FINAL REPORT
STRUCTURE FOUNDATION EXPLORATION
NOISE WALLS
FRA-71-0.00 IMPROVEMENTS
FRANKLIN COUNTY, OHIO
PID#: 93496

For:

Mead & Hunt, Inc.
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Submitted by:

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March 27, 2017

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EXECUTIVE SUMMARY

This report presents the results of a structure foundation exploration for noise walls that will parallel Interstate 71 (IR-71) between Lambert Road (Rd) north to approximately 900 ft south of the IR-71-0308 Bridge in southwestern Franklin County. The noise wall is a component of the larger IR-71 widening program, FRA-71-0.00, that includes ~6 miles of roadway and widening of three bridges.

The noise wall will be designed using the Load and Resistance Factor Design (LRFD) method as set forth in the American Association of State Highway and Transportation Officials (AASHTO) Publication *AASHTO LRFD Bridge Design Specifications 7th Edition* (AASHTO, 2014) and Ohio Department of Transportation (ODOT) *Bridge Design Manual* (BDM), [ODOT, 2007 (revised 2014)].

The site is located in the Darby Plain portion of the Southern Ohio Loamy Till Plain, which is part of the Central Lowlands, which is characterized by hummocky ground moraine of moderate relief and poorly drained swales, which previously held wet prairies/meadows, and a few large streams. Bedrock is mapped as Devonian-age Columbus Limestone mapped at a depth of ~100 ft.

Subsurface conditions were characterized on the basis of 14 borings drilled to a depth of 25 ft deep. The geotechnical conditions at the wall site are good very stiff to hard glacial till present at shallow depth.

Parameters to be used in the application of ODOT BDM Section 802 noise wall foundation design methodology are provided.

1. INTRODUCTION

1.1. General

This report presents the results of a structure foundation exploration for a two-segment noise wall that will parallel IR-71 between Lambert Rd north to approximately 900 ft south of the IR-71-0308 Bridge in southwestern Franklin County.

The exploration was conducted in general accordance with National Engineering & Architectural Services, Inc.'s (NEAS) [1] proposal to Mead & Hunt, Inc. dated October 16, 2014, and ODOT *Specifications for Geotechnical Explorations, 2013* (ODOT, 2013). The noise wall will be designed using the LRFD method as set forth in *AASHTO LRFD Bridge Design Specifications 7th Edition* (AASHTO, 2014) and ODOT's *Bridge Design Manual* (BDM), [ODOT, 2007 (revised 2014)].

1.2. Proposed Construction

The noise wall will consist of two segments ~1,900 ft and ~600 ft in length, as shown in Exhibit 1. The longer wall will be constructed at the top of a ~15 ft high 2:1 cut slope that extends from the edge of the freeway up to the residential properties above. The shorter wall will be located immediately adjacent to the freeway. At the east end of the shorter wall, the natural terrain drops away into a heavily wooded drainage and the freeway is built on embankment across this small valley.

2. GEOLOGY AND OBSERVATIONS OF THE PROJECT

2.1. Geology and Physiology

The site is located in the Darby Plain portion of the Southern Ohio Loamy Till Plain, which is part of the Central Lowlands (Brockman, 1998). The area is characterized by hummocky ground moraine of moderate relief and poorly drained swales, which previously held wet prairies/meadows, and a few large streams.

The terrain at the wall site and to the east is flat at about elevation 870-875 ft (US Department of the Interior, 1966). To the west the land dips to 780 ft at Big Darby Creek approximately 0.8 mile away.

The surficial geology is mapped as 40 feet of Wisconsinan Loam Till, with high carbonate content,

[1] On October 19, 2014 Barr & Prevost Inc. (B&P) separated into two entities; Barr Engineering Inc. (BEI), the predecessor company to B&P and Barr & Prevost, a JMT Division. BEI has retained the geotechnical exploration services for this project. On November 23, 2016, BEI was renamed to National Engineering & Architectures, Inc (NEAS).

overlying up to 130 feet (ft) of undifferentiated till of indeterminate age characterized primarily by it high density. Bedrock consists of Devonian-age Columbus Limestone mapped at a depth of ~100 ft. [Brockman et. al., 2005 and Shrake, 1994) at the wall site.

2.2. Soils

Based on the Natural Resources Conservation Service (U.S. Department of Agriculture, 2015) mapping the wall site lies between the boundary of four soil groups: Udorthents-Urban land complex (Ut), Celina-Urban land complex, 2 to 6 percent slopes (CfB) in the south and Kokomo silty clay loam, 0 to 2 percent slopes (Ko) and Kokomo-Urban land complex (Ku) in the north. Ut and CfB are not rated. Ko and Ku are rated as very limited for local road and street construction because of flooding, frost susceptibility, and low strength.

2.3. Seismicity

Earthquake hazard analysis in this part of the country is dominated by proximity to the New Madrid Fault Zone (NMFZ) approximately 400 miles to the southwest. Possible future movements along this fault could generate earthquakes of magnitude 7.0-8.0 with a recurrence period of 500-1,500 years (USGS, 2008). The resulting ground motion would be experienced over a wide area, with the Harrisburg area located within the possible zone of influence. In addition, earthquake epicenters of lesser magnitude (< ~ magnitude 5) occurred in southern Fairfield County (~30 miles southeast) in 1848/1870 and 1967, which indicate other potential earthquake sources that are contributory to seismic risk (ODNR, 2012 and 2013[(1)]).

2.4. Hydrogeology

Surface water drainage in the area is dominated by the south flowing Big Darby Creek, a tributary to the Scioto River, located approximately 0.8 mile west. The creek is at an elevation of about 780 ft at this location and likely represents the regional ground water elevation.

2.5. Mining and Oil/Gas Production

No abandoned mines are noted on ODNR’s Abandoned Underground Mine Locator in the vicinity of the wall site (ODNR, 2015[(2)]).

No oil or gas wells are noted within the immediate vicinity of the wall site (ODNR, 2015[(3)]).

2.6. Site Reconnaissance

A preliminary site reconnaissance was conducted during the field operation planning phase of the project and, as expected revealed the need for extensive brush and vegetation clearance to provide access for the drilling equipment. Co-ordination with adjacent home owners was required where their landscaping extended onto the ODOT right-of-way.

The project site reconnaissance was conducted on January 28, 2015 at which time snow covered much of the surface up to 2" thick. Land use to the north of the proposed wall consists of single-family residences. Agricultural fields are located to the south of IR-71.

The noise wall alignment parallels a slope that may exceed 2:1 in places (Photographs 1, 2 & 3), but decreases in steepness to the east. The trees on the slope appear to be close to vertical, so creep does not seem to have occurred, indicating stable slopes. The upper portion of the slope is covered in thick vegetation, composed of trees, bushes, and grass. The remainder of the slope has a well-established grass coverage, with trees interspersed throughout. Properties to the north of the site at the top of the slope appear to be relatively flat (Photograph 4). Power lines and fiber optic cable markers were observed along the top of the slope at the rear of the residential properties.

An old culvert pipe was encountered at the east end of the site along an intermittent tributary to Big Darby Creek (Photograph 5); the bottom half was corroded. The nearby culvert carrying the tributary beneath IR-71 was observed to be in good condition (Photograph 6).

Site drainage appeared to be adequate, as snow was melting and no large pools of water were encountered.

Photograph 1: View of the proposed wall site looking east from the Lambert Rd overpass.

Photograph 2: View of slope at the western end of the wall.

Photograph 3: View of wall site at the eastern end looking west.

Photograph 4: Looking east along top of Slope.

Photograph 5: View of corroded culvert.

