2-10											CORE	
	1073.8	34																
		35																
		EOB 36																

NOTES:
- No seepage or groundwater noted during drilling.
- Borehole was observed to be dry prior to rock coring.

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; SOIL CUTTINGS

PLATE 22

Slake Durability Index Test Report

ASTM D 4644

S&ME, Inc. - Columbus 6190 Enterprise Court, Dublin, Ohio 43016

Project Information
Project Name
SUM-IR 76/77 8.42/9.74
Project Number
1179-20-041
Specimen Information
Boring ID
B-40-2-21 S-8
Sample Depth, feet
22.1' to 23.1
Sample Description
Sandstone
Water Temperature, ºC
20.5
Test Results
Natural Water Content, %
7.6
Slake Durability Index, 1st cycle, %
96.7
Slake Durability Index, 2nd cycle, %
95.1

Description of Fragments	Date Tested	Testing Technician
TYPE I	**5/4/2021**	**SC**

Slake Durability Index Test Report

ASTM D 4644

S&ME, Inc. - Columbus 6190 Enterprise Court, Dublin, Ohio 43016

Project Information
Project Name
SUM-IR 76/77 8.42/9.74
Project Number
1179-20-041
Specimen Information
Boring ID
B-042-2-21 S-9
Sample Depth, feet
28.0' to 29.0'
Sample Description
Shale
Water Temperature, ºC
20.3
Test Results
Natural Water Content, %
3.1
Slake Durability Index, 1st cycle, %
94.2
Slake Durability Index, 2nd cycle, %
87.2

Description of Fragments	Date Tested	Testing Technician
TYPE II	**4/28/2021**	**SC**

UNCONFINED COMPRESSION
(ASTM D7012 Method C)

S&ME, Inc. - Knoxville 1413 Topside Road, Louisville, TN 37777

Project Name: SUM-IR-76-77 Design Build
Project Number: 1179-20-041

Report Date: May 10, 2021
Reviewed By: Nathan Dewitt

Boring No.	Sample No.	Depth (ft)	Dimensions, in.		Shape (See Key)	Area (in^2)	Unit Weight (lbs/ft^3)	Loading Rate (psi/sec)	Maximum Load (lbs)	Strength (psi)	Moisture (%)
			Length	Diameter							
R-003	S-10	28.0 - 28.5	3.83	1.97	A	3.05	158.4	69	18,003	5,903	1.0
B-005-1	S-6	21.0 - 21.7	4.45	1.99	C	3.11	158.5	67	27,276	8,770	1.4
B-028-1	S-7	25.6 - 26.3	4.41	1.94	A	2.96	133.3	63	12,214	4,126	1.4
B-040-2	S-8	21.6 - 22.1	4.33	1.93	A	2.93	138.0	71	15,293	5,219	0.3
B-042-2	S-8	23.4 - 24.0	4.37	1.97	A	3.05	137.8	58	16,938	5,553	0.2

NOTES: Effective (as received) unit weight as determined by RTH 109-93.
Loading rates were selected to target reaching failure between 2 and 15 minutes.
Test results for specimens not meeting the requirements of ASTM D4543-19 may differ from a test specimen that meets the requirements of ASTM D4543.
Specimen R-003, S-10 does not meet the length to diameter ratio requirement fo 2.0 to 2.5.

SHAPE KEY

ASTM D4543-19 Standard Practice for Preparing Rock Core as Cylindrical Test Specimens and Verifying Conformance to Dimensional and Shape Tolerance Section 1.2 - "Rock is a complex engineering material that can vary greatly as a function of lithology, stress history, weathering, moisture content and chemistry, and other natural geologic processes. As such, it is not always possible to obtain or prepare rock core specimens that satisfy the desirable tolerances given in this practice. Most commonly, this situation presents itself with weaker, more porous, and poorly cemented rock types and rock types containing significant or weak (or both) structural features. For rock types which are difficult to prepare, all reasonable efforts shall be made to prepare a specimen in accordance with this practice and for the intended test procedure. However, when it has been determined by trial and error that this is not possible, prepare the rock specimen to the closest tolerances practicable and consider this to be the best effort and report it as such and if allowable or necessary for the intended test, capping the ends of the specimen as discussed in this practice is permitted."

A Test specimen measurements met the desired shape tolerances of ASTM D4543-19 (side straightness, end flatness & parallelism, and end perpendicularity to axis)

B Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness & parallelism, and end perpendicularity to axis. Specimen did not meet the desired tolerance for side straightness. Specimen prepared to closest tolerances practicable.

C Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness & parallelism. Specimen did not meet the desired tolerances for side straightness and end perpendicularity to axis. Specimen prepared to closest tolerances practicable.

D Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness. Specimen did not meet the desired tolerances for side straightness, parallelism and end perpendicularity to axis. Specimen prepared to closest tolerances practicable.

E Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness and end perpendicularity to axis. Specimen did not meet the desired tolerance for side

PREPARING ROCK CORE AS CYLINDRICAL TEST SPECIMENS AND VERIFYING CONFORMANCE TO DIMENSIONAL AND SHAPE TOLERANCES (ASTM D4543)

1413 Topside Road, Louisville, TN 37777

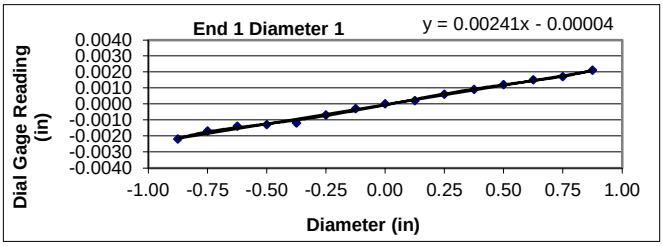
Project:	SUM-IR-76-77 Design Build	**Diameter (in):**	1.93	**Date:**	5/4/2021
Project No.:	1179-20-041	**Length (in):**	4.33	**Tested by:**	Tori Igoe
Boring Id:	B-040-2	**Unit Weight (pcf):**	138.0	**Reviewed by:**	N. Randy Rainwater
Sample No.:	S-8	**Moisture Content (%):**	0.3		
Depth (ft):	21.6 - 22.1				

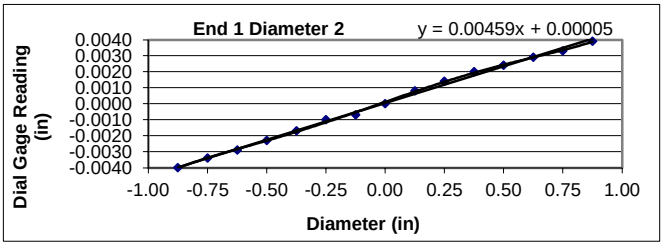
Deviation From Straightness (Procedure S1)

Is the maximum gap ≤ 0.02 in.? **YES** Straightness Tolerance Met? **YES**

End Flatness and Parallelism Readings (Procedure FP1)

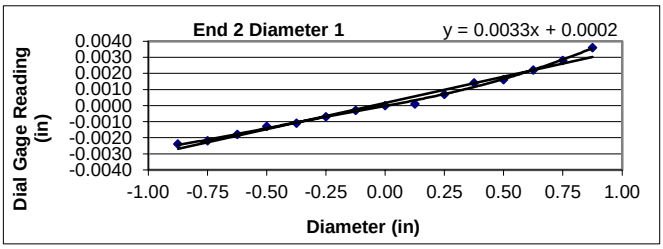
Position	End 1	End 1(90)	End 2	End 2(90)
- 7/8	-0.0022	-0.0040	-0.0024	-0.0036
- 6/8	-0.0017	-0.0034	-0.0022	-0.0030
- 5/8	-0.0014	-0.0029	-0.0018	-0.0024
- 4/8	-0.0013	-0.0023	-0.0013	-0.0017
- 3/8	-0.0012	-0.0017	-0.0011	-0.0013
- 2/8	-0.0007	-0.0010	-0.0007	-0.0008
- 1/8	-0.0003	-0.0007	-0.0003	-0.0002
0	0.0000	0.0000	0.0000	0.0000
1/8	0.0002	0.0008	0.0001	0.0003
2/8	0.0006	0.0014	0.0007	0.0009
3/8	0.0009	0.0020	0.0014	0.0013
4/8	0.0012	0.0024	0.0016	0.0017
5/8	0.0015	0.0029	0.0022	0.0021
6/8	0.0017	0.0033	0.0028	0.0028
7/8	0.0021	0.0039	0.0036	0.0034

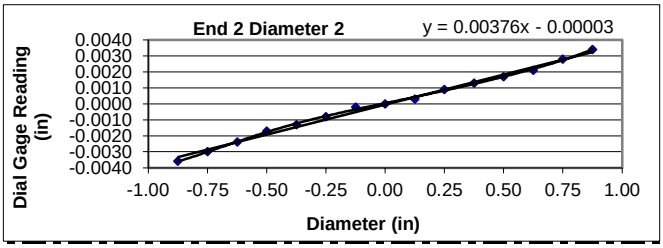




Flatness is met when the difference at any point between a smooth curve drawn through points and a visual best fit line is ≤ 0.001 in.

Flatness Tolerance Met? **YES**





Parallelism is met when the angular difference between best fit lines on opposing ends is ≤ 0.25°.

Parrallelism Diameter 1

End 1:	Slope of Best Fit Line:	0.00241
	Angle of Best Fit Line:	0.13816
End 2:	Slope of Best Fit Line:	0.00327
	Angle of Best Fit Line:	0.18711
	Max Angular Difference:	**-0.05**

Parrallelism Diameter 2

End 1:	Slope of Best Fit Line:	0.00459
	Angle of Best Fit Line:	0.26307
End 2:	Slope of Best Fit Line:	0.00376
	Angle of Best Fit Line:	0.21543
	Max Angular Difference:	**0.05**

Parallelism Tolerance Met? **YES**

Perpendicularity (Procedure P1) is met when the difference between max and min readings along each line divided by the diameter is ≤ 0.0043.

	Difference b/w max & min	Divide by Diameter	Meets Tolerance
End 1 Diam 1	0.0043	0.0022	**YES**
End 1 Diam 2	0.0079	0.0041	**YES**
End 2 Diam 1	0.0060	0.0031	**YES**
End 2 Diam 2	0.0070	0.0036	**YES**

Perpendicularity Tolerance Met? **YES**

PREPARING ROCK CORE AS CYLINDRICAL TEST SPECIMENS AND VERIFYING CONFORMANCE TO DIMENSIONAL AND SHAPE TOLERANCES (ASTM D4543)

1413 Topside Road, Louisville, TN 37777

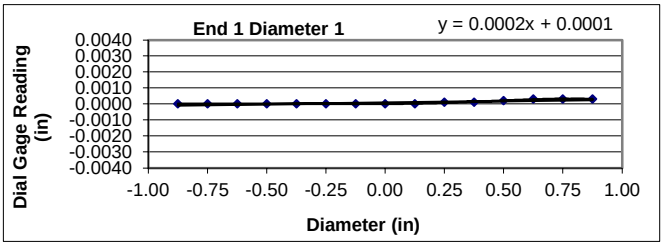
Project:	SUM-IR-76-77 Design Build	**Diameter (in):**	1.97	**Date:**	5/4/2021
Project No.:	1179-20-041	**Length (in):**	4.37	**Tested by:**	Tori Igoe
Boring Id:	B-042-2	**Unit Weight (pcf):**	137.8	**Reviewed by:**	N. Randy Rainwater
Sample No.:	S-8	**Moisture Content (%):**	0.2		
Depth (ft):	23.4 - 24.0				

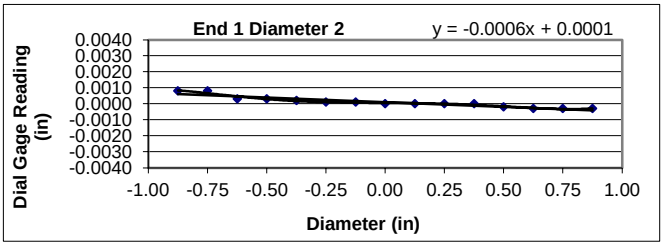
Deviation From Straightness (Procedure S1)

Is the maximum gap ≤ 0.02 in.? **YES** Straightness Tolerance Met? **YES**

End Flatness and Parallelism Readings (Procedure FP1)

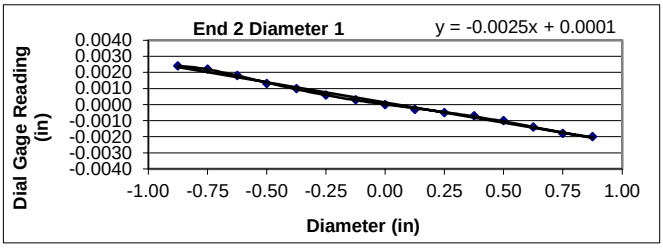
Position	End 1	End 1(90)	End 2	End 2(90)
- 7/8	0.0000	0.0008	0.0024	-0.0001
- 6/8	0.0000	0.0008	0.0022	0.0000
- 5/8	0.0000	0.0003	0.0018	0.0000
- 4/8	0.0000	0.0003	0.0013	0.0000
- 3/8	0.0000	0.0002	0.0010	0.0000
- 2/8	0.0000	0.0001	0.0006	0.0000
- 1/8	0.0000	0.0001	0.0003	0.0000
0	0.0000	0.0000	0.0000	0.0000
1/8	0.0000	0.0000	-0.0003	0.0000
2/8	0.0001	0.0000	-0.0005	0.0000
3/8	0.0001	0.0000	-0.0007	0.0003
4/8	0.0002	-0.0002	-0.0010	0.0003
5/8	0.0003	-0.0003	-0.0014	0.0003
6/8	0.0003	-0.0003	-0.0018	0.0003
7/8	0.0003	-0.0003	-0.0020	0.0005

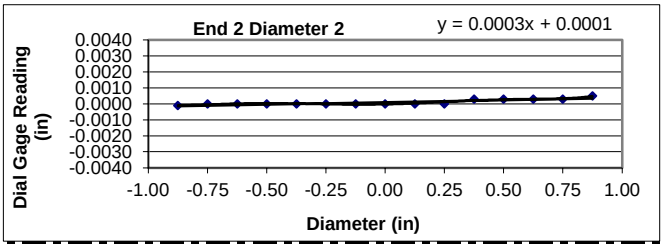




Flatness is met when the difference at any point between a smooth curve drawn through points and a visual best fit line is ≤ 0.001 in.

Flatness Tolerance Met? **YES**





Parallelism is met when the angular difference between best fit lines on opposing ends is ≤ 0.25°.

Parrallelism Diameter 1

End 1:	Slope of Best Fit Line:	0.00019
	Angle of Best Fit Line:	0.01097
End 2:	Slope of Best Fit Line:	-0.00251
	Angle of Best Fit Line:	-0.14389
	Max Angular Difference:	**0.15**

Parrallelism Diameter 2

End 1:	Slope of Best Fit Line:	-0.00058
	Angle of Best Fit Line:	-0.03307
End 2:	Slope of Best Fit Line:	0.00027
	Angle of Best Fit Line:	0.01572
	Max Angular Difference:	**-0.05**

Parallelism Tolerance Met? **YES**

Perpendicularity (Procedure P1) is met when the difference between max and min readings along each line divided by the diameter is ≤ 0.0043.

	Difference b/w max & min	Divide by Diameter	Meets Tolerance
End 1 Diam 1	0.0003	0.0002	**YES**
End 1 Diam 2	0.0011	0.0006	**YES**
End 2 Diam 1	0.0044	0.0022	**YES**
End 2 Diam 2	0.0006	0.0003	**YES**

Perpendicularity Tolerance Met? **YES**

Date: 5/8/2021

Photographer: Tori Igoe

5	**Location / Orientation**	B-042-2, S-8 (23.4' – 24.0')
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

5	**Photographer:**	KAH	**Remarks:**	B-028-1-21 51.0' - 55.0'
	Date Taken:	4/28/2021		
	Location / Orientation:			

6	**Photographer:**	KAH	**Remarks:**	B-040-1-21 15.0' - 25.0'
	Date Taken:	4/28/2021		
	Location / Orientation:			

7	**Photographer:**	KAH	**Remarks:**	B-040-2-21
	Date Taken:	4/28/2021		18.6' - 26.6'
	Location / Orientation:			

8	**Photographer:**	KAH	**Remarks:**	B-040-2-21
	Date Taken:	4/28/2021		26.6' - 35.0'
	Location / Orientation:			

9	**Photographer:**	KAH	**Remarks:**	B-042-1-21 20.0' - 30.0'
	Date Taken:	4/28/2021		
	Location / Orientation:			

10	**Photographer:**	KAH	**Remarks:**	B-042-2-21 18.6' - 26.2'
	Date Taken:	4/28/2021		
	Location / Orientation:			

11	**Photographer:**	KAH	**Remarks:**	B-042-2-21 26.2' - 36.2'
	Date Taken:	4/28/2021		
	Location / Orientation:			

12	**Photographer:**	KAH	**Remarks:**	B-043-1-21 25.0' - 30.0'
	Date Taken:	4/28/2021		
	Location / Orientation:			

THE H. C. NUTTING COMPANY

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10-21-60 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEV. IMMEDIATE None CLIENT: City of Akron, Ohio

DATE COMPLETED 10-24-60 CASING: LENGTH 24' DIA. 3.5" I.D. AFTER Backfilled HOURS PROJECT: Akron Expressway-So. Expr. So. Corp. Line to Lovers Ln.

BORING No. B-6-S STATION AND OFFSET 339+41, 95' R. SURFACE ELEV. 1127.4

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (ft)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
1127.4	0													
		1	6-7-9	16"	Brown silt, some sand, trace of gravel dry - medium dense.	4	2	24	50	20	26	6	12	A-4b
1125.4	2													
	4	2	24-18-17	15"	Brown silty gravel, some sand, moist - dense.	46	2	23	17	12	23	7	14	A-2-4
	6													
1117.4	8	3	19-27-53	17"	Brown silty sand, some gravel, moist - very dense.	34	10	34	10	12	20	5	11	A-2-4
	10	4	9-10-11	18"	Brown silty sand and gravel, moist - medium dense.	35	15	38	3	9	--	0	13	A-1-b
1115.4	12													
	14	5	19-16-14	15"	Brown silty sand and gravel, moist - dense.	41	7	40	-12-		--	--	12	A-2-4
	16	6	34-46-30	16"	do	44	0	45	9	2	--	0	13	A-2-4
1110.4	18	7	50-63	10"	Brown silty fine sand and gravel, moist - very dense.	36	1	53	4	6	--	0	15	A-3
	20				Brown fine sand and gravel, trace of									
1106.4		8	53-68	8"	silt, moist - very dense.	49	0	43	6	2	--	0	15	A-3
	22	9	73	4"	Brown silty sand and gravel, moist - very dense.	42	4	41	8	5	--	0	18	A-2-4
1103.4	24													
	26	10	RM	100%	Light brown friable fine to medium grained sandstone with few limonite seams. (Core in broken pieces to 4" layers - layers Avg. 3").									
1098.4	28													
	30				Boring completed.									
	32													
	34													

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LOG OF BORING

DATE STARTED 3-17-60 SAMPLER: TYPE Split Spoon & NX Core Barrel DIA. 2" OD WATER ELEV IMMEDIATE None CLIENT: City of Akron, Ohio

DATE COMPLETED 3-17-60 CASING: LENGTH 11' DIA. 3.5" I.D. AFTER ____ HOURS ____ PROJECT: Akron Expressway So. Expressway So. Corp. line to Lovers Lane Part 16

BORING No. BW-19 STATION AND OFFSET 343+58, 104' R of ℄ SURFACE ELEV. 1125.3

backfilled hole

ELEV	DEPTH	SAMPLE No.	STD PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG	% C.S	% F.S	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
1125.3	0													
	2	1	4-5-6	10"	Topsoil-Brown sandy silt, moist - medium dense.	1	4	28	48	19	27	3	29	A-4a
	4	2	7-7-10	14"	Brown sandy silt, trace of gravel and limestone fragments, moist - medium dense.	4	7	33	36	20	21	5	15	A-4a
	6													
	8	3	11-11-13	17"	Brown sandy silt, trace of gravel and limestone fragments, moist - medium dense.	5	8	22	43	22	21	4	15	A-4a
1116.3														
	10	4	34-27-19	16"	Brown silty gravel and sand, sandstone & shale fragments, moist - dense.	50	3	34	7	6	--	0	13	A-1-b
1114.3	12													
	14	5	NX	70%	Light brown to dark brown friable, fine to medium grained sandstone (Core in broken pieces to 4" layers-layers avg. broken pieces and 1½")									
1109.3	16													
	18													
	20				Boring completed.									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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LOG OF BORING

DATE STARTED 3-17-60 SAMPLER: TYPE Split Spoon DIA. 2" OD WATER ELEV. IMMEDIATE None CLIENT: City of Akron, Ohio

DATE COMPLETED 3-17-60 CASING: LENGTH 11' DIA. 3.5" I.D. AFTER backfilled HOURS PROJECT: Akron Expressway, So. Express way So. Corp. line to Lovers Lane, Part 16

BORING No. BW-21 STATION AND OFFSET 345+77, 119' R of ℄ SURFACE ELEV. 1121.8

ELEV	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	Soil Class
1121.8	0													
	2	1	23-9-6	10"	Brown sandy silt, little wood, cinders, & gravel, fill, moist - medium stiff.	13	9	23	33	22	27	6	27	A-4a
1118.8														
	4	2	5-6-6	14"	Brown & gray sandy silt, little limestone fragments, and gravel, moist - medium dense.	10	5	21	38	26	26	9	15	A-4a
	6													
	8	3	6-7-9	18"	Brown sandy silt, little gravel and limestone fragments, moist - medium dense.	11	6	15	47	21	23	5	16	A-4a
	10	4	11-16-25	17"	Brown sandy silt, little gravel, moist - dense.	11	10	18	37	24	25	8	15	A-4a
1109.3	12													
	14	5	NX	90%	Light & dark gray friable fine to medium grained sandstone with conglomerate at approximately 14½' to 15' (Core in broken pieces to 5" layers-layers avg. 2 and 4".)									
1104.3	16													
	18													
	20				Boring completed.									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

APPENDIX C

NOISE BARRIER DRILLED SHAFT LENGTH DESIGN

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall A

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **3**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.50	10.00	1055.50
10+10.00	2	14.50	16.00	1055.50
10+26.00	3	14.50	24.00	1055.50
10+50.00	4	14.00	24.00	1056.00
10+74.00	5	13.50	24.00	1056.50
10+98.00	6	13.50	24.00	1057.00
11+22.00	7	13.50	24.00	1057.50
11+46.00	8	13.50	24.00	1057.50
11+70.00	9	13.00	24.00	1058.00
11+94.00	10	13.00	24.00	1059.00
12+18.00	11	12.50	24.00	1060.00
12+42.00	12	13.00	24.00	1060.50
12+66.00	13	13.00	24.00	1061.00
12+90.00	14	12.50	24.00	1061.50
13+14.00	15	13.50	24.00	1062.50
13+38.00	16	13.50	24.00	1062.50
13+62.00	17	13.00	24.00	1063.00
13+86.00	18	13.00	24.00	1064.00
14+10.00	19	13.50	24.00	1065.00
14+34.00	20	13.50	24.00	1065.50
14+58.00	21	13.50	24.00	1066.50
14+82.00	22	14.50	24.00	1066.50
15+06.00	23	14.50	24.00	1066.50
15+30.00	24	14.50	24.00	1066.50

