Resource International, Inc.

FRA-161-15.80 NOISE WALLS
PID NO. 117607
FRANKLIN COUNTY, OHIO

DRAFT GEOTECHNICAL EXPLORATION REPORT

Prepared For:
Arcadis U.S., Inc.
8101 North High Street, Suite 100
Columbus, OH 43235

Prepared By:
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Rii Project No. W-23-107

January 2024

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January 18, 2024 (Revised March 18, 2024)

Mr. Jeff Hackenbracht, P.E.
Principal
Arcadis U.S., Inc.
8101 North High Street, Suite 100
Columbus, Ohio 43235

Re: DRAFT Geotechnical Exploration Report
FRA-161-15.80 Noise Walls
PID No. 117607
Franklin County, Ohio
Rii Project No. W-23-107

Mr. Hackenbracht:

Resource International, Inc. (Rii) is pleased to submit this revised Draft Geotechnical Exploration Report for the above referenced project. Engineering logs have been prepared and are attached to this report along with the results of laboratory testing. This revised report includes recommendations for the design and construction of eight (8) proposed noise walls and deep foundations for Noise Walls subgrade improvements along SR 161 between Ulry Road and US 62, Franklin County, Ohio. This revised report supersedes our previous submittal.

We sincerely appreciate the opportunity to be of continued service to you on this project. If you have any questions regarding the structure foundation exploration, or this report, please do not hesitate to contact us.

Sincerely,

RESOURCE INTERNATIONAL, INC.

Daniel K. Hayes, E.I.
Staff Engineer

Daniel E. Karch, P.E.
Project Manager - Geotechnical Services

Enclosure: DRAFT Geotechnical Exploration Report

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EXECUTIVE SUMMARY

This report is a presentation of the subgrade exploration performed for the proposed construction of eight (8) new noise walls along SR 161 between Ulry Road and US 62 in Franklin County, Ohio. Based on the available project information, it is understood that the walls will range from 497 to 2,226 feet in length and will be 14 feet high. Noise Walls 3, 6, 8, 9, 11, 12 and 15, as designated and shown on the project documents, are included as part of this investigation. Details of the proposed noise walls are presented in the following table:

Noise Wall Details

Element	Detail
Noise Wall 3	576 feet long along the north side of SR 161 just east of Ulry Road. Maximum wall height of 14 feet.
Noise Wall 6	528 feet long along the north side of SR 161 just east of FRA-00161-19.090 L&R. Maximum wall height of 14 feet.
Noise Wall 8	1,018 feet long along the south side of SR 161 just east of FRA-00161-19.090 L&R. Maximum wall height of 14 feet.
Noise Wall 9	1,270 feet long along the north side of SR 161 just east of Harlem Rd. Maximum wall height of 14 feet.
Noise Wall 11	1,584 feet long along the south side of SR 161 just east of Harlem Rd. Maximum wall height of 14 feet.
Noise Wall 12	497 feet long along the south side of SR 161 just east of Harlem Rd. Maximum wall height of 14 feet.
Noise Wall 15	2,226 feet long along the south side of SR 161 east and west of New Albany Road. Maximum wall height of 14 feet.

The exploration was performed within general accordance of the Ohio Department of Transportation's (ODOT) Specifications for Geotechnical Explorations (SGE), revised January 2023.

Exploration and Findings

Between October 23 and December 5, 2023, a total of 53 borings were performed for the noise walls as part of the overall FRA-161-16.80 project. The borings performed for noise walls were advanced to depths ranging between 15 and 27.5 feet below the existing ground surface

All borings except B-038-0-23 encountered topsoil thicknesses between 1 inch and 10 inches. Boring B-038-0-23 encountered 3.0 inches of asphalt overlaying 6.5 inches of concrete, overlaying 3.5 inches of aggregate base.

Underlying the surficial soils, the natural soils were encountered, consisting of both cohesive and granular deposits. The natural cohesive soils were described as sandy silt,

silt and clay, silty clay, and clay (ODOT A-4a, A-6a, A-6b, A-7-6). The granular soils were described as gravel, gravel with sand, gravel with sand and silt, gravel with sand and silt and clay, and coarse and fine sand (ODOT A-1-a, A-1-b, A-2-4, A-2-6, A-3a).

Bedrock was encountered in borings B-001-0-23, B-002-0-23, B-003-0-23, B-004-0-23, B-018-0-23, B-019-0-23, B-020-0-23, B-021-0-23, B-022-0-23, B-023-0-23, B-024-0-23, B-027-0-23, B-028-0-23, B-038-0-23, B-039-0-23, B-040-0-23, B-041-0-23, B-042-0-23, B-043-0-23, B-044-0-23, B-045-0-23, B-046-0-23, B-047-0-23, B-048-0-23, B-049-0-23, B-050-0-23, B-001-0-23, B-001-0-23, B-001-0-23, and B-001-0-23 at depths ranging from 4.3 to 23.0 feet beneath the existing ground surface. The bedrock was described as highly weathered gray and brown sandstone, highly weathered to severely weathered gray and black silt, and highly weathered gray shalestone.

Groundwater seepage was encountered in 3 of the borings at depths ranging from 14.0 to 22.4 feet below the ground surface. Significant groundwater flow was encountered during drilling (initial water level) in 26 of the borings at depths ranging from 12.0 to 21.0 feet below the existing ground surface. Measurable groundwater was observed at the completion of drilling in seventeen (17) of the borings at depths ranging from 7.8 to 20.5 feet below existing grade.

Analyses and Recommendations

Data obtained from the subsurface exploration has been used to determine the foundation support capabilities for the soils and bedrock encountered at the site. These parameters have been used to provide guidelines for the design of foundation systems for the proposed noise walls, as well as the construction specifications related to the placement of foundation systems and general earthwork recommendations

Due to revisions in the proposed noise wall alignments after select borings were advanced, data from fifty (50) borings was utilized in the analysis.

The required shaft embedment for the proposed Noise Barriers 3, 6, 8, 9, 11, 12, and 15 was determined in accordance with Section 802.1.2 of the ODOT Bridge Design Manual (BDM). Per ODOT BDM Section 802.1.2, the required embedment depth for the supporting drilled shafts is determined using energy and depth corrected SPT values and selecting the required embedment depth based on either the average or critical corrected SPT value from Table 802.1.2-1 for granular soils or 802.1.2-2 for cohesive soils. Based on the plans and profile information provided, the anticipated panel heights and spacing for each noise barrier are as follows:

Noise Walls 3, 6, 8, 9, 11, 12 and 15 – Panel Heights and Spacing Information

Noise Barrier	Noise Barrier 3	Noise Barrier 6	Noise Barrier 8	Noise Barrier 9	Noise Barrier 11	Noise Barrier 12	Noise Barrier 15
Panel Heights (feet)	14	14	14	14	14	14	14
Maximum Panel Spacing Center-to-Center of the Drilled Shaft (feet)	24	24	24	24	24	24	24

Based on cross section information provided, the transverse cross-slopes along the alignment of Noise Barrier 3 range from 3:1 and transition to level. The transverse cross-slopes along the Noise Barrier 6 range from 3:1 to 4:1. The transverse cross-slopes along the alignment of Noise Barrier 8 are considered to be generally level with a localized slope of 5:1. The transverse cross-slopes along the alignment of Noise Barrier 9 range from 3:1 to 5:1. The transverse cross-slopes along the alignment of Noise Barrier 11 range from level to 5:1. The transverse cross-slopes along the alignment of Noise Barrier 12 range from 2:1 to 5:1. Finally, the transverse cross-slopes along the alignment of Noise Barrier 15 range from 3:1 to level.

In general, the analysis indicates that 2.5-foot diameter drilled shafts excavated to depths ranging from 6.5 to 8.5 feet for Noise Barrier 3, 7.0 feet for Noise Barrier 6, from 6.5 to 7.0 feet for Noise Barrier 8, 7.0 feet for Noise Barrier 9, from 6.5 to 7.0 feet for Noise Barrier 11, from 7.0 to 8.5 feet for Noise Barrier 12, and from 6.5 to 9.5 feet for Noise Barrier 15 will be required for the support of the proposed noise walls. The following tables detail the required minimum drilled shaft depth for each panel along each of the proposed noise barrier wall alignment.

Please note that this executive summary does not contain all the information presented in the report. The unabridged subsurface exploration report should be read in its entirety to obtain a more complete understanding of the information presented.

1.0 INTRODUCTION

This report is a presentation of the geotechnical exploration performed for the proposed construction of eight (8) new noise walls along SR 161 between Ulry Road and US 62 in Franklin County, Ohio. Based on the available project information, it is understood that the walls will range from 497 to 2,226 feet in length and will be 14 feet high. Noise Walls 3, 6, 8, 9, 11, 12 and 15, as designated and shown on the project documents, are included as part of this investigation. Details of the proposed noise walls are presented in Table 1.

Table 1. Noise Wall Details

Element	Detail
Noise Wall 3	576 feet long along the north side of SR 161 just east of Ulry Road. Maximum wall height of 14 feet.
Noise Wall 6	528 feet long along the north side of SR 161 just east of FRA-00161-19.090 L&R. Maximum wall height of 14 feet.
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Noise Wall 12	497 feet long along the south side of SR 161 just east of Harlem Rd. Maximum wall height of 14 feet.
Noise Wall 15	2,226 feet long along the south side of SR 161 east and west of New Albany Road. Maximum wall height of 14 feet.

The exploration was performed within general accordance of the Ohio Department of Transportation's (ODOT) Specifications for Geotechnical Explorations (SGE), revised January 2023. The project site and general location of the proposed retaining walls are as shown on the vicinity map and boring plan presented in Appendix I.

2.0 GEOLOGY AND OBSERVATIONS OF THE PROJECT

2.1 Site Geology

Physiographically, the project site falls within Galion Glaciated Low Plateau. This region is characterized by rolling uplands which are transitional between the gently rolling Till Plains and hill Glaciated Allegheny Plateau. The soils consist of thin to thick drift with moderate relief.

Based on bedrock geology and topography maps of the area from the Ohio Department of Natural Resources (ODNR), the underlying bedrock beneath the site is Mississippian-age shales and sandstones The bedrock surface in the vicinity of the site ranges between approximately 5 to 25 feet below the existing surface grade.

2.2 Existing Conditions

The proposed project site is located along SR 161 on the northeast side of Columbus in Franklin County, Ohio. The project limits stretching between Ulry Road and US 62. Land use in the project vicinity is predominantly residential with some commercial and/or industrial purpose.

3.0 EXPLORATION

A total of fifty-three (53) borings were performed as part of the overall project. The borings were performed between October 23 and December 5, 2023. The borings performed were advanced to depths ranging between 15.0 and 27.5 feet below the existing ground surface.

Boring locations were selected and field located by Rii personnel prior to drilling operations. Ground surface elevations of the as drilled boring locations were interpolated from basemaps provided by Arcadis. A schedule of the borings performed is provided in Appendix II.

The borings performed were drilled with a track mounted Diedrich D-50 rotary drilling machine, utilizing 3.25-inch inside diameter hollow-stem augers to advance the holes between sampling attempts. Standard penetration testing (SPT) and split spoon sampling were performed at 2.5-foot intervals either to the boring completion depths or to auger refusal.