Photograph 6: Culvert beneath IR-71.

3. EXPLORATION

3.1. Historical Boring Programs

No historical subsurface investigations or borings were identified in the vicinity of the wall.

3.2. Field Exploration

Subsurface drilling was conducted between December 17 and 31, 2014 and consisted of 14 borings drilled to 25.0 ft below ground surface. The locations of these borings are provided on Exhibit 1 and summarized below in Table 2. The Logs of Borings are provided in Appendix A.

Table 1: Boring Summary

Boring Number	Boring Location (Lat/Long)	NAVD 88 Surface Elevation (ft)	Depth (ft)	Bottom of Hole Elevation (ft)	Depth to Groundwater (ft)	Depth to Bedrock (ft)
B-032-1-14	39.825329, -83.154778	859.8	25.0	834.8	NE	NE
B-033-1-14	39.825393, -83.154073	862.5	25.0	837.5	NE	NE
B-033-2-14	39.825453, -83.153308	865.9	25.0	840.9	NE	NE
B-034-1-14	39.325483, -83.152655	866.7	25.0	841.7	NE	NE
B-034-2-14	39.825512, -83.151937	867.7	25.0	842.7	NE	NE
B-035-1-14	39.825542, -83.150955	869.5	25.0	844.5	NE	NE
B-035-2-14	39.825583, -83.150227	869.7	25.0	844.7	NE	NE
B-036-1-14	39.825609, -83.149524	870.3	25.0	845.3	NE	NE
B-036-2-14	39.825429, -83.149086	865.9	25.0	840.9	NE	NE
B-036-3-14	39.825592, -83.148754	868.9	25.0	843.9	NE	NE
B-037-1-14	39.825428, -83.148321	870.4	25.0	845.4	NE	NE
B-037-2-14	39.825595, -83.147906	866.8	25.0	841.8	NE	NE
B-037-3-14	39.825402, -83.147274	876.5	25.0	851.5	NE	NE
B-038-1-14	39.825380, -83.146518	880.6	25.0	855.6	NE	NE

NE – not encountered.

The borings were drilled using a truck-mounted CME 550X rig with 3.25-inch diameter hollow stem augers (HSA). Soil samples were recovered at 2.5-ft intervals using a split spoon sampler (AASHTO T-206 "Standard Method for Penetration Test and Split Barrel Sampling of Soils").

The standard penetration test (SPT) was conducted during sampling using an auto-hammer that was calibrated January 26, 2014 as 85.3% efficient. Field boring logs were prepared by the BEI field supervisor, including lithological description and standard penetration test results, recorded as blows per 6-inch increment of penetration. Groundwater observations were recorded during the investigation. Hand penetrometer testing was conducted on a majority of SPT samples prior to removal from the sampler. Each boring was backfilled with soil cuttings.

3.3. Laboratory Testing Program

The laboratory testing program consisted primarily of classification testing and moisture content determinations. Data from the laboratory-testing program were incorporated onto the logs of borings (Appendix A). Soil samples are retained at the laboratory for 60 days following report submittal, after which time they will be discarded.

3.3.1. Classification Testing

Natural moisture content tests were performed on all soil samples. Representative soil samples were selected for index property (Atterberg Limits) and gradation testing for classification purposes. The results are presented on the log of the boring. Mechanical soil classification (Plastic Limit, Liquid Limit and gradation testing) was conducted on 48% of the recovered samples enabling identification and testing of all significant soil units.

Final classification of soil strata in accordance with AASHTO M-145 “Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes,” as modified by ODOT “Classification of Soils” was made once laboratory test results became available. Samples that were not tested were classified visually on the basis of comparison to those that were.

3.3.2. Standard Penetration Test Results

Standard Penetration Tests (SPT) and split-barrel (commonly known as split-spoon) sampling of soils was performed at 2.5-foot intervals in all borings using a calibrated auto-hammer. The resulting N-values must then be adjusted to account for the high efficiency of the hammer, compared to those used historically when many of the correlations of N-value with engineering properties of soils were developed. Manual hammers used in the past are considered to have been approximately 60% efficient and so the field measured N-values are adjusted by a factor equal to the calibrated efficiency/60. The resulting N_{60} values are shown on the log of borings.

4. FINDINGS

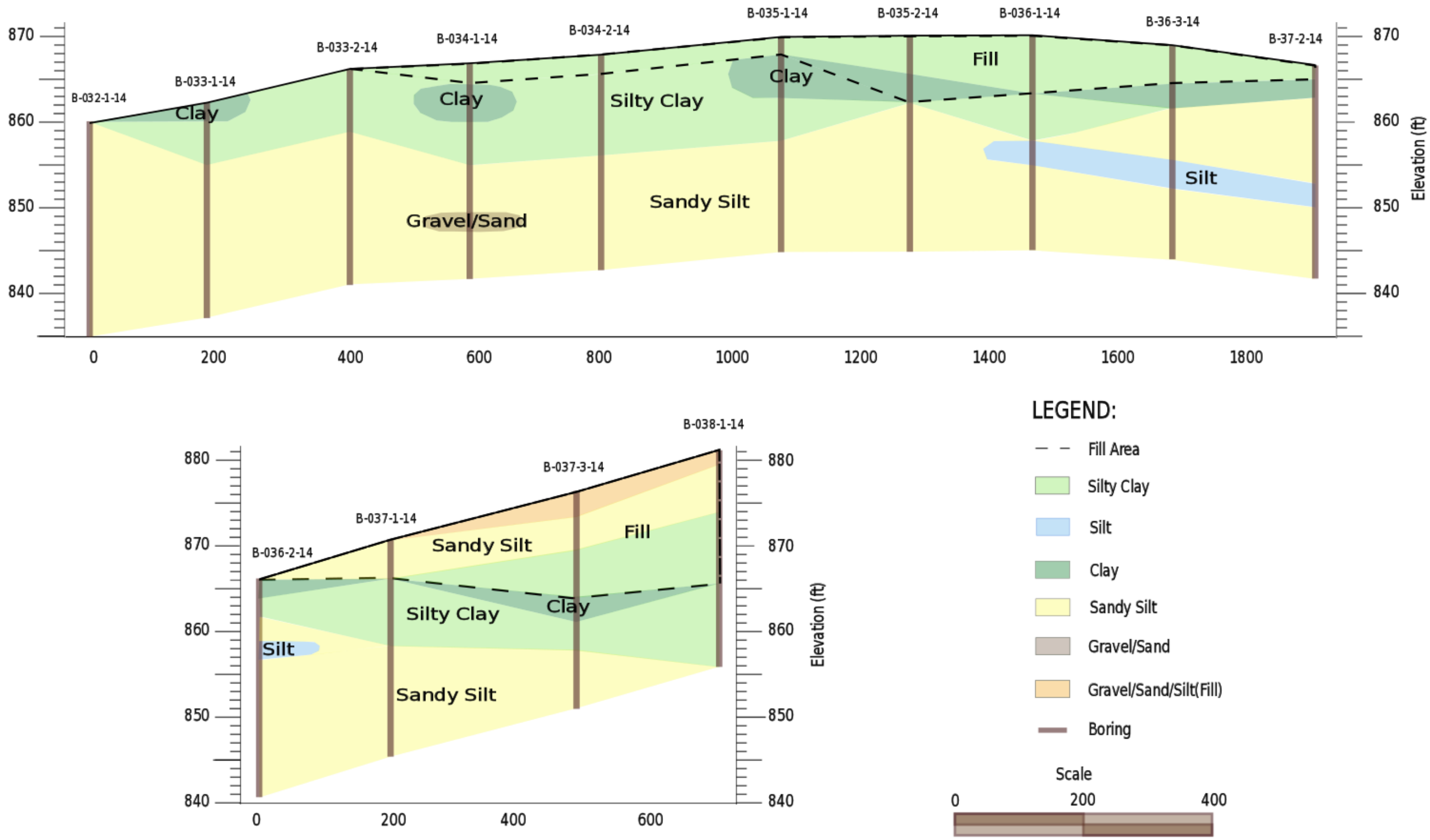
The following interpretation of the subsurface conditions is based on results of a field exploration, laboratory testing, and consideration of the geological history of the site.