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-001-0-22	10+69.00	11+66.50	1057.95	1056.00	1057.71			24	14.50	2.0	2:1	10+00.00	11+46.00	1	8	8.50	1047.50
B-002-0-22	12+64.00	13+71.00	1062.50	1060.50	1062.55			24	13.50	2.0	2:1	11+70.00	13+62.00	9	17	11.50	1049.00
B-003-0-22	14+78.00	14+78.00	1068.29	1066.50	1067.20	1046.29		24	13.50	6.0	5:1	13+86.00	15+30.00	18	24	6.50	1060.00

Cut (ft) = -1.71
Shaft Top Elev. (ft) = 1056.00
Boring Top Elev. (ft) = 1057.95 Ex. Ground Elev.= 1057.71
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = 2:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1047.50'									

C CT.: 4
G CT.: 1
N dsgn: 22

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1057.95	1055.45	2.50	A-3a	Granular	17	2.00	34	34	125	63	63	157	78	0.55	34	Granular
2	1055.45	1052.95	5.00	A-6a	Cohesive	17	1.72	17	17	122	60	60	149	231	3.05	17	Cohesive
3	1052.95	1050.45	7.50	A-4a P	Cohesive	18	1.56	18	18	122	60	60	149	380	5.55	18	Cohesive
4	1050.45	1047.95	10.00	A-4a P	Cohesive	18	1.45	18	18	122	60	60	149	529	8.05	18	Cohesive
5	1047.95	1045.45	12.50	A-4a P	Cohesive	25	1.36	25	25	125	63	63	157	682	10.55	25	Cohesive
6	1045.45	1042.95	15.00	A-4a P	Cohesive	14	1.29	14	14	122	60	60	149	835	13.05	14	Cohesive
7	1042.95	1040.45	17.50	A-4a P	Cohesive	16	1.24	16	16	122	60	60	149	984	15.55	16	Cohesive
8	1040.45	1037.95	20.00	A-6a	Cohesive	12	1.19	12	12	120	58	58	144	1130	18.05	12	Cohesive
9	1037.95	1035.45	22.50	A-6a	Cohesive	17	1.15	17	17	122	60	60	149	1277	20.55	17	Cohesive
10	1035.45	1032.95	25.00	A-6a	Cohesive	22	1.11	22	22	125	63	63	157	1429	23.05	22	Cohesive

Cut (ft) = -2.05
Shaft Top Elev. (ft) = 1060.50
Boring Top Elev. (ft) = 1062.50 Ex. Ground Elev.= 1062.55
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 2:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
9.0 ft	11.5 ft								
1051.50'	1049.00'								
C CT.: 3	C CT.: 4								
G CT.: 2	G CT.: 2								
N dsgn: 25	N dsgn: 23								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1062.50	1060.00	2.50	A-3a	Granular	29	2.00	58	58	128	66	66	164	82	0.50	58	Granular
2	1060.00	1057.50	5.00	A-3a	Granular	17	1.71	29	29	125	63	63	157	242	3.00	29	Granular
3	1057.50	1055.00	7.50	A-4a P	Cohesive	20	1.54	20	20	125	63	63	157	399	5.50	20	Cohesive
4	1055.00	1052.50	10.00	A-4a P	Cohesive	11	1.43	11	11	120	58	58	144	549	8.00	11	Cohesive
5	1052.50	1050.00	12.50	A-4a P	Cohesive	8	1.36	8	8	118	56	56	139	691	10.50	8	Cohesive
6	1050.00	1047.50	15.00	A-4a P	Cohesive	13	1.30	13	13	120	58	58	144	832	13.00	13	Cohesive
7	1047.50	1045.00	17.50	A-4a P	Cohesive	37	1.24	37	32	130	68	68	169	989	15.50	32	Cohesive
8	1045.00	1042.50	20.00	A-4a P	Cohesive	24	1.19	24	24	125	63	63	157	1151	18.00	24	Cohesive
9	1042.50	1040.00	22.50	A-1-b	Granular	38	1.14	43	43	130	68	68	169	1314	20.50	43	Granular
10	1040.00	1037.50	25.00	A-1-b	Granular	51	1.10	56	56	132	70	70	174	1486	23.00	56	Granular

Cut (ft) =	-0.70	Rock Elev. (ft)=	1046.29
Shaft Top Elev. (ft) =	1066.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1068.29	Ex. Ground Elev.=	1067.20
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1060.00'									

C CT.: 4
G CT.: 0
N dsgn: 16

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1068.29	1065.79	2.50	A-4a P	Cohesive	16	2.00	16	16	122	60	60	149	75	0.71	16	Cohesive
2	1065.79	1063.29	5.00	A-4a P	Cohesive	16	1.73	16	16	122	60	60	149	224	3.21	16	Cohesive
3	1063.29	1060.79	7.50	A-4a P	Cohesive	17	1.56	17	17	122	60	60	149	373	5.71	17	Cohesive
4	1060.79	1058.29	10.00	A-4b P	Cohesive	16	1.45	16	16	122	60	60	149	522	8.21	16	Cohesive
5	1058.29	1055.79	12.50	A-4b P	Cohesive	14	1.37	14	14	122	60	60	149	671	10.71	14	Cohesive
6	1055.79	1053.29	15.00	A-4a P	Cohesive	25	1.30	25	25	125	63	63	157	823	13.21	25	Cohesive
7	1053.29	1050.79	17.50	A-4a P	Cohesive	29	1.24	29	29	128	66	66	164	984	15.71	29	Cohesive
8	1050.79	1048.29	20.00	A-2-4	Granular	104	1.18	123	60	140	78	78	194	1163	18.21	60	Granular
9	1048.29	1046.29	22.00	A-2-4	Granular	50	1.14	57	57	132	70	70	139	1329	20.21	57	Granular
10	1046.29	1044.29	24.00	Rock		100									22.21		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall B

NEAS, Inc.

Prepared By: Zhao Mankoci
Date prepared: Tuesday, March 19, 2024

Checked By: Melinda He
Date Checked: Friday, March 22, 2024

No. of Borings: 9

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	13.50	8.00	1061.50
10+08.00	2	13.50	8.00	1061.50
10+16.00	3	14.00	16.00	1062.00
10+32.00	4	14.50	24.00	1062.00
10+56.00	5	14.50	24.00	1062.50
10+80.00	6	14.00	24.00	1063.50
11+04.00	7	14.00	24.00	1064.00
11+28.00	8	14.00	24.00	1065.00
11+52.00	9	14.50	24.00	1066.00
11+76.00	10	14.50	24.00	1066.50
12+00.00	11	13.50	24.00	1067.50
12+24.00	12	14.50	24.00	1068.50
12+48.00	13	14.50	24.00	1068.50
12+72.00	14	14.00	24.00	1069.50
12+96.00	15	14.00	24.00	1070.00
13+20.00	16	14.00	24.00	1071.00
13+44.00	17	13.50	24.00	1071.50
13+68.00	18	13.50	24.00	1072.00
13+92.00	19	14.00	24.00	1072.50
14+16.00	20	14.50	24.00	1073.00
14+40.00	21	14.50	24.00	1073.50
14+64.00	22	14.00	24.00	1074.00
14+88.00	23	14.50	24.00	1075.00
15+12.00	24	14.50	24.00	1075.50
15+24.00	25	14.00	24.00	1076.00
15+48.00	26	14.00	24.00	1076.00
15+72.00	27	14.00	24.00	1077.00
15+96.00	28	14.00	24.00	1077.50
16+20.00	29	14.00	24.00	1078.00
16+44.00	30	14.00	24.00	1078.50
16+68.00	31	14.00	24.00	1079.00
16+92.00	32	14.00	24.00	1079.50
17+16.00	33	14.50	24.00	1080.00
17+40.00	34	14.50	24.00	1080.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+64.00	35	14.00	24.00	1081.50
17+88.00	36	14.50	24.00	1082.00
18+12.00	37	14.50	24.00	1082.50
18+36.00	38	14.50	24.00	1083.50
18+60.00	39	14.00	24.00	1084.00
18+84.00	40	14.50	24.00	1085.50
19+02.00	41	14.50	18.00	1085.50
19+20.00	42	14.00	18.00	1086.50
19+38.00	43	14.50	18.00	1087.00
19+56.00	44	14.50	18.00	1087.50
19+74.00	45	14.50	18.00	1088.50
19+92.00	46	14.00	18.00	1089.00
20+10.00	47	14.00	18.00	1090.00
20+28.00	48	14.00	18.00	1091.00
20+46.00	49	14.00	18.00	1092.00
20+64.00	50	14.50	18.00	1093.00
20+74.00	51	15.00	24.00	1093.50
20+98.00	52	15.00	24.00	1094.00
21+22.00	53	15.00	24.00	1095.00
21+46.00	54	14.50	24.00	1096.50
21+58.00	55	14.50	18.00	1098.00
21+76.00	56	14.50	18.00	1098.50
21+94.00	57	14.00	18.00	1100.00
22+12.00	58	14.00	18.00	1101.00
22+30.00	59	14.00	18.00	1102.50
22+48.00	60	14.00	18.00	1103.00
22+66.00	61	14.00	24.00	1104.00
22+90.00	62	14.00	24.00	1105.00
23+02.00	63	14.00	12.00	1106.00
23+14.00	64	14.00	12.00	1107.00
23+26.00	65	14.50	12.00	1108.00
23+38.00	66	14.50	24.00	1108.00
23+62.00	67	14.50	24.00	1109.50
23+74.00	68	14.00	12.00	1111.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
23+86.00	69	14.50	16.00	1112.00
24+02.00	70	14.50	16.00	1112.50
24+18.00	71	14.50	16.00	1113.50
24+34.00	72	14.50	16.00	1114.50
24+50.00	73	14.50	16.00	1115.50
24+66.00	74	14.50	16.00	1116.50
24+82.00	75	14.50	16.00	1117.50
24+98.00	76	14.00	16.00	1118.00
25+14.00	77	14.00	16.00	1119.00
25+30.00	78	14.00	16.00	1120.00
25+46.00	79	14.50	16.00	1121.00
25+62.00	80	14.50	16.00	1121.50
25+78.00	81	14.50	16.00	1122.50
25+94.00	82	14.50	16.00	1123.50
26+10.00	83	14.50	16.00	1124.50
26+26.00	84	14.50	16.00	1125.50
26+42.00	85	14.50	16.00	1126.50
26+58.00	86	15.00	16.00	1127.50
26+74.00	87	15.00	16.00	1128.00
26+90.00	88	15.00	16.00	1129.00
27+06.00	89	15.00	16.00	1130.00
27+22.00	90	14.50	16.00	1131.50
27+32.00	91	14.50	10.00	1132.50
27+42.00	92	14.00	10.00	1133.00

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-011-0-22	9+23.00	10+25.50	1058.34	1061.50	1058.34	1044.34		16	14.00	0.0	Level	10+00.00	10+16.00	1	3	6.00	1055.50
B-012-0-22	11+28.00	12+36.50	1065.81	1065.00	1066.70	1050.31		24	14.50	7.0	5:1	10+32.00	12+24.00	4	12	7.50	1057.50
B-013-0-22	13+45.00	14+44.50	1071.85	1071.50	1072.60	1048.85		24	14.50	7.0	5:1	12+48.00	14+40.00	13	21	7.50	1064.00
B-014-0-22	15+44.00	16+45.00	1077.11	1076.00	1077.70			24	14.50	6.0	5:1	14+64.00	16+44.00	22	30	7.50	1068.50
B-015-0-22	17+46.00	18+41.00	1081.76	1080.50	1082.40			24	14.50	8.0	Level	16+68.00	18+36.00	31	38	10.00	1070.50
B-016-0-22	19+36.00	20+41.00	1087.50	1086.50	1088.40	1078.50		24	14.50	8.0	Level	18+60.00	20+28.00	39	48	11.00	1075.50
B-017-0-22	21+46.00	22+48.50	1097.33	1096.50	1098.90	1083.83		24	15.00	5.0	5:1	20+46.00	22+48.00	49	60	10.50	1086.00
B-018-0-22	23+51.00	24+39.00	1110.70	1108.00	1111.10	1097.20		24	14.50	8.0	Level	22+66.00	24+34.00	61	72	10.00	1098.00
B-019-0-22	25+27.00	25+27.00	1121.35	1119.00	1121.50	1102.85		16	14.50	8.0	Level	24+50.00	27+42.00	73	92	7.00	1112.00

Fill (ft) =	3.16	Rock Elev. (ft)=	1044.34
Shaft Top Elev. (ft) =	1061.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1058.34	Ex. Ground Elev.=	1058.34
Post Spacing (ft) =	16		
Barrier Height (ft) =	14.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft									
1055.50'									

C CT.: 2
G CT.: 0
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1058.34	1055.84	2.50	A-4b P	Cohesive	12	2.00	12	12	120	58	58	144	72	0.66	20	Cohesive
2	1055.84	1053.34	5.00	A-4b P	Cohesive	11	1.75	11	11	120	58	58	144	216	3.16	20	Cohesive
3	1053.34	1050.84	7.50	A-4b P	Cohesive	17	1.57	17	17	122	60	60	149	363	5.66	12	Cohesive
4	1050.84	1048.34	10.00	A-4a NP	Granular	43	1.45	62	60	130	68	68	169	522	8.16	11	Cohesive
5	1048.34	1045.84	12.50	A-4a P	Cohesive	32	1.36	32	32	128	66	66	164	688	10.66	17	Cohesive
6	1045.84	1044.34	14.00	Rock		100									13.16	60	Granular
															15.66	32	Cohesive
															17.16		

Cut (ft) =	-1.70	Rock Elev. (ft)=	1050.31
Shaft Top Elev. (ft) =	1065.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1065.81	Ex. Ground Elev.=	1066.70
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
7.5 ft									
1057.50'									

C CT.: 3
G CT.: 1
N dsgn: 18

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1065.81	1063.31	2.50	A-1-b	Granular	8	2.00	16	16	120	58	58	144	72	1.69	16	Granular
2	1063.31	1060.81	5.00	A-4a P	Cohesive	3	1.77	3	3	110	48	48	119	204	4.19	3	Cohesive
3	1060.81	1058.31	7.50	A-6a	Cohesive	22	1.59	22	22	125	63	63	157	341	6.69	22	Cohesive
4	1058.31	1055.81	10.00	A-4a P	Cohesive	29	1.46	29	29	128	66	66	164	502	9.19	29	Cohesive
5	1055.81	1053.31	12.50	A-4a P	Cohesive	33	1.37	33	32	128	66	66	164	666	11.69	32	Cohesive
6	1053.31	1050.31	15.50	A-1-b	Granular	55	1.29	71	60	135	73	73	218	856	14.69	60	Granular
7	1050.31	1041.91	23.90	Rock											23.09		

Cut (ft) =	-1.10	Rock Elev. (ft)=	1048.85
Shaft Top Elev. (ft) =	1071.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1071.85	Ex. Ground Elev.=	1072.60
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
7.5 ft									
1064.00'									

C CT.: 4
G CT.: 0
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1071.85	1069.35	2.50	A-4a P	Cohesive	9	2.00	9	9	118	56	56	139	70	2.15	9	Cohesive
2	1069.35	1066.85	5.00	A-4a P	Cohesive	22	1.74	22	22	125	63	63	157	217	4.65	22	Cohesive
3	1066.85	1064.35	7.50	A-4a P	Cohesive	18	1.57	18	18	122	60	60	149	370	7.15	18	Cohesive
4	1064.35	1061.85	10.00	A-4a P	Cohesive	30	1.45	30	30	128	66	66	164	527	9.65	30	Cohesive
5	1061.85	1059.35	12.50	A-4a P	Cohesive	33	1.36	33	32	128	66	66	164	691	12.15	32	Cohesive
6	1059.35	1056.85	15.00	A-4a P	Cohesive	51	1.28	51	32	135	73	73	182	863	14.65	32	Cohesive
7	1056.85	1054.35	17.50	A-6a	Cohesive	67	1.22	67	32	140	78	78	194	1051	17.15	32	Cohesive
8	1054.35	1052.35	19.50	A-6a	Cohesive	50	1.17	50	32	135	73	73	145	1221	19.15	32	Cohesive
9	1052.35	1049.35	22.50	A-1-b	Granular	18	1.12	20	20	125	63	63	188	1387	22.15	20	Granular
10	1049.35	1047.95	23.90	Rock		100									23.55		

Cut (ft) =	-1.70		
Shaft Top Elev. (ft) =	1076.00		
Boring Top Elev. (ft) =	1077.11	Ex. Ground Elev.=	1077.70
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
7.5 ft									
1068.50'									

C CT.: 4
G CT.: 0
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1077.11	1074.61	2.50	A-4a P	Cohesive	18	2.00	18	18	122	60	60	149	75	1.39	18	Cohesive
2	1074.61	1073.51	3.60	A-4a P	Cohesive	50	1.79	50	32	135	73	73	80	189	2.49	32	Cohesive
3	1073.51	1069.61	7.50	A-4a P	Cohesive	20	1.58	20	20	125	63	63	244	351	6.39	20	Cohesive
4	1069.61	1067.11	10.00	A-4a P	Cohesive	9	1.44	9	9	118	56	56	139	542	8.89	9	Cohesive
5	1067.11	1064.61	12.50	A-4a P	Cohesive	14	1.36	14	14	122	60	60	149	686	11.39	14	Cohesive
6	1064.61	1062.11	15.00	A-4a P	Cohesive	21	1.29	21	21	125	63	63	157	839	13.89	21	Cohesive
7	1062.11	1059.61	17.50	A-4a P	Cohesive	18	1.24	18	18	122	60	60	149	992	16.39	18	Cohesive
8	1059.61	1057.61	19.50	A-2-4	Granular	50	1.19	60	60	132	70	70	139	1136	18.39	60	Granular
9	1057.61	1055.61	21.50	A-1-b	Granular	50	1.15	58	58	132	70	70	139	1275	20.39	58	Granular
10	1055.61	1052.11	25.00	A-1-b	Granular	101	1.10	111	60	140	78	78	272	1481	23.89	60	Granular

Cut (ft) = -1.90
Shaft Top Elev. (ft) = 1080.50
Boring Top Elev. (ft) = 1081.76 Ex. Ground Elev.= 1082.40
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = Level

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
9.0 ft	10.0 ft								
1071.50'	1070.50'								
C CT.: 0	C CT.: 0								
G CT.: 5	G CT.: 5								
N dsgn: 34	N dsgn: 34								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1081.76	1079.26	2.50	A-3a	Granular	7	2.00	14	14	120	58	58	144	72	1.24	14	Granular
2	1079.26	1076.76	5.00	A-3a	Granular	18	1.74	31	31	125	63	63	157	222	3.74	31	Granular
3	1076.76	1074.26	7.50	A-3a	Granular	30	1.55	47	47	128	66	66	164	383	6.24	47	Granular
4	1074.26	1071.76	10.00	A-3a	Granular	18	1.44	26	26	125	63	63	157	543	8.74	26	Granular
5	1071.76	1069.26	12.50	A-2-4	Granular	38	1.35	51	51	130	68	68	169	706	11.24	51	Granular
6	1069.26	1066.76	15.00	A-2-4	Granular	14	1.28	18	18	122	60	60	149	865	13.74	18	Granular
7	1066.76	1064.26	17.50	A-2-4	Granular	49	1.23	60	60	132	70	70	174	1026	16.24	60	Granular
8	1064.26	1061.76	20.00	A-4a NP	Granular	17	1.18	20	20	125	63	63	157	1191	18.74	20	Granular
9	1061.76	1059.26	22.50	A-4a NP	Granular	22	1.13	25	25	125	63	63	157	1348	21.24	25	Granular
10	1059.26	1056.76	25.00	A-4a NP	Granular	13	1.10	14	14	122	60	60	149	1501	23.74	14	Granular

Cut (ft) =	-1.90	Rock Elev. (ft)=	1078.50
Shaft Top Elev. (ft) =	1086.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1087.50	Ex. Ground Elev.=	1088.40
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
9.0 ft	**11.0 ft**								
1077.50'	**1075.50'**								
C CT.: 0	C CT.: 0								
G CT.: 5	G CT.: 5								
N dsgn: 27	N dsgn: 27								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1087.50	1085.00	2.50	A-2-6	Granular	25	2.00	50	50	128	66	66	164	82	1.50	50	Granular
2	1085.00	1082.50	5.00	A-2-6	Granular	16	1.71	27	27	125	63	63	157	242	4.00	27	Granular
3	1082.50	1080.00	7.50	A-3a	Granular	3	1.55	5	5	118	56	56	139	390	6.50	5	Granular
4	1080.00	1077.50	10.00	A-3a	Granular	21	1.44	30	30	125	63	63	157	538	9.00	30	Granular
5	1077.50	1075.00	12.50	A-3a	Granular	16	1.36	22	22	125	63	63	157	694	11.50	22	Granular
6	1075.00	1072.50	15.00	A-4a P	Cohesive	17	1.29	17	17	122	60	60	149	847	14.00	17	Cohesive
7	1072.50	1070.00	17.50	A-4a P	Cohesive	28	1.23	28	28	128	66	66	164	1004	16.50	28	Cohesive
8	1070.00	1067.50	20.00	A-4a P	Cohesive	14	1.18	14	14	122	60	60	149	1160	19.00	14	Cohesive
9	1067.50	1065.00	22.50	A-4a P	Cohesive	13	1.14	13	13	120	58	58	144	1307	21.50	13	Cohesive
10	1065.00	1062.50	25.00	A-4b P	Cohesive	16	1.11	16	16	122	60	60	149	1453	24.00	16	Cohesive

Cut (ft) =	-2.40	Rock Elev. (ft)=	1083.83
Shaft Top Elev. (ft) =	1096.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1097.33	Ex. Ground Elev.=	1098.90
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
9.5 ft	10.5 ft								
1087.00'	1086.00'								
C CT.: 2	C CT.: 2								
G CT.: 2	G CT.: 2								
N dsgn: 36	N dsgn: 36								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1097.33	1094.83	2.50	A-4a P	Cohesive	8	2.00	8	8	118	56	56	139	70	1.67	8	Cohesive
2	1094.83	1092.33	5.00	A-4b P	Cohesive	17	1.75	17	17	122	60	60	149	214	4.17	17	Cohesive
3	1092.33	1089.83	7.50	A-1-b	Granular	45	1.56	70	60	132	70	70	174	375	6.67	60	Granular
4	1089.83	1088.33	9.00	A-1-b	Granular	50	1.46	73	60	132	70	70	104	514	8.17	60	Granular
5	1088.33	1084.83	12.50	Rock		100									11.67		

Cut (ft) =	-3.10	Rock Elev. (ft)=	1097.20
Shaft Top Elev. (ft) =	1108.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1110.70	Ex. Ground Elev.=	1111.10
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
9.0 ft	10.0 ft								
1099.00'	1098.00'								
C CT.: 1	C CT.: 1								
G CT.: 2	G CT.: 2								
N dsgn: 42	N dsgn: 42								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1110.70	1108.20	2.50	A-4a P	Cohesive	5	2.00	5	5	115	53	53	132	66			
2	1108.20	1105.70	5.00	A-4a P	Cohesive	1	1.80	1	1	105	43	43	107	185	4.80	7	Cohesive
3	1105.70	1103.20	7.50	A-4a P	Cohesive	7	1.63	7	7	118	56	56	139	308	7.30	60	Granular
4	1103.20	1100.70	10.00	A-4b NP	Granular	61	1.49	91	60	135	73	73	182	468	9.60	60	Granular
5	1100.70	1098.40	12.30	A-2-4	Granular	50	1.38	69	60	132	70	70	160	639	12.30		
6	1098.40	1095.70	15.00	Rock		100									14.80		
7	1095.70	1093.20	17.50	Rock		100											