The SPT, per the American Society for Testing and Materials (ASTM) designation D1586, is conducted using a 140-pound hammer falling 30.0 inches to drive a 2.0-inch outside diameter split spoon sampler 18.0 inches. Driving resistance is recorded on the boring logs in terms of blows per 6-inch interval of the driving distance. The second and third intervals are added to obtain the number of blows per foot (N). Standard penetration blow counts aid in determining soil properties applicable in foundation system design. Measured blow count (N_m) values are corrected to an equivalent (60%) energy ratio, N_{60}, by the following equation. Both values are represented on boring logs presented in Appendix IV.

$$N_{60} = N_m*(ER/60)$$

Where:
N_m = measured N value
ER = drill rod energy ratio, expressed as a percent, for the system used

The hammer for the Diedrich D-50 rig operated by Rii on this project was calibrated on March 21, 2022 and has a drill rod energy ratio 86.4 percent.

In general, for instances of no recovery from standard split spoon sampling, a 2.5-inch outside diameter split spoon sampler was driven the full length of the standard split spoon interval plus an additional 6.0 inches to obtain a representative sample. These samples are designated with a “2S” preceding the sample number on the boring logs. Only the final 6.0 inches of sample were retained for classification.

Hand penetrometer readings, which provide a rough estimate of the unconfined compression strength (UCS) of the soil, were reported on the boring logs in units of tons per square foot (tsf) and were utilized to classify the consistency of the cohesive soil in each layer. An indirect estimate of the unconfined compressive strength of the cohesive split spoon samples can also be made from a correlation with the blow counts (N_{60}). Please note that split spoon samples are considered to be disturbed and the laboratory determination of their shear strengths may vary from undisturbed conditions.

The depth to bedrock was determined by split spoon sampler refusal and/or auger refusal on bedrock. Where the borings were extended into the bedrock, an NQ2-sized, double-tube, diamond bit core barrel (utilizing wire line equipment) was used to core the bedrock. The rock cores obtained from the borings were logged in the field and visually classified in the laboratory. The retrieved cores were analyzed to identify the type of rock, color, mineral content, bedding planes and other geological and mechanical features of interest in this project. The Rock Quality Designation (RQD) for each rock core run was calculated according to the following equation:

$$RQD = \frac{\sum \text{segments equal to or longer than 4.0 inches}}{\text{core run length}} \text{ x } 100$$

The RQD value aids in estimating the general quality of the rock and is used in conjunction with other parameters to designate the quality of the rock mass.

Upon completion of field work, the borings were backfilled with either bentonite chips and soil cuttings or were sealed with cement-bentonite grout in accordance with ODOT policy. Where borings penetrated the existing pavement, an equivalent thickness of cold patch asphalt was used to repair the pavement surface.

During drilling, field personnel prepared field logs showing the encountered subsurface conditions. Soil samples obtained from the drilling operation were preserved and sealed in glass jars and delivered to the soil laboratory. In the laboratory, the recovered soil and rock samples were visually classified, and select samples from the borings performed for the subject structures were tested, as noted in Table 2.

Table 2. Laboratory Test Schedule

Laboratory Test	Test Designation	Number of Tests Performed
Natural Moisture Content	ASTM D 2216	439
Plastic and Liquid Limits	AASHTO T89, T90	83
Gradation – Sieve/Hydrometer	AASHTO T88	83
Unconfined Compressive Strength of Intact Rock	ASTM D7012, Method C	6
Point Load Strength Index	ASTM D5731	2

The tests performed are necessary to classify the existing soil and rock according to the Ohio Department of Transportation (ODOT) classification system and to estimate engineering properties of importance for foundation design and construction recommendations. Results of the laboratory testing are presented on the boring logs in Appendix IV and also in Appendix V.

4.0 FINDINGS

Interpreted engineering logs have been prepared based on the field logs, visual examination of samples and laboratory test results. Classification follows the version of the ODOT Specifications for Geotechnical Explorations (SGE) at the time the exploration borings were performed. The following is a summary of what was found in the test borings and what is represented on the boring logs. A description of the soil and rock terms used throughout this report is presented in Appendix III.

4.1 Surface Materials

The borings were generally performed in the vicinity of the proposed noise wall alignments. All borings, except B-038-0-23, encountered topsoil thicknesses between 1 inch and 10 inches. Boring B-038-0-23 encountered 3.0 inches of asphalt overlying 6.5 inches of concrete overlying 3.5 inches of aggregate base.

4.2 Subsurface Soils

Underlying the surficial soils, the natural soils were encountered, consisting of both cohesive and granular deposits. The natural cohesive soils were described as sandy silt, silt and clay, silty clay, and clay (ODOT A-4a, A-6a, A-6b, A-7-6). The granular soils were described as gravel, gravel with sand, gravel with sand and silt, gravel with sand and silt and clay, and coarse and fine sand (ODOT A-1-a, A-1-b, A-2-4, A-2-6, A-3a).

The shear strength and consistency of the cohesive soils are primarily derived from the hand penetrometer values (HP). The cohesive soils encountered ranged from medium

stiff (0.5 < HP ≤ 1.0 tsf) to hard (HP > 4.0 tsf). The unconfined compressive strength of the cohesive soil samples tested, obtained from the hand penetrometer, ranged from 0.75 to over 4.5 tsf (limit of instrument). The relative density of granular soils is primarily derived from SPT blow counts (N_{60}). Based on the SPT blow counts obtained, the granular soils encountered ranged from loose (5 < N_{60} ≤ 10 blows per foot [bpf]) to very dense (N_{60} > 50 bpf). Blow counts recorded from the SPT sampling within the granular soil deposits ranged from 9 to 96 bpf.

Natural moisture contents of the soil samples tested ranged from 3 to 25 percent. The natural moisture contents of the cohesive soil samples tested for plasticity ranged from 14 percent below to 5 percent above their corresponding plastic limits. In general, the soil exhibited natural moisture contents considered to be significantly below to significantly above optimum moisture levels.

4.3 Bedrock

Bedrock was encountered in borings B-001-0-23 through B-004-0-23, B-018-0-23, through B-024-0-23, B-027-0-23, B-028-0-23, and B-038-0-23 through B-053-0-23 at depths ranging from 4.3 to 23.0 feet beneath the existing ground surface. The bedrock was described as highly weathered gray and brown sandstone, highly weathered to severely weathered gray and black silt, and highly weathered gray shalestone.

4.4 Groundwater

Groundwater seepage was encountered in three (3) of the borings at depths ranging from 14.0 to 22.4 feet below the ground surface. Significant groundwater flow was encountered during drilling (initial water level) in twenty-six (26) of the borings at depths ranging from 12.0 to 21.0 feet below the existing ground surface. Measurable groundwater was observed at the completion of drilling in seventeen (17) of the borings at depths ranging from 7.8 to 20.5 feet below existing grade.

Please note that short-term water level readings, especially in cohesive soils, are not necessarily an accurate indication of the actual groundwater level. In addition, groundwater levels or the presence of groundwater are considered to be dependent on seasonal fluctuations in precipitation.

A more comprehensive description of what was encountered during the drilling process may be found on the individual boring logs in Appendix IV.

5.0 ANALYSES AND RECOMMENDATIONS

Data obtained from the subsurface exploration has been used to determine the foundation support capabilities for the soils and bedrock encountered at the site. These parameters have been used to provide guidelines for the design of foundation systems for the proposed noise walls, as well as the construction specifications related to the placement

of foundation systems and general earthwork recommendations, which are discussed in the following paragraphs.

Due to revisions in the proposed noise wall alignments after select borings were advanced, data from fifty (50) borings was utilized in the analysis.

5.1 Drilled Shaft Foundations (Noise Barriers 3, 6, 8, 9, 11, 12 and 15)

The required shaft embedment for the proposed Noise Barriers 3, 6, 8, 9, 11, 12, and 15 was determined in accordance with Section 802.1.2 of the ODOT Bridge Design Manual (BDM). Per ODOT BDM Section 802.1.2, the required embedment depth for the supporting drilled shafts is determined using energy and depth corrected SPT values and selecting the required embedment depth based on either the average or critical corrected SPT value from Table 802.1.2-1 for granular soils or 802.1.2-2 for cohesive soils. Based on the plans and profile information provided, the anticipated panel heights and spacing for each noise barrier are as presented in Table 3.

Table 3. Noise Walls 3, 6, 8, 9, 11, 12 and 15 – Panel Heights and Spacing Information

Noise Barrier	Noise Barrier 3	Noise Barrier 6	Noise Barrier 8	Noise Barrier 9	Noise Barrier 11	Noise Barrier 12	Noise Barrier 15
Panel Heights (feet)	14	14	14	14	14	14	14
Maximum Panel Spacing Center-to-Center of the Drilled Shaft (feet)	24	24	24	24	24	24	24

Based on cross section information provided, the transverse cross-slopes along the alignment of Noise Barrier 3 range from 3:1 and transition to level. The transverse cross-slopes along the Noise Barrier 6 range from 3:1 to 4:1. The transverse cross-slopes along the alignment of Noise Barrier 8 are considered to be generally level with a localized slope of 5:1. The transverse cross-slopes along the alignment of Noise Barrier 9 range from 3:1 to 5:1. The transverse cross-slopes along the alignment of Noise Barrier 11 range from level to 5:1. The transverse cross-slopes along the alignment of Noise Barrier 12 range from 2:1 to 5:1. Finally, the transverse cross-slopes along the alignment of Noise Barrier 15 range from 3:1 to level.

In general, the analysis indicates that 2.5-foot diameter drilled shafts excavated to depths ranging from 6.5 to 8.5 feet for Noise Barrier 3, 7.0 feet for Noise Barrier 6, from 6.5 to 7.0 feet for Noise Barrier 8, 7.0 feet for Noise Barrier 9, from 6.5 to 7.0 feet for Noise Barrier 11, from 7.0 to 8.5 feet for Noise Barrier 12, and from 6.5 to 9.5 feet for Noise Barrier 15 will be required for the support of the proposed noise walls. The following tables detail the required minimum drilled shaft depth for each panel along each of the proposed

noise barrier wall alignment. Calculations for the noise barrier foundation depths are provided in Appendix VI.