4.1. General

The stratigraphy at the site is generally consistent with the geological model discussed above, with over 25 ft of glacial till overburden to the depth explored. Bedrock was not encountered in any of the borings and is estimated to be on the order of 100 ft deep. Groundwater was not encountered in any of the borings. Figure 1 provides a schematic profile of the stratigraphy along the walls.

The soil profile is dominated by hard sandy silt (A-4a) that is overlain by up to about 10 ft of very stiff to hard clay and silt/clay mixtures (A-6a, A-7-6). Much of the alignment is mantled by 2-7 ft of fill consisting of the finer grained clay/silt mixtures described above. The thickness of fill at the east end of the shorter wall increases to about 15 ft reflecting the presence of embankment crossing the small valley. A schematic subsurface profile along the alignments of the two walls is provided in Figure 1.

Figure 1: Schematic of Site Stratigraphy



5. ANALYSIS AND RECOMMENDATIONS

5.1. Noise Barrier Foundation Design

This section provides information required to complete the design of 30"-diameter drilled shaft noise barrier supports. The geotechnical information has been developed in accordance with the ODOT Bridge Design Manual, Section 802.1.2. ODOT design methodology requires that the N_{60} values be corrected using a factor to account for the depth of each test, and the results analyzed to determine a mean or minimum depending on the trend of the data. Using the broad distinction between cohesive and granular soils, the mean or minimum is then used (designated $N1_{60}$ herein), together with proposed barrier geometry, in a look-up table to determine the depth of shaft required at that boring location. This analysis is presented below in Table 2.

The ODOT shaft design method should be a two-step process if the design is to be optimized. This is described below using the example of Boring B-037-3-14 and a proposed noise wall with post spacing of 24 ft and a height of 12 ft. Level ground is assumed.

The results of the analysis of $N1_{60}$ values for all the borings are presented in Table 2. The design $N1_{60}$ value for B-037-3-14 is 14, based on the lower of the lowest value or the average for the whole boring, since the values are dissimilar and do not increase with depth. As shown on the log of the boring, the plasticity index is not less than 7, and the material is considered cohesive. Consulting BDM Figure 802.1.2-2, the shaft length for level ground is 9.5 ft.

Reviewing Table 2 for a situation where the foundation depth is 9.5 ft shows that the design $N1_{60}$ for a shaft of this specific length is actually 30. Returning to Figure 802.1.2-2, $N1_{60}$ of 30 moves the design into the next $N1_{60}$ range where the design depth is 6.5 ft. This is selected as the design length for the shaft at this location.

The soils along the alignment are generally cohesive; exceptions being B-036-1-14, B-036-2-14 and B-037-2-14 where they are relatively fine grained, but non-plastic and therefore classified as 'granular'. The slope in front of the long wall is about ~2:1, and at the rear of the short wall the embankment slope is also on the order of 2:1. The foundation design should reflect the actual slopes at the location of the supports when using the ODOT BDM design charts.

The conditions reflected at each boring in Table 2 were observed at those locations only and may not be indicative of conditions at intermediate points between borings. However, for purposes of design it is recommended that the supports be sized based on conditions at the nearest boring. Put another way, each boring may, for design purposes, be considered representative of sub-surface conditions up to half the distance to the next nearest boring away.

Table 2: FRA-71-0.00 Noise Wall Foundation Design

Depth of SPT	Correction Factor	B-032-1-14		B-033-1-14		B-033-2-14		B-034-1-14		Depth of SPT	Correction Factor	B-036-2-14		B-036-3-14		B-037-1-14	
		N_{60}	$N1_{60}$	N_{60}	$N1_{60}$	N_{60}	$N1_{60}$	N_{60}	$N1_{60}$			N_{60}	$N1_{60}$	N_{60}	$N1_{60}$	N_{60}	$N1_{60}$
2.5	1.6	67	107	60	96	31	50	43	69	2.5	1.6	26	42	33	53	50	80
5	1.4	53	74	75	105	30	42	50	70	5	1.4	26	36	33	46	26	36
7.5	1.2	33	40	28	34	21	25	30	36	7.5	1.2	13	16	21	25	16	19
10	1.1	30	33	31	34	53	58	18	20	10	1.1	23	25	21	23	18	20
12.5	1.1	17	19	16	18	27	30	11	12	12.5	1.1	27	30	21	23	28	31
15	1	23	23	17	17	16	16	10	10	15	1	27	27	36	36	37	37
17.5	0.96	31	30	18	17	26	25	24	23	17.5	0.96	43	41	48	46	24	23
20	0.91	38	35	23	21	21	19	18	16	20	0.91	48	44	34	31	31	28
23.5	0.86	34	29	40	34	30	26	33	28	23.5	0.86	51	44	28	24	30	26
		Average	43		42		32		32			**Average**	34		34		33
		Lowest	19		17		16		10			**Lowest**	16		23		19
Depth of Shaft		Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Depth of Shaft		Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]
6		40	c	34	c	25	c	36	c	6		16	c	25	c	19	c
8		33	c	34	c	25	c	20	c	8		16	g	23	c	19	c
10		33	c	34	c	25	c	20	c	10		16	g	23	c	19	c
12		19	c	17	c	16	c	10	c	12		16	g	23	g	19	c
14		19	c	17	c	16	c	10	c	14		16	g	23	g	19	c
16		19	c	17	c	16	c	10	c	16		16	g	23	g	19	c
18		19	c	17	c	16	c	10	c	18		16	g	23	g	19	c
20		19	c	17	c	16	c	10	c	20		16	g	23	c	19	c

Depth of SPT	Correction Factor	B-034-2-14		B-035-1-14		B-035-2-14		B-036-1-14		Depth of SPT	Correction Factor	B-037-2-14		B-037-3-14		B-038-1-14	
		N_{60}	$N1_{60}$	N_{60}	$N1_{60}$	N_{60}	$N1_{60}$	N_{60}	$N1_{60}$			N_{60}	$N1_{60}$	N_{60}	$N1_{60}$	N_{60}	$N1_{60}$
2.5	1.6	20	32	36	58	34	54	27	43	2.5	1.6	38	61	40	64	30	48
5	1.4	14	20	30	42	31	43	51	71	5.0	1.4	48	67	38	53	34	48
7.5	1.2	16	19	24	29	21	25	23	28	7.5	1.2	21	25	31	37	24	29
10	1.1	67	74	28	31	11	12	13	14	10.0	1.1	33	36	27	30	33	36
12.5	1.1	21	23	18	20	11	12	23	25	12.5	1.1	23	25	13	14	27	30
15	1	14	14	14	14	16	16	16	16	15.0	1	30	30	18	18	21	21
17.5	0.96	17	16	18	17	20	19	24	23	17.5	0.96	17	16	17	16	17	16
20	0.91	16	15	26	24	23	21	16	15	20.0	0.91	18	16	20	18	18	16
23.5	0.86	26	22	28	24	36	31	34	29	23.5	0.86	21	18	20	17	13	11
		Average	26		29		26		29			**Average**	33		30		28
		Lowest	14		14		12		14			**Lowest**	16		14		11
Depth of Shaft		Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Depth of Shaft		Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]	Min or Ave $N1_{60}$	Soil type[1]
6		19	c	29	c	25	c	28	c	6		25	c	37	c	29	c
8		19	c	29	c	12	c	14	c	8		25	c	30	c	29	c
10		19	c	29	c	12	c	14	g	10		25	c	30	c	29	c
12		14	c	14	c	12	c	14	g	12		25	g	14	c	21	c
14		14	c	14	c	12	c	14	g	14		25	g	14	c	21	c
16		14	c	14	c	12	c	14	g	16		16	g	14	c	16	c
18		14	c	14	c	12	c	14	g	18		16	g	14	c	16	c
20		14	c	14	c	12	c	14	g	20		16	g	14	c	16	c