Cut (ft) =	-2.50	Rock Elev. (ft)=	1102.85
Shaft Top Elev. (ft) =	1119.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1121.35	Ex. Ground Elev.=	1121.50
Post Spacing (ft) =	16		
Barrier Height (ft) =	15.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
7.0 ft									
1112.00'									

C CT.: 0
G CT.: 4
N dsgn: 53

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1121.35	1118.85	2.50	A-3a	Granular	33	2.00	66	60	128	66	66	164	82	0.15	60	Granular
2	1118.85	1116.35	5.00	A-3a	Granular	74	1.68	125	60	140	78	78	194	261	2.65	60	Granular
3	1116.35	1113.85	7.50	A-3a	Granular	22	1.51	33	33	125	63	63	157	436	5.15	33	Granular
4	1113.85	1111.85	9.50	A-3a	Granular	50	1.41	71	60	132	70	70	139	584	7.15	60	Granular
5	1111.85	1108.85	12.50	A-3a	Granular	82	1.32	108	60	140	78	78	233	770	10.15	60	Granular
6	1108.85	1106.35	15.00	A-3a	Granular	67	1.24	83	60	140	78	78	194	984	12.65	60	Granular
7	1106.35	1103.85	17.50	A-3a	Granular	40	1.18	47	47	130	68	68	169	1165	15.15	47	Granular
8	1103.85	1101.35	20.00	Rock		100									17.65		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall C

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.00	8.00	1137.00
10+08.00	2	14.00	16.00	1137.00
10+24.00	3	14.00	16.00	1137.50
10+40.00	4	14.00	20.00	1138.00
10+60.00	5	14.00	24.00	1138.50
10+84.00	6	14.00	24.00	1139.00
11+08.00	7	14.00	24.00	1139.50
11+32.00	8	14.00	24.00	1140.00
11+56.00	9	14.00	24.00	1140.50
11+80.00	10	14.00	24.00	1141.00
12+04.00	11	13.50	24.00	1141.50
12+28.00	12	13.50	24.00	1141.50
12+52.00	13	13.50	24.00	1141.50
12+76.00	14	13.50	24.00	1141.50
13+00.00	15	13.50	24.00	1141.50
13+24.00	16	13.50	24.00	1141.50
13+48.00	17	13.50	24.00	1141.50
13+72.00	18	13.50	24.00	1141.50
13+96.00	19	13.50	24.00	1141.00
14+20.00	20	13.00	24.00	1141.00
14+44.00	21	13.00	24.00	1141.00
14+68.00	22	13.50	24.00	1140.50
14+92.00	23	13.50	24.00	1140.50
15+16.00	24	14.50	24.00	1139.50
15+40.00	25	14.50	24.00	1139.50
15+58.00	26	13.50	18.00	1138.50
15+76.00	27	14.00	18.00	1138.00
15+94.00	28	14.00	18.00	1137.50
16+12.00	29	14.00	18.00	1137.00
16+30.00	30	14.00	18.00	1136.00
16+48.00	31	14.00	18.00	1135.00
16+66.00	32	14.00	18.00	1134.00
16+84.00	33	14.50	18.00	1132.50
17+02.00	34	14.50	18.00	1131.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+20.00	35	14.50	18.00	1131.00
17+38.00	36	14.00	18.00	1130.00
17+56.00	37	14.00	18.00	1129.50
17+74.00	38	14.00	18.00	1129.00
17+92.00	39	14.00	18.00	1128.50
18+10.00	40	14.00	18.00	1128.00
18+28.00	41	14.00	18.00	1127.50
18+46.00	42	14.50	18.00	1126.50
18+64.00	43	14.50	24.00	1125.50
18+88.00	44	14.50	24.00	1124.50
19+12.00	45	14.50	24.00	1124.50
19+36.00	46	14.00	24.00	1124.00
19+60.00	47	14.00	24.00	1123.50
19+84.00	48	14.50	24.00	1122.50
20+08.00	49	14.50	24.00	1122.50
20+32.00	50	14.00	24.00	1122.00
20+56.00	51	14.00	24.00	1122.00
20+64.00	52	14.00	8.00	1122.00

Noise Wall ID:																
Boring ID	**Boring STA. (ft)**	**Mid-Boring STA. (ft)**	**Boring Elev. (ft)**	**Shaft Elev. (ft)**	**Ex. Ground Elev. (ft)**	**Rock Elev. (ft)**	**Rock UCS (psi)**	**Post Spacing (ft)**	**Barrier Height (ft)**	**Cross Slope**		**From DS STA.**	**To DS STA.**	**From Post No.**	**To Post No.**	**DS Length (ft)**	**Bottom of DS Elev. (ft)**
B-027-0-22	11+93.00	14+23.00	1142.68	1141.00	1142.30	1129.18		24	14.00	3.0	3:1	10+00.00	14+20.00	1	20	9.50	1131.50
B-028-0-22	16+53.00	17+53.00	1135.94	1135.00	1136.40	1126.44		24	14.50	2.0	2:1	14+44.00	17+38.00	21	36	11.50	1123.50
B-029-0-22	18+53.00	19+57.00	1130.11	1126.50	1127.80	1119.11		24	14.50	2.0	2:1	17+56.00	19+36.00	37	46	8.50	1118.00
B-030-0-22	20+61.00	20+61.00	1123.80	1122.00	1122.90	1115.30		24	14.50	2.0	2:1	19+60.00	20+64.00	47	52	12.00	1110.00

Cut (ft) =	-1.30	Rock Elev. (ft)=	1129.18
Shaft Top Elev. (ft) =	1141.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1142.68	Ex. Ground Elev.=	1142.30
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	3:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft	9.5 ft								
1133.00'	1131.50'								
C CT.: 1	C CT.: 1								
G CT.: 3	G CT.: 4								
N dsgn: 38	N dsgn: 37								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1142.68	1140.18	2.50	A-4a P	Cohesive	11	2.00	11	11	120	58	58	144	72	0.82	11	Cohesive
2	1140.18	1137.68	5.00	A-3a	Granular	22	1.74	38	38	125	63	63	157	222	3.32	38	Granular
3	1137.68	1135.18	7.50	A-1-b	Granular	45	1.55	70	60	132	70	70	174	388	5.82	60	Granular
4	1135.18	1132.68	10.00	A-2-6	Granular	30	1.43	43	43	128	66	66	164	557	8.32	43	Granular
5	1132.68	1130.18	12.50	A-1-b	Granular	25	1.34	34	34	128	66	66	164	721	10.82	34	Granular
6	1130.18	1127.68	15.00	Rock		100									13.32		

Cut (ft) =	-1.40	Rock Elev. (ft)=	1126.44
Shaft Top Elev. (ft) =	1135.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1135.94	Ex. Ground Elev.=	1136.40
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
11.5 ft									
1123.50'									

C CT.: 0
G CT.: 4
N dsgn: 57

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1135.94	1133.44	2.50	A-3a	Granular	72	2.00	144	60	140	78	78	194	97	1.56	60	Granular
2	1133.44	1130.94	5.00	A-3a	Granular	32	1.66	53	53	128	66	66	164	276	4.06	53	Granular
3	1130.94	1128.44	7.50	A-3a	Granular	36	1.51	54	54	130	68	68	169	443	6.56	54	Granular
4	1128.44	1126.44	9.50	A-3a	Granular	50	1.41	70	60	132	70	70	139	597	8.56	60	Granular
5	1126.44	1124.64	11.30	Rock		100									10.36		
6	1124.64	1122.14	13.80	Rock		100									12.86		

Cut (ft) =	-1.30	Rock Elev. (ft)=	1119.11
Shaft Top Elev. (ft) =	1126.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1130.11	Ex. Ground Elev.=	1127.80
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1118.00'									

C CT.: 3
G CT.: 0
N dsgn: 23

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1130.11	1127.61	2.50	A-4a P	Cohesive	12	2.00	12	12	120	58	58	144	72			
2	1127.61	1125.11	5.00	A-4a P	Cohesive	17	1.74	17	17	122	60	60	149	219	1.39	17	Cohesive
3	1125.11	1122.61	7.50	A-6a	Cohesive	21	1.56	21	21	125	63	63	157	371	3.89	21	Cohesive
4	1122.61	1120.11	10.00	A-6a	Cohesive	46	1.44	46	32	135	73	73	182	540	6.39	32	Cohesive
5	1120.11	1118.11	12.00	Rock		100									8.39		

Cut (ft) =	-0.90	Rock Elev. (ft)=	1115.30
Shaft Top Elev. (ft) =	1122.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1123.80	Ex. Ground Elev.=	1122.90
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
11.5 ft	**12.0 ft**								
1110.50'	**1110.00'**								
C CT.: 1	C CT.: 1								
G CT.: 2	G CT.: 2								
N dsgn: 23	N dsgn: 23								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1123.80	1121.30	2.50	A-4a NP	Granular	13	2.00	26	26	122	60	60	149	75	0.70	26	Granular
2	1121.30	1118.80	5.00	A-2-4	Granular	20	1.73	35	35	125	63	63	157	227	3.20	35	Granular
3	1118.80	1116.30	7.50	A-4a P	Cohesive	9	1.56	9	9	118	56	56	139	375	5.70	9	Cohesive
4	1116.30	1113.80	10.00	Rock		38									8.20		
5	1113.80	1111.30	12.50	Rock		100									10.70		
6	1111.30	1108.80	15.00	Rock		100									13.20		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall D

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **5**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.00	8.00	1134.77
10+08.00	2	14.00	16.00	1134.72
10+24.00	3	14.00	24.00	1134.69
10+48.00	4	14.00	24.00	1134.69
10+72.00	5	15.00	24.00	1133.69
10+96.00	6	15.00	24.00	1133.69
11+20.00	7	15.00	24.00	1133.69
11+44.00	8	15.00	24.00	1133.19
11+68.00	9	15.50	24.00	1132.19
11+92.00	10	15.50	24.00	1131.19
12+16.00	11	15.50	24.00	1131.19
12+40.00	12	15.00	24.00	1130.69
12+64.00	13	15.00	24.00	1130.72
12+76.00	14	14.00	12.00	1131.72
12+88.00	15	15.00	24.00	1130.69
13+12.00	16	15.00	24.00	1129.69
13+36.00	17	15.00	24.00	1128.69
13+60.00	18	16.50	24.00	1127.05
13+84.00	19	16.50	24.00	1127.19
14+08.00	20	16.00	24.00	1127.69
14+32.00	21	16.50	24.00	1127.05
14+56.00	22	16.50	24.00	1127.05
14+79.00	23	16.50	23.00	1128.22
14+91.00	24	16.00	20.00	1129.19
15+11.00	25	16.00	20.00	1129.69
15+31.00	26	15.50	22.00	1130.19
15+53.00	27	14.50	24.00	1131.19
15+77.00	28	15.50	24.00	1130.19
16+01.00	29	15.50	24.00	1130.22
16+13.00	30	16.00	12.00	1129.72
16+25.00	31	16.50	24.00	1129.05
16+49.00	32	18.00	24.00	1128.55
16+73.00	33	19.50	24.00	1128.05
16+97.00	34	19.50	24.00	1128.05

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+17.00	35	19.50	20.00	1129.05
17+37.00	36	19.50	20.00	1129.05
17+57.00	37	16.50	20.00	1132.19
17+77.00	38	14.00	20.00	1135.19
17+97.00	39	14.00	20.00	1134.69
18+17.00	40	14.00	20.00	1134.69
18+37.00	41	15.00	20.00	1134.22
18+51.00	42	14.00	14.00	1134.22
18+65.00	43	14.00	22.00	1133.69
18+87.00	44	15.00	24.00	1131.69
19+11.00	45	16.00	24.00	1131.19
19+35.00	46	16.00	24.00	1130.19
19+55.00	47	16.00	24.00	1130.19
19+79.00	48	15.00	24.00	1130.19
20+03.00	49	14.00	24.00	1130.69
20+27.00	50	14.00	24.00	1130.69
20+51.00	51	14.00	24.00	1130.69
20+75.00	52	13.00	24.00	1130.69
20+99.00	53	13.00	24.00	1130.69
21+23.00	54	14.00	24.00	1130.19
21+47.00	55	14.00	24.00	1129.69
21+71.00	56	15.00	24.00	1128.19
21+95.00	57	17.00	24.00	1126.19
22+19.00	58	16.00	24.00	1125.72
22+31.00	59	16.00	24.00	1124.69
22+55.00	60	16.00	24.00	1123.69
22+79.00	61	15.00	24.00	1123.69
23+03.00	62	14.00	24.00	1123.69
23+27.00	63	14.00	24.00	1123.69
23+51.00	64	14.00	24.00	1123.69
23+75.00	65	14.00	24.00	1123.69
23+99.00	66	14.00	24.00	1123.69
24+23.00	67	14.00	24.00	1124.19
24+41.00	68	15.00	24.00	1123.69

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
24+65.00	69	15.00	24.00	1123.72
24+77.00	70	14.00	12.00	1124.72
24+89.00	71	14.50	24.00	1124.69
25+13.00	72	14.50	24.00	1125.19
25+37.00	73	14.50	24.00	1126.19
25+61.00	74	14.50	24.00	1126.26

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-033-0-22	11+50.00	13+14.50	1128.29	1133.19	1135.10	1114.79		24	15.50	4.0	4:1	10+00.00	13+12.00	1	16	13.50	1119.69
B-034-0-22	14+79.00	16+75.50	1116.15	1128.22	1130.00	1112.65		24	19.50	4.0	4:1	13+36.00	16+73.00	17	33	10.00	1118.22
B-035-0-22	18+72.00	20+20.50	1116.47	1133.69	1134.80	1107.47		24	19.50	2.0	2:1	16+97.00	20+03.00	34	49	11.50	1122.19
B-036-0-22	21+69.00	23+23.00	1122.42	1129.69	1130.60	1104.92		24	17.00	2.0	2:1	20+27.00	23+03.00	50	62	15.50	1114.19
B-037-0-22	24+77.00	24+77.00	1127.04	1124.72	1125.80			24	15.00	3.0	3:1	23+27.00	25+61.00	63	74	8.50	1116.22

Cut (ft) =	-1.91	Rock Elev. (ft)=	1114.79
Shaft Top Elev. (ft) =	1133.19	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1128.29	Ex. Ground Elev.=	1135.10
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
10.0 ft	**13.5 ft**								
1123.19'	**1119.69'**								
C CT.: 1	C CT.: 2								
G CT.: 2	G CT.: 2								
N dsgn: 16	N dsgn: 19								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1128.29	1125.29	3.00	A-3a	Granular	9	2.00	18	18	122	60	60	179	89	7.90	18	Granular
2	1125.29	1123.29	5.00	A-3a	Granular	13	1.71	22	22	122	60	60	119	238	9.90	22	Granular
3	1123.29	1120.79	7.50	A-7-6	Cohesive	8	1.57	8	8	118	56	56	139	368	12.40	8	Cohesive
4	1120.79	1118.29	10.00	A-7-6	Cohesive	28	1.45	28	28	128	66	66	164	519	14.90	28	Cohesive
5	1118.29	1114.79	13.50	A-7-6	Cohesive	45	1.34	45	32	135	73	73	254	728	18.40	32	Cohesive
6	1114.79	1109.29	19.00	Rock		100									23.90		

Cut (ft) =	-1.78	Rock Elev. (ft)=	1112.65
Shaft Top Elev. (ft) =	1128.22	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1116.15	Ex. Ground Elev.=	1130.00
Post Spacing (ft) =	24		
Barrier Height (ft) =	20.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
10.0 ft									
1118.22'									

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1116.15	1112.65	3.50	A-1-b	Granular	28	1.96	55	55	128	66	66	230	115	15.57	55	Granular
2	1112.65	1111.15	5.00	Rock		100									17.07		
3	1111.15	1108.65	7.50	Rock		100									19.57		
4	1108.65	1106.15	10.00	Rock		100									22.07		

Cut (ft) =	-1.11	Rock Elev. (ft)=	1107.47
Shaft Top Elev. (ft) =	1133.69	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1116.47	Ex. Ground Elev.=	1134.80
Post Spacing (ft) =	24		
Barrier Height (ft) =	20.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
11.5 ft									
1122.19'									

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1116.47	1113.97	2.50	A-6b	Cohesive	18	2.00	18	18	122	60	60	149	75	19.72	18	Cohesive
2	1113.97	1111.47	5.00	A-6b	Cohesive	16	1.73	16	16	122	60	60	149	224	22.22	16	Cohesive
3	1111.47	1107.47	9.00	A-6b	Cohesive	16	1.53	16	16	122	60	60	238	417	26.22	16	Cohesive
4	1107.47	1106.47	10.00	Rock		100									27.22		
5	1106.47	1103.97	12.50	Rock		100									29.72		

Cut (ft) =	-0.91	Rock Elev. (ft)=	1104.92
Shaft Top Elev. (ft) =	1129.69	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1122.42	Ex. Ground Elev.=	1130.60
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft	15.5 ft								
1121.19'	1114.19'								
C CT.: 1	C CT.: 2								
G CT.: 0	G CT.: 2								
N dsgn: 12	N dsgn: 17								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1122.42	1119.92	2.50	A-6a	Cohesive	12	2.00	12	12	120	58	58	144	72	9.77	12	Cohesive
2	1119.92	1117.42	5.00	A-3a	Granular	9	1.74	16	16	122	60	60	149	219	12.27	16	Granular
3	1117.42	1114.92	7.50	A-3a	Granular	8	1.57	13	13	120	58	58	144	365	14.77	13	Granular
4	1114.92	1112.42	10.00	A-7-6	Cohesive	26	1.46	26	26	125	63	63	157	515	17.27	26	Cohesive
5	1112.42	1109.92	12.50	A-7-6	Cohesive	51	1.36	51	32	135	73	73	182	684	19.77	32	Cohesive
6	1109.92	1107.42	15.00	A-7-6	Cohesive	46	1.28	46	32	135	73	73	182	866	22.27	32	Cohesive
7	1107.42	1104.92	17.50	A-7-6	Cohesive	80	1.22	80	32	140	78	78	194	1054	24.77	32	Cohesive
8	1104.92	1103.42	19.00	Rock		100									26.27		
9	1103.42	1100.92	21.50	Rock		100									28.77		
10	1100.92	1098.42	24.00	Rock		100									31.27		

Cut (ft) = -1.08
Shaft Top Elev. (ft) = 1124.72
Boring Top Elev. (ft) = 1127.04 Ex. Ground Elev.= 1125.80
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = 3:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1116.22'									

C CT.: 4
G CT.: 1
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1127.04	1124.54	2.50	A-3a	Granular	17	2.00	34	34	125	63	63	157	78	0.18	34	Granular
2	1124.54	1122.04	5.00	A-4a P	Cohesive	13	1.73	13	13	120	58	58	144	229	2.68	13	Cohesive
3	1122.04	1119.54	7.50	A-4a P	Cohesive	11	1.56	11	11	120	58	58	144	373	5.18	11	Cohesive
4	1119.54	1117.04	10.00	A-4a P	Cohesive	20	1.45	20	20	125	63	63	157	523	7.68	20	Cohesive
5	1117.04	1114.54	12.50	A-4a P	Cohesive	21	1.36	21	21	125	63	63	157	679	10.18	21	Cohesive
6	1114.54	1112.04	15.00	A-4a P	Cohesive	16	1.30	16	16	122	60	60	149	832	12.68	16	Cohesive
7	1112.04	1109.54	17.50	A-4a P	Cohesive	18	1.24	18	18	122	60	60	149	981	15.18	18	Cohesive
8	1109.54	1107.04	20.00	A-4b P	Cohesive	7	1.19	7	7	118	56	56	139	1125	17.68	7	Cohesive
9	1107.04	1104.54	22.50	A-4b P	Cohesive	7	1.16	7	7	118	56	56	139	1264	20.18	7	Cohesive
10	1104.54	1102.04	25.00	A-4b P	Cohesive	8	1.12	8	8	118	56	56	139	1403	22.68	8	Cohesive

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall E

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **2**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.00	24.00	1129.00
10+24.00	2	14.00	24.00	1129.00
10+48.00	3	14.00	24.00	1129.00
10+72.00	4	15.00	24.00	1128.00
10+96.00	5	15.50	24.00	1127.50
11+20.00	6	15.50	24.00	1127.50
11+44.00	7	14.50	24.00	1127.50
11+68.00	8	14.50	24.00	1127.50
11+84.00	9	14.50	24.00	1127.50
12+08.00	10	14.00	24.00	1128.00
12+32.00	11	14.50	24.00	1127.50
12+56.00	12	14.50	24.00	1127.50
12+80.00	13	14.50	24.00	1127.50
13+04.00	14	14.00	24.00	1128.00
13+28.00	15	14.50	24.00	1127.50
13+52.00	16	14.50	24.00	1127.50
13+76.00	17	14.50	24.00	1127.50
14+00.00	18	14.50	24.00	1127.50
14+24.00	19	14.50	24.00	1127.50
14+48.00	20	14.50	24.00	1127.50
14+72.00	21	16.00	24.00	1126.00
14+84.00	22	16.00	24.00	1126.00
15+08.00	23	14.50	24.00	1127.50
15+32.00	24	14.50	24.00	1127.50
15+56.00	25	14.00	24.00	1128.00

Noise Wall ID:																
Boring ID	**Boring STA. (ft)**	**Mid-Boring STA. (ft)**	**Boring Elev. (ft)**	**Shaft Elev. (ft)**	**Ex. Ground Elev. (ft)**	**Rock Elev. (ft)**	**Rock UCS (psi)**	**Post Spacing (ft)**	**Barrier Height (ft)**	**Cross Slope**		**From DS STA.**	**To DS STA.**	**From Post No.**	**To Post No.**	**DS Length (ft)**	**Bottom of DS Elev. (ft)**
B-038-0-22	11+91.00	12+86.00	1130.79	1127.50	1128.65			24	15.50	2.0	2:1	10+00.00	12+80.00	1	13	8.50	1119.00
B-039-0-22	13+81.00	13+81.00	1130.89	1127.50	1128.47			24	14.50	2.0	2:1	13+04.00	15+56.00	14	25	8.50	1119.00

Cut (ft) =	-1.15		
Shaft Top Elev. (ft) =	1127.50		
Boring Top Elev. (ft) =	1130.79	Ex. Ground Elev.=	1128.65
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1119.00'									

C CT.: 4
G CT.: 0
N dsgn: 17

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1130.79	1128.29	2.50	A-2-4	Granular	13	2.00	26	26	122	60	60	149	75			
2	1128.29	1125.79	5.00	A-4a P	Cohesive	16	1.73	16	16	122	60	60	149	224	1.71	16	Cohesive
3	1125.79	1123.29	7.50	A-4a P	Cohesive	18	1.56	18	18	122	60	60	149	373	4.21	18	Cohesive
4	1123.29	1120.79	10.00	A-6a	Cohesive	16	1.45	16	16	122	60	60	149	522	6.71	16	Cohesive
5	1120.79	1118.29	12.50	A-4a P	Cohesive	17	1.37	17	17	122	60	60	149	671	9.21	17	Cohesive
6	1118.29	1115.79	15.00	A-4a P	Cohesive	25	1.30	25	25	125	63	63	157	823	11.71	25	Cohesive
7	1115.79	1113.29	17.50	A-4a P	Cohesive	34	1.24	34	32	128	66	66	164	984	14.21	32	Cohesive
8	1113.29	1110.79	20.00	A-4a P	Cohesive	24	1.19	24	24	125	63	63	157	1144	16.71	24	Cohesive
9	1110.79	1108.29	22.50	A-4a P	Cohesive	28	1.14	28	28	128	66	66	164	1304	19.21	28	Cohesive
10	1108.29	1105.79	25.00	A-4a P	Cohesive	30	1.11	30	30	128	66	66	164	1468	21.71	30	Cohesive