Table 4. Noise Barrier 3 Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	5	96	B-001-0-23	24	14	3:1	7.0
6	13	168	B-002-0-23	24	14	4:1	8.5
14	21	168	B-003-0-23	24	14	5:1	7.0
22	25	72	B-004-0-23	24	14	Level	6.5

Table 5. Noise Barrier 6 Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	4	72	B-005-0-23	24	14	3:1	7.0
5	15	168	B-006-0-23	12 to 24	14	4:1	7.0
16	22	144	B-007-0-23	24	14	4:1	7.0
23	26	72	B-008-0-23	24	14	4:1	7.0

Table 6. Noise Barrier 8 Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	8	168	B-012-0-23	24	14	Level	6.5
9	16	168	B-013-0-23	24	14	Level	6.5
14	24	168	B-014-0-23	24	14	Level	6.5
25	33	192	B-015-0-23	24	14	Level	6.5
34	41	168	B-016-0-23	24	14	Level	6.5
42	52	188	B-017-0-23	14 to 24	14	Level	6.5
53	60	168	B-018-0-23	24	14	5:1	7.0
61	68	168	B-019-0-23	24	14	Level	6.5
69	75	144	B-020-0-23	24	14	Level	6.5
76	79	60	B-021-0-23	12 to 24	14	Level	6.5

Table 7. Noise Barrier 9 Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	5	88	B-031-0-23	16 to 24	14	3:1	7.0
6	14	168	B-032-0-23	16 to 24	14	3:1	7.0
15	23	192	B-033-0-23	24	14	4:1	7.0
24	31	168	B-034-0-23	24	14	3:1	7.0
32	39	168	B-035-0-23	24	14	5:1	7.0
40	48	192	B-036-0-23	24	14	4:1	7.0
49	57	150	B-037-0-23	17 to 24	14	3:1	7.0

Table 8. Noise Barrier 11 Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	5	96	B-022-0-23	24	14	Level	6.5
6	13	168	B-023-0-23	24	14	5:1	7.0
14	21	168	B-024-0-23	24	14	Level	6.5
22	30	192	B-025-0-23	24	14	Level	6.5
31	38	168	B-026-0-23	24	14	5:1	7.0
39	46	168	B-027-0-23	24	14	Level	6.5
47	55	192	B-028-0-23	24	14	Level	6.5
56	63	168	B-029-0-23	24	14	Level	6.5
64	67	72	B-030-0-23	24	14	Level	6.5

Table 9. Noise Barrier 12 Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	6	72	B-038-0-23	12 to 24	14	2:1	7.0
7	14	168	B-039-0-23	24	14	5:1	7.0
15	23	166	B-040-0-23	8 to 24	14	5:1	7.0
23	25	24	B-041-0-23	19 to24	14	5:1	8.5

Table 10. Noise Barrier 15 (Sta. 1500+00 to 1502+40) Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
1	6	120	B-042-0-23	15 to 24	14	4:1	7.0
7	13	105	B-043-0-23	15 to 24	14	4:1	7.0

Table 11. Noise Barrier 15 (Sta. 1504+27 to 1518+43) Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
14	17	72	B-044-0-23	24	14	3:1	7.0
18	25	168	B-045-0-23	24	14	3:1	7.0
26	34	192	B-046-0-23	24	14	3:1	7.0
35	42	168	B-047-0-23	24	14	4:1	7.0
43	50	168	B-048-0-23	24	14	5:1	7.0
51	59	192	B-049-0-23	24	14	Level	6.5
60	67	168	B-050-0-23	24	14	Level	6.5
68	73	120	B-0051-23	24	14	5:1	8.5

Table 12. Noise Barrier 15 (Sta. 1518+43 to 1522+26) Foundation Depth Requirements

From Panel	To Panel	Length (feet)	Representative Boring	Post Spacing (feet)	Barrier Height (feet)	Transverse Ground Slope	Proposed Shaft Depth (feet)
74	77	72	B-051-0-23	24	14	5:1	8.5
78	84	144	B-052-0-23	24	14	5:1	7.0
85	88	72	B-053-0-23	24	14	Level	9.5

The drilled shaft excavations should be carefully observed by a geotechnical engineering representative as soon as possible following excavation to assure adequacy. If inadequate bearing soil is encountered, the shaft excavations should be continued into more suitable end bearing soils or to bedrock. Since water has an adverse effect on cohesive soil, drilled shaft concrete should be placed as soon as possible following

excavation, preferably the same day to reduce the potential for water related damage. Drilled shaft excavations should be kept dry and clean until concrete is placed to reduce damage to the bearing surfaces. For details about groundwater observations, refer to Section 4.4.

5.1.1 Drilled Shaft Considerations

The minimum requirements for proper inspection of drilled shaft construction are as follows:

- A qualified inspector should record the material types being removed from the hole as excavation proceeds.
- The use of casing for drilled shafts is recommended if caving material and/or groundwater is encountered at any time during the drilling of the shaft, or if groundwater seepage occurs in the drilled shaft.
- The placement of all concrete for the drilled shafts shall follow the American Concrete Institute's Design and Construction of Drilled Piers (ACI 336.3R-93).
- Concrete placed freefall should not be allowed to hit the sidewalls of the excavation and should not pass through any water. Therefore, concrete should be placed by tremie method if groundwater is encountered during construction of the drilled shafts.
- If concrete is placed by tremie method, it must be done so with an adequate head to displace water or slurry if groundwater has entered the drilled shaft (all tremie procedures shall follow applicable ACI specifications).
- The volume of concrete should be checked to ensure voids did not result during extraction of the casing.
- Pulling casing with insufficient concrete inside should be restricted.
- The bottom of drilled shaft excavations should be clean and free of loose material. Any loose material observed should be removed using a clean-out bucket (muck bucket).

In addition, it is recommended that, if casing is used, it be pulled after the concrete is poured, allowing for reuse of the casing, and eliminating reduction of side resistance (between soil and concrete).

5.2 Lateral Earth Pressure

For the soil types encountered in the borings, the "in-situ" unit weight (γ), cohesion (c), effective angle of friction (φ'), and lateral earth pressure coefficients for at-rest conditions

(k_o), active conditions (k_a), and passive conditions (k_p) have been estimated and are provided in Table 13 and Table 14.

Table 13. Estimated Undrained (Short-term) Soil Parameters for Design

Soil Type	γ (pcf) [1]	c (psf)	φ	k_a	k_o	k_p
Soft to Medium Stiff Cohesive Soil	110	500	0°	N/A	N/A	N/A
Stiff Cohesive Soil	120	1,500	0°	N/A	N/A	N/A
Very Stiff to Hard Cohesive Soil	125	2,500	0°	N/A	N/A	N/A
Very Loose to Loose Granular Soil	120	0	28°	0.36	0.53	2.77
Medium Dense to Dense Granular Soil	125	0	32°	0.31	0.47	3.25
Dense to Very Dense Granular Soil	130	0	35°	0.27	0.43	3.69
Compacted Cohesive Engineered Fill	120	2,000	0°	N/A	N/A	N/A
Compacted Granular Engineered Fill	125	0	32°	0.31	0.47	3.25

1. *When below groundwater table, use effective unit weight, γ' = γ - 62.4 pcf and add hydrostatic water pressure.*

Table 14. Estimated Drained (Long-term) Soil Parameters for Design

Soil Type	γ (pcf) [1]	c' (psf)	φ'	k_a	k_o	k_p
Soft to Medium Stiff Cohesive Soil	120	0	22°	0.45	0.63	2.20
Stiff Cohesive Soil	125	0	26°	0.39	0.56	2.56
Very Stiff to Hard Cohesive Soil	125	0	28°	0.36	0.53	2.77
Very Loose to Loose Granular Soil	120	0	28°	0.36	0.53	2.77
Medium Dense to Dense Granular Soil	125	0	32°	0.31	0.47	3.25
Dense to Very Dense Granular Soil	130	0	35°	35°	0.27	0.43
Compacted Cohesive Engineered Fill	120	0	28°	0.36	0.53	2.77
Compacted Granular Engineered Fill	125	0	32°	0.31	0.47	3.25

1. *When below groundwater table, use effective unit weight, γ' = γ - 62.4 pcf and add hydrostatic water pressure.*

These parameters are considered appropriate for the design of all subsurface structures and any excavation support systems. Subsurface structures (where the top of the structure is restrained from movement) should be designed based on at-rest conditions (k_o). For proposed temporary retaining structures (where the top of the structure is allowed to move), earth pressure distributions should be based on active (k_a) and passive (k_p) conditions.

These recommendations do not take into consideration the effect of any surcharge loading or a sloped ground surface (a flat surface is assumed). Earth pressures on excavation support systems will be dependent on the type of sheeting and method of bracing or anchorage. Surcharge loads, such as that imposed by traffic loading, will create additional lateral loading on the subsurface structures and excavation support systems. The resulting lateral earth pressure should be evaluated based on active (k_a) and at-rest (k_o) conditions and the anticipated magnitude of the loading.

Temporary retaining structures, such as sheet pile system, should be designed using the undrained soil parameters provided in Table 13, and the design should follow all applicable guidelines for the type of retaining structure utilized. Permanent retaining and subsurface structures should be designed using the drained soil parameters provided in Table 14. Regardless of whether the retaining structure is temporary or permanent, the effective unit weight (γ' = γ - 62.4 pcf) plus the hydrostatic water pressure ($\gamma_w * h_w$, where h_w is the height of water behind the wall above the base of the wall) should be utilized below the design groundwater level. The lateral earth pressure coefficients should only be applied to the horizontal pressure resulting from the effective overburden pressure, and should not be applied to the hydrostatic water pressure.

5.3 Construction Considerations

All site work shall conform to local codes and to the latest ODOT Construction and Materials Specifications (CMS), including that all excavation and embankment preparation and construction should follow ODOT Item 200 (Earthwork).

5.3.1 Excavation Considerations

All excavations should be shored / braced or laid back at a safe angle in accordance with Occupational Safety and Health Administration (OSHA) guidelines. During excavation, if slopes cannot be laid back to OSHA Standards due to adjacent structures or other obstructions, temporary shoring may be required. The following table should be utilized as a general guide for implementing OSHA guidelines when estimating excavation back slopes at the various boring locations. Actual excavation back slopes must be field verified by qualified personnel at the time of excavation in strict accordance with OSHA guidelines.

Table 15. Excavation Back Slopes

Soil	Maximum Back Slope	Notes
Soft to Medium Stiff Cohesive	1.5 : 1.0	Above Ground Water Table and No Seepage
Stiff Cohesive	1.0 : 1.0	Above Ground Water Table and No Seepage
Very Stiff to Hard Cohesive	0.75 : 1.0	Above Ground Water Table and No Seepage
All Granular & Cohesive Soil Below Ground Water Table or with Seepage	1.5 : 1.0	None

5.3.2 Groundwater Considerations

Based on the groundwater observations made during drilling, groundwater may be encountered during construction. Where groundwater is encountered, proper groundwater control should be employed and maintained to prevent disturbance to excavation bottoms consisting of cohesive soil, and to prevent the possible development of a quick or "boiling" condition where soft silts and/or fine sands are encountered. It is preferable that the groundwater level, if encountered, be maintained at least 36 inches below the deepest excavation. Any seepage or groundwater encountered within fine-grained or cohesive soils at this site should be able to be controlled by pumping from temporary sumps. Based on the recommended lengths of drilled shafts and proposed shaft elevations, it is not anticipated that groundwater will be encountered within granular soil layers. However, where excavations encounter groundwater within granular layers, more robust dewatering measures such as well points would be needed to control groundwater. Additional measures may be required depending on seasonal fluctuations of the groundwater level. Note that determining and maintaining actual groundwater levels during construction is the responsibility of the contractor.

6.0 LIMITATIONS OF STUDY

The above recommendations are predicated upon construction inspection by a qualified soil technician under the direct supervision of a professional geotechnical engineer. Adequate testing and inspection during construction are considered necessary to assure an adequate foundation system and are part of these recommendations.

The recommendations for this project were developed utilizing soil and bedrock information obtained from the test borings that were made at the proposed site for the current investigation. Resource International is not responsible for the data, conclusions, opinions or recommendations made by others during previous investigations at this site. At this time we would like to point out that soil borings only depict the soil and bedrock conditions at the specific locations and time at which they were made. The conditions at other locations on the site may differ from those occurring at the boring locations.