[1] c = cohesive soil BDM Figure 802.1.2-2
g = granular soil BDM Figure 802.1.2-1

5.2. Construction

The hard, fine-grained glacial till soils are stable and no caving of the exploration bore holes was observed. It is expected that the holes bored for shaft construction will remain stable without the need for casing. Groundwater was not encountered in any of the borings and is not expected to be present in the drilled shaft bores.

6. QUALIFICATIONS

This investigation was performed in accordance with accepted geotechnical engineering practice for the purpose of characterizing the subsurface conditions at the noise wall sites, performing geotechnical engineering analyses, and providing recommendations for the design and construction of the foundations only. The analyses and recommendations submitted in this report are based upon data obtained from borings drilled at the locations shown on Exhibit 1 and as presented on the Log of Boring (Appendix A). 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 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 Mead & Hunt, Inc. performing this geotechnical exploration for the noise wall for the FRA-71-0.00 project.

Respectfully Submitted,
NEAS, Inc.

STATE OF OHIO
CHUNMEI HE
E-79190
REGISTERED
PROFESSIONAL ENGINEER

3/27/17

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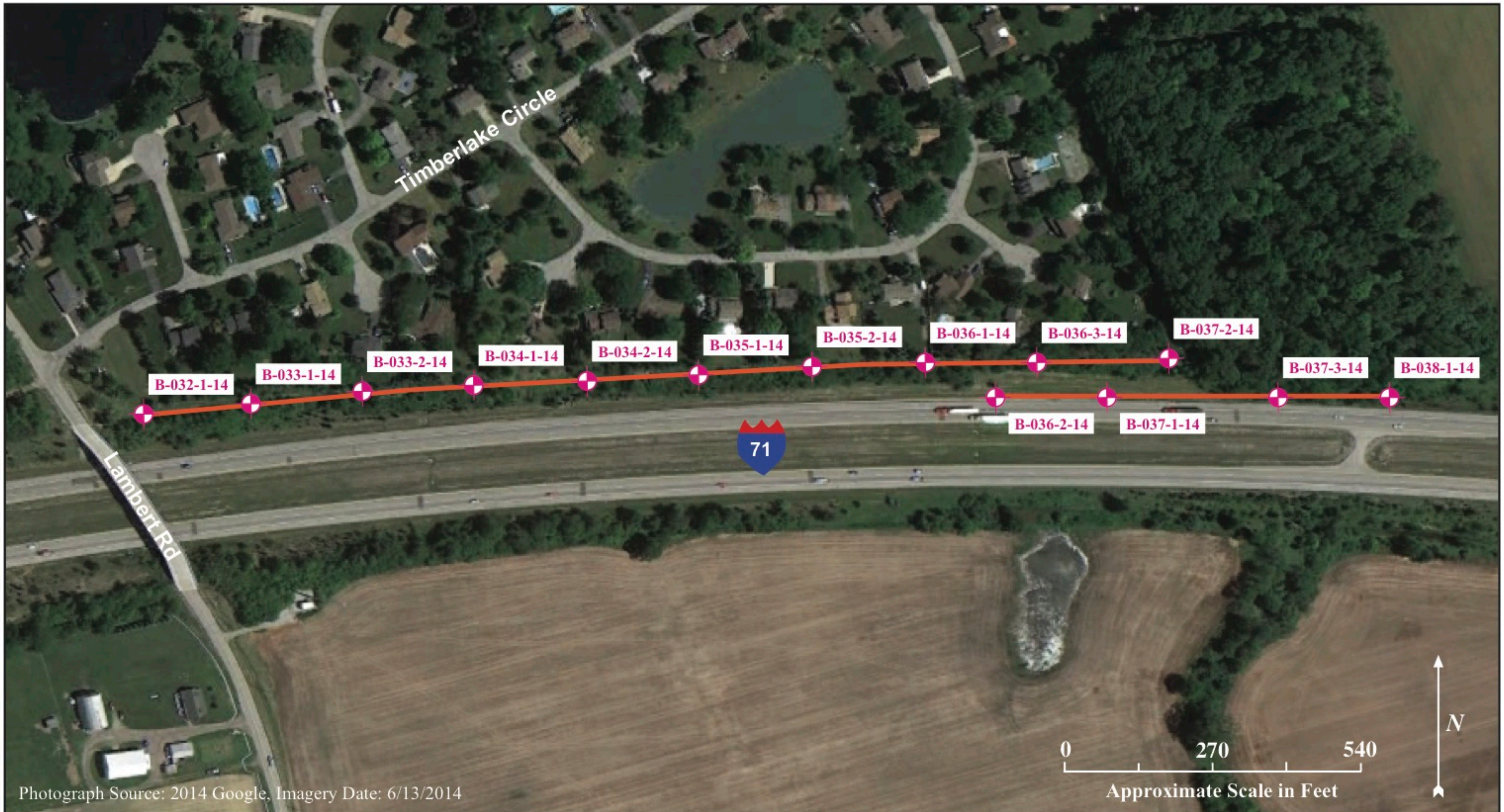

Area of Detail

Legend

Noise Wall

Project Boring Location

Exhibit 1

BARR ENGINEERING, INC.

Boring Locations

FRA-71-0.00 - FRA-71-0308 Bridge
PID#: 93496

APPENDIX A

LOGS OF BORINGS AND LABORATORY TESTING RESULTS

NEAS Inc.
National Engineering & Architectural Services Inc.

LEGEND

SYMBOL	DESCRIPTION	ODOT CLASSIFICATION
	Gravel and/or Stone Fragments	A-1-a
	Gravel and/or Stone Fragments with Sand	A-1-b
	Fine Sand	A-3
	Coarse and Fine Sand	A-3a
	Gravel and/or Stone Fragments with Sand and Silt	A-2-4 A-2-5
	Gravel and/or Stone Fragments with Sand, Silt and Clay	A-2-6 A-2-7
	Sandy Silt	A-4a
	Silt	A-4b
	Elastic Silt and Clay	A-5
	Silt and Clay	A-6a
	Silty Clay	A-6b
	Elastic Clay	A-7-5
	Clay	A-7-6
	Organic Silt	A-8a
	Organic Clay	A-8b

SYMBOL	DESCRIPTION	ODOT CLASSIFICATION
	Shale	Visual
	Weathered Shale	Visual
	Sandstone	Visual

GRADATION (%)

GR Gravel
CS Coarse Sand
MS Medium Sand
FS Fine Sand
SI Silt
CL Clay (<5 micron)

SAMPLER SYMBOLS

Shelby Tube

Rock Core

Split Spoon Sample (SS)