Cut (ft) =	-0.97		
Shaft Top Elev. (ft) =	1127.50		
Boring Top Elev. (ft) =	1130.89	Ex. Ground Elev.=	1128.47
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft									
1119.00'									

C CT.: 3
G CT.: 1
N dsgn: 30

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1130.89	1128.39	2.50	A-2-4	Granular	21	2.00	42	42	125	63	63	157	78			
2	1128.39	1125.89	5.00	A-2-4	Granular	75	1.69	127	60	140	78	78	194	254	1.61	60	Granular
3	1125.89	1123.39	7.50	A-4a P	Cohesive	33	1.51	33	32	128	66	66	164	433	4.11	32	Cohesive
4	1123.39	1120.89	10.00	A-4a P	Cohesive	14	1.41	14	14	122	60	60	149	589	6.61	14	Cohesive
5	1120.89	1118.39	12.50	A-4a P	Cohesive	14	1.34	14	14	122	60	60	149	738	9.11	14	Cohesive
6	1118.39	1115.89	15.00	A-4a P	Cohesive	14	1.27	14	14	122	60	60	149	887	11.61	14	Cohesive
7	1115.89	1113.39	17.50	A-4a P	Cohesive	21	1.22	21	21	125	63	63	157	1040	14.11	21	Cohesive
8	1113.39	1110.89	20.00	A-4a P	Cohesive	7	1.18	7	7	118	56	56	139	1188	16.61	7	Cohesive
9	1110.89	1108.39	22.50	A-4b P	Cohesive	5	1.14	5	5	115	53	53	132	1323	19.11	5	Cohesive
10	1108.39	1105.89	25.00	A-4a P	Cohesive	8	1.11	8	8	118	56	56	139	1458	21.61	8	Cohesive

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall F

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **5**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	13.00	20.00	1124.76
10+20.00	2	14.00	24.00	1124.26
10+44.00	3	14.00	24.00	1124.19
10+56.00	4	14.00	24.00	1123.69
10+80.00	5	14.00	24.00	1123.69
10+92.00	6	15.00	24.00	1122.19
11+16.00	7	15.00	24.00	1122.19
11+40.00	8	14.00	24.00	1122.19
11+64.00	9	15.00	24.00	1120.69
11+88.00	10	16.00	24.00	1120.19
12+12.00	11	15.00	24.00	1119.69
12+36.00	12	15.00	24.00	1119.19
12+60.00	13	15.00	24.00	1119.19
12+84.00	14	15.00	24.00	1118.69
13+08.00	15	15.00	24.00	1117.69
13+32.00	16	15.00	24.00	1117.19
13+56.00	17	17.00	24.00	1114.19
13+80.00	18	16.00	24.00	1114.19
14+04.00	19	15.00	24.00	1114.69
14+28.00	20	14.00	24.00	1114.69
14+52.00	21	13.00	24.00	1115.69
14+76.00	22	14.00	24.00	1115.19
15+00.00	23	14.00	24.00	1114.19
15+24.00	24	13.00	24.00	1113.69
15+48.00	25	14.00	24.00	1113.19
15+72.00	26	15.00	24.00	1112.19
15+96.00	27	14.00	24.00	1111.69
16+20.00	28	14.00	24.00	1110.69
16+44.00	29	14.00	24.00	1109.69
16+68.00	30	15.00	24.00	1109.19
16+92.00	31	15.00	24.00	1109.19

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-040-0-22	10+00.00	10+89.50	1127.93	1124.76	1125.55			24	14.00	4.0	4:1	10+00.00	10+80.00	1	5	6.50	1118.26
B-041-0-22	11+79.00	12+63.50	1124.22	1120.69	1123.95			24	16.00	4.0	4:1	10+92.00	12+60.00	6	13	8.00	1112.69
B-042-0-22	13+48.00	14+35.00	1120.44	1117.19	1119.03			24	17.00	4.0	4:1	12+84.00	14+28.00	14	20	8.00	1109.19
B-043-0-22	15+22.00	16+34.50	1116.62	1114.19	1114.70			24	15.00	4.0	4:1	14+52.00	16+20.00	21	28	8.00	1106.19
B-044-0-22	17+47.00	17+47.00	1111.70	1109.19	1111.90			24	15.00	7.0	5:1	16+44.00	16+92.00	29	31	10.00	1099.19

Cut (ft) =	-0.79		
Shaft Top Elev. (ft) =	1124.76		
Boring Top Elev. (ft) =	1127.93	Ex. Ground Elev.=	1125.55
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.5 ft									
1118.26'									

C CT.: 3
G CT.: 0
N dsgn: 23

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1127.93	1125.43	2.50	A-4a P	Cohesive	14	2.00	14	14	122	60	60	149	75			
2	1125.43	1122.93	5.00	A-4a P	Cohesive	20	1.73	20	20	125	63	63	157	227	1.83	20	Cohesive
3	1122.93	1120.43	7.50	A-4a P	Cohesive	20	1.55	20	20	125	63	63	157	384	4.33	20	Cohesive
4	1120.43	1117.93	10.00	A-4a P	Cohesive	28	1.44	28	28	128	66	66	164	544	6.83	28	Cohesive
5	1117.93	1115.43	12.50	A-4a P	Cohesive	33	1.35	33	32	128	66	66	164	708	9.33	32	Cohesive
6	1115.43	1112.93	15.00	A-6a	Cohesive	14	1.28	14	14	122	60	60	149	865	11.83	14	Cohesive
7	1112.93	1110.43	17.50	A-6a	Cohesive	30	1.23	30	30	128	66	66	164	1021	14.33	30	Cohesive
8	1110.43	1107.93	20.00	A-6a	Cohesive	16	1.18	16	16	122	60	60	149	1178	16.83	16	Cohesive
9	1107.93	1105.43	22.50	A-6a	Cohesive	43	1.14	43	32	130	68	68	169	1337	19.33	32	Cohesive
10	1105.43	1102.93	25.00	A-6a	Cohesive	33	1.10	33	32	128	66	66	164	1503	21.83	32	Cohesive

Cut (ft) = -3.26
Shaft Top Elev. (ft) = 1120.69
Boring Top Elev. (ft) = 1124.22 Ex. Ground Elev.= 1123.95
Post Spacing (ft) = 24
Barrier Height (ft) = 16.00
Transverse Slope = 4:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft									
1112.69'									

C CT.: 4
G CT.: 0
N dsgn: 21

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1124.22	1121.72	2.50	A-4a P	Cohesive	13	2.00	13	13	120	58	58	144	72			
2	1121.72	1119.22	5.00	A-4a P	Cohesive	20	1.74	20	20	125	63	63	157	222	1.47	20	Cohesive
3	1119.22	1116.72	7.50	A-4a P	Cohesive	40	1.55	40	32	130	68	68	169	385	3.97	32	Cohesive
4	1116.72	1114.22	10.00	A-4a P	Cohesive	12	1.44	12	12	120	58	58	144	542	6.47	12	Cohesive
5	1114.22	1111.72	12.50	A-4a P	Cohesive	18	1.36	18	18	122	60	60	149	688	8.97	18	Cohesive
6	1111.72	1109.22	15.00	A-4a P	Cohesive	13	1.29	13	13	120	58	58	144	835	11.47	13	Cohesive
7	1109.22	1106.72	17.50	A-4a P	Cohesive	12	1.24	12	12	120	58	58	144	979	13.97	12	Cohesive
8	1106.72	1104.22	20.00	A-4b P	Cohesive	12	1.19	12	12	120	58	58	144	1123	16.47	12	Cohesive
9	1104.22	1101.72	22.50	A-4b P	Cohesive	12	1.15	12	12	120	58	58	144	1267	18.97	12	Cohesive
10	1101.72	1099.22	25.00	A-4b P	Cohesive	13	1.12	13	13	120	58	58	144	1411	21.47	13	Cohesive

Cut (ft) = -1.84
Shaft Top Elev. (ft) = 1117.19
Boring Top Elev. (ft) = 1120.44 Ex. Ground Elev.= 1119.03
Post Spacing (ft) = 24
Barrier Height (ft) = 17.00
Transverse Slope = 4:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft									
1109.19'									

C CT.: 4
G CT.: 0
N dsgn: 21

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1120.44	1117.94	2.50	A-6a	Cohesive	11	2.00	11	11	120	58	58	144	72			
2	1117.94	1115.44	5.00	A-6a	Cohesive	13	1.75	13	13	120	58	58	144	216	1.75	13	Cohesive
3	1115.44	1112.94	7.50	A-6a	Cohesive	17	1.57	17	17	122	60	60	149	363	4.25	17	Cohesive
4	1112.94	1110.44	10.00	A-6a	Cohesive	20	1.46	20	20	125	63	63	157	515	6.75	20	Cohesive
5	1110.44	1107.94	12.50	A-4a P	Cohesive	32	1.36	32	32	128	66	66	164	676	9.25	32	Cohesive
6	1107.94	1105.44	15.00	A-4a P	Cohesive	17	1.30	17	17	122	60	60	149	832	11.75	17	Cohesive
7	1105.44	1102.94	17.50	A-4a P	Cohesive	22	1.24	22	22	125	63	63	157	985	14.25	22	Cohesive
8	1102.94	1100.44	20.00	A-4b P	Cohesive	7	1.19	7	7	118	56	56	139	1133	16.75	7	Cohesive
9	1100.44	1097.94	22.50	A-4b P	Cohesive	8	1.15	8	8	118	56	56	139	1272	19.25	8	Cohesive
10	1097.94	1095.44	25.00	A-4b P	Cohesive	9	1.12	9	9	118	56	56	139	1411	21.75	9	Cohesive

Cut (ft) = -0.51
Shaft Top Elev. (ft) = 1114.19
Boring Top Elev. (ft) = 1116.62 Ex. Ground Elev.= 1114.70
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = 4:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft									
1106.19'									

C CT.: 4
G CT.: 1
N dsgn: 21

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1116.62	1114.12	2.50	A-3a	Granular	18	2.00	36	36	125	63	63	157	78	0.07	36	Granular
2	1114.12	1111.62	5.00	A-4a P	Cohesive	12	1.73	12	12	120	58	58	144	229	2.57	12	Cohesive
3	1111.62	1109.12	7.50	A-4a P	Cohesive	20	1.56	20	20	125	63	63	157	379	5.07	20	Cohesive
4	1109.12	1106.62	10.00	A-4a P	Cohesive	16	1.44	16	16	122	60	60	149	532	7.57	16	Cohesive
5	1106.62	1104.12	12.50	A-4a P	Cohesive	21	1.36	21	21	125	63	63	157	684	10.07	21	Cohesive
6	1104.12	1101.62	15.00	A-4a P	Cohesive	17	1.29	17	17	122	60	60	149	837	12.57	17	Cohesive
7	1101.62	1099.12	17.50	A-4b NP	Granular	11	1.24	14	14	122	60	60	149	986	15.07	14	Granular
8	1099.12	1096.62	20.00	A-4b NP	Granular	16	1.19	19	19	125	63	63	157	1139	17.57	19	Granular
9	1096.62	1094.12	22.50	A-4b NP	Granular	21	1.15	24	24	125	63	63	157	1295	20.07	24	Granular
10	1094.12	1091.62	25.00	A-4b NP	Granular	24	1.11	27	27	125	63	63	157	1452	22.57	27	Granular

Cut (ft) = -2.71
Shaft Top Elev. (ft) = 1109.19
Boring Top Elev. (ft) = 1111.70 Ex. Ground Elev.= 1111.90
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = 5:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
7.5 ft	**10.0 ft**								
1101.69'	**1099.19'**								
C CT.: 4	C CT.: 5								
G CT.: 0	G CT.: 0								
N dsgn: 11	N dsgn: 10								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1111.70	1109.20	2.50	A-4a P	Cohesive	12	2.00	12	12	120	58	58	144	72			
2	1109.20	1106.70	5.00	A-4a P	Cohesive	8	1.75	8	8	118	56	56	139	214	4.99	13	Cohesive
3	1106.70	1104.20	7.50	A-4a P	Cohesive	13	1.58	13	13	120	58	58	144	355	7.49	11	Cohesive
4	1104.20	1101.70	10.00	A-4b P	Cohesive	11	1.47	11	11	120	58	58	144	499	9.99	9	Cohesive
5	1101.70	1099.20	12.50	A-4b P	Cohesive	9	1.38	9	9	118	56	56	139	641	12.49	9	Cohesive
6	1099.20	1096.70	15.00	A-4b P	Cohesive	9	1.32	9	9	118	56	56	139	780	14.99	8	Cohesive
7	1096.70	1094.20	17.50	A-4b P	Cohesive	8	1.26	8	8	118	56	56	139	919	17.49	11	Cohesive
8	1094.20	1091.70	20.00	A-4b P	Cohesive	11	1.21	11	11	120	58	58	144	1060	19.99	29	Granular
9	1091.70	1089.20	22.50	A-2-4	Granular	25	1.17	29	29	128	66	66	164	1214	21.89	57	Granular
10	1089.20	1087.30	24.40	A-2-4	Granular	50	1.13	57	57	132	70	70	132	1362			

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall G

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **5**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	12.00	10.00	1108.00
10+10.00	2	12.00	22.00	1108.00
10+32.00	3	12.00	24.00	1108.00
10+56.00	4	12.50	24.00	1107.50
10+80.00	5	12.50	24.00	1107.50
11+04.00	6	12.50	24.00	1107.50
11+20.00	7	13.00	24.00	1107.00
11+44.00	8	13.00	24.00	1107.00
11+68.00	9	13.00	24.00	1107.00
11+92.00	10	13.00	24.00	1107.00
12+16.00	11	13.00	24.00	1107.00
12+40.00	12	13.00	24.00	1107.00
12+64.00	13	13.00	24.00	1107.00
12+88.00	14	13.00	24.00	1107.00
13+12.00	15	13.00	24.00	1107.00
13+36.00	16	12.50	24.00	1107.50
13+60.00	17	12.50	24.00	1107.50
13+84.00	18	13.00	24.00	1108.00
14+08.00	19	13.00	24.00	1108.00
14+32.00	20	13.00	24.00	1108.00
14+56.00	21	13.00	24.00	1108.00
14+80.00	22	12.50	24.00	1108.50
15+04.00	23	12.00	24.00	1109.00
15+28.00	24	12.00	24.00	1109.00
15+52.00	25	12.00	24.00	1109.00
15+76.00	26	12.00	24.00	1109.00
16+00.00	27	11.50	24.00	1109.50
16+24.00	28	12.00	24.00	1109.50
16+48.00	29	12.00	24.00	1110.00
16+72.00	30	12.00	24.00	1110.00
16+96.00	31	12.50	24.00	1109.50
17+20.00	32	13.50	24.00	1108.50
17+44.00	33	14.00	24.00	1108.00
17+68.00	34	14.00	24.00	1108.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+92.00	35	14.00	24.00	1108.00
18+16.00	36	14.00	24.00	1108.00
18+40.00	37	14.00	24.00	1108.00
18+64.00	38	14.00	24.00	1108.00
18+88.00	39	14.00	24.00	1108.00
19+12.00	40	14.00	24.00	1108.00
19+36.00	41	14.00	24.00	1108.00
19+52.00	42	14.00	16.00	1108.00
19+60.00	43	13.50	8.00	1108.50

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-060-0-22	9+22.00	10+12.50	1108.40	1108.00	1108.90			22	12.00	0.0	Level	10+00.00	10+10.00	1	2	7.50	1100.50
B-061-0-22	11+03.00	12+24.00	1106.97	1107.50	1108.31			24	13.00	8.0	Level	10+32.00	12+16.00	3	11	7.50	1100.00
B-062-0-22	13+45.00	14+43.50	1107.82	1107.50	1108.30	1085.82		24	13.00	8.0	Level	12+40.00	14+32.00	12	20	12.50	1095.00
B-063-0-22	15+42.00	16+63.00	1108.96	1109.00	1109.70	1086.46		24	13.00	0.0	Level	14+56.00	16+48.00	21	29	7.50	1101.50
B-064-0-22	17+84.00	17+84.00	1109.15	1108.00	1108.96	1090.65		24	14.00	2.0	2:1	16+72.00	19+60.00	30	43	8.00	1100.00

Cut (ft) = -0.90
Shaft Top Elev. (ft) = 1108.00
Boring Top Elev. (ft) = 1108.40 Ex. Ground Elev.= 1108.90
Post Spacing (ft) = 22
Barrier Height (ft) = 12.00
Transverse Slope = Level

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft	7.5 ft								
1102.00'	1100.50'								
C CT.: 3	C CT.: 4								
G CT.: 0	G CT.: 0								
N dsgn: 15	N dsgn: 14								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1108.40	1105.90	2.50	A-4b P	Cohesive	14	2.00	14	14	122	60	60	149	75	2.10	14	Cohesive
2	1105.90	1103.40	5.00	A-4b P	Cohesive	16	1.73	16	16	122	60	60	149	224	4.60	16	Cohesive
3	1103.40	1100.90	7.50	A-4b P	Cohesive	16	1.56	16	16	122	60	60	149	373	7.10	16	Cohesive
4	1100.90	1098.40	10.00	A-4b P	Cohesive	9	1.45	9	9	118	56	56	139	517	9.60	9	Cohesive
5	1098.40	1095.90	12.50	A-4a NP	Granular	7	1.37	10	10	120	58	58	144	658	12.10	10	Granular
6	1095.90	1093.40	15.00	A-4a P	Cohesive	11	1.31	11	11	120	58	58	144	802	14.60	11	Cohesive
7	1093.40	1090.90	17.50	A-4a P	Cohesive	9	1.25	9	9	118	56	56	139	944	17.10	9	Cohesive
8	1090.90	1088.40	20.00	A-4a P	Cohesive	11	1.21	11	11	120	58	58	144	1085	19.60	11	Cohesive
9	1088.40	1085.90	22.50	A-2-4	Granular	45	1.16	52	52	132	70	70	174	1244	22.10	52	Granular
10	1085.90	1083.40	25.00	A-2-4	Granular	42	1.12	47	47	130	68	68	169	1416	24.60	47	Granular

Cut (ft) = -0.81
Shaft Top Elev. (ft) = 1107.50
Boring Top Elev. (ft) = 1106.97 Ex. Ground Elev.= 1108.31
Post Spacing (ft) = 24
Barrier Height (ft) = 13.00
Transverse Slope = Level

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft	7.5 ft								
1101.50'	1100.00'								
C CT.: 3	C CT.: 3								
G CT.: 0	G CT.: 0								
N dsgn: 12	N dsgn: 12								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1106.97	1104.47	2.50	A-4a P	Cohesive	14	2.00	14	14	122	60	60	149	75	3.03	14	Cohesive
2	1104.47	1101.97	5.00	A-4a P	Cohesive	8	1.74	8	8	118	56	56	139	219	5.53	8	Cohesive
3	1101.97	1099.47	7.50	A-4a P	Cohesive	13	1.58	13	13	120	58	58	144	360	8.03	13	Cohesive
4	1099.47	1096.97	10.00	A-4a P	Cohesive	16	1.46	16	16	122	60	60	149	507	10.53	16	Cohesive
5	1096.97	1094.47	12.50	A-4a P	Cohesive	12	1.38	12	12	120	58	58	144	653	13.03	12	Cohesive
6	1094.47	1091.97	15.00	A-4a P	Cohesive	8	1.31	8	8	118	56	56	139	795	15.53	8	Cohesive
7	1091.97	1089.47	17.50	A-3a	Granular	26	1.25	33	33	128	66	66	164	946	18.03	33	Granular
8	1089.47	1086.97	20.00	A-3a	Granular	36	1.20	43	43	130	68	68	169	1113	20.53	43	Granular
9	1086.97	1084.47	22.50	A-4a P	Cohesive	41	1.15	41	32	130	68	68	169	1282	23.03	32	Cohesive
10	1084.47	1081.97	25.00	A-2-4	Granular	50	1.11	55	55	132	70	70	174	1453	25.53	55	Granular

Cut (ft) =	-0.80	Rock Elev. (ft)=	1085.82
Shaft Top Elev. (ft) =	1107.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1107.82	Ex. Ground Elev.=	1108.30
Post Spacing (ft) =	24		
Barrier Height (ft) =	13.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.0 ft	**7.5 ft**	**12.5 ft**							
1101.50'	**1100.00'**	**1095.00'**							
C CT.: 3	C CT.: 4	C CT.: 6							
G CT.: 0	G CT.: 0	G CT.: 0							
N dsgn: 10	N dsgn: 8	N dsgn: 8							

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1107.82	1105.32	2.50	A-6a	Cohesive	9	2.00	9	9	118	56	56	139	70	2.18	9	Cohesive
2	1105.32	1102.82	5.00	A-4a P	Cohesive	11	1.75	11	11	120	58	58	144	211	4.68	11	Cohesive
3	1102.82	1100.32	7.50	A-4a P	Cohesive	9	1.58	9	9	118	56	56	139	353	7.18	9	Cohesive
4	1100.32	1097.82	10.00	A-4a P	Cohesive	4	1.48	4	4	112	50	50	124	484	9.68	4	Cohesive
5	1097.82	1095.32	12.50	A-4a P	Cohesive	7	1.40	7	7	118	56	56	139	616	12.18	7	Cohesive
6	1095.32	1092.82	15.00	A-4a P	Cohesive	9	1.33	9	9	118	56	56	139	755	14.68	9	Cohesive
7	1092.82	1090.32	17.50	A-4a NP	Granular	4	1.27	5	5	118	56	56	139	894	17.18	5	Granular
8	1090.32	1087.82	20.00	A-1-b	Granular	22	1.22	27	27	125	63	63	157	1041	19.68	27	Granular
9	1087.82	1085.32	22.50	A-1-b	Granular	83	1.17	97	60	140	78	78	194	1217	22.18	60	Granular
10	1085.32	1082.82	25.00	Rock		100									24.68		

Cut (ft) =	-0.70	Rock Elev. (ft)=	1086.46
Shaft Top Elev. (ft) =	1109.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1108.96	Ex. Ground Elev.=	1109.70
Post Spacing (ft) =	24		
Barrier Height (ft) =	13.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.0 ft	**7.5 ft**								
1103.00'	**1101.50'**								
C CT.: 3	C CT.: 3								
G CT.: 0	G CT.: 0								
N dsgn: 13	N dsgn: 13								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1108.96	1106.46	2.50	A-6a	Cohesive	8	2.00	8	8	118	56	56	139	70	2.54	8	Cohesive
2	1106.46	1103.96	5.00	A-6a	Cohesive	18	1.75	18	18	122	60	60	149	214	5.04	18	Cohesive
3	1103.96	1101.46	7.50	A-4b P	Cohesive	12	1.58	12	12	120	58	58	144	360	7.54	12	Cohesive
4	1101.46	1098.96	10.00	A-3a	Granular	9	1.46	13	13	122	60	60	149	507	10.04	13	Granular
5	1098.96	1096.46	12.50	A-4a P	Cohesive	5	1.38	5	5	115	53	53	132	647	12.54	5	Cohesive
6	1096.46	1093.96	15.00	A-4a P	Cohesive	13	1.31	13	13	120	58	58	144	785	15.04	13	Cohesive
7	1093.96	1091.46	17.50	A-4a P	Cohesive	18	1.26	18	18	122	60	60	149	931	17.54	18	Cohesive
8	1091.46	1088.96	20.00	A-1-b	Granular	57	1.20	69	60	135	73	73	182	1096	20.04	60	Granular
9	1088.96	1086.46	22.50	A-1-b	Granular	65	1.15	75	60	140	78	78	194	1284	22.54	60	Granular
10	1086.46	1083.96	25.00	Rock		100									25.04		