The conclusions and recommendations herein have been based upon the available soil and bedrock information and the design details furnished by a representative of the owner of the proposed project. Any revision in the plans for the proposed construction from those anticipated in this report should be brought to the attention of the geotechnical engineer to determine whether any changes in the foundation or earthwork recommendations are necessary. If deviations from the noted subsurface conditions are encountered during construction, they should also be brought to the attention of the geotechnical engineer.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater or surface water within or beyond the site studied. Any statements in this report or on the test boring logs regarding odors, staining of soils or other unusual conditions observed are strictly for the information of our client.

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. Resource International is not responsible for the conclusions, opinions or recommendations made by others based upon the data included.

APPENDIX I

BORING PLAN

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 1 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:57:19 PM USER: kevinj
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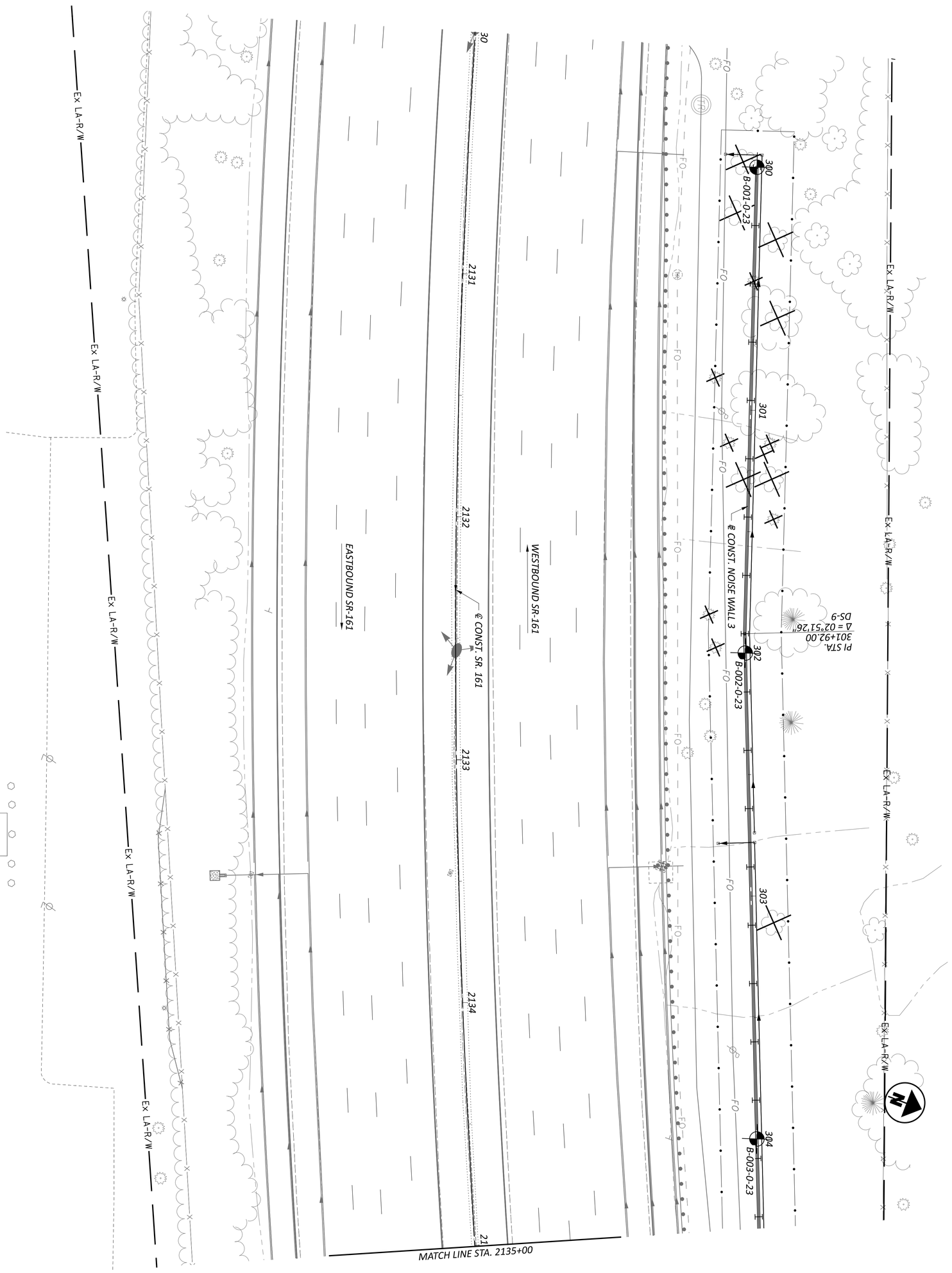

BORING PLAN - NOISE WALL 3
STA. 2130+00.00 TO STA. 2135+00.00

HORIZONTAL SCALE IN FEET
0 0
0 0

DESIGN AGENCY
RESOURCE INTERNATIONAL
6161 PERIMETER PTNL GATEWAY
COLUMBUS, OHIO 43231
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DESIGNER JAS
REVIEWER DEK
PROJECT ID 117607
SHEET P.0 TOTAL 0

MM-DD-YY

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 2 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:57:58 PM USER: kevinj
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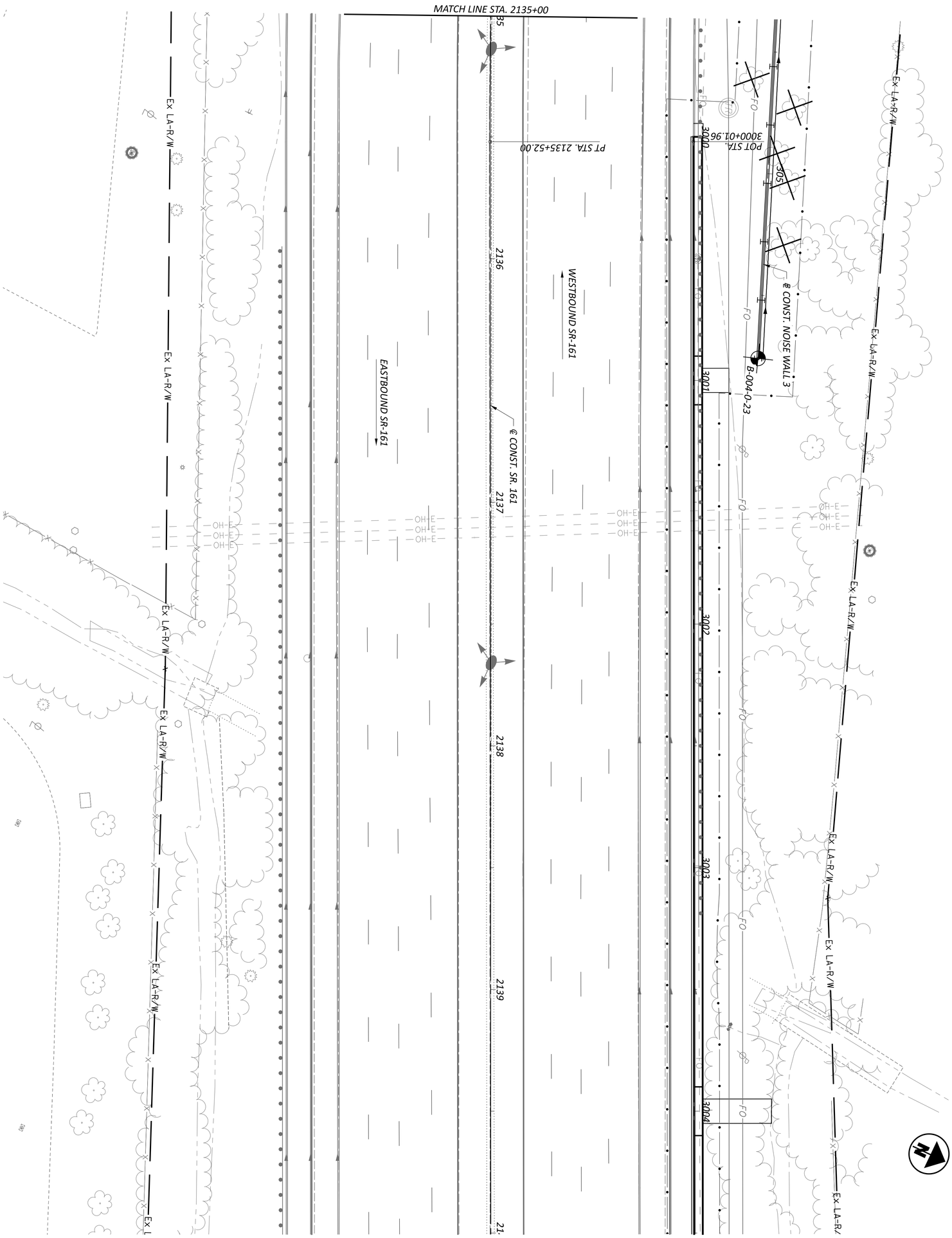
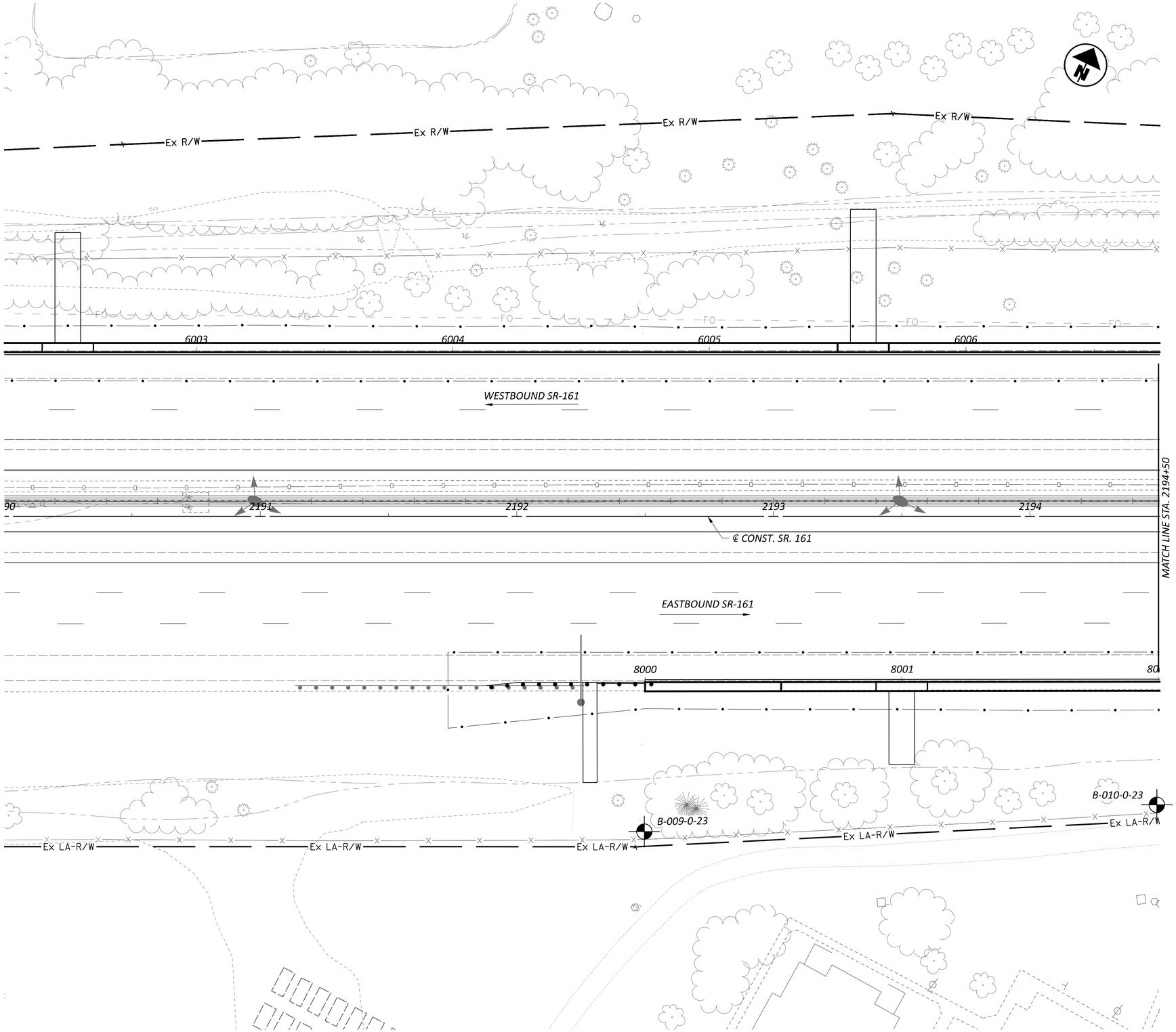