* Indicates a Sample Taken Within 3 ft of Proposed Grade

ABBREVIATIONS

LL	LIQUID LIMIT (%)	HP	HAND PENETROMETER
PI	PLASTIC INDEX (%0	PID	PHOTOIONIZATION DETECTOR
WC	MOISTURE CONTENT (%)	UC	UNCONFINED COMPRESSION
SPT	STANDARD PENETRATION TEST	ppm	PARTS PER MILLION
NP	NON PLASTIC	w	WATER FIRST ENCOUNTERED
-200	PERCENT PASSING NO. 200 SIEVE	▼	WATER LEVEL UPON COMPLETION
N_{60}	ADJUSTED SPT RESULT		
EOB	END OF BORING		

MATERIAL CLASSIFIED BY VISUAL INSPECTION

Sod and Topsoil
Pavement or Base
Concrete

Uncontrolled Fill (Describe)

Bouldery Zone

Peat, S-Sedimentary W-Woody F-Fibrous L-Loamy & etc

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 126+20, 160 LT
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 859.8 (MSL) EOB: 25.0 ft.
START: 12/18/14 END: 12/18/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825329000, -83.154778000

EXPLORATION ID: B-032-1-14

MATERIAL DESCRIPTION AND NOTES	ELEV. 859.8	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
HARD, BROWN TO BROWN MOTTLED WITH GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, SS-1 TO SS-3 CONTAINS FEW ROOTS, DAMP		0–1.5	3 6 13	27	89	SS-1	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)	
		2.5–4	19 24 23	67	100	SS-2	4.5+	8	12	14	36	30	27	17	10	10	A-4a (6)	
		5–6.5	11 16 21	53	100	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
		7.5–9	9 11 12	33	100	SS-4	4.5+	8	13	16	40	23	23	14	9	10	A-4a (6)	
		10–11.5	7 9 12	30	100	SS-5	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
@12.5'; SS-6 CHANGES TO DARK GRAY		12.5–14	4 5 7	17	100	SS-6	4.5+	10	12	16	36	26	22	13	9	11	A-4a (5)	
		15–16.5	4 7 9	23	100	SS-7	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		17.5–19	7 9 13	31	100	SS-8	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		20–21.5	9 12 15	38	100	SS-9	4.5+	10	12	17	37	24	23	13	10	9	A-4a (5)	
	834.8	23.5–25 (EOB 25)	8 11 13	34	100	SS-10	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 128+17, 157 LT
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 862.5 (MSL) EOB: 25.0 ft.
START: 12/19/14 END: 12/19/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825393000, -83.154073000

EXPLORATION ID B-033-1-14

MATERIAL DESCRIPTION AND NOTES	ELEV. 862.5	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
VERY STIFF TO HARD, BROWN MOTTLED WITH ORANGISH BROWN, **CLAY**, "AND"SILT, LITTLE SAND, TRACE GRAVEL, CONTAINS ROOTS, IRON STAINED, MOIST	860.5	0–2	2 3 5	11	78	SS-1	2.75 - 4.5+	1	5	8	39	47	51	20	31	23	A-7-6 (18)	
HARD, BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, CONTAINS FEW ROOTS, IRON STAINED, DAMP		2.5–4	11 16 26	60	100	SS-2	4.5+	8	12	15	36	29	28	16	12	9	A-6a (7)	
	855.5	5–6.5	18 22 31	75	100	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
HARD, BROWN MOTTLED WITH GRAY, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		7.5–9	9 10 10	28	89	SS-4	4.5+	10	14	16	38	22	22	14	8	10	A-4a (5)	
@10.0'; SS-5 BECOMES BROWN MOTTLED WITH GRAYISH BROWN AND ORANGISH BROWN, CONTAINS IRON STAINING		10–11.5	8 9 13	31	100	SS-5	4.5+	11	14	15	39	21	22	14	8	10	A-4a (5)	
@12.5'; SS-6 TO SS-10 BECOMES DARK GRAY		12.5–14	3 4 7	16	100	SS-6	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		15–16.5	3 5 7	17	100	SS-7	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		17.5–19	5 5 8	18	67	SS-8	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		20–21.5	6 7 9	23	100	SS-9	4.5+	10	13	18	36	23	21	13	8	10	A-4a (5)	
	837.5	23.5–25 EOB	10 13 15	40	28	SS-10	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 130+30, 154 LT	EXPLORATION ID B-033-2-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 865.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/19/14 END: 12/19/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825453000, -83.153308000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 865.9	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
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY, DARK GRAY AND ORANGISH BROWN, **SILT AND CLAY**, SOME SAND, TRACE TO LITTLE GRAVEL, SS-1 AND SS-2 CONTAIN ROOTS, DAMP		0–1.5	2 3 3	9	89	SS-1	3.2 - 3.6	13	9	12	37	29	32	17	15	15	A-6a (8)	
@2.5'; SS-2 AND SS-3 BECOME LIGHT BROWN MOTTLED WITH GRAY		2.5–4	8 10 12	31	100	SS-2	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		5–6.5	8 10 11	30	100	SS-3	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
	858.9	7																
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		7.5–9	3 5 10	21	100	SS-4	4.5+	6	12	16	39	27	25	17	8	13	A-4a (6)	
@10.0'; SS-5 AND SS-6 BECOME BROWN MOTTLED WITH GRAY AND ORANGISH BROWN, CONTAIN IRON STAINS		10–11.5	11 18 19	53	100	SS-5	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		12.5–14	6 6 13	27	67	SS-6	2.75	-	-	-	-	-	-	-	-	11	A-4a (V)	
@15.0'; SS-7 BECOMES GRAY		15–16.5	5 5 6	16	100	SS-7	4.0 - 4.5+	10	14	16	39	21	20	13	7	10	A-4a (5)	
		17.5–19	8 7 11	26	100	SS-8	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		20–21.5	4 6 9	21	100	SS-9	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		23.5–25	7 9 12	30	100	SS-10	4.5+	10	13	16	36	25	22	14	8	10	A-4a (5)	
	840.9	EOB 25																

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/15/17 12:29 - \\COLUMBUSLAB\LABACTIVE PROJECTS\ACTIVE SOIL PROJECTS\1ARCHIVE BY YEAR\2015 ARCHIVE\FRA-71-0.0

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / D.ROSE	DRILL RIG: CME 550X	STATION / OFFSET: 132+11, 148 LT	EXPLORATION ID B-034-1-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / D.ROSE	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 866.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/29/14 END: 12/29/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825483000, -83.152655000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 866.7	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
VERY STIFF TO HARD, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS FEW ROOTS, DAMP **(FILL)**	864.7	0–2	2 3 4	10	89	SS-1	2.6 - 4.5+	-	-	-	-	-	-	-	-	18	A-6b (V)	
HARD, BROWN MOTTLED WITH DARK GRAY AND GRAY, **CLAY**, "AND" SILT, TRACE TO LITTLE SAND, TRACE GRAVEL, SS-2 CONTAINS FEW ROOTS, DAMP			11 14 16	43	94	SS-2	4.5+	1	4	8	- 87 -		53	21	32	19	A-7-6 (19)	
@5.0'; SS-3 CONTAINS IRON STAINS	859.7	2–7	11 16 19	50	100	SS-3	4.5+	1	3	7	42	47	48	18	30	16	A-7-6 (18)	
HARD, BROWN MOTTLED WITH GRAY, **SILTY CLAY**, LITTLE SAND, TRACE TO LITTLE GRAVEL, CONTAINS IRON STAINING, DAMP			6 10 11	30	100	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
	854.7	7–12	4 6 7	18	94	SS-5	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP @12.5'; SS-8A BECOMES GRAY			3 4 4	11	89	SS-6	2.7 - 4.5+	12	12	16	40	20	21	14	7	11	A-4a (5)	
@15.0'; SS-7 BECOMES BROWN, SOME GRAVEL	848.9	12–17.8	3 3 4	10	17	SS-7	-	-	-	-	-	-	-	-	-	10	A-4a (V)	
			5 10 7	24	100	SS-8	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
MEDIUM DENSE, GRAY, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	847.2	17.8–19.5					-	16	46	22	11	5	NP	NP	NP	8	A-1-b (0)	
HARD, GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, DAMP			4 6 7	18	100	SS-9	4.5+	17	12	15	35	21	23	14	9	9	A-4a (4)	
	841.7	19.5–25 (EOB)	7 10 13	33	100	SS-10	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/15/17 12:29 - \\COLUMBUSLAB\LABACTIVE PROJECTS\ACTIVE SOIL PROJECTS\1ARCHIVE BY YEAR\2015 ARCHIVE\FRA-71-0.0