Cut (ft) =	-0.96	Rock Elev. (ft)=	1090.65
Shaft Top Elev. (ft) =	1108.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1109.15	Ex. Ground Elev.=	1108.96
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.5 ft	**8.0 ft**								
1101.50'	**1100.00'**								
C CT.: 4	C CT.: 4								
G CT.: 0	G CT.: 0								
N dsgn: 14	N dsgn: 14								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1109.15	1106.65	2.50	A-4a P	Cohesive	17	2.00	17	17	122	60	60	149	75	1.35	17	Cohesive
2	1106.65	1104.15	5.00	A-4a P	Cohesive	17	1.73	17	17	122	60	60	149	224	3.85	17	Cohesive
3	1104.15	1101.65	7.50	A-4a P	Cohesive	14	1.56	14	14	122	60	60	149	373	6.35	14	Cohesive
4	1101.65	1099.15	10.00	A-4a P	Cohesive	7	1.45	7	7	118	56	56	139	517	8.85	7	Cohesive
5	1099.15	1096.65	12.50	A-4a P	Cohesive	11	1.37	11	11	120	58	58	144	658	11.35	11	Cohesive
6	1096.65	1094.15	15.00	A-4a P	Cohesive	16	1.31	16	16	122	60	60	149	805	13.85	16	Cohesive
7	1094.15	1091.65	17.50	A-4b NP	Granular	14	1.25	17	17	122	60	60	149	954	16.35	17	Granular
8	1091.65	1089.15	20.00	Rock		53									18.85		
9	1089.15	1086.65	22.50	Rock		100									21.35		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall H

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.50	10.00	1108.50
10+10.00	2	14.50	24.00	1108.50
10+34.00	3	14.50	24.00	1108.50
10+58.00	4	14.50	24.00	1108.50
10+82.00	5	14.50	24.00	1108.50
11+06.00	6	15.00	24.00	1108.00
11+30.00	7	15.00	24.00	1108.00
11+54.00	8	15.00	24.00	1108.00
11+78.00	9	15.00	24.00	1108.00
12+02.00	10	15.00	24.00	1108.00
12+26.00	11	15.00	24.00	1108.00
12+50.00	12	14.00	24.00	1108.00
12+74.00	13	14.00	24.00	1108.00
12+98.00	14	14.00	24.00	1108.00
13+22.00	15	15.00	24.00	1108.00
13+46.00	16	15.00	24.00	1108.00
13+70.00	17	14.50	24.00	1108.50
13+94.00	18	14.50	24.00	1108.50
14+18.00	19	14.50	24.00	1108.50
14+42.00	20	14.50	24.00	1108.50
14+66.00	21	14.50	24.00	1108.50
14+90.00	22	15.00	24.00	1108.00
15+14.00	23	15.00	24.00	1108.00
15+38.00	24	14.50	24.00	1107.50
15+62.00	25	15.00	24.00	1107.00
15+86.00	26	15.00	24.00	1106.50
16+10.00	27	15.00	24.00	1106.00
16+34.00	28	15.00	24.00	1106.00
16+58.00	29	15.00	24.00	1105.00
16+82.00	30	15.00	24.00	1104.50
17+06.00	31	15.50	24.00	1103.50
17+30.00	32	15.50	24.00	1103.00
17+54.00	33	15.50	24.00	1102.50
17+78.00	34	15.50	24.00	1102.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
18+02.00	35	15.00	24.00	1101.50
18+26.00	36	15.50	24.00	1100.50
18+50.00	37	16.00	24.00	1100.00
18+74.00	38	16.00	24.00	1100.00
18+98.00	39	16.00	24.00	1100.00
19+22.00	40	16.00	24.00	1100.00
19+38.00	41	15.00	16.00	1100.00
19+46.00	42	14.00	8.00	1100.00

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-040-1-21	10+92.00	11+96.00	1108.00	1108.50	1109.71	1093.00		24	15.00	2.0	2:1	10+00.00	11+78.00	1	9	8.50	1100.00
B-070-0-22	13+00.00	14+00.00	1109.50	1108.00	1108.80	1098.00		24	15.00	2.0	2:1	12+02.00	13+94.00	10	18	8.50	1099.50
B-042-1-21	15+00.00	15+97.50	1110.00	1108.00	1109.10	1090.00		24	15.00	2.0	2:1	14+18.00	15+86.00	19	26	8.50	1099.50
B-071-0-22	16+95.00	16+95.00	1106.57	1104.50	1105.30	1095.07		24	15.00	2.0	2:1	16+10.00	19+46.00	27	42	8.50	1096.00

Cut (ft) =	-1.21	Rock Elev. (ft)=	1093.00
Shaft Top Elev. (ft) =	1108.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1108.00	Ex. Ground Elev.=	1109.71
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft									
1100.00'									

C CT.: 3
G CT.: 1
N dsgn: 18

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1108.00	1105.50	2.50	A-4a P	Cohesive	5	2.00	5	5	115	53	53	132	66	3.00	5	Cohesive
2	1105.50	1103.00	5.00	A-4a P	Cohesive	3	1.79	3	3	110	48	48	119	191	5.50	3	Cohesive
3	1103.00	1100.50	7.50	A-4a P	Cohesive	5	1.62	5	5	115	53	53	132	316	8.00	5	Cohesive
4	1100.50	1098.00	10.00	A-3a	Granular	73	1.48	108	60	140	78	78	194	479	10.50	60	Granular
5	1098.00	1093.00	15.00	A-3a	Granular	50	1.33	66	60	132	70	70	348	750	15.50	60	Granular
6	1093.00	1083.00	25.00	Rock		100									25.50		

Cut (ft) =	-0.80	Rock Elev. (ft)=	1098.00
Shaft Top Elev. (ft) =	1108.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1109.50	Ex. Ground Elev.=	1108.80
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft									
1099.50'									

C CT.: 3
G CT.: 2
N dsgn: 31

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1109.50	1107.00	2.50	A-6a	Cohesive	17	2.00	17	17	122	60	60	149	75	1.00	17	Cohesive
2	1107.00	1104.50	5.00	A-4a P	Cohesive	16	1.73	16	16	122	60	60	149	224	3.50	16	Cohesive
3	1104.50	1102.00	7.50	A-4a P	Cohesive	14	1.56	14	14	122	60	60	149	373	6.00	14	Cohesive
4	1102.00	1099.50	10.00	A-1-b	Granular	33	1.45	48	48	128	66	66	164	529	8.50	48	Granular
5	1099.50	1098.00	11.50	A-1-b	Granular	50	1.37	69	60	132	70	70	104	663	10.00	60	Granular
6	1098.00	1092.00	17.50	Rock		100									16.00		

Cut (ft) =	-1.10	Rock Elev. (ft)=	1090.00
Shaft Top Elev. (ft) =	1108.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1110.00	Ex. Ground Elev.=	1109.10
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft									
1099.50'									

C CT.: 4
G CT.: 1
N dsgn: 19

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1110.00	1107.50	2.50	A-4a P	Cohesive	8	2.00	8	8	118	56	56	139	70	0.50	8	Cohesive
2	1107.50	1105.00	5.00	A-4a P	Cohesive	6	1.76	6	6	115	53	53	132	205	3.00	6	Cohesive
3	1105.00	1102.50	7.50	A-4a P	Cohesive	9	1.59	9	9	118	56	56	139	340	5.50	9	Cohesive
4	1102.50	1100.00	10.00	A-4a P	Cohesive	11	1.48	11	11	120	58	58	144	482	8.00	11	Cohesive
5	1100.00	1095.00	15.00	A-3	Granular	45	1.34	60	60	132	70	70	348	728	13.00	60	Granular
6	1095.00	1090.00	20.00	A-3	Granular	50	1.21	60	60	132	70	70	348	1076	18.00	60	Granular
7	1090.00	1081.00	29.00	Rock		100									27.00		

Cut (ft) =	-0.80	Rock Elev. (ft)=	1095.07
Shaft Top Elev. (ft) =	1104.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1106.57	Ex. Ground Elev.=	1105.30
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1096.00'									

C CT.: 3
G CT.: 2
N dsgn: 31

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1106.57	1104.07	2.50	A-4a P	Cohesive	8	2.00	8	8	118	56	56	139	70	0.43	8	Cohesive
2	1104.07	1101.57	5.00	A-4a P	Cohesive	14	1.75	14	14	122	60	60	149	214	2.93	14	Cohesive
3	1101.57	1099.07	7.50	A-4a P	Cohesive	13	1.58	13	13	120	58	58	144	360	5.43	13	Cohesive
4	1099.07	1096.57	10.00	A-1-b	Granular	47	1.45	68	60	132	70	70	174	519	7.93	60	Granular
5	1096.57	1095.07	11.50	A-1-b	Granular	50	1.37	69	60	132	70	70	104	658	9.43	60	Granular
6	1095.07	1089.07	17.50	Rock		100									15.43		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall I

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	15.00	12.00	1047.00
10+12.00	2	15.50	12.00	1047.00
10+24.00	3	15.50	24.00	1047.50
10+48.00	4	15.50	24.00	1048.50
10+60.00	5	15.50	12.00	1050.00
10+72.00	6	15.50	24.00	1050.50
10+96.00	7	15.50	24.00	1051.50
11+08.00	8	15.00	12.00	1053.00
11+20.00	9	15.00	12.00	1054.00
11+32.00	10	15.50	12.00	1055.00
11+44.00	11	15.50	24.00	1055.50
11+68.00	12	15.50	24.00	1056.50
11+92.00	13	15.50	24.00	1057.50
12+04.00	14	15.00	12.00	1059.00
12+16.00	15	15.50	12.00	1060.00
12+28.00	16	15.50	12.00	1060.50
12+40.00	17	16.00	24.00	1061.50
12+64.00	18	16.00	24.00	1062.00
12+88.00	19	15.50	24.00	1063.50
13+12.00	20	16.00	24.00	1064.50
13+36.00	21	16.00	24.00	1065.00
13+60.00	22	15.00	24.00	1066.00
13+84.00	23	15.00	24.00	1066.50
13+96.00	24	15.00	24.00	1067.00
14+20.00	25	15.50	24.00	1067.00
14+44.00	26	16.00	24.00	1067.50
14+68.00	27	16.50	24.00	1068.00
14+86.00	28	16.50	24.00	1068.50
15+10.00	29	16.00	24.00	1070.00
14+34.00	30	14.50	24.00	1071.50
15+46.00	31	14.00	12.00	1072.00

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-006-0-22	9+98.00	10+58.00	1055.00	1047.00	1047.44	1034.00		24	15.50	8.0	Level	10+00.00	10+48.00	1	4	10.00	1037.00
B-007-0-22	11+18.00	12+13.50	1057.21	1053.00	1055.63	1040.71		24	15.50	8.0	Level	10+60.00	12+04.00	5	14	10.00	1043.00
B-008-0-22	13+09.00	13+92.50	1067.72	1063.50	1065.70	1047.22		24	16.00	4.0	4:1	12+16.00	13+84.00	15	23	12.50	1051.00
B-009-0-22	14+76.00	14+76.00	1071.73	1068.00	1069.64	1052.73		24	16.50	6.0	5:1	13+96.00	15+46.00	24	31	10.50	1057.50

Cut (ft) =	-0.44	Rock Elev. (ft)=	1034.00
Shaft Top Elev. (ft) =	1047.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1055.00	Ex. Ground Elev.=	1047.44
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
9.0 ft	10.0 ft								
1038.00'	1037.00'								
C CT.: 1	C CT.: 1								
G CT.: 3	G CT.: 4								
N dsgn: 40	N dsgn: 44								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1055.00	1052.50	2.50	A-4a P	Cohesive	13	2.00	13	13	120	58	58	144	72			
2	1052.50	1050.00	5.00	A-4a P	Cohesive	12	1.75	12	12	120	58	58	144	216			
3	1050.00	1047.50	7.50	A-4a P	Cohesive	22	1.57	22	22	125	63	63	157	366			
4	1047.50	1045.00	10.00	A-4a P	Cohesive	14	1.45	14	14	122	60	60	149	519	2.00	14	Cohesive
5	1045.00	1042.50	12.50	A-4a NP	Granular	20	1.37	27	27	125	63	63	157	672	4.50	27	Granular
6	1042.50	1040.00	15.00	A-3a	Granular	45	1.29	58	58	132	70	70	174	837	7.00	58	Granular
7	1040.00	1037.50	17.50	A-3a	Granular	70	1.23	86	60	140	78	78	194	1021	9.50	60	Granular
8	1037.50	1035.00	20.00	A-3a	Granular	70	1.17	82	60	140	78	78	194	1215	12.00	60	Granular
9	1035.00	1032.50	22.50	Rock		100									14.50		
10	1032.50	1030.00	25.00	Rock		100									17.00		

Cut (ft) =	-2.63	Rock Elev. (ft)=	1040.71
Shaft Top Elev. (ft) =	1053.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1057.21	Ex. Ground Elev.=	1055.63
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
9.0 ft	**10.0 ft**								
1044.00'	**1043.00'**								
C CT.: 1	C CT.: 1								
G CT.: 4	G CT.: 4								
N dsgn: 38	N dsgn: 38								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1057.21	1054.71	2.50	A-4a P	Cohesive	13	2.00	13	13	120	58	58	144	72			
2	1054.71	1052.21	5.00	A-4a P	Cohesive	20	1.74	20	20	125	63	63	157	222	0.79	20	Cohesive
3	1052.21	1049.71	7.50	A-3a	Granular	24	1.56	37	37	125	63	63	157	379	3.29	37	Granular
4	1049.71	1047.21	10.00	A-1-b	Granular	26	1.44	37	37	128	66	66	164	539	5.79	37	Granular
5	1047.21	1044.71	12.50	A-4a NP	Granular	28	1.35	38	38	128	66	66	164	703	8.29	38	Granular
6	1044.71	1042.51	14.70	A-1-b	Granular	50	1.28	64	60	132	70	70	153	862	10.49	60	Granular
7	1042.51	1040.71	16.50	A-3a	Granular	50	1.23	62	60	132	70	70	125	1001	12.29	60	Granular
8	1040.71	1038.11	19.10	Rock		100									14.89		

Cut (ft) =	-2.20	Rock Elev. (ft)=	1047.22
Shaft Top Elev. (ft) =	1063.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1067.72	Ex. Ground Elev.=	1065.70
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
10.0 ft	**12.5 ft**								
1053.50'	**1051.00'**								
C CT.: 2	C CT.: 3								
G CT.: 3	G CT.: 3								
N dsgn: 25	N dsgn: 24								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1067.72	1065.22	2.50	A-4a P	Cohesive	16	2.00	16	16	122	60	60	149	75			
2	1065.22	1062.72	5.00	A-4a P	Cohesive	22	1.73	22	22	125	63	63	157	227	0.78	22	Cohesive
3	1062.72	1060.22	7.50	A-4a P	Cohesive	24	1.55	24	24	125	63	63	157	384	3.28	24	Cohesive
4	1060.22	1057.72	10.00	A-4a NP	Granular	13	1.44	19	19	122	60	60	149	537	5.78	19	Granular
5	1057.72	1055.22	12.50	A-4a NP	Granular	21	1.36	29	29	125	63	63	157	689	8.28	29	Granular
6	1055.22	1052.72	15.00	A-3a	Granular	25	1.29	32	32	128	66	66	164	850	10.78	32	Granular
7	1052.72	1050.22	17.50	A-4a P	Cohesive	17	1.23	17	17	122	60	60	149	1006	13.28	17	Cohesive
8	1050.22	1047.72	20.00	A-4a P	Cohesive	25	1.18	25	25	125	63	63	157	1159	15.78	25	Cohesive
9	1047.72	1046.42	21.30	Rock		100									17.08		

Cut (ft) =	-1.64	Rock Elev. (ft)=	1052.73
Shaft Top Elev. (ft) =	1068.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1071.73	Ex. Ground Elev.=	1069.64
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
9.5 ft	**10.5 ft**								
1058.50'	**1057.50'**								
C CT.: 2	C CT.: 2								
G CT.: 3	G CT.: 3								
N dsgn: 31	N dsgn: 31								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1071.73	1069.23	2.50	A-4a P	Cohesive	29	2.00	29	29	128	66	66	164	82			
2	1069.23	1066.73	5.00	A-4a P	Cohesive	16	1.71	16	16	122	60	60	149	239	1.27	16	Cohesive
3	1066.73	1064.23	7.50	A-4a P	Cohesive	8	1.55	8	8	118	56	56	139	383	3.77	8	Cohesive
4	1064.23	1061.73	10.00	A-4a NP	Granular	49	1.44	71	60	132	70	70	174	539	6.27	60	Granular
5	1061.73	1059.23	12.50	A-4a NP	Granular	33	1.35	45	45	128	66	66	164	708	8.77	45	Granular
6	1059.23	1056.73	15.00	A-4a NP	Granular	22	1.28	28	28	125	63	63	157	868	11.27	28	Granular
7	1056.73	1054.23	17.50	A-3a	Granular	38	1.22	46	46	130	68	68	169	1031	13.77	46	Granular
8	1054.23	1052.53	19.20	A-3a	Granular	50	1.18	59	59	132	70	70	118	1175	15.47	59	Granular
9	1052.53	1051.73	20.00	Rock		100									16.27		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall J

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **7**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.50	24.00	1070.50
10+24.00	2	15.00	24.00	1070.50
10+48.00	3	15.00	24.00	1071.00
10+72.00	4	15.00	24.00	1071.50
10+96.00	5	15.00	24.00	1072.00
11+20.00	6	15.00	24.00	1072.50
11+32.00	7	15.00	24.00	1073.00
11+56.00	8	15.50	24.00	1073.50
11+80.00	9	16.00	24.00	1073.50
12+04.00	10	16.00	24.00	1074.00
12+28.00	11	15.00	24.00	1075.50
12+52.00	12	15.00	24.00	1076.00
12+76.00	13	15.50	24.00	1077.00
13+00.00	14	15.50	24.00	1077.50
13+24.00	15	15.00	24.00	1078.50
13+48.00	16	15.00	24.00	1079.00
13+72.00	17	15.00	24.00	1079.50
13+96.00	18	15.00	24.00	1080.00
14+20.00	19	16.00	24.00	1080.00
14+44.00	20	16.00	24.00	1080.00
14+68.00	21	16.00	24.00	1081.00
14+92.00	22	15.50	24.00	1082.50
15+08.00	23	15.00	24.00	1083.50
15+32.00	24	15.50	24.00	1084.00
15+56.00	25	16.00	24.00	1084.50
15+80.00	26	16.50	24.00	1085.00
16+04.00	27	16.50	24.00	1085.50
16+28.00	28	16.50	24.00	1086.50
16+52.00	29	16.00	24.00	1088.00
16+64.00	30	16.00	12.00	1089.50
16+76.00	31	16.50	24.00	1090.00
17+00.00	32	16.50	24.00	1090.50
17+24.00	33	16.50	24.00	1091.50
17+48.00	34	16.50	24.00	1092.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+72.00	35	16.00	24.00	1094.00
17+84.00	36	16.50	12.00	1095.00
17+96.00	37	17.50	24.00	1095.50
18+20.00	38	17.50	24.00	1095.50
18+44.00	39	16.50	24.00	1097.50
18+68.00	40	16.50	24.00	1109.00
18+92.00	41	16.50	24.00	1099.50
19+16.00	42	16.50	24.00	1100.50
19+28.00	43	16.50	24.00	1102.00
19+52.00	44	16.50	24.00	1102.50
19+76.00	45	16.00	24.00	1104.00
20+00.00	46	15.50	24.00	1105.50
20+12.00	47	15.50	24.00	1107.00
20+36.00	48	15.50	24.00	1107.50
20+60.00	49	15.00	24.00	1109.00
20+84.00	50	15.00	24.00	1110.00
21+08.00	51	15.00	24.00	1111.00
21+32.00	52	15.00	24.00	1112.00
21+56.00	53	15.00	24.00	1112.50
21+80.00	54	15.00	24.00	1113.00
22+04.00	55	14.50	24.00	1113.50
22+28.00	56	15.00	24.00	1113.50
22+52.00	57	15.00	24.00	1114.00
22+76.00	58	14.50	24.00	1114.50
23+00.00	59	15.00	24.00	1114.50
23+24.00	60	15.00	24.00	1115.00
23+38.00	61	14.50	14.00	1115.50
23+52.00	62	15.00	20.00	1116.00
23+72.00	63	15.00	20.00	1116.00
23+84.00	64	15.00	12.00	1117.00
23+96.00	65	15.00	12.00	1117.50
24+08.00	66	15.00	12.00	1118.00
24+20.00	67	15.00	12.00	1119.00
24+30.00	68	14.50	10.00	1119.50

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-010-0-22	11+46.00	12+47.00	1075.80	1073.00	1174.30	1056.30		24	16.00	0.0	Level	10+00.00	12+28.00	1	11	11.00	1062.00
B-021-0-22	13+48.00	14+37.50	1078.65	1079.00	1080.30	1065.65		24	16.00	0.0	Level	12+52.00	14+20.00	12	19	10.00	1069.00
B-022-0-22	15+27.00	16+08.50	1084.55	1083.50	1085.20	1070.55		24	16.50	0.0	Level	14+44.00	16+04.00	20	27	6.00	1077.50
B-023-0-22	16+90.00	17+89.50	1093.30	1090.00	1091.90	1070.80		24	16.50	0.0	Level	16+28.00	17+84.00	28	36	6.00	1084.00
B-024-0-22	18+89.00	19+95.00	1104.45	1109.00	1101.40	1100.95		24	17.50	4.0	4:1	17+96.00	19+76.00	37	45	8.00	1101.00
B-025-0-22	21+01.00	21+93.00	1115.09	1110.00	1112.50	1102.59		24	16.00	3.0	3:1	20+00.00	21+80.00	46	54	8.50	1101.50
B-026-0-22	22+85.00	22+85.00	1120.20	1114.50	1115.50			24	15.00	2.0	2:1	22+04.00	24+30.00	55	68	13.00	1101.50

Cut (ft) =	-101.30	Rock Elev. (ft)=	1056.30
Shaft Top Elev. (ft) =	1073.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1075.80	Ex. Ground Elev.=	1174.30
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
9.0 ft	**11.0 ft**								
1064.00'	**1062.00'**								
C CT.: 0	C CT.: 1								
G CT.: 4	G CT.: 4								
N dsgn: 23	N dsgn: 22								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1075.80	1073.30	2.50	A-4a P	Cohesive	14	2.00	14	14	122	60	60	149	75			
2	1073.30	1070.80	5.00	A-1-b	Granular	11	1.73	19	19	122	60	60	149	224	4.70	14	Granular
3	1070.80	1068.30	7.50	A-1-b	Granular	9	1.56	14	14	122	60	60	149	373	7.20	13	Granular
4	1068.30	1065.80	10.00	A-3a	Granular	9	1.45	13	13	122	60	60	149	522	9.70	16	Granular
5	1065.80	1063.30	12.50	A-4a NP	Granular	12	1.37	16	16	122	60	60	149	671	12.20	48	Granular
6	1063.30	1060.80	15.00	A-4a NP	Granular	37	1.30	48	48	130	68	68	169	830	14.70	21	Cohesive
7	1060.80	1058.30	17.50	A-6a	Cohesive	21	1.24	21	21	125	63	63	157	992	16.70	59	Granular
8	1058.30	1056.30	19.50	A-1-b	Granular	50	1.19	59	59	132	70	70	139	1140	22.70		
9	1056.30	1050.30	25.50	Rock		100											