BORING PLAN - NOISE WALL 3
STA. 2135+00.00 TO STA. 2140+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40

SHEET	P.0
TOTAL	0
PROJECT ID	117607
REVIEWER	DEK MM-DD-YY
DESIGNER	JAS
DESIGN AGENCY	RESOURCE INTERNATIONAL
	6366 PRESIDENTIAL GATEWAY COLUMBUS, OHIO 43231 (614) 882-4369



HORIZONTAL SCALE IN FEET
0 10 20 40

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STA. 2190+00.00 TO STA. 2194+50.00

FRA-161-15.80 NOISE WALLS

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DESIGNER JAS
REVIEWER DEK MM-DD-YY
PROJECT ID 117607
SHEET P.0 TOTAL 0

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 14 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:58:09 PM USER: kevinj
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HORIZONTAL SCALE IN FEET
0 10 20 40

BORING PLAN - NOISE WALLS 6 AND 8
STA. 2194+50.00 TO STA. 2200+25.00

Ex R/W
Ex R/W
Ex R/W
Ex R/W
Ex R/W
600
601
602
603
604
605
B-005-0-23
B-006-0-23
B-007-0-23
B-008-0-23
℄ CONST. NOISE WALL 6
OH-E
FO
6007
6008
WESTBOUND SR-161
MATCH LINE STA. 2194+50
2195
2196
2197
℄ CONST. SR. 161
2198
2199
2200
MATCH LINE STA. 2200+25
EASTBOUND SR-161
02
8003
8004
8005
8006
8007
B-010-0-23
B-011-0-23
Ex LA-R/W
℄ CONST. NOISE WALL 8
800
B-012-0-23 801
802

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REVIEWER	DEK MM-DD-YY
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SHEET	P.0
TOTAL	0

FRA-161-15.80 NOISE WALLS

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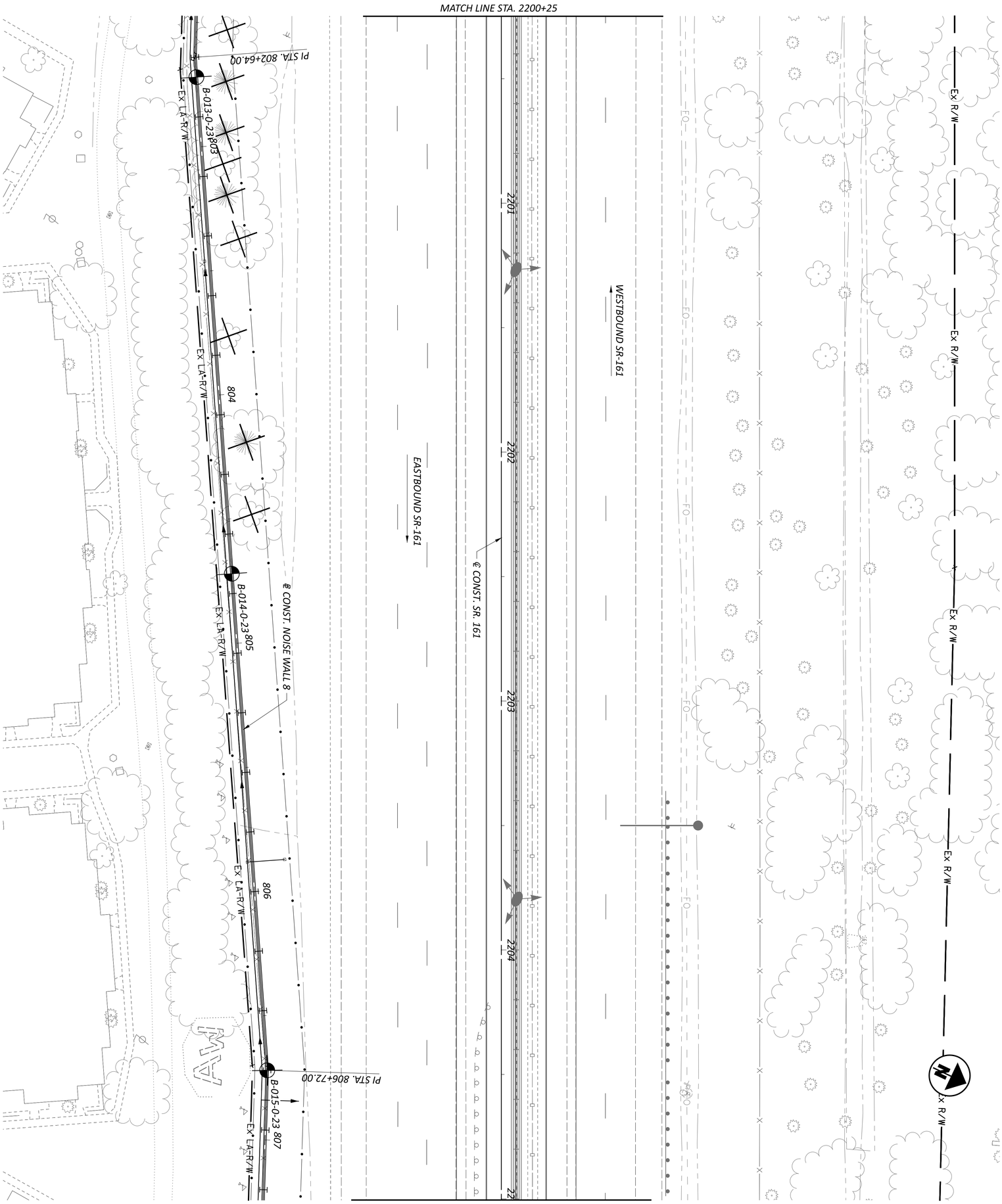
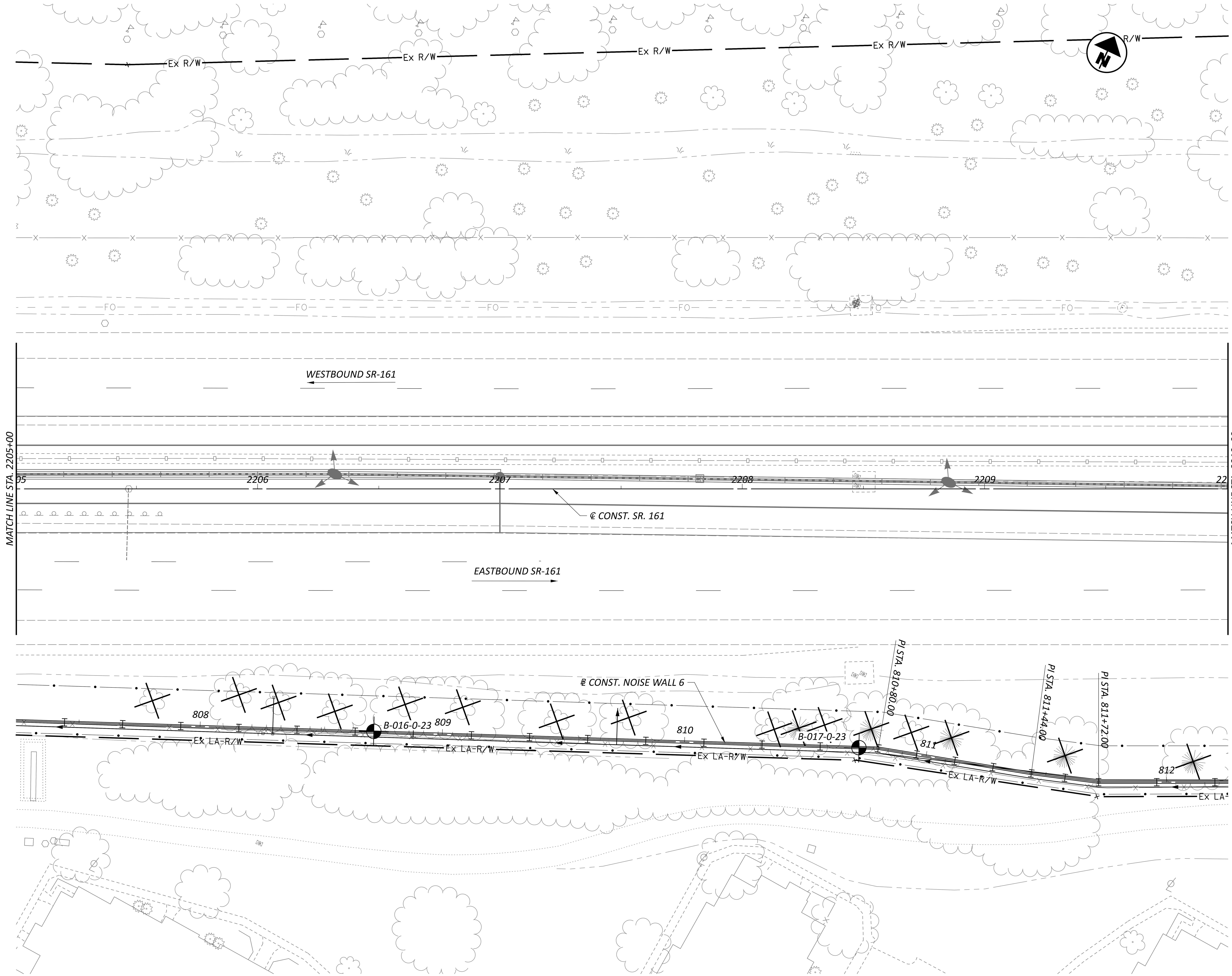


BORING PLAN - NOISE WALL 8
STA. 2200+25.00 TO STA. 2205+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40

SHEET	P.0
TOTAL	0
PROJECT ID	117607
REVIEWER	DRK MM-DD-YY
DESIGNER	JAS
DESIGN AGENCY	RESOURCE INTERNATIONAL
	6161 PERIMETRAL GATEWAY COLUMBUS, OHIO 43231 (614) 823-4949



HORIZONTAL SCALE IN FEET
0 10 20 40

BORING PLAN NOISE WALL 8
STA. 2205+00.00 TO STA. 2210+00.00

FRA-161-15.80 NOISE WALLS

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DESIGNER	JAS
REVIEWER	DEK MM-DD-YY
PROJECT ID	117507
SHEET / TOTAL	P.0 / 0