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / D.ROSE	DRILL RIG: CME 550X	STATION / OFFSET: 134+11, 142 LT	EXPLORATION ID B-034-2-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / D.ROSE	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 867.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/29/14 END: 12/29/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825512000, -83.151937000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 867.7	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
VERY STIFF, BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, DAMP **(FILL)**	865.7	1–2	2 3 4	10	100	SS-1	2.0 - 2.5	-	-	-	-	-	-	-	-	14	A-6b (V)	
HARD, BROWN TO BROWN MOTTLED WITH DARK GRAY AND GRAY, **SILTY CLAY**, LITTLE TO SOME SAND, TRACE TO LITTLE GRAVEL, DAMP		3–4	6 7 7	20	100	SS-2	4.5+	15	5	9	37	34	40	18	22	12	A-6b (12)	
		5–6	5 5 5	14	100	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-6b (V)	
	858.2	7–9	4 6 5	16	100	SS-4	4.5+	-	-	-	-	-	-	-	-	11	A-6b (V)	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	855.7	10–11	5 25 22	67	94	SS-5	4.5+	8	10	13	41	28	27	16	11	12	A-6a (7)	
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP		12–14	2 7 8	21	78	SS-6	4.5+	19	10	13	39	19	21	14	7	10	A-4a (5)	
@15.0'; SS-7 BECOMES BROWN		15–16	3 5 5	14	100	SS-7	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
@17.5'; SS-8 TO SS-10 BECOME GRAY TO GRAYISH BROWN		17–19	3 5 7	17	100	SS-8	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		20–21	2 5 6	16	56	SS-9	3.4 - 4.0	15	12	16	37	20	23	14	9	10	A-4a (4)	
	842.7	22–25 EOB	4 8 10	26	89	SS-10	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / D.ROSE	DRILL RIG: CME 550X	STATION / OFFSET: 136+84, 136 LT	EXPLORATION ID B-035-1-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / D.ROSE	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 869.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/30/14 END: 12/30/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825542000, -83.150955000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 869.5
HARD, BROWN AND DARK BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS FEW ROOTS, DAMP **(FILL)**	867.5
HARD, BROWN MOTTLED WITH DARK GRAY, **CLAY**, "AND" SILT, TRACE TO LITTLE SAND, TRACE GRAVEL, SS-2 CONTAINS FEW ROOTS, DAMP	862.5
HARD, BROWN TO BROWN MOTTLED WITH GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	857.5
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE GRAVEL, DAMP @17.5'; SS-8 TO SS-10 BECOME GRAY	844.5

EOB — 25

SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)
2 3 7	14	67	SS-1	4.5+	-	-	-	-	-	-	-	-	16	A-6b (V)
7 12 13	36	100	SS-2	4.5+	2	4	8	42	44	50	18	32	18	A-7-6 (18)
6 10 11	30	100	SS-3	4.5+	1	2	6	45	46	50	19	31	15	A-7-6 (18)
6 7 10	24	100	SS-4	4.5+	-	-	-	-	-	-	-	-	9	A-6a (V)
6 9 11	28	100	SS-5	4.5+	8	11	14	39	28	26	15	11	12	A-6a (7)
7 4 9	18	100	SS-6	2.2 - 3.2	-	-	-	-	-	-	-	-	11	A-4a (V)
5 5 5	14	17	SS-7	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)
3 4 9	18	100	SS-8	4.5+	11	12	17	40	20	22	14	8	10	A-4a (5)
4 7 11	26	100	SS-9	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)
5 9 11	28	100	SS-10	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 138+86, 142 LT	EXPLORATION ID B-035-2-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 869.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/18/14 END: 12/18/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825583000, -83.150227000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 869.7	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
VERY STIFF TO HARD, DARK GRAYISH BROWN AND BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, DAMP **(FILL)**		0–2	2 2 4	9	56	SS-1	2.25 - 3.75	8	10	14	39	29	40	21	19	20	A-6b (10)	
	865.2	3–4.5	9 12 12	34	100	SS-2	4.5+	-	-	-	-	-	-	-	-	15	A-6b (V)	
HARD, DARK GRAYISH BROWN WITH ORANGISH BROWN, AND DARK GRAY, **CLAY**, "AND" SILT, LITTLE SAND, TRACE GRAVEL, DAMP **(FILL)**	862.0	5–6.5	8 10 12	31	100	SS-3	4.5+	2	4	9	36	49	53	20	33	20	A-7-6 (19)	
@7.5'; SS-4A CHANGES TO BROWN AND DARK BROWN		7.5	8 8 7	21	100	SS-4	4.5+	-	-	-	-	-	-	-	-	21	A-7-6 (V)	
STIFF TO HARD, BROWN TO BROWN MOTTLED WITH GRAY, **SANDY SILT**, LITTLE TO SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		8–9					4.5+	5	12	15	39	29	26	16	10	12	A-4a (7)	
		10–11.5	3 4 4	11	100	SS-5	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	
		12.5–14	4 4 4	11	100	SS-6	1.75 - 2.75	13	14	18	36	19	21	14	7	12	A-4a (4)	
@15.0'; SS-7 BECOMES GRAYISH BROWN		15–16.5	3 5 6	16	100	SS-7	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
@17.5'; SS-8 BECOMES GRAY		17.5–19	4 5 9	20	100	SS-8	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
@20.0'; SS-9 BECOMES DARK GRAY		20–21.5	5 7 9	23	100	SS-9	4.5+	12	14	17	35	22	23	14	9	9	A-4a (4)	
	844.7	23.5–25 EOB	10 12 13	36	67	SS-10	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/15/17 12:29 - \\COLUMBUSLAB\LAB\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\1ARCHIVE BY YEAR\2015 ARCHIVE\FRA-71-0.0

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 140+82, 146 LT	EXPLORATION ID B-036-1-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 870.3 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/17/14 END: 12/18/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825609000, -83.149524000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 870.3	DEPTHS
HARD, BROWN, **SILT AND CLAY**, LITTLE SAND, LITTLE GRAVEL, DAMP **(FILL)**	868.3	0–2
HARD, LIGHT BROWN WITH GRAY AND BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS ROOTS, DAMP **(FILL)**	863.3	2–7
HARD, BROWN MOTTLED WITH GRAY, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP @10.0'; SS-5 CONTAINS ROOTS	858.3	7–12
HARD, GRAYISH BROWN, **SILT**, LITTLE CLAY, LITTLE SAND, TRACE GRAVEL, DAMP	855.8	12–14.5
VERY STIFF, GRAYISH BROWN, **SANDY SILT**, LITTLE CLAY, TRACE TO LITTLE GRAVEL, DAMP TO MOIST	845.3	14.5–25 (EOB)