Cut (ft) =	-1.30	Rock Elev. (ft)=	1065.65
Shaft Top Elev. (ft) =	1079.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1078.65	Ex. Ground Elev.=	1080.30
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
9.0 ft	**10.0 ft**								
1070.00'	**1069.00'**								
C CT.: 1	C CT.: 1								
G CT.: 3	G CT.: 3								
N dsgn: 36	N dsgn: 36								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1078.65	1076.15	2.50	A-4a P	Cohesive	20	2.00	20	20	125	63	63	157	78	2.85	20	Cohesive
2	1076.15	1073.65	5.00	A-3a	Granular	22	1.72	38	38	125	63	63	157	235	5.35	38	Granular
3	1073.65	1071.15	7.50	A-3a	Granular	28	1.54	43	43	128	66	66	164	395	7.85	43	Granular
4	1071.15	1068.65	10.00	A-2-4	Granular	29	1.43	41	41	128	66	66	164	559	10.35	41	Granular
5	1068.65	1065.65	13.00	A-1-b	Granular	32	1.33	43	43	128	66	66	197	739	13.35	43	Granular
6	1065.65	1059.65	19.00	Rock		100									19.35		

Cut (ft) =	-1.70	Rock Elev. (ft)=	1070.55
Shaft Top Elev. (ft) =	1083.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1084.55	Ex. Ground Elev.=	1085.20
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft									
1077.50'									

C CT.: 2
G CT.: 1
N dsgn: 23

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1084.55	1082.05	2.50	A-4a P	Cohesive	25	2.00	25	25	125	63	63	157	78	1.45	25	Cohesive
2	1082.05	1079.55	5.00	A-6a	Cohesive	18	1.72	18	18	122	60	60	149	231	3.95	18	Cohesive
3	1079.55	1077.05	7.50	A-1-b	Granular	17	1.55	26	26	125	63	63	157	384	6.45	26	Granular
4	1077.05	1074.55	10.00	A-4a P	Cohesive	24	1.44	24	24	125	63	63	157	540	8.95	24	Cohesive
5	1074.55	1072.05	12.50	A-4a P	Cohesive	40	1.35	40	32	130	68	68	169	703	11.45	32	Cohesive
6	1072.05	1070.55	14.00	A-1-b	Granular	50	1.29	65	60	132	70	70	104	840	12.95	60	Granular
7	1070.55	1065.05	19.50	Rock		100									18.45		

Cut (ft) =	-1.90	Rock Elev. (ft)=	1070.80
Shaft Top Elev. (ft) =	1090.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1093.30	Ex. Ground Elev.=	1091.90
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft									
1084.00'									

C CT.: 2
G CT.: 1
N dsgn: 27

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1093.30	1090.80	2.50	A-6a	Cohesive	17	2.00	17	17	122	60	60	149	75			
2	1090.80	1088.30	5.00	A-1-b	Granular	18	1.73	31	31	125	63	63	157	227	1.70	31	Granular
3	1088.30	1085.80	7.50	A-6a	Cohesive	18	1.56	18	18	122	60	60	149	380	4.20	18	Cohesive
4	1085.80	1083.30	10.00	A-6a	Cohesive	33	1.44	33	32	128	66	66	164	537	6.70	32	Cohesive
5	1083.30	1080.80	12.50	A-4a P	Cohesive	29	1.35	29	29	128	66	66	164	701	9.20	29	Cohesive
6	1080.80	1078.30	15.00	A-4a P	Cohesive	18	1.29	18	18	122	60	60	149	857	11.70	18	Cohesive
7	1078.30	1075.80	17.50	A-4a P	Cohesive	22	1.23	22	22	125	63	63	157	1010	14.20	22	Cohesive
8	1075.80	1073.30	20.00	A-1-b	Granular	25	1.18	30	30	128	66	66	164	1170	16.70	30	Granular
9	1073.30	1070.80	22.50	A-4a NP	Granular	32	1.14	36	36	128	66	66	164	1334	19.20	36	Granular
10	1070.80	1065.60	27.70	Rock		100									24.40		

Fill (ft) =	7.60	Rock Elev. (ft)=	1100.95
Shaft Top Elev. (ft) =	1109.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1104.45	Ex. Ground Elev.=	1101.40
Post Spacing (ft) =	24		
Barrier Height (ft) =	18.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft									
1101.00'									

C CT.: 2
G CT.: 0
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1104.45	1101.95	2.50	A-6a	Cohesive	13	2.00	13	13	120	58	58	144	72	0.10	20	Cohesive
2	1101.95	1100.95	3.50	A-6a	Cohesive	13	1.82	13	13	120	58	58	58	173	2.60	20	Cohesive
3	1100.95	1095.85	8.60	Rock		100									5.10	20	Cohesive
4	1095.85	1090.85	13.60	Rock		100									7.60	20	Cohesive
															10.10	20	Cohesive
															12.60	13	Cohesive
															13.15		Cohesive
															18.15		Cohesive

Cut (ft) =	-2.50	Rock Elev. (ft)=	1102.59
Shaft Top Elev. (ft) =	1110.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1115.09	Ex. Ground Elev.=	1112.50
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	3:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft									
1101.50'									

C CT.: 3
G CT.: 0
N dsgn: 31

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1115.09	1112.59	2.50	A-4a P	Cohesive	24	2.00	24	24	125	63	63	157	78			
2	1112.59	1110.09	5.00	A-4a P	Cohesive	22	1.72	22	22	125	63	63	157	235			
3	1110.09	1107.59	7.50	A-4a P	Cohesive	30	1.54	30	30	128	66	66	164	395	2.41	30	Cohesive
4	1107.59	1105.09	10.00	A-4a P	Cohesive	47	1.42	47	32	135	73	73	182	568	4.91	32	Cohesive
5	1105.09	1102.59	12.50	A-4a P	Cohesive	63	1.33	63	32	140	78	78	194	756	7.41	32	Cohesive
6	1102.59	1097.39	17.70	Rock		100									12.61		

Cut (ft) =	-1.00		
Shaft Top Elev. (ft) =	1114.50		
Boring Top Elev. (ft) =	1120.20	Ex. Ground Elev.=	1115.50
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
11.5 ft	**13.0 ft**								
1103.00'	**1101.50'**								
C CT.: 2	C CT.: 3								
G CT.: 3	G CT.: 3								
N dsgn: 42	N dsgn: 39								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1120.20	1117.70	2.50	A-4a P	Cohesive	11	2.00	11	11	120	58	58	144	72			
2	1117.70	1115.20	5.00	A-4a P	Cohesive	12	1.75	12	12	120	58	58	144	216			
3	1115.20	1112.70	7.50	A-1-b	Granular	67	1.55	104	60	140	78	78	194	385	1.80	60	Granular
4	1112.70	1110.20	10.00	A-1-b	Granular	43	1.42	61	60	130	68	68	169	567	4.30	60	Granular
5	1110.20	1107.70	12.50	A-2-4	Granular	18	1.34	24	24	125	63	63	157	729	6.80	24	Granular
6	1107.70	1105.20	15.00	A-4a P	Cohesive	105	1.27	105	32	140	78	78	194	905	9.30	32	Cohesive
7	1105.20	1102.70	17.50	A-4a P	Cohesive	41	1.21	41	32	130	68	68	169	1086	11.80	32	Cohesive
8	1102.70	1100.20	20.00	A-6a	Cohesive	28	1.16	28	28	128	66	66	164	1253	14.30	28	Cohesive
9	1100.20	1097.70	22.50	A-6a	Cohesive	36	1.12	36	32	130	68	68	169	1419	16.80	32	Cohesive
10	1097.70	1095.20	25.00	A-6a	Cohesive	79	1.08	79	32	140	78	78	194	1601	19.30	32	Cohesive

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall K

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **3**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.00	8.00	1121.00
10+08.00	2	14.00	8.00	1121.00
10+16.00	3	14.50	24.00	1120.50
10+40.00	4	15.00	24.00	1120.00
10+64.00	5	15.50	24.00	1119.50
10+88.00	6	15.00	24.00	1119.00
11+12.00	7	16.00	24.00	1118.00
11+36.00	8	15.50	24.00	1117.50
11+60.00	9	15.00	24.00	1117.00
11+84.00	10	15.50	24.00	1116.50
12+08.00	11	15.50	24.00	1116.50
12+32.00	12	15.50	24.00	1116.50
12+56.00	13	15.50	24.00	1116.50
12+80.00	14	14.50	24.00	1117.50
13+04.00	15	15.50	24.00	1116.50
13+28.00	16	16.50	24.00	1115.50
13+52.00	17	16.50	24.00	1114.50
13+76.00	18	16.00	24.00	1114.00
14+00.00	19	15.50	24.00	1117.50
14+24.00	20	15.00	24.00	1113.00
14+48.00	21	15.00	24.00	1113.00
14+72.00	22	15.50	24.00	1112.50
14+96.00	23	14.50	24.00	1112.50
15+20.00	24	14.50	24.00	1112.50
15+44.00	25	15.00	24.00	1112.00
15+68.00	26	15.00	24.00	1112.00
15+92.00	27	15.00	24.00	1112.00
16+16.00	28	15.00	24.00	1112.00
16+40.00	29	14.00	24.00	1112.00
16+64.00	30	14.00	24.00	1112.00
16+76.00	31	14.00	12.00	1112.00

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-006-5-60	9+88.00	11+99.00	1127.40	1121.00	1122.10	1103.40		24	16.00	2.0	2:1	10+00.00	11+84.00	1	10	11.50	1109.50
B-019-0-60	14+10.00	15+22.00	1125.30	1117.50	1113.05	1116.30		24	16.50	2.0	2:1	12+08.00	15+20.00	11	24	6.50	1111.00
B-021-0-60	16+34.00	16+34.00	1121.80	1112.00	1114.44	1109.30		24	15.00	2.0	2:1	15+44.00	16+76.00	25	31	8.00	1104.00

Cut (ft) =	-1.10	Rock Elev. (ft)=	1103.40
Shaft Top Elev. (ft) =	1121.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1127.40	Ex. Ground Elev.=	1122.10
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
11.5 ft									
1109.50'									

C CT.: 0
G CT.: 5
N dsgn: 50

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1127.40	1125.90	1.50	A-4b P	Cohesive	16	2.00	16	16	122	60	60	89	45			
2	1125.90	1122.90	4.50	A-2-4	Granular	35	1.79	63	60	130	68	68	203	191			
3	1122.90	1119.90	7.50	A-2-4	Granular	80	1.53	123	60	140	78	78	233	409	1.10	60	Granular
4	1119.90	1116.90	10.50	A-1-b	Granular	21	1.39	29	29	125	63	63	188	619	4.10	29	Granular
5	1116.90	1113.90	13.50	A-2-4	Granular	30	1.30	39	39	128	66	66	197	811	7.10	39	Granular
6	1113.90	1111.40	16.00	A-2-4	Granular	76	1.23	94	60	140	78	78	194	1007	9.60	60	Granular
7	1111.40	1109.40	18.00	A-3	Granular	63	1.18	74	60	135	73	73	145	1176	11.60	60	Granular
8	1109.40	1106.40	21.00	A-3	Granular	68	1.13	77	60	140	78	78	233	1365	14.60	60	Granular
9	1106.40	1103.40	24.00	A-2-4	Granular	73	1.08	79	60	140	78	78	233	1598	17.60	60	Granular
						100											

Fill (ft) =	4.45	Rock Elev. (ft)=	1116.30
Shaft Top Elev. (ft) =	1117.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1125.30	Ex. Ground Elev.=	1113.05
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1111.00'									

C CT.: 5
G CT.: 0
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1125.30	1123.80	1.50	A-4a NP	Granular	11	2.00	22	22	122	60	60	89	45	1.95	20	Cohesive
2	1123.80	1120.80	4.50	A-4a P	Cohesive	17	1.81	17	17	122	60	60	179	179	4.45	20	Cohesive
3	1120.80	1117.80	7.50	A-4a P	Cohesive	24	1.57	24	24	125	63	63	188	362	6.95	20	Cohesive
4	1117.80	1114.30	11.00	A-1-b	Granular	46	1.42	65	60	132	70	70	244	578	9.45	20	Cohesive
5	1114.30	1109.30	16.00	Rock		100									11.95	20	Cohesive
															14.45	20	Cohesive
															16.95	17	Cohesive

Cut (ft) =	-2.44	Rock Elev. (ft)=	1109.30
Shaft Top Elev. (ft) =	1112.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1121.80	Ex. Ground Elev.=	1114.44
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft									
1104.00'									

C CT.: 1
G CT.: 0
N dsgn: 32

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1121.80	1120.30	1.50	A-4a P	Cohesive	15	2.00	15	15	122	60	60	89	45			
2	1120.30	1117.30	4.50	A-4a P	Cohesive	12	1.81	12	12	120	58	58	173	176			
3	1117.30	1114.30	7.50	A-4a P	Cohesive	16	1.58	16	16	122	60	60	179	352			
4	1114.30	1109.30	12.50	A-4a P	Cohesive	41	1.40	41	32	130	68	68	338	610	2.70	32	Cohesive
5	1109.30	1104.30	17.50	Rock		100									7.70		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall L

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **2**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.00	18.00	1111.00
10+18.00	2	14.00	24.00	1111.00
10+42.00	3	14.00	24.00	1111.00
10+66.00	4	14.00	24.00	1111.00
10+90.00	5	14.00	24.00	1111.00
10+98.00	6	14.00	20.00	1111.00
11+18.00	7	14.50	24.00	1110.50
11+42.00	8	14.50	24.00	1110.50
11+66.00	9	15.00	24.00	1110.00
11+90.00	10	15.00	24.00	1109.50
12+14.00	11	14.50	24.00	1109.50
12+38.00	12	14.50	24.00	1109.50
12+62.00	13	14.50	24.00	1109.50
12+86.00	14	14.00	24.00	1110.00
13+10.00	15	15.00	24.00	1110.00
13+34.00	16	15.50	24.00	1110.00
13+58.00	17	16.00	24.00	1110.00
13+82.00	18	16.00	24.00	1111.00
14+06.00	19	16.50	24.00	1112.00
14+30.00	20	16.50	24.00	1112.50
14+54.00	21	16.50	24.00	1113.50
14+78.00	22	15.50	24.00	1115.50
15+02.00	23	15.50	24.00	1117.00
15+26.00	24	15.50	24.00	1117.50
15+50.00	25	15.50	24.00	1118.50
15+74.00	26	15.00	24.00	1119.00
15+87.00	27	14.50	13.00	1119.50
16+00.00	28	15.00	24.00	1119.50
16+24.00	29	15.00	24.00	1120.00
16+32.00	30	14.50	8.00	1120.50

Noise Wall ID:																
Boring ID	**Boring STA. (ft)**	**Mid-Boring STA. (ft)**	**Boring Elev. (ft)**	**Shaft Elev. (ft)**	**Ex. Ground Elev. (ft)**	**Rock Elev. (ft)**	**Rock UCS (psi)**	**Post Spacing (ft)**	**Barrier Height (ft)**	**Cross Slope**		**From DS STA.**	**To DS STA.**	**From Post No.**	**To Post No.**	**DS Length (ft)**	**Bottom of DS Elev. (ft)**
B-031-0-22	12+63.00	13+62.00	1114.72	1109.50	1110.64	1095.72		24	16.00	2.0	2:1	10+00.00	13+58.00	1	17	13.00	1096.50
B-032-0-22	14+61.00	14+61.00	1117.32	1113.50	1116.63	1103.82		24	16.50	2.0	2:1	13+82.00	16+32.00	18	30	8.50	1105.00

Cut (ft) =	-1.14	Rock Elev. (ft)=	1095.72
Shaft Top Elev. (ft) =	1109.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1114.72	Ex. Ground Elev.=	1110.64
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
11.5 ft	**13.0 ft**								
1098.00'	**1096.50'**								
C CT.: 1	C CT.: 2								
G CT.: 4	G CT.: 4								
N dsgn: 48	N dsgn: 46								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1114.72	1111.72	3.00	A-4a NP	Granular	45	1.99	90	60	132	70	70	209	104			
2	1111.72	1109.72	5.00	A-4a NP	Granular	17	1.67	28	28	125	63	63	125	271			
3	1109.72	1107.22	7.50	A-2-4	Granular	20	1.53	31	31	125	63	63	157	412	2.28	31	Granular
4	1107.22	1104.72	10.00	A-2-4	Granular	63	1.42	89	60	135	73	73	182	581	4.78	60	Granular
5	1104.72	1102.22	12.50	A-2-4	Granular	59	1.32	78	60	135	73	73	182	763	7.28	60	Granular
6	1102.22	1099.72	15.00	A-2-4	Granular	46	1.25	58	58	132	70	70	174	941	9.78	58	Granular
7	1099.72	1097.22	17.50	A-4b P	Cohesive	104	1.19	104	32	140	78	78	194	1125	12.28	32	Cohesive
8	1097.22	1095.72	19.00	A-4b P	Cohesive	50	1.15	50	32	135	73	73	109	1276	13.78	32	Cohesive
9	1095.72	1089.72	25.00	Rock		100									19.78		

Cut (ft) =	-3.13	Rock Elev. (ft)=	1103.82
Shaft Top Elev. (ft) =	1113.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1117.32	Ex. Ground Elev.=	1116.63
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1105.00'									

C CT.: 3
G CT.: 1
N dsgn: 31

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1117.32	1114.32	3.00	A-1-b	Granular	62	1.98	122	60	135	73	73	218	109			
2	1114.32	1112.32	5.00	A-1-b	Granular	34	1.66	56	56	128	66	66	131	283	1.18	56	Granular
3	1112.32	1109.82	7.50	A-6a	Cohesive	18	1.52	18	18	122	60	60	149	424	3.68	18	Cohesive
4	1109.82	1107.32	10.00	A-4a P	Cohesive	34	1.42	34	32	128	66	66	164	580	6.18	32	Cohesive
5	1107.32	1104.82	12.50	A-4a P	Cohesive	18	1.34	18	18	122	60	60	149	737	8.68	18	Cohesive
6	1104.82	1102.32	15.00	Rock		61									11.18		
7	1102.32	1099.82	17.50	Rock		93									13.68		
8	1099.82	1097.32	20.00	Rock		128									16.18		
9	1097.32	1095.32	22.00	Rock		100									18.18		
10	1095.32	1093.32	24.00	Rock		100									20.18		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall M

NEAS, Inc.

Prepared By: Zhao Mankoci
Date prepared: Tuesday, March 19, 2024

Checked By: Melinda He
Date Checked: Friday, March 22, 2024

No. of Borings: 7

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	13.00	8.00	1118.00
10+08.00	2	14.00	24.00	1117.00
10+32.00	3	14.00	24.00	1116.00
10+56.00	4	14.00	24.00	1115.00
10+80.00	5	14.00	24.00	1115.00
11+04.00	6	14.00	24.00	1114.00
11+28.00	7	14.00	24.00	1114.00
11+52.00	8	13.50	24.00	1113.50
11+76.00	9	14.00	24.00	1113.00
12+00.00	10	14.00	24.00	1113.00
12+24.00	11	13.50	24.00	1112.50
12+48.00	12	13.50	24.00	1111.50
12+72.00	13	13.50	24.00	1111.50
12+96.00	14	13.50	24.00	1111.50
13+20.00	15	14.00	24.00	1111.00
13+44.00	16	14.00	24.00	1111.00
13+68.00	17	14.50	24.00	1110.50
13+92.00	18	14.50	24.00	1110.50
14+16.00	19	14.50	24.00	1111.50
14+40.00	20	14.50	24.00	1111.50
14+64.00	21	14.00	24.00	1112.00
14+88.00	22	14.00	24.00	1112.00
15+12.00	23	14.50	24.00	1112.50
15+36.00	24	14.50	24.00	1112.50
15+60.00	25	14.50	24.00	1112.50
15+84.00	26	15.50	24.00	1113.50
16+08.00	27	15.50	24.00	1113.50
16+32.00	28	15.00	24.00	1114.50
16+56.00	29	15.00	24.00	1115.00
16+80.00	30	14.50	24.00	1115.50
17+04.00	31	13.50	24.00	1116.00
17+28.00	32	13.50	24.00	1116.00
17+52.00	33	13.50	24.00	1115.50
17+76.00	34	14.00	24.00	1115.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
18+00.00	35	14.00	24.00	1115.00
18+24.00	36	15.00	24.00	1116.00
18+48.00	37	15.00	24.00	1116.00
18+72.00	38	13.50	24.00	1117.50
18+96.00	39	14.00	24.00	1117.00
19+20.00	40	14.50	24.00	1116.50
19+44.00	41	14.50	24.00	1116.50
19+68.00	42	14.50	24.00	1116.50
19+92.00	43	14.50	24.00	1116.50
20+16.00	44	14.00	24.00	1117.00
20+40.00	45	13.50	24.00	1117.50
20+64.00	46	13.50	24.00	1117.00
20+88.00	47	14.00	24.00	1117.00
21+12.00	48	14.50	24.00	1116.50
21+36.00	49	14.50	24.00	1116.50
21+60.00	50	14.50	24.00	1116.50
21+76.00	51	15.00	24.00	1116.00
22+00.00	52	15.00	24.00	1116.00
22+24.00	53	14.50	24.00	1116.50
22+48.00	54	14.50	24.00	1117.00
22+72.00	55	15.00	24.00	1117.50
22+96.00	56	15.00	24.00	1118.00
23+20.00	57	15.00	24.00	1118.00
23+44.00	58	15.00	24.00	1118.50
23+68.00	59	15.00	24.00	1119.00
23+92.00	60	14.50	24.00	1119.50
24+16.00	61	14.50	24.00	1120.50
24+40.00	62	14.50	24.00	1121.00
24+64.00	63	14.50	24.00	1121.50
24+88.00	64	14.50	24.00	1121.50
25+12.00	65	14.00	24.00	1122.00
25+36.00	66	13.50	24.00	1122.50
25+58.00	67	13.00	22.00	1123.00
25+80.00	68	13.00	22.00	1123.00

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-045-0-22	12+36.00	13+44.50	1110.25	1112.50	1113.20	1098.75		24	14.00	6.0	5:1	10+00.00	13+44.00	1	16	10.00	1102.50
B-046-0-22	14+53.00	15+55.50	1108.80	1111.50	1112.91	1099.80		24	14.50	4.0	4:1	13+68.00	15+36.00	17	24	8.00	1103.50
B-047-0-22	16+58.00	17+49.50	1112.25	1115.00	1116.42	1099.25		24	15.50	4.0	4:1	15+60.00	17+28.00	25	32	12.50	1102.50
B-048-0-22	18+41.00	19+27.00	1115.13	1116.00	1117.90	1106.13		24	15.00	5.0	5:1	17+52.00	19+20.00	33	40	7.50	1108.50
B-049-0-22	20+13.00	21+19.00	1117.37	1116.50	1117.90	1103.87		24	14.50	6.0	5:1	19+44.00	21+12.00	41	48	7.50	1109.00
B-050-0-22	22+25.00	23+12.00	1119.85	1116.50	1117.60	1101.85		24	15.00	3.0	3:1	21+36.00	22+96.00	49	56	13.00	1103.50
B-051-0-22	23+99.00	23+99.00	1122.31	1119.50	1121.00	1099.81		24	15.00	2.0	2:1	23+20.00	25+80.00	57	68	8.50	1111.00