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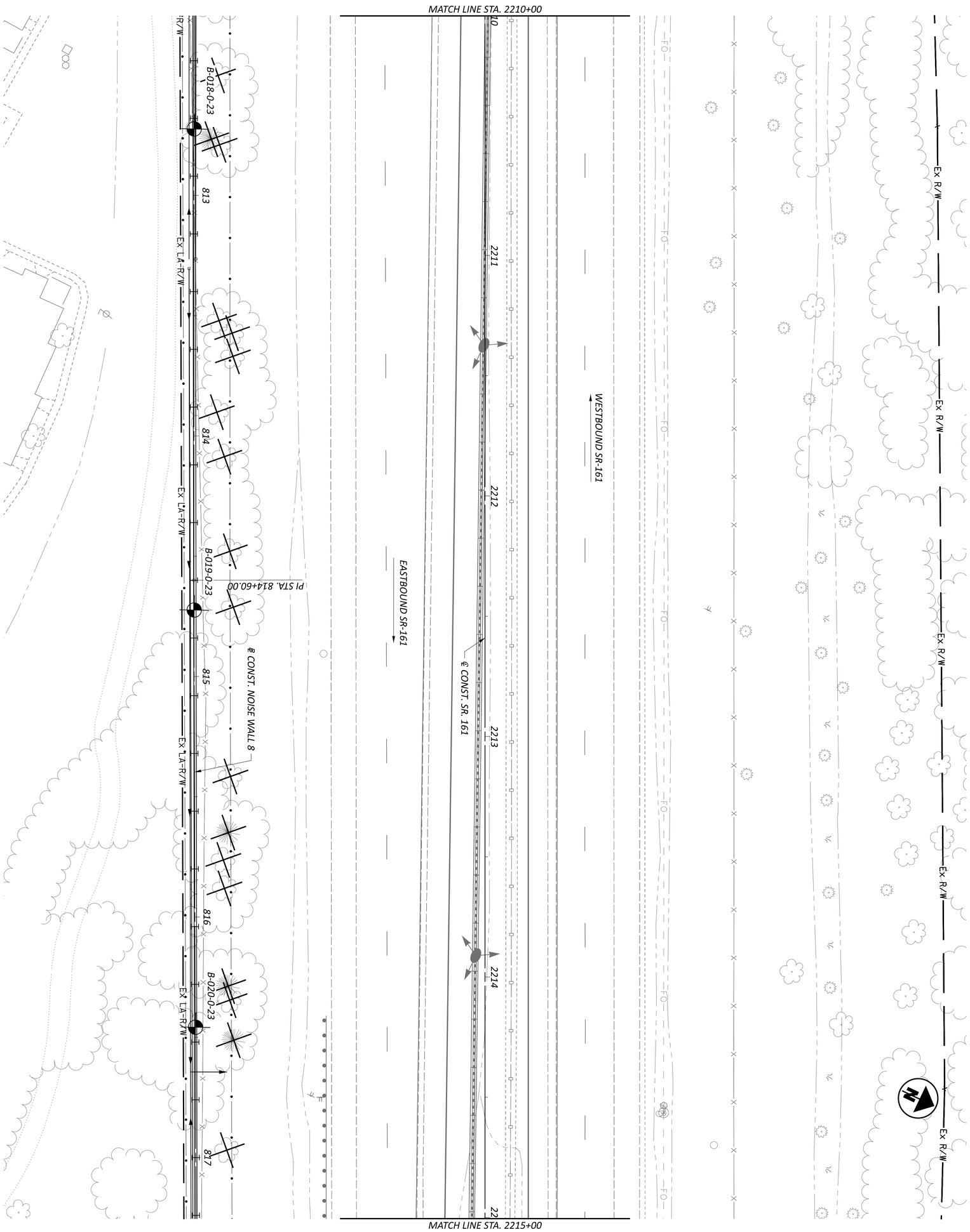

BORING PLAN NOISE WALL 8
STA. 2210+00.00 TO STA. 2215+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40

SHEET	P.0
TOTAL	0
PROJECT ID	117607
REVIEWER	DEK MM-DD-YY
DESIGNER	JAS
DESIGN AGENCY	RESOURCE INTERNATIONAL

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COLUMBUS, OHIO 43231
(614) 823-4949

FRA-161-15.80 NOISE WALLS

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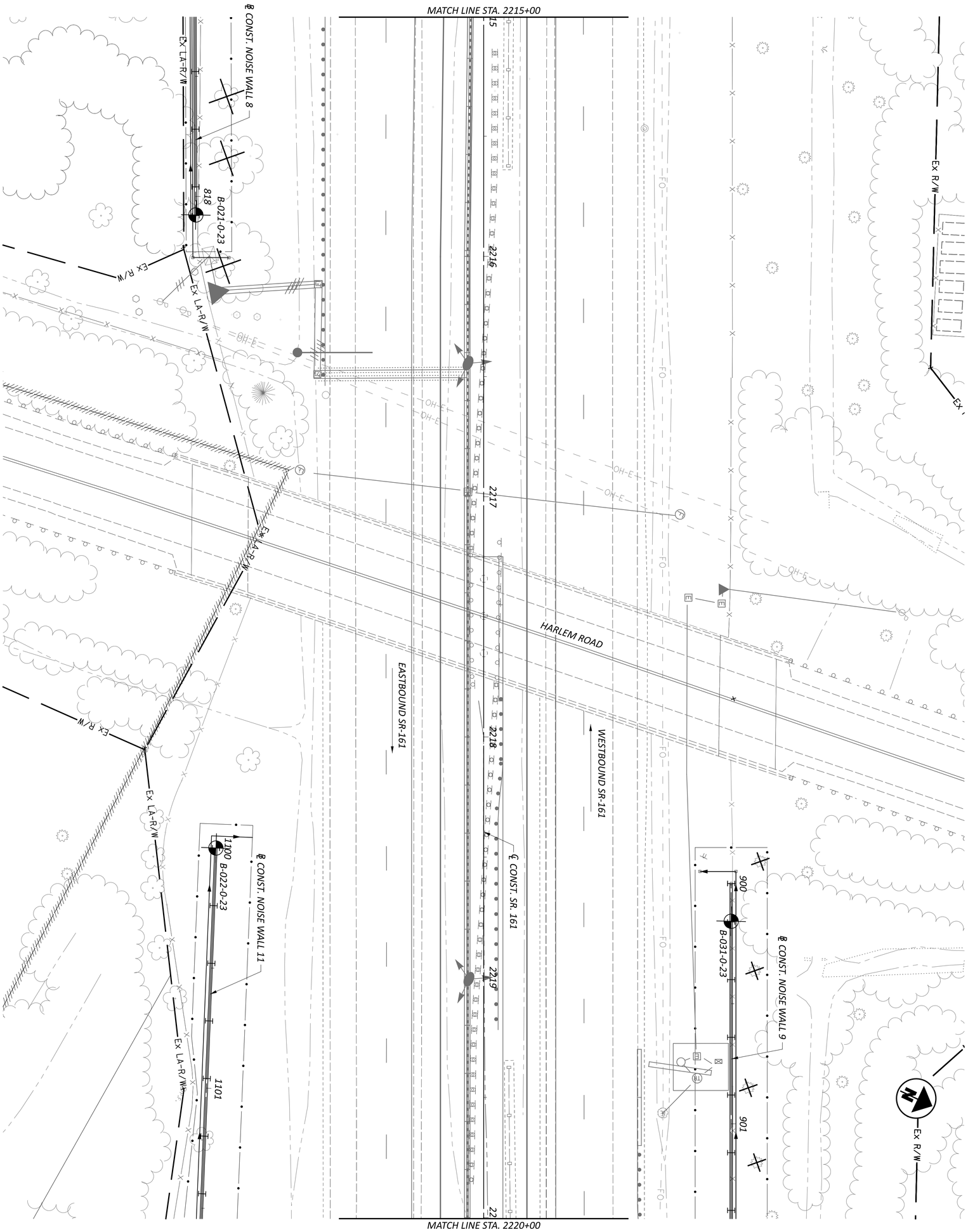

SHEET P.8 TOTAL 18	PROJECT ID 117607	REVIEWER DEK 1/1924	DESIGNER JAS	6350 PRESIDENTIAL GATEWAY COLUMBUS, OHIO 43231 (614) 824-3369	DESIGN AGENCY RESOURCE INTERNATIONAL

BORING PLAN - NOISE WALLS 8, 9, AND 11
STA. 2215+00.00 TO STA. 2220+00.00

HORIZONTAL SCALE IN FEET
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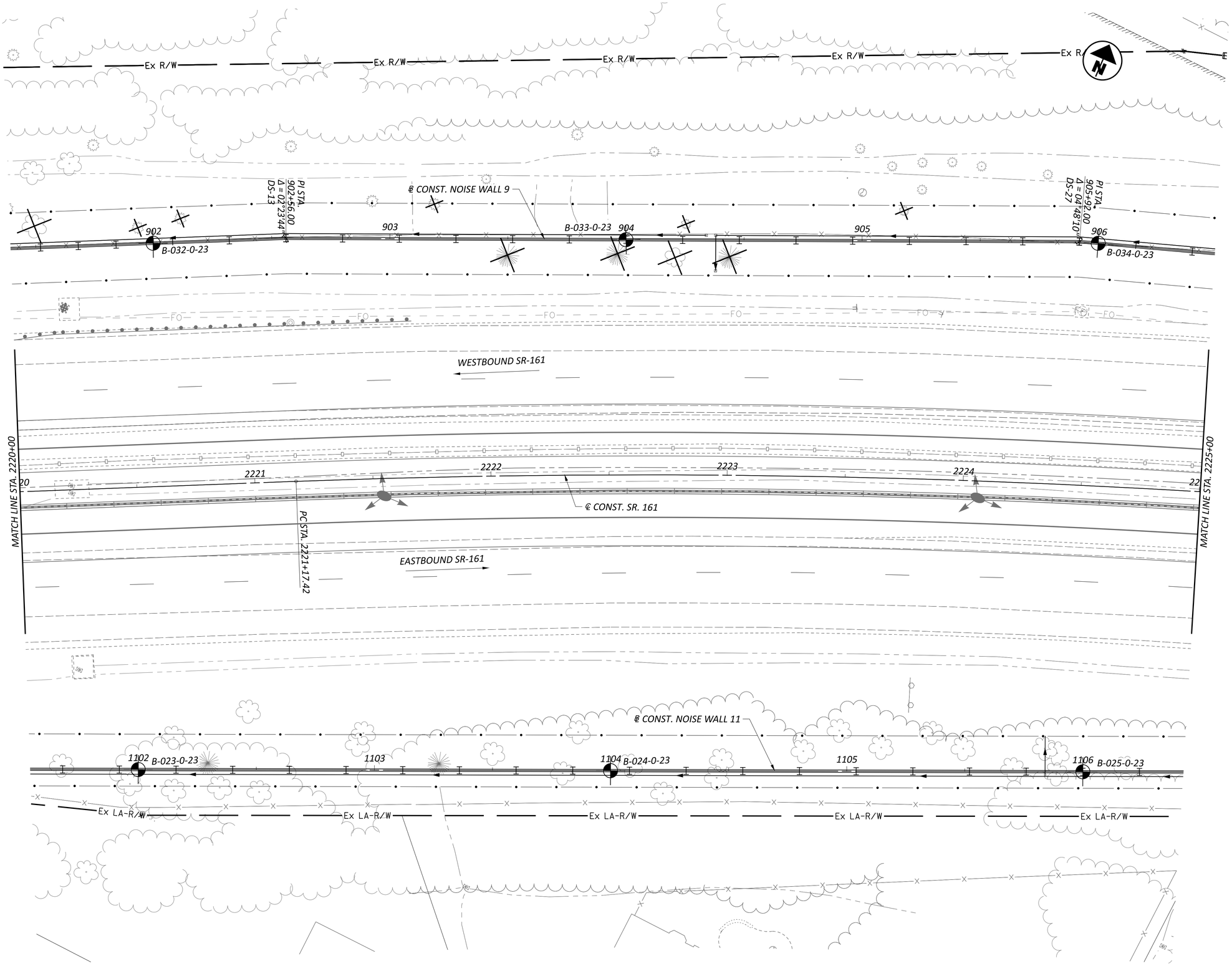
10 40