SPT/RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
3 7 8	21	56	SS-1	4.5+	17	8	10	37	28	32	18	14	13	A-6a (8)	
8 10 9	27	100	SS-2	4.5+	3	4	10	49	34	36	20	16	12	A-6b (10)	
14 17 19	51	100	SS-3	4.5+	-	-	-	-	-	-	-	-	6	A-6b (V)	
3 7 9	23	100	SS-4	4.5+	13	11	14	37	25	30	16	14	14	A-6a (7)	
3 4 5	13	100	SS-5	4.0 - 4.2	-	-	-	-	-	-	-	-	16	A-6a (V)	
7 8 8	23	100	SS-6	4.5+	1	3	9	70	17	23	18	5	17	A-4b (8)	
3 5 6	16	100	SS-7	2.0 - 3.5	-	-	-	-	-	-	-	-	14	A-4a (V)	
6 8 9	24	100	SS-8	-	-	-	-	-	-	18	13	5	10	A-4a (V)	
4 5 6	16	100	SS-9	2.75 - 3.5	-	-	-	-	-	-	-	-	11	A-4a (V)	
6 10 14	34	100	SS-10	2.25 - 2.75	10	14	17	40	19	20	13	7	11	A-4a (5)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/15/17 12:29 - \\COLUMBUSLAB\LABIACTIVE PROJECTS\ACTIVE SOIL PROJECTS\1ARCHIVE BY YEAR\2015 ARCHIVE\FRA-71-0.0

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / D.ROSE	DRILL RIG: CME 550X	STATION / OFFSET: 142+03, 79 LT	EXPLORATION ID B-036-2-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / D.ROSE	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 865.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/31/14 END: 12/31/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825429000, -83.149086000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 865.9	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
VERY STIFF TO HARD, BROWN, **CLAY**, "AND" SILT, LITTLE SAND, TRACE GRAVEL, MOIST	863.9	0–2	4-7-8	21	100	SS-1	3.0 - 4.5+	4	5	10	38	43	48	18	30	19	A-7-6 (18)	
HARD, BROWN, **SILTY CLAY**, SOME SAND, LITTLE GRAVEL, DAMP	861.4	2–4.5	5-8-10	26	100	SS-2	4.5+	-	-	-	-	-	-	-	-	13	A-6b (V)	
HARD, BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, DAMP	858.9	4.5–7	6-7-11	26	100	SS-3	4.2 - 4.5+	13	11	15	38	23	24	16	8	13	A-4a (5)	
MEDIUM DENSE, BROWN AND GRAY, **SILT**, LITTLE CLAY, LITTLE SAND, TRACE GRAVEL, WET	856.4	7–9.5	3-4-5	13	100	SS-4	1.2 - 1.5	1	1	14	68	16	21	19	2	21	A-4b (8)	
VERY STIFF TO HARD, GRAYISH BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP		9.5–25	3-7-9	23	100	SS-5	4.5+	16	11	16	40	17	19	13	6	9	A-4a (4)	
			6-10-9	27	100	SS-6	3.5 - 4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
			7-9-10	27	100	SS-7	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
@17.5'; SS-8 TO SS-10 BECOME GRAY, SS-8 CONTAINS FEW FINE SAND LENSES			5-13-17	43	100	SS-8	4.5+	12	8	21	42	17	19	13	6	10	A-4a (5)	
			9-15-19	48	100	SS-9	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)	
	840.9	EOB 25	9-18-18	51	100	SS-10	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 142+95, 138 LT
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 868.9 (MSL) EOB: 25.0 ft.
START: 12/22/14 END: 12/22/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825592000, -83.148754000

EXPLORATION ID B-036-3-14

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 868.9	DEPTHS
VERY STIFF TO HARD, BROWN, **SILTY CLAY**, SOME SAND, LITTLE GRAVEL, SS-1 CONTAINS MANY ROOTS, DAMP **(FILL)** @2.5'; SS-2 CHANGES TO DARK GRAYISH BROWN AND BROWN, CONTAINS ONE PIECE OF 1.0"+ COARSE GRAVEL, ROOTS	864.4	0.0–4.5
HARD, BROWN MOTTLED WITH LIGHT BROWN, **CLAY**, "AND" SILT, LITTLE SAND, TRACE GRAVEL, CONTAINS FEW ROOTS, DAMP	861.9	4.5–7.0
HARD, BROWN TO BROWN MOTTLED WITH GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, DAMP @12.5'; SS-6 BECOMES GRAYISH BROWN MOTTLED WITH BROWN	854.4	7.0–14.5
HARD, GRAYISH BROWN, **SILT**, SOME SAND, LITTLE CAY, TRACE GRAVEL, INTERBEDDED SILT AND SAND, DAMP	851.9	14.5–17.0
HARD, GRAYISH BROWN TO BROWN, **SANDY SILT**, LITTLE CLAY, LITTLE TO SOME GRAVEL, DAMP	843.9	17.0–25.0 (EOB)

SPT/RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)
2 / 9 / 10	27	33	SS-1	3.75 - 4.0	12	10	12	43	23	40	24	16	20	A-6b (9)
9 / 11 / 12	33	56	SS-2	3.75 - 4.1	-	-	-	-	-	-	-	-	21	A-6b (V)
10 / 11 / 12	33	100	SS-3	4.5+	1	2	9	37	51	51	20	31	19	A-7-6 (18)
5 / 7 / 8	21	100	SS-4	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)
6 / 7 / 8	21	100	SS-5	4.00	13	11	14	37	25	26	17	9	13	A-4a (5)
6 / 7 / 8	21	100	SS-6	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)
7 / 11 / 14	36	100	SS-7	4.0 - 4.5+	1	5	28	52	14	17	14	3	15	A-4b (6)
10 / 12 / 22	48	100	SS-8	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)
10 / 11 / 13	34	100	SS-9	4.5+	21	11	13	37	18	21	13	8	8	A-4a (4)
8 / 9 / 11	28	100	SS-10	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / D.ROSE	DRILL RIG: CME 550X	STATION / OFFSET: 144+16, 78 LT
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / D.ROSE	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 870.4 (MSL) EOB: 25.0 ft.
START: 12/30/14 END: 12/30/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825428000, -83.148321000

EXPLORATION ID B-037-1-14

MATERIAL DESCRIPTION AND NOTES	ELEV. 870.4	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
HARD, BROWN AND GRAY, **SANDY SILT**, SOME GRAVEL, LITTLE CLAY, SS-2 CONTAINS ASPHALT FRAGMENTS, DAMP SS-2 CHANGES TO BROWN **(FILL)**		1	7 6 9	21	89	SS-1	4.5+	28	21	14	24	13	23	15	8	9	A-4a (0)	
	865.9	3	7 11 24	50	100	SS-2	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	
HARD, DARK GRAY MOTTLED WITH BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	863.4	5–6	6 8 10	26	100	SS-3	4.5+	4	6	9	43	38	40	18	22	19	A-6b (13)	
HARD, BROWN MOTTLED WITH GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		8	3 5 6	16	78	SS-4	4.5+	7	12	14	41	26	31	16	15	14	A-6a (8)	
	858.4	11	4 6 7	18	100	SS-5	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
HARD, GRAYISH BROWN, **SANDY SILT**, SOME CLAY, TRACE TO LITTLE GRAVEL, DAMP		13	3 7 13	28	100	SS-6	4.5+	15	12	14	37	22	25	16	9	12	A-4a (5)	
		16	4 9 17	37	100	SS-7	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		18	7 8 9	24	100	SS-8	4.5+	8	10	12	44	26	25	16	9	13	A-4a (7)	
		21	5 10 12	31	100	SS-9	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)	
	845.4	24	6 10 11	30	100	SS-10	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		EOB 25																