Cut (ft) =	-0.70	Rock Elev. (ft)=	1098.75
Shaft Top Elev. (ft) =	1112.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1110.25	Ex. Ground Elev.=	1113.20
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
7.5 ft	**10.0 ft**								
1105.00'	**1102.50'**								
C CT.: 1	C CT.: 2								
G CT.: 2	G CT.: 2								
N dsgn: 17	N dsgn: 16								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1110.25	1107.75	2.50	A-1-b	Granular	7	2.00	14	14	120	58	58	144	72	4.75	14	Granular
2	1107.75	1105.25	5.00	A-1-b	Granular	11	1.74	19	19	122	60	60	149	219	7.25	19	Granular
3	1105.25	1102.75	7.50	A-4a P	Cohesive	18	1.57	18	18	122	60	60	149	368	9.75	18	Cohesive
4	1102.75	1098.75	11.50	A-4a P	Cohesive	11	1.43	11	11	120	58	58	230	557	13.75	11	Cohesive
5	1098.75	1090.75	19.50	Rock		100									21.75		

Cut (ft) =	-1.41	Rock Elev. (ft)=	1099.80
Shaft Top Elev. (ft) =	1111.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1108.80	Ex. Ground Elev.=	1112.91
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.0 ft									
1103.50'									

C CT.: 2
G CT.: 0
N dsgn: 28

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1108.80	1106.30	2.50	A-4a P	Cohesive	93	2.00	93	32	140	78	78	194	97	5.20	32	Cohesive
2	1106.30	1103.30	5.50	A-4a P	Cohesive	24	1.65	24	24	125	63	63	188	288	8.20	24	Cohesive
3	1103.30	1099.80	9.00	A-6a	Cohesive	14	1.47	14	14	122	60	60	209	486	11.70	14	Cohesive
4	1099.80	1092.30	16.50	Rock		100									19.20		

Cut (ft) =	-1.42	Rock Elev. (ft)=	1099.25
Shaft Top Elev. (ft) =	1115.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1112.25	Ex. Ground Elev.=	1116.42
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	4:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
10.0 ft	**12.5 ft**								
1105.00'	**1102.50'**								
C CT.: 1	C CT.: 2								
G CT.: 2	G CT.: 2								
N dsgn: 23	N dsgn: 23								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1112.25	1109.75	2.50	A-4a P	Cohesive	50	2.00	50	32	135	73	73	182	91	5.25	32	Cohesive
2	1109.75	1107.25	5.00	A-1-b	Granular	14	1.69	24	24	122	60	60	149	256	7.75	24	Granular
3	1107.25	1104.75	7.50	A-1-b	Granular	8	1.54	12	12	120	58	58	144	403	10.25	12	Granular
4	1104.75	1102.25	10.00	A-4a P	Cohesive	25	1.43	25	25	125	63	63	157	553	12.75	25	Cohesive
5	1102.25	1099.25	13.00	A-4a P	Cohesive	50	1.33	50	32	135	73	73	218	740	15.75	32	Cohesive
6	1099.25	1088.05	24.20	Rock		100									26.95		

Cut (ft) =	-1.90	Rock Elev. (ft)=	1106.13
Shaft Top Elev. (ft) =	1116.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1115.13	Ex. Ground Elev.=	1117.90
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
7.5 ft									
1108.50'									

C CT.: 2
G CT.: 1
N dsgn: 16

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1115.13	1112.63	2.50	A-1-b	Granular	9	2.00	18	18	122	60	60	149	75	3.37	18	Granular
2	1112.63	1110.13	5.00	A-4a P	Cohesive	11	1.74	11	11	120	58	58	144	221	5.87	11	Cohesive
3	1110.13	1106.13	9.00	A-4a P	Cohesive	18	1.53	18	18	122	60	60	238	412	9.87	18	Cohesive
4	1106.13	1098.63	16.50	Rock		100									17.37		

Cut (ft) =	-1.40	Rock Elev. (ft)=	1103.87
Shaft Top Elev. (ft) =	1116.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1117.37	Ex. Ground Elev.=	1117.90
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
7.5 ft									
1109.00'									

C CT.: 3
G CT.: 1
N dsgn: 19

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1117.37	1114.87	2.50	A-1-b	Granular	14	2.00	28	28	122	60	60	149	75	1.63	28	Granular
2	1114.87	1112.37	5.00	A-4a P	Cohesive	11	1.74	11	11	120	58	58	144	221	4.13	11	Cohesive
3	1112.37	1109.87	7.50	A-4a P	Cohesive	11	1.57	11	11	120	58	58	144	365	6.63	11	Cohesive
4	1109.87	1107.37	10.00	A-4a P	Cohesive	24	1.46	24	24	125	63	63	157	515	9.13	24	Cohesive
5	1107.37	1103.87	13.50	A-4a P	Cohesive	33	1.35	33	32	128	66	66	230	708	12.63	32	Cohesive
6	1103.87	1095.87	21.50	Rock		100									20.63		

Cut (ft) =	-1.10	Rock Elev. (ft)=	1101.85
Shaft Top Elev. (ft) =	1116.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1119.85	Ex. Ground Elev.=	1117.60
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	3:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
10.5 ft	**13.0 ft**								
1106.00'	**1103.50'**								
C CT.: 3	C CT.: 4								
G CT.: 2	G CT.: 2								
N dsgn: 23	N dsgn: 25								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1119.85	1117.35	2.50	A-1-b	Granular	22	2.00	44	44	125	63	63	157	78			
2	1117.35	1114.85	5.00	A-1-b	Granular	33	1.71	57	57	128	66	66	164	239	1.65	57	Granular
3	1114.85	1112.35	7.50	A-2-4	Granular	5	1.55	8	8	118	56	56	139	390	4.15	8	Granular
4	1112.35	1109.85	10.00	A-4a P	Cohesive	17	1.44	17	17	122	60	60	149	534	6.65	17	Cohesive
5	1109.85	1107.35	12.50	A-4a P	Cohesive	13	1.36	13	13	120	58	58	144	681	9.15	13	Cohesive
6	1107.35	1104.85	15.00	A-4a P	Cohesive	22	1.30	22	22	125	63	63	157	831	11.65	22	Cohesive
7	1104.85	1101.85	18.00	A-4a P	Cohesive	45	1.23	45	32	135	73	73	218	1018	14.65	32	Cohesive
8	1101.85	1095.85	24.00	Rock		100									20.65		

Cut (ft) =	-1.50	Rock Elev. (ft)=	1099.81
Shaft Top Elev. (ft) =	1119.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1122.31	Ex. Ground Elev.=	1121.00
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft									
1111.00'									

C CT.: 3
G CT.: 1
N dsgn: 25

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1122.31	1119.81	2.50	A-6a	Cohesive	33	2.00	33	32	128	66	66	164	82			
2	1119.81	1117.31	5.00	A-6a	Cohesive	18	1.71	18	18	122	60	60	149	239	2.19	18	Cohesive
3	1117.31	1114.81	7.50	A-1-b	Granular	21	1.55	32	32	125	63	63	157	391	4.69	32	Granular
4	1114.81	1112.31	10.00	A-4a P	Cohesive	26	1.43	26	26	125	63	63	157	548	7.19	26	Cohesive
5	1112.31	1109.81	12.50	A-4a P	Cohesive	24	1.35	24	24	125	63	63	157	704	9.69	24	Cohesive
6	1109.81	1107.31	15.00	A-4a P	Cohesive	14	1.29	14	14	122	60	60	149	857	12.19	14	Cohesive
7	1107.31	1104.81	17.50	A-6b	Cohesive	18	1.23	18	18	122	60	60	149	1006	14.69	18	Cohesive
8	1104.81	1102.31	20.00	A-4a P	Cohesive	18	1.19	18	18	122	60	60	149	1155	17.19	18	Cohesive
9	1102.31	1099.81	22.50	A-4a P	Cohesive	88	1.14	88	32	140	78	78	194	1327	19.69	32	Cohesive
10	1099.81	1097.31	25.00	Rock		120									22.19		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall N

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	14.50	24.00	1126.50
10+24.00	2	14.50	24.00	1126.50
10+48.00	3	14.50	24.00	1128.00
10+72.00	4	14.50	24.00	1128.00
10+96.00	5	14.50	24.00	1126.50
11+20.00	6	14.50	24.00	1127.00
11+44.00	7	14.00	24.00	1127.50
11+68.00	8	13.50	24.00	1128.00
11+92.00	9	13.00	24.00	1128.00
12+16.00	10	13.00	24.00	1128.00
12+40.00	11	13.50	24.00	1128.50
12+64.00	12	13.50	24.00	1128.50
12+88.00	13	13.50	24.00	1129.00
13+12.00	14	13.00	24.00	1129.00
13+36.00	15	13.50	24.00	1128.50
13+60.00	16	13.50	24.00	1128.50
13+84.00	17	14.00	24.00	1128.50
14+08.00	18	14.00	24.00	1129.00
14+32.00	19	13.00	24.00	1129.00
14+56.00	20	13.50	24.00	1128.50
14+80.00	21	13.50	24.00	1128.50
15+04.00	22	14.00	24.00	1129.00
15+28.00	23	14.00	24.00	1129.50
15+50.00	24	13.50	22.00	1129.50

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-052-0-22	10+07.00	11+16.00	1128.76	1126.50	1127.60			24	14.50	3.0	3:1	10+00.00	10+96.00	1	5	8.50	1118.00
B-053-0-22	12+25.00	13+09.00	1130.52	1128.00	1129.10			24	14.50	2.0	2:1	11+20.00	12+88.00	6	13	8.50	1119.50
B-054-0-22	13+93.00	14+77.50	1130.73	1128.50	1129.00			24	14.00	2.0	2:1	13+12.00	14+56.00	14	20	6.50	1122.00
B-055-0-22	15+62.00	15+62.00	1130.24	1129.50	1130.40			24	14.00	2.0	2:1	14+80.00	15+50.00	21	24	6.50	1123.00

Cut (ft) = -1.10
Shaft Top Elev. (ft) = 1126.50
Boring Top Elev. (ft) = 1128.76 Ex. Ground Elev.= 1127.60
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = 3:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1118.00'									

C CT.: 5
G CT.: 0
N dsgn: 25

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1128.76	1126.26	2.50	A-4a P	Cohesive	26	2.00	26	26	125	63	63	157	78	0.24	26	Cohesive
2	1126.26	1123.76	5.00	A-4a P	Cohesive	37	1.71	37	32	130	68	68	169	241	2.74	32	Cohesive
3	1123.76	1121.26	7.50	A-4a P	Cohesive	32	1.53	32	32	128	66	66	164	408	5.24	32	Cohesive
4	1121.26	1118.76	10.00	A-4a P	Cohesive	14	1.43	14	14	122	60	60	149	564	7.74	14	Cohesive
5	1118.76	1116.26	12.50	A-4a P	Cohesive	22	1.34	22	22	125	63	63	157	717	10.24	22	Cohesive
6	1116.26	1113.76	15.00	A-4a P	Cohesive	29	1.28	29	29	128	66	66	164	877	12.74	29	Cohesive
7	1113.76	1111.26	17.50	A-4a P	Cohesive	54	1.22	54	32	140	78	78	194	1056	15.24	32	Cohesive
8	1111.26	1108.76	20.00	A-4a P	Cohesive	13	1.17	13	13	120	58	58	144	1225	17.74	13	Cohesive
9	1108.76	1106.26	22.50	A-4a P	Cohesive	13	1.13	13	13	120	58	58	144	1369	20.24	13	Cohesive
10	1106.26	1103.76	25.00	A-4a P	Cohesive	46	1.09	46	32	135	73	73	182	1532	22.74	32	Cohesive

Cut (ft) = -1.10
Shaft Top Elev. (ft) = 1128.00
Boring Top Elev. (ft) = 1130.52 Ex. Ground Elev.= 1129.10
Post Spacing (ft) = 24
Barrier Height (ft) = 15.00
Transverse Slope = 2:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
8.5 ft									
1119.50'									

C CT.: 4
G CT.: 0
N dsgn: 28

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1130.52	1128.02	2.50	A-4a P	Cohesive	24	2.00	24	24	125	63	63	157	78			
2	1128.02	1125.52	5.00	A-4a P	Cohesive	25	1.72	25	25	125	63	63	157	235	2.48	25	Cohesive
3	1125.52	1123.02	7.50	A-4a P	Cohesive	50	1.54	50	32	135	73	73	182	404	4.98	32	Cohesive
4	1123.02	1120.52	10.00	A-4a P	Cohesive	33	1.42	33	32	128	66	66	164	577	7.48	32	Cohesive
5	1120.52	1118.02	12.50	A-4a P	Cohesive	22	1.34	22	22	125	63	63	157	737	9.98	22	Cohesive
6	1118.02	1115.52	15.00	A-4a P	Cohesive	25	1.27	25	25	125	63	63	157	893	12.48	25	Cohesive
7	1115.52	1113.02	17.50	A-4a P	Cohesive	22	1.22	22	22	125	63	63	157	1050	14.98	22	Cohesive
8	1113.02	1110.52	20.00	A-4a P	Cohesive	28	1.17	28	28	128	66	66	164	1210	17.48	28	Cohesive
9	1110.52	1108.02	22.50	A-4a P	Cohesive	25	1.13	25	25	125	63	63	157	1370	19.98	25	Cohesive
10	1108.02	1105.52	25.00	A-4a P	Cohesive	26	1.09	26	26	125	63	63	157	1527	22.48	26	Cohesive

Cut (ft) = -0.50
Shaft Top Elev. (ft) = 1128.50
Boring Top Elev. (ft) = 1130.73 Ex. Ground Elev.= 1129.00
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 2:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1122.00'									

C CT.: 4
G CT.: 0
N dsgn: 26

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1130.73	1128.23	2.50	A-4a P	Cohesive	21	2.00	21	21	125	63	63	157	78	0.27	21	Cohesive
2	1128.23	1125.73	5.00	A-4a P	Cohesive	24	1.72	24	24	125	63	63	157	235	2.77	24	Cohesive
3	1125.73	1123.23	7.50	A-4a P	Cohesive	50	1.54	50	32	135	73	73	182	404	5.27	32	Cohesive
4	1123.23	1120.73	10.00	A-4a P	Cohesive	25	1.42	25	25	125	63	63	157	573	7.77	25	Cohesive
5	1120.73	1118.23	12.50	A-4a P	Cohesive	29	1.34	29	29	128	66	66	164	733	10.27	29	Cohesive
6	1118.23	1115.73	15.00	A-4a P	Cohesive	18	1.27	18	18	122	60	60	149	890	12.77	18	Cohesive
7	1115.73	1113.23	17.50	A-4a P	Cohesive	25	1.22	25	25	125	63	63	157	1042	15.27	25	Cohesive
8	1113.23	1110.73	20.00	A-4a P	Cohesive	25	1.17	25	25	125	63	63	157	1199	17.77	25	Cohesive
9	1110.73	1108.23	22.50	A-4a P	Cohesive	24	1.13	24	24	125	63	63	157	1355	20.27	24	Cohesive
10	1108.23	1105.73	25.00	A-4a P	Cohesive	29	1.09	29	29	128	66	66	164	1516	22.77	29	Cohesive

Cut (ft) = -0.90
Shaft Top Elev. (ft) = 1129.50
Boring Top Elev. (ft) = 1130.24 Ex. Ground Elev.= 1130.40
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 2:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1123.00'									

C CT.: 3
G CT.: 0
N dsgn: 26

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1130.24	1127.74	2.50	A-4a P	Cohesive	21	2.00	21	21	125	63	63	157	78	1.76	21	Cohesive
2	1127.74	1125.24	5.00	A-4a P	Cohesive	24	1.72	24	24	125	63	63	157	235	4.26	24	Cohesive
3	1125.24	1122.74	7.50	A-4a P	Cohesive	50	1.54	50	32	135	73	73	182	404	6.76	32	Cohesive
4	1122.74	1120.24	10.00	A-4a P	Cohesive	25	1.42	25	25	125	63	63	157	573	9.26	25	Cohesive
5	1120.24	1117.74	12.50	A-4a P	Cohesive	29	1.34	29	29	128	66	66	164	733	11.76	29	Cohesive
6	1117.74	1115.24	15.00	A-4a P	Cohesive	18	1.27	18	18	122	60	60	149	890	14.26	18	Cohesive
7	1115.24	1112.74	17.50	A-4a P	Cohesive	25	1.22	25	25	125	63	63	157	1042	16.76	25	Cohesive
8	1112.74	1110.24	20.00	A-4a P	Cohesive	25	1.17	25	25	125	63	63	157	1199	19.26	25	Cohesive
9	1110.24	1107.74	22.50	A-4a P	Cohesive	24	1.13	24	24	125	63	63	157	1355	21.76	24	Cohesive
10	1107.74	1105.24	25.00	A-4a P	Cohesive	29	1.09	29	29	128	66	66	164	1516	24.26	29	Cohesive

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall O

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	13.00	10.00	1124.00
10+10.00	2	13.00	10.00	1124.00
10+20.00	3	13.00	24.00	1124.00
10+44.00	4	13.00	24.00	1124.00
10+68.00	5	13.50	24.00	1123.50
10+92.00	6	14.00	24.00	1123.00
11+16.00	7	14.00	24.00	1122.50
11+40.00	8	14.00	24.00	1122.00
11+64.00	9	14.00	24.00	1121.50
11+88.00	10	14.00	24.00	1121.00
12+12.00	11	14.00	24.00	1121.00
12+36.00	12	13.50	24.00	1120.50
12+60.00	13	14.00	24.00	1120.00
12+84.00	14	14.00	24.00	1119.00
13+08.00	15	14.00	24.00	1118.50
13+32.00	16	14.00	24.00	1118.00
13+56.00	17	14.00	24.00	1117.50
13+80.00	18	13.50	24.00	1116.50
14+04.00	19	14.00	24.00	1116.00
14+28.00	20	14.00	24.00	1115.50
14+52.00	21	14.00	24.00	1115.00
14+76.00	22	14.00	24.00	1114.50
15+00.00	23	14.00	24.00	1114.00
15+24.00	24	14.00	24.00	1113.00
15+48.00	25	14.00	24.00	1112.50
15+72.00	26	14.00	24.00	1112.00
15+96.00	27	14.00	24.00	1112.00
16+20.00	28	13.50	24.00	1111.50
16+44.00	29	14.00	24.00	1111.00
16+68.00	30	14.00	24.00	1111.00
16+92.00	31	13.00	24.00	1111.00
17+16.00	32	13.00	24.00	1111.00

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-056-0-22	11+79.00	12+63.50	1123.46	1121.50	1122.60			24	14.00	3.0	3:1	10+00.00	12+60.00	1	13	6.50	1115.00
B-057-0-22	13+48.00	14+47.50	1119.86	1118.00	1118.70			24	14.00	3.0	3:1	12+84.00	14+28.00	14	20	6.50	1111.50
B-058-0-22	15+47.00	16+43.00	1114.66	1113.00	1113.90			24	14.00	3.0	3:1	14+52.00	16+20.00	21	28	6.50	1106.50
B-059-0-22	17+39.00	17+39.00	1111.73	1111.00	1111.90			24	14.00	3.0	3:1	16+44.00	17+16.00	29	32	6.50	1104.50

Cut (ft) = -1.10
Shaft Top Elev. (ft) = 1121.50
Boring Top Elev. (ft) = 1123.46 Ex. Ground Elev.= 1122.60
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 3:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1115.00'									

C CT.: 3
G CT.: 1
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1123.46	1120.96	2.50	A-1-b	Granular	21	2.00	42	42	125	63	63	157	78	0.54	42	Granular
2	1120.96	1118.46	5.00	A-4a P	Cohesive	12	1.73	12	12	120	58	58	144	229	3.04	12	Cohesive
3	1118.46	1115.96	7.50	A-4a P	Cohesive	11	1.56	11	11	120	58	58	144	373	5.54	11	Cohesive
4	1115.96	1113.46	10.00	A-4a P	Cohesive	16	1.45	16	16	122	60	60	149	519	8.04	16	Cohesive
5	1113.46	1110.96	12.50	A-4a P	Cohesive	13	1.37	13	13	120	58	58	144	666	10.54	13	Cohesive
6	1110.96	1108.46	15.00	A-4a P	Cohesive	11	1.30	11	11	120	58	58	144	810	13.04	11	Cohesive
7	1108.46	1105.96	17.50	A-4a P	Cohesive	11	1.25	11	11	120	58	58	144	954	15.54	11	Cohesive
8	1105.96	1103.46	20.00	A-4a P	Cohesive	20	1.20	20	20	125	63	63	157	1104	18.04	20	Cohesive
9	1103.46	1100.96	22.50	A-4a P	Cohesive	25	1.16	25	25	125	63	63	157	1260	20.54	25	Cohesive
10	1100.96	1098.46	25.00	A-4a P	Cohesive	13	1.12	13	13	120	58	58	144	1411	23.04	13	Cohesive

Cut (ft) = -0.70
Shaft Top Elev. (ft) = 1118.00
Boring Top Elev. (ft) = 1119.86 Ex. Ground Elev.= 1118.70
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 3:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1111.50'									

C CT.: 3
G CT.: 1
N dsgn: 18

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1119.86	1117.36	2.50	A-1-b	Granular	20	2.00	40	40	125	63	63	157	78	0.64	40	Granular
2	1117.36	1114.86	5.00	A-4a P	Cohesive	13	1.73	13	13	120	58	58	144	229	3.14	13	Cohesive
3	1114.86	1112.36	7.50	A-4a P	Cohesive	9	1.57	9	9	118	56	56	139	370	5.64	9	Cohesive
4	1112.36	1109.86	10.00	A-4a P	Cohesive	11	1.46	11	11	120	58	58	144	512	8.14	11	Cohesive
5	1109.86	1107.36	12.50	A-4a P	Cohesive	18	1.37	18	18	122	60	60	149	658	10.64	18	Cohesive
6	1107.36	1104.86	15.00	A-6a	Cohesive	24	1.30	24	24	125	63	63	157	811	13.14	24	Cohesive
7	1104.86	1102.36	17.50	A-6a	Cohesive	28	1.24	28	28	128	66	66	164	971	15.64	28	Cohesive
8	1102.36	1099.86	20.00	A-6a	Cohesive	30	1.19	30	30	128	66	66	164	1135	18.14	30	Cohesive
9	1099.86	1097.36	22.50	A-6a	Cohesive	18	1.15	18	18	122	60	60	149	1292	20.64	18	Cohesive
10	1097.36	1094.86	25.00	A-4b P	Cohesive	20	1.11	20	20	125	63	63	157	1444	23.14	20	Cohesive

Cut (ft) = -0.90
Shaft Top Elev. (ft) = 1113.00
Boring Top Elev. (ft) = 1114.66 Ex. Ground Elev.= 1113.90
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 3:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1106.50'									