HORIZONTAL SCALE IN FEET

0 10 20 40

BORING PLAN - NOISE WALLS 9 AND 11
STA. 2220+00.00 TO STA.2225+00.00

FRA-161-15.80 NOISE WALLS

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DESIGNER: JAS
REVIEWER: DEK MM-DD-YY
PROJECT ID: 117607
SHEET: P.0 TOTAL: 0

FRA-161-15.80 NOISE WALLS

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BORING PLAN - NOISE WALLS 9 AND 11
STA. 2225+00.00 TO STA. 2230+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40

SHEET	P.0
TOTAL	0
PROJECT ID	117607
REVIEWER	DEK MM-DD-YY
DESIGNER	JAS
DESIGN AGENCY	RESOURCE INTERNATIONAL
	6161 PRESIDENTIAL GATEWAY COLUMBUS, OHIO 43231 (614) 882-4369

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 21 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:58:43 PM USER: kevinj
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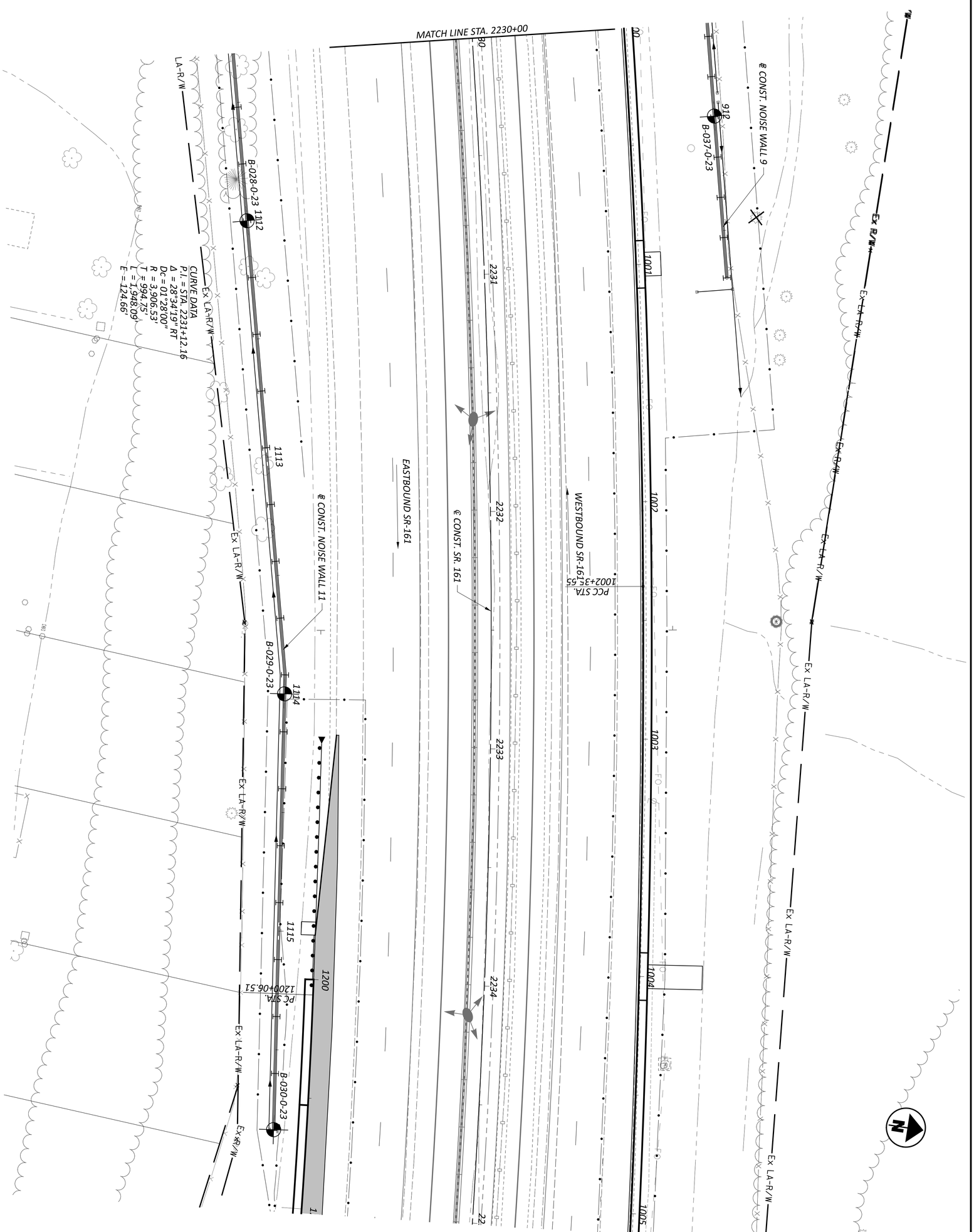
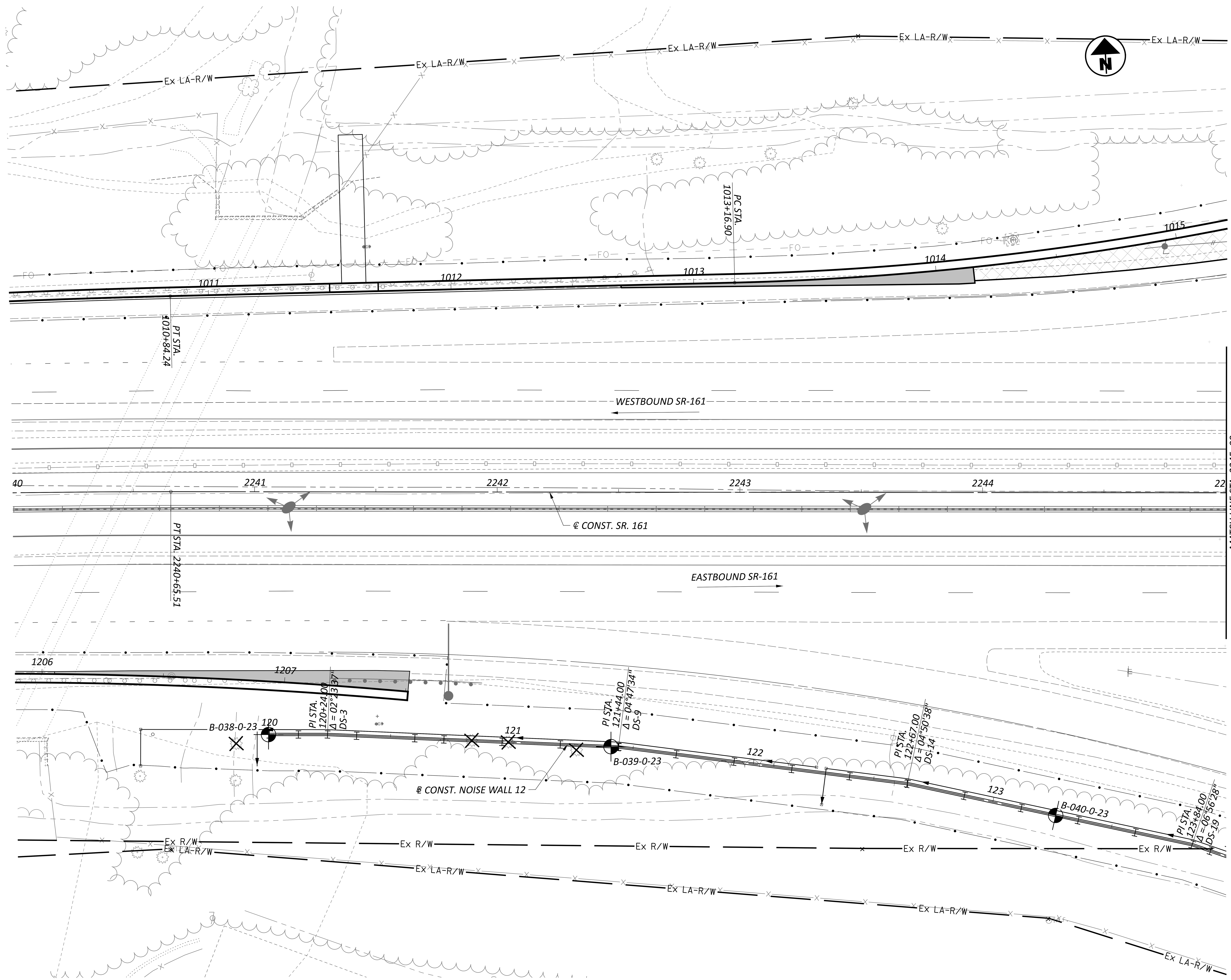


SHEET P.0 | TOTAL 0	DESIGN AGENCY	BORING PLANS - NOISE WALLS 9 AND 11 STA. 2230+00.00 TO STA. 2235+00.00	HORIZONTAL SCALE IN FEET 0 20 10 40
PROJECT ID 117607	RESOURCE INTERNATIONAL 6161 PRESIDENTIAL GATEWAY COLUMBUS, OHIO 43231 (614) 823-4949		
DEK MM-DD-YY			
REVIEWER JAS			
DESIGNER			



HORIZONTAL SCALE IN FEET

0 10 20 40

BORING PLAN - NOISE WALL 12
STA. 2240+00.00 TO STA. 2245+00.00

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DESIGNER
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REVIEWER
DEK MM-DD-YY