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/15/17 12:29 - \\COLUMBUS\LAB\LABACTIVE PROJECTS\ACTIVE SOIL PROJECTS\1ARCHIVE BY YEAR\2015 ARCHIVE\FRA-71-0.0

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 145+31, 141 LT	EXPLORATION ID B-037-2-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 866.8 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/22/14 END: 12/22/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825595000, -83.147906000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 866.8	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
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS MANY ROOTS, DAMP **(FILL)**	864.8	1–2	3 3 4	10	89	SS-1	2.00 - 4.5+	6	7	11	47	29	37	22	15	21	A-6a (10)	
HARD, BROWN MOTTLED WITH LIGHT BROWN, **CLAY**, "AND" SILT , LITTLE SAND, TRACE GRAVEL, CONTAINS ROOTS, MOIST	862.3	3–4	9 12 15	38	89	SS-2	4.5+	1	4	8	39	48	53	19	34	20	A-7-6 (19)	
HARD, BROWN MOTTLED WITH GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		5–6	11 15 19	48	100	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
@7.5'; SS-4 BECOMES BROWN		7–9	5 7 8	21	100	SS-4	4.5+	4	15	16	40	25	24	16	8	12	A-4a (6)	
@10.0'; SS-5 BECOMES DARK GRAY, CONTAINS IRON STAINING		10–11	9 11 12	33	100	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
	852.3	12–14	3 7 9	23	100	SS-6	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
HARD, GRAYISH BROWN, **SILT**, LITTLE SAND, LITTLE CLAY, TRACE GRAVEL, CONTAINS SAND LENSES, DAMP	849.8	15–16	7 10 11	30	100	SS-7	4.5+	4	4	13	65	14	20	17	3	14	A-4b (8)	
HARD, GRAYISH BROWN, **SANDY SILT**, LITTLE TO SOME GRAVEL, LITTLE CLAY, DAMP TO MOIST		17–19	2 2 10	17	100	SS-8	3.25 - 4.5+	-	-	-	-	-	-	-	-	20	A-4a (V)	
		20–21	4 6 7	18	67	SS-9	4.5+	21	9	13	41	16	21	16	5	13	A-4a (4)	
	841.8	22–24, EOB 25	4 6 9	21	100	SS-10	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 147+09, 75 LT
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 876.5 (MSL) EOB: 25.0 ft.
START: 12/22/14 END: 12/22/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825402000, -83.147274000

EXPLORATION ID: B-037-3-14

MATERIAL DESCRIPTION AND NOTES	ELEV. 876.5
6.0", **ASPHALT**	876.0
DENSE, BROWN, **GRAVEL**, SOME SAND, TRACE SILT, TRACE CLAY, DAMP **(FILL)**	874.2
HARD, GRAYISH BROWN, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP **(FILL)**	869.5
HARD, BROWN, GRAY, AND LIGHT BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, DAMP **(FILL)**	864.5
VERY STIFF, GRAY MOTTLED WITH LIGHT AND DARK GRAY, **CLAY**, "AND" SILT, TRACE SAND, DAMP	862.0
HARD, BROWN MOTTLED WITH GRAY, **SILTY CLAY**, TRACE TO LITTLE SAND, TRACE GRAVEL, CONTAINS LITTLE IRON STAINING, DAMP	859.5
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP @20.0'; SS-9 BECOMES BROWN, CONTAINS LITTLE IRON STAINING @23.5'; SS-10 BECOMES GRAY MOTTLED WITH ORANGISH BROWN	851.5

EOB — 25

SPT/RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)
14 12 11	33	44	SS-1	-	62	18	7	10	3	NP	NP	NP	5	A-1-a (0)
7 10 18	40	100	SS-2	4.5+	9	13	16	39	23	22	14	8	9	A-4a (5)
9 11 16	38	100	SS-3	4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)
10 9 13	31	100	SS-4	4.5+	3	8	13	40	36	34	16	18	15	A-6b (11)
6 9 10	27	100	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-6b (V)
2 3 6	13	100	SS-6	3.0 - 3.25	0	1	4	53	42	46	17	29	17	A-7-6 (17)
5 6 7	18	100	SS-7	4.5+	1	1	6	48	44	40	20	20	20	A-6b (12)
2 5 7	17	100	SS-8	3.75 - 4.5+	-	-	-	-	-	-	-	-	18	A-4a (V)
4 5 9	20	100	SS-9	4.5+	4	8	12	44	32	29	19	10	18	A-4a (8)
6 7 7	20	100	SS-10	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS

PROJECT: FRA-71-00.00	DRILLING FIRM / OPERATOR: BARR / J.GILBERT	DRILL RIG: CME 550X	STATION / OFFSET: 149+20, 76 LT	EXPLORATION ID B-038-1-14
TYPE: NOISE BARRIER	SAMPLING FIRM / LOGGER: BARR / J.GILBERT	HAMMER: CME AUTOMATIC	ALIGNMENT: CL CONST. IR 71	
PID: 93496 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 1/26/14	ELEVATION: 880.6 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/22/14 END: 12/22/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.3	COORD: 39.825380000, -83.146518000	

MATERIAL DESCRIPTION AND NOTES	ELEV. 880.6
6.0", **ASPHALT**	880.1
DENSE, BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP **(FILL - GRANULAR BASE)**	878.9
HARD, GRAY, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, DAMP **(FILL)**	873.6
HARD, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP **(FILL)**	868.6
HARD, BROWN WITH LIGHT BROWN AND GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP **(FILL)**	866.1
VERY STIFF TO HARD, BROWN MOTTLED WITH GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, SS-7 CONTAINS DECAYED ROOTS AND IRON STAINS, HAS ORGANIC ODOR, MOIST @17.5'; SS-8 BECOMES DARK GRAY MOTTLED WITH BROWN @20.0'; SS-9 BECOMES DARK GRAYISH BROWN, CONTAINS ROOTS AND HAS ORGANIC ODOR @23.5'; SS-10 BECOMES DARK GRAY MOTTLED WITH ORANGISH BROWN, CONTAINS IRON STAINING	855.6

EOB — 25

SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)
19 14 11	36	56	SS-1	-	40	21	13	19	7	20	16	4	7	A-2-4 (0)
				4.5+	-	-	-	-	-	-	-	-	9	A-4a (V)
8 10 11	30	89	SS-2	4.5+	18	13	15	36	18	22	14	8	8	A-4a (4)
10 11 13	34	100	SS-3	4.5+	-	-	-	-	-	-	-	-	7	A-4a (V)
6 8 9	24	100	SS-4	4.5+	16	11	13	38	22	25	13	12	10	A-6a (6)
9 11 12	33	100	SS-5	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)
5 8 11	27	100	SS-6	4.5+	6	8	12	38	36	36	17	19	15	A-6b (11)
6 7 8	21	100	SS-7	4.5+	-	-	-	-	-	-	-	-	20	A-6b (V)
2 5 7	17	100	SS-8	3.0 - 4.5+	3	7	11	42	37	38	17	21	19	A-6b (12)
5 6 7	18	100	SS-9	4.25	-	-	-	-	-	-	-	-	24	A-6b (V)
4 4 5	13	100	SS-10	2.0 - 2.25	-	-	-	-	-	-	-	-	27	A-6b (V)

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

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SHOVELED SOIL CUTTINGS