C CT.: 3
G CT.: 1
N dsgn: 26

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1114.66	1112.16	2.50	A-1-b	Granular	25	2.00	50	50	128	66	66	164	82	0.84	50	Granular
2	1112.16	1109.66	5.00	A-4a P	Cohesive	21	1.71	21	21	125	63	63	157	242	3.34	21	Cohesive
3	1109.66	1107.16	7.50	A-4a P	Cohesive	17	1.54	17	17	122	60	60	149	395	5.84	17	Cohesive
4	1107.16	1104.66	10.00	A-6a	Cohesive	14	1.44	14	14	122	60	60	149	544	8.34	14	Cohesive
5	1104.66	1102.16	12.50	A-6a	Cohesive	24	1.35	24	24	125	63	63	157	697	10.84	24	Cohesive
6	1102.16	1099.66	15.00	A-4b P	Cohesive	29	1.29	29	29	128	66	66	164	857	13.34	29	Cohesive
7	1099.66	1097.16	17.50	A-4b P	Cohesive	12	1.23	12	12	120	58	58	144	1011	15.84	12	Cohesive
8	1097.16	1094.66	20.00	A-4b P	Cohesive	7	1.19	7	7	118	56	56	139	1153	18.34	7	Cohesive
9	1094.66	1092.16	22.50	A-4b P	Cohesive	12	1.15	12	12	120	58	58	144	1294	20.84	12	Cohesive
10	1092.16	1089.66	25.00	A-4b P	Cohesive	8	1.11	8	8	118	56	56	139	1436	23.34	8	Cohesive

Cut (ft) = -0.90
Shaft Top Elev. (ft) = 1111.00
Boring Top Elev. (ft) = 1111.73 Ex. Ground Elev.= 1111.90
Post Spacing (ft) = 24
Barrier Height (ft) = 14.00
Transverse Slope = 3:1

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.5 ft									
1104.50'									

C CT.: 2
G CT.: 1
N dsgn: 28

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1111.73	1109.23	2.50	A-1-b	Granular	22	2.00	44	44	125	63	63	157	78	1.77	44	Granular
2	1109.23	1106.73	5.00	A-4b P	Cohesive	21	1.72	21	21	125	63	63	157	235	4.27	21	Cohesive
3	1106.73	1104.23	7.50	A-4b P	Cohesive	20	1.55	20	20	125	63	63	157	391	6.77	20	Cohesive
4	1104.23	1101.73	10.00	A-4b P	Cohesive	16	1.44	16	16	122	60	60	149	544	9.27	16	Cohesive
5	1101.73	1099.23	12.50	A-3a	Granular	17	1.35	23	23	125	63	63	157	697	11.77	23	Granular
6	1099.23	1096.73	15.00	A-4a P	Cohesive	24	1.29	24	24	125	63	63	157	853	14.27	24	Cohesive
7	1096.73	1094.23	17.50	A-2-4	Granular	28	1.23	34	34	128	66	66	164	1014	16.77	34	Granular
8	1094.23	1091.73	20.00	A-4a P	Cohesive	7	1.18	7	7	118	56	56	139	1165	19.27	7	Cohesive
9	1091.73	1089.23	22.50	A-4a P	Cohesive	9	1.14	9	9	118	56	56	139	1304	21.77	9	Cohesive
10	1089.23	1086.73	25.00	A-2-4	Granular	29	1.11	32	32	128	66	66	164	1456	24.27	32	Granular

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall P

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **5**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	13.00	8.00	1110.77
10+08.00	2	13.00	8.00	1110.72
10+16.00	3	13.00	24.00	1110.69
10+40.00	4	13.00	24.00	1110.69
10+64.00	5	13.50	24.00	1110.69
10+88.00	6	13.50	24.00	1111.19
11+12.00	7	13.50	24.00	1111.19
11+36.00	8	13.50	24.00	1111.19
11+60.00	9	13.50	24.00	1111.19
11+84.00	10	15.00	24.00	1111.19
12+08.00	11	14.00	24.00	1111.69
12+32.00	12	14.00	24.00	1111.69
12+56.00	13	13.50	24.00	1112.19
12+80.00	14	13.50	24.00	1112.19
13+04.00	15	14.00	24.00	1112.69
13+28.00	16	15.00	24.00	1112.69
13+52.00	17	14.00	24.00	1113.69
13+76.00	18	15.00	24.00	1114.19
14+00.00	19	14.00	24.00	1114.69
14+24.00	20	13.50	24.00	1115.19
14+48.00	21	13.50	24.00	1115.19
14+72.00	22	13.50	24.00	1115.19
14+96.00	23	13.50	24.00	1115.19
15+20.00	24	14.00	24.00	1114.69
15+44.00	25	14.00	24.00	1114.69
15+68.00	26	14.00	24.00	1114.69
15+92.00	27	14.00	24.00	1114.69
16+16.00	28	13.50	24.00	1115.19
16+40.00	29	13.00	24.00	1115.69
16+64.00	30	13.00	24.00	1115.69
16+88.00	31	13.00	24.00	1115.69
17+12.00	32	13.00	24.00	1115.69
17+36.00	33	13.50	24.00	1115.19
17+60.00	34	13.50	24.00	1115.19

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+84.00	35	14.00	24.00	1114.69
18+08.00	36	15.50	24.00	1113.19
18+32.00	37	15.50	24.00	1113.19
18+56.00	38	15.50	24.00	1113.19
18+80.00	39	15.00	24.00	1114.69
19+04.00	40	13.50	24.00	1116.19
19+28.00	41	13.50	24.00	1116.19
19+52.00	42	15.00	24.00	1114.69
19+76.00	43	15.00	24.00	1114.69
20+00.00	44	14.00	24.00	1114.69
20+24.00	45	14.00	24.00	1114.69
20+48.00	46	13.50	24.00	1115.19
20+72.00	47	13.50	24.00	1115.19
20+80.00	48	12.50	8.00	1116.27

Noise Wall ID:

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev. (ft)	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height (ft)	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-065-0-22	10+67.00	11+64.00	1110.68	1110.69	1111.98	1090.68		24	13.50	8.0	Level	10+00.00	11+60.00	1	9	6.00	1104.69
B-066-0-22	12+61.00	13+61.50	1113.54	1112.19	1113.59	1093.54		24	15.00	8.0	Level	11+84.00	13+52.00	10	17	6.00	1106.19
B-067-0-22	14+62.00	15+83.00	1113.87	1115.19	1116.60	1095.87		24	15.00	6.0	5:1	13+76.00	15+68.00	18	26	10.50	1104.69
B-068-0-22	17+04.00	17+81.00	1115.02	1115.69	1116.62	1102.52		24	14.00	6.0	5:1	15+92.00	17+60.00	27	34	8.00	1107.69
B-069-0-22	18+58.00	18+58.00	1115.85	1113.19	1115.79	1101.85		24	15.50	8.0	Level	17+84.00	20+80.00	35	48	10.00	1103.19

Cut (ft) =	-1.29	Rock Elev. (ft)=	1090.68
Shaft Top Elev. (ft) =	1110.69	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1110.68	Ex. Ground Elev.=	1111.98
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft									
1104.69'									

C CT.: 2
G CT.: 1
N dsgn: 20

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1110.68	1108.18	2.50	A-7-6	Cohesive	13	2.00	13	13	120	58	58	144	72	2.51	13	Cohesive
2	1108.18	1105.68	5.00	A-6a	Cohesive	21	1.74	21	21	125	63	63	157	222	5.01	21	Cohesive
3	1105.68	1103.18	7.50	A-3a	Granular	17	1.56	26	26	125	63	63	157	379	7.51	26	Granular
4	1103.18	1100.68	10.00	A-4a P	Cohesive	8	1.45	8	8	118	56	56	139	527	10.01	8	Cohesive
5	1100.68	1098.18	12.50	A-4b P	Cohesive	7	1.37	7	7	118	56	56	139	666	12.51	7	Cohesive
6	1098.18	1095.68	15.00	A-4b P	Cohesive	9	1.31	9	9	118	56	56	139	805	15.01	9	Cohesive
7	1095.68	1093.18	17.50	A-2-4	Granular	7	1.25	9	9	120	58	58	144	946	17.51	9	Granular
8	1093.18	1090.68	20.00	A-1-b	Granular	30	1.20	36	36	128	66	66	164	1100	20.01	36	Granular
9	1090.68	1088.18	22.50	Rock		45									22.51		
10	1088.18	1085.68	25.00	Rock		14									25.01		

Cut (ft) =	-1.40	Rock Elev. (ft)=	1093.54
Shaft Top Elev. (ft) =	1112.19	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1113.54	Ex. Ground Elev.=	1113.59
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft									
1106.19'									

C CT.: 3
G CT.: 0
N dsgn: 18

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1113.54	1111.04	2.50	A-4b P	Cohesive	34	2.00	34	32	128	66	66	164	82	1.15	32	Cohesive
2	1111.04	1108.54	5.00	A-4b P	Cohesive	8	1.72	8	8	118	56	56	139	234	3.65	8	Cohesive
3	1108.54	1106.04	7.50	A-4b P	Cohesive	14	1.56	14	14	122	60	60	149	378	6.15	14	Cohesive
4	1106.04	1103.54	10.00	A-4a NP	Granular	16	1.45	23	23	125	63	63	157	530	8.65	23	Granular
5	1103.54	1101.04	12.50	A-1-b	Granular	76	1.35	103	60	140	78	78	194	706	11.15	60	Granular
6	1101.04	1098.54	15.00	A-1-b	Granular	88	1.27	112	60	140	78	78	194	900	13.65	60	Granular
7	1098.54	1096.04	17.50	A-1-b	Granular	104	1.20	125	60	140	78	78	194	1094	16.15	60	Granular
8	1096.04	1093.54	20.00	A-1-b	Granular	61	1.15	70	60	135	73	73	182	1281	18.65	60	Granular
9	1093.54	1091.04	22.50	Rock		40									21.15		
10	1091.04	1088.54	25.00	Rock		100									23.65		

Cut (ft) =	-1.41	Rock Elev. (ft)=	1095.87
Shaft Top Elev. (ft) =	1115.19	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1113.87	Ex. Ground Elev.=	1116.60
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
9.5 ft	12.0 ft	10.5 ft							
1105.69'	1103.19'	1104.69'							
C CT.: 1	C CT.: 1	C CT.: 1							
G CT.: 3	G CT.: 4	G CT.: 3							
N dsgn: 29	N dsgn: 34	N dsgn: 29							

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1113.87	1111.37	2.50	A-4a P	Cohesive	20	2.00	20	20	125	63	63	157	78	3.82	20	Cohesive
2	1111.37	1108.87	5.00	A-4b NP	Granular	12	1.72	21	21	122	60	60	149	231	6.32	21	Granular
3	1108.87	1106.37	7.50	A-4a NP	Granular	21	1.55	33	33	125	63	63	157	384	8.82	33	Granular
4	1106.37	1103.87	10.00	A-1-b	Granular	30	1.44	43	43	128	66	66	164	544	11.32	43	Granular
5	1103.87	1101.37	12.50	A-1-b	Granular	38	1.35	51	51	130	68	68	169	711	13.82	51	Granular
6	1101.37	1098.87	15.00	A-1-b	Granular	42	1.28	54	54	130	68	68	169	880	16.32	54	Granular
7	1098.87	1096.37	17.50	A-1-b	Granular	22	1.22	27	27	125	63	63	157	1042	18.82	27	Granular
8	1096.37	1093.87	20.00	Rock		14									21.32		
9	1093.87	1091.37	22.50	Rock		78									23.82		
10	1091.37	1088.87	25.00	Rock		78									26.32		

Cut (ft) =	-0.93	Rock Elev. (ft)=	1102.52
Shaft Top Elev. (ft) =	1115.69	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1115.02	Ex. Ground Elev.=	1116.62
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	5:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.5 ft	**8.0 ft**								
1109.19'	**1107.69'**								
C CT.: 3	C CT.: 3								
G CT.: 0	G CT.: 0								
N dsgn: 15	N dsgn: 15								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1115.02	1112.52	2.50	A-4a P	Cohesive	17	2.00	17	17	122	60	60	149	75	3.17	17	Cohesive
2	1112.52	1110.02	5.00	A-4a P	Cohesive	17	1.73	17	17	122	60	60	149	224	5.67	17	Cohesive
3	1110.02	1107.52	7.50	A-4a P	Cohesive	12	1.57	12	12	120	58	58	144	370	8.17	12	Cohesive
4	1107.52	1105.02	10.00	A-1-b	Granular	18	1.45	26	26	125	63	63	157	520	10.67	26	Granular
5	1105.02	1102.52	12.50	A-1-b	Granular	66	1.36	89	60	140	78	78	194	696	13.17	60	Granular
6	1102.52	1101.02	14.00	Rock		100									14.67		

Cut (ft) =	-2.60	Rock Elev. (ft)=	1101.85
Shaft Top Elev. (ft) =	1113.19	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1115.85	Ex. Ground Elev.=	1115.79
Post Spacing (ft) =	24		
Barrier Height (ft) =	16.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft	**10.0 ft**								
1107.19'	**1103.19'**								
C CT.: 3	C CT.: 4								
G CT.: 0	G CT.: 1								
N dsgn: 11	N dsgn: 14								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1115.85	1114.55	1.30	A-7-6	Cohesive	7	2.00	7	7	118	56	56	72	36			
2	1114.55	1113.35	2.50	A-4a P	Cohesive	7	1.99	7	7	118	56	56	67	106			
3	1113.35	1110.85	5.00	A-4a P	Cohesive	5	1.76	5	5	115	53	53	132	205	2.34	5	Cohesive
4	1110.85	1108.35	7.50	A-6a	Cohesive	18	1.59	18	18	122	60	60	149	345	4.84	18	Cohesive
5	1108.35	1105.85	10.00	A-4a P	Cohesive	11	1.47	11	11	120	58	58	144	492	7.34	11	Cohesive
6	1105.85	1103.35	12.50	A-4a P	Cohesive	16	1.38	16	16	122	60	60	149	638	9.84	16	Cohesive
7	1103.35	1101.85	14.00	A-1-b	Granular	16	1.33	21	21	125	63	63	94	759	11.34	21	Granular
8	1101.85	1095.85	20.00	Rock		100									17.34		

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

SUM-77/SR8 -9.75/0.00
113208

Noise Wall Q

NEAS, Inc.

Prepared By:	**Zhao Mankoci**
Date prepared:	**Tuesday, March 19, 2024**
Checked By:	**Melinda He**
Date Checked:	**Friday, March 22, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
10+00.00	1	13.00	8.00	1117.00
10+08.00	2	13.00	16.00	1117.00
10+24.00	3	13.00	24.00	1117.00
10+48.00	4	14.00	24.00	1116.00
10+72.00	5	13.50	24.00	1116.00
10+96.00	6	14.50	24.00	1115.00
11+20.00	7	13.50	24.00	1115.00
11+44.00	8	13.50	24.00	1115.00
11+68.00	9	13.50	24.00	1115.00
11+92.00	10	13.50	24.00	1115.00
12+16.00	11	13.00	24.00	1115.50
12+40.00	12	13.00	24.00	1115.50
12+64.00	13	13.50	24.00	1115.00
12+88.00	14	13.50	24.00	1115.00
13+12.00	15	13.00	24.00	1115.00
13+36.00	16	13.50	24.00	1114.50
13+60.00	17	13.50	24.00	1114.50
13+84.00	18	13.50	24.00	1114.50
14+08.00	19	13.50	24.00	1114.50
14+32.00	20	12.50	24.00	1114.50
14+56.00	21	12.50	24.00	1114.50
14+80.00	22	12.50	24.00	1114.50
15+04.00	23	12.50	24.00	1114.50
15+28.00	24	12.50	24.00	1114.50
15+52.00	25	12.50	24.00	1114.50
15+76.00	26	12.50	24.00	1114.50
16+00.00	27	13.00	24.00	1114.00
16+24.00	28	14.00	24.00	1113.00
16+48.00	29	16.50	24.00	1110.50
16+72.00	30	17.00	24.00	1109.00
16+96.00	31	16.00	24.00	1109.00
17+20.00	32	15.00	24.00	1109.00
17+44.00	33	13.00	24.00	1110.00
17+68.00	34	12.50	24.00	1110.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
17+92.00	35	14.50	24.00	1108.50
18+16.00	36	14.50	24.00	1108.50
18+40.00	37	13.50	24.00	1108.50
18+64.00	38	13.50	24.00	1108.50
18+88.00	39	13.50	24.00	1108.50
19+12.00	40	13.50	24.00	1108.50
19+36.00	41	13.50	24.00	1108.50
19+44.00	42	13.00	8.00	1109.00
19+52.00	43	12.50	8.00	1109.50

Noise Wall ID:																
Boring ID	**Boring STA. (ft)**	**Mid-Boring STA. (ft)**	**Boring Elev. (ft)**	**Shaft Elev. (ft)**	**Ex. Ground Elev. (ft)**	**Rock Elev. (ft)**	**Rock UCS (psi)**	**Post Spacing (ft)**	**Barrier Height (ft)**	**Cross Slope**		**From DS STA.**	**To DS STA.**	**From Post No.**	**To Post No.**	**DS Length (ft)**	**Bottom of DS Elev. (ft)**
B-040-2-21	11+68.00	12+60.00	1116.00	1115.00	1116.79	1097.40		24	14.50	0.0	Level	10+00.00	12+40.00	1	12	10.00	1105.00
B-072-0-22	13+52.00	14+36.50	1114.92	1114.50	1115.32	1099.92		24	13.50	0.0	Level	12+64.00	14+32.00	13	20	7.50	1107.00
B-042-2-21	15+21.00	16+12.50	1110.00	1114.50	1114.83	1091.40		24	13.00	0.0	Level	14+56.00	16+00.00	21	27	7.50	1107.00
B-073-0-22	17+04.00	17+04.00	1112.43	1109.00	1111.57	1098.43		24	17.00	2.0	2:1	16+24.00	19+52.00	28	43	10.50	1098.50

Cut (ft) =	-1.79	Rock Elev. (ft)=	1097.40
Shaft Top Elev. (ft) =	1115.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1116.00	Ex. Ground Elev.=	1116.79
Post Spacing (ft) =	24		
Barrier Height (ft) =	15.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.0 ft	**10.0 ft**								
1109.00'	**1105.00'**								
C CT.: 3	C CT.: 5								
G CT.: 0	G CT.: 0								
N dsgn: 11	N dsgn: 15								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1116.00	1113.50	2.50	A-4a P	Cohesive	16	2.00	16	16	122	60	60	149	75	1.50	16	Cohesive
2	1113.50	1111.00	5.00	A-4a P	Cohesive	9	1.74	9	9	118	56	56	139	219	4.00	9	Cohesive
3	1111.00	1108.50	7.50	A-4a P	Cohesive	8	1.58	8	8	118	56	56	139	358	6.50	8	Cohesive
4	1108.50	1106.00	10.00	A-4a P	Cohesive	11	1.47	11	11	120	58	58	144	499	9.00	11	Cohesive
5	1106.00	1097.40	18.60	A-4a P	Cohesive	50	1.28	50	32	135	73	73	624	883	17.60	32	Cohesive
6	1097.40	1081.00	35.00	Rock		100									34.00		

Cut (ft) =	-0.82	Rock Elev. (ft)=	1099.92
Shaft Top Elev. (ft) =	1114.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1114.92	Ex. Ground Elev.=	1115.32
Post Spacing (ft) =	24		
Barrier Height (ft) =	14.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	Trial 02	Trial 03	Trial 04	Trial 05	Trial 06	Trial 07	Trial 08	Trial 09	Trial 10
6.0 ft	7.5 ft								
1108.50'	1107.00'								
C CT.: 3	C CT.: 4								
G CT.: 0	G CT.: 0								
N dsgn: 13	N dsgn: 13								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1114.92	1112.42	2.50	A-7-6	Cohesive	14	2.00	14	14	122	60	60	149	75	2.08	14	Cohesive
2	1112.42	1109.92	5.00	A-4a P	Cohesive	13	1.74	13	13	120	58	58	144	221	4.58	13	Cohesive
3	1109.92	1107.42	7.50	A-4a P	Cohesive	12	1.57	12	12	120	58	58	144	365	7.08	12	Cohesive
4	1107.42	1104.92	10.00	A-4b P	Cohesive	11	1.46	11	11	120	58	58	144	509	9.58	11	Cohesive
5	1104.92	1102.42	12.50	A-4b P	Cohesive	12	1.38	12	12	120	58	58	144	653	12.08	12	Cohesive
6	1102.42	1099.92	15.00	A-4b P	Cohesive	16	1.31	16	16	122	60	60	149	800	14.58	16	Cohesive
7	1099.92	1094.92	20.00	Rock		100									19.58		

Cut (ft) =	-0.33	Rock Elev. (ft)=	1091.40
Shaft Top Elev. (ft) =	1114.50	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1110.00	Ex. Ground Elev.=	1114.83
Post Spacing (ft) =	24		
Barrier Height (ft) =	13.00		
Transverse Slope =	Level		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
6.0 ft	**7.5 ft**								
1108.50'	**1107.00'**								
C CT.: 1	C CT.: 2								
G CT.: 0	G CT.: 0								
N dsgn: 11	N dsgn: 13								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1110.00	1107.50	2.50	A-4a P	Cohesive	11	2.00	11	11	120	58	58	144	72	7.00	11	Cohesive
2	1107.50	1105.00	5.00	A-4a P	Cohesive	14	1.74	14	14	122	60	60	149	219	9.50	14	Cohesive
3	1105.00	1102.50	7.50	A-4a P	Cohesive	11	1.57	11	11	120	58	58	144	365	12.00	11	Cohesive
4	1102.50	1096.50	13.50	A-4a P	Cohesive	16	1.40	16	16	122	60	60	358	616	18.00	16	Cohesive
5	1096.50	1091.40	18.60	A-6a	Cohesive	25	1.25	25	25	125	63	63	319	954	23.10	25	Cohesive
6	1091.40	1073.80	36.20	Rock		100									40.70		

Cut (ft) =	-2.57	Rock Elev. (ft)=	1098.43
Shaft Top Elev. (ft) =	1109.00	Rock UCS (psi)=	0
Boring Top Elev. (ft) =	1112.43	Ex. Ground Elev.=	1111.57
Post Spacing (ft) =	24		
Barrier Height (ft) =	17.00		
Transverse Slope =	2:1		

Foundation Depth (ft)									
Trial 01	**Trial 02**	**Trial 03**	**Trial 04**	**Trial 05**	**Trial 06**	**Trial 07**	**Trial 08**	**Trial 09**	**Trial 10**
8.5 ft	**10.5 ft**								
1100.50'	**1098.50'**								
C CT.: 4	C CT.: 5								
G CT.: 0	G CT.: 0								
N dsgn: 11	N dsgn: 11								

Layer No.	Top Elev. (ft)	Bottom Elev. (ft)	Layer Depth (ft)	Soil Class	Soil Type	N_{60} (bpf)	C_N	$N1_{60}$ (bpf)	Adj. $N1_{60}$ (bpf)	$\gamma_{tot.}$ (pcf)	$\gamma_{sat.}$ (pcf)	γ' (eff.) (pcf)	σ_v (psf)	σ'_v (psf)	Depth Cut Fill (ft)	N_{60} Cut Fill (bpf)	Soil Class
1	1112.43	1109.93	2.50	A-6b	Cohesive	12	2.00	12	12	120	58	58	144	72			
2	1109.93	1107.43	5.00	A-4a P	Cohesive	14	1.74	14	14	122	60	60	149	219	1.57	14	Cohesive
3	1107.43	1104.93	7.50	A-4a P	Cohesive	13	1.57	13	13	120	58	58	144	365	4.07	13	Cohesive
4	1104.93	1102.43	10.00	A-4a P	Cohesive	11	1.46	11	11	120	58	58	144	509	6.57	11	Cohesive
5	1102.43	1099.93	12.50	A-4a P	Cohesive	5	1.38	5	5	115	53	53	132	647	9.07	5	Cohesive
6	1099.93	1098.43	14.00	A-4a P	Cohesive	11	1.33	11	11	120	58	58	86	756	10.57	11	Cohesive
7	1098.43	1092.43	20.00	Rock		23									16.57		