PROJECT ID
117607

SHEET P.0
TOTAL 0

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 23 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:58:49 PM USER: kevinj
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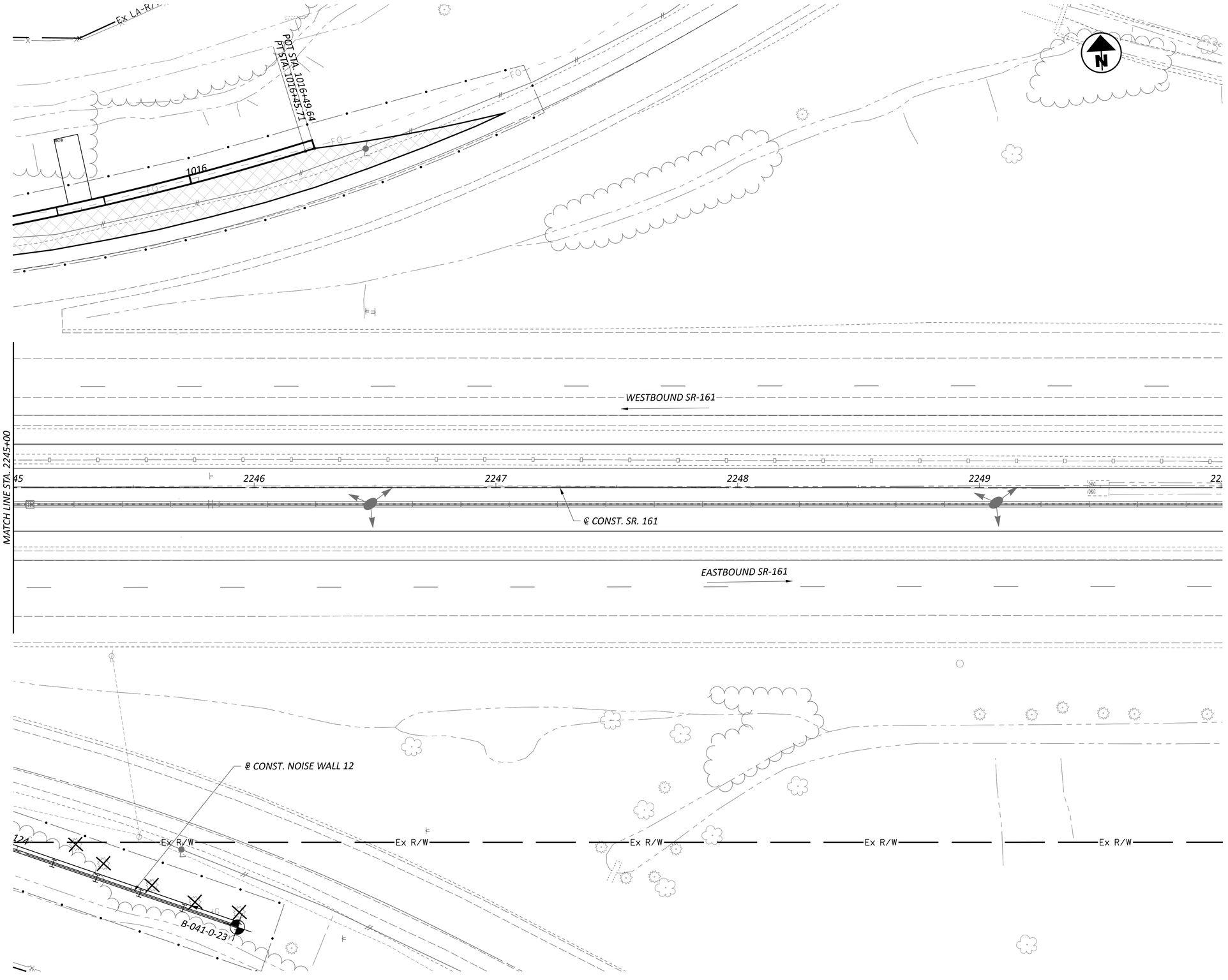

HORIZONTAL SCALE IN FEET
0 10 20 40

BORING PLAN - NOISE WALL 12
STA. 2245+00.00 TO STA. 2250+00.00

FRA-161-15.80 NOISE WALLS

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DESIGNER: JAS
REVIEWER: DEK MM-DD-YY
PROJECT ID: 117607
SHEET: P.0 TOTAL: 0

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FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 32 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:58:58 PM USER: kevinj
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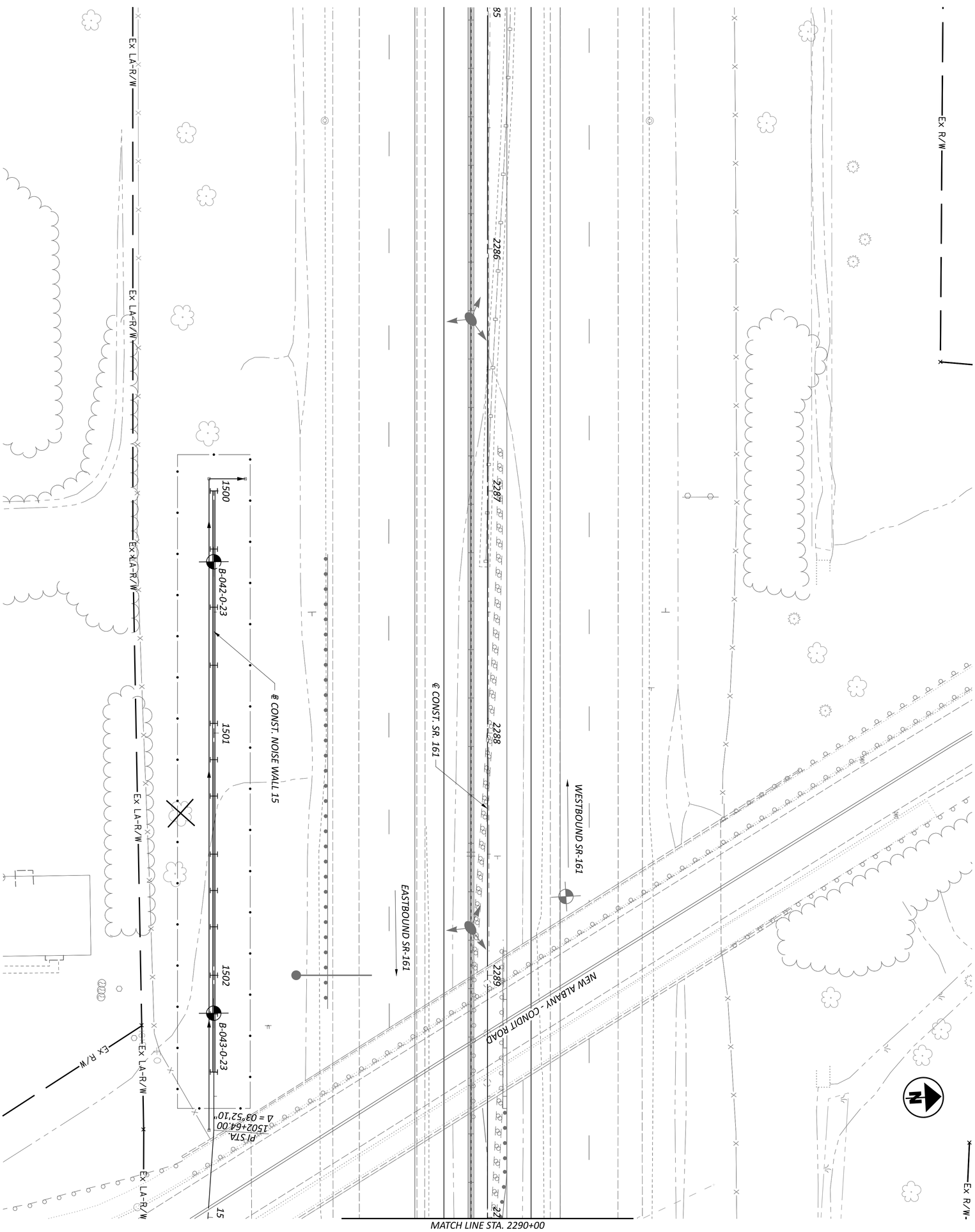

BORING PLAN - NOISE WALL 15
STA. 2285+00.00 TO STA. 2290+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40

SHEET	P.0
TOTAL	0
PROJECT ID	117607
REVIEWER	DEK MM-DD-YY
DESIGNER	JAS

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COLUMBUS, OHIO 43231
(614) 824-2369

DESIGN AGENCY

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 33 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:59:03 PM USER: kevinj
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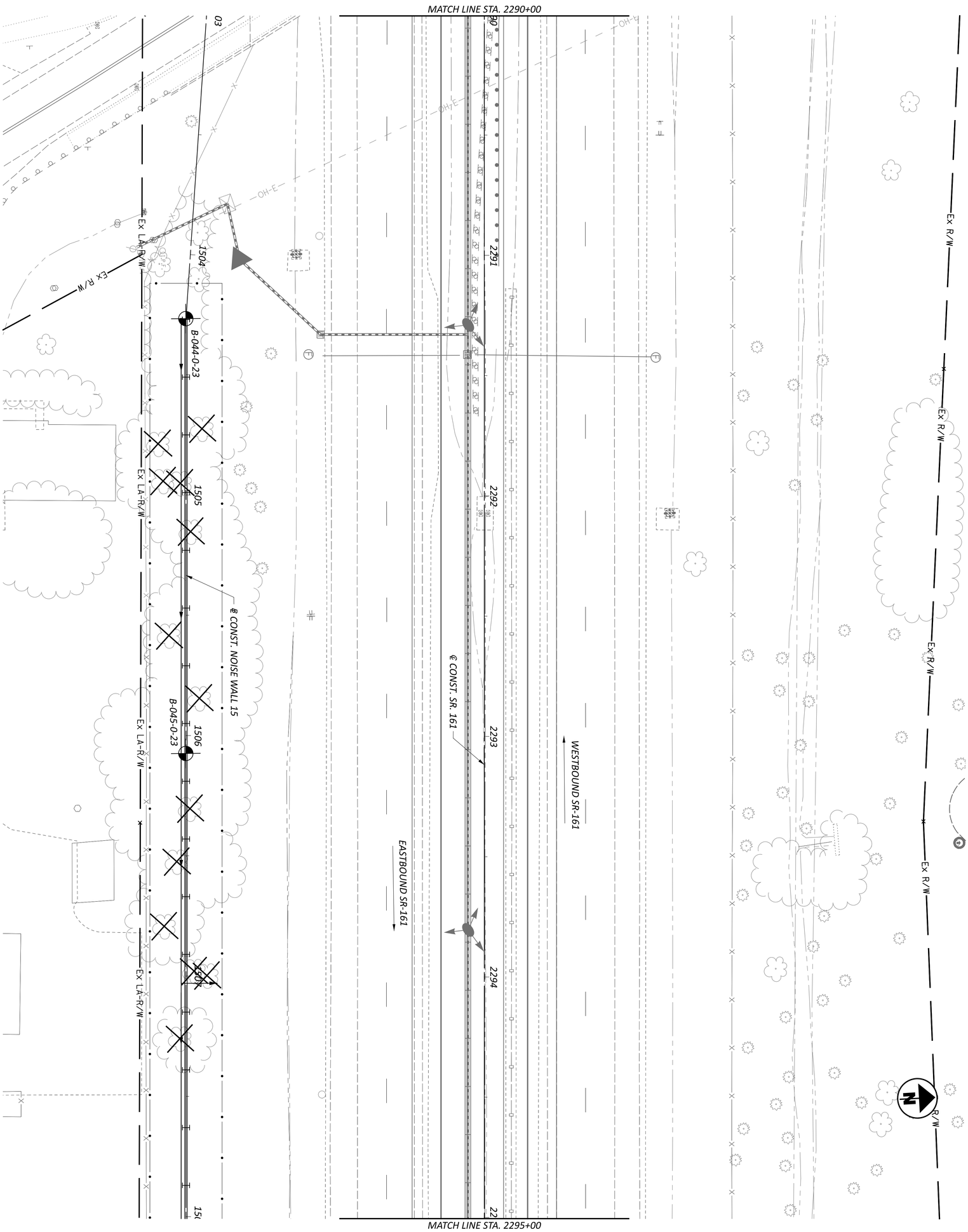

SHEET P.0 / TOTAL 0	PROJECT ID 117607	REVIEWER DEK MM-DD-YY	DESIGNER JAS

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COLUMBUS, OHIO 43231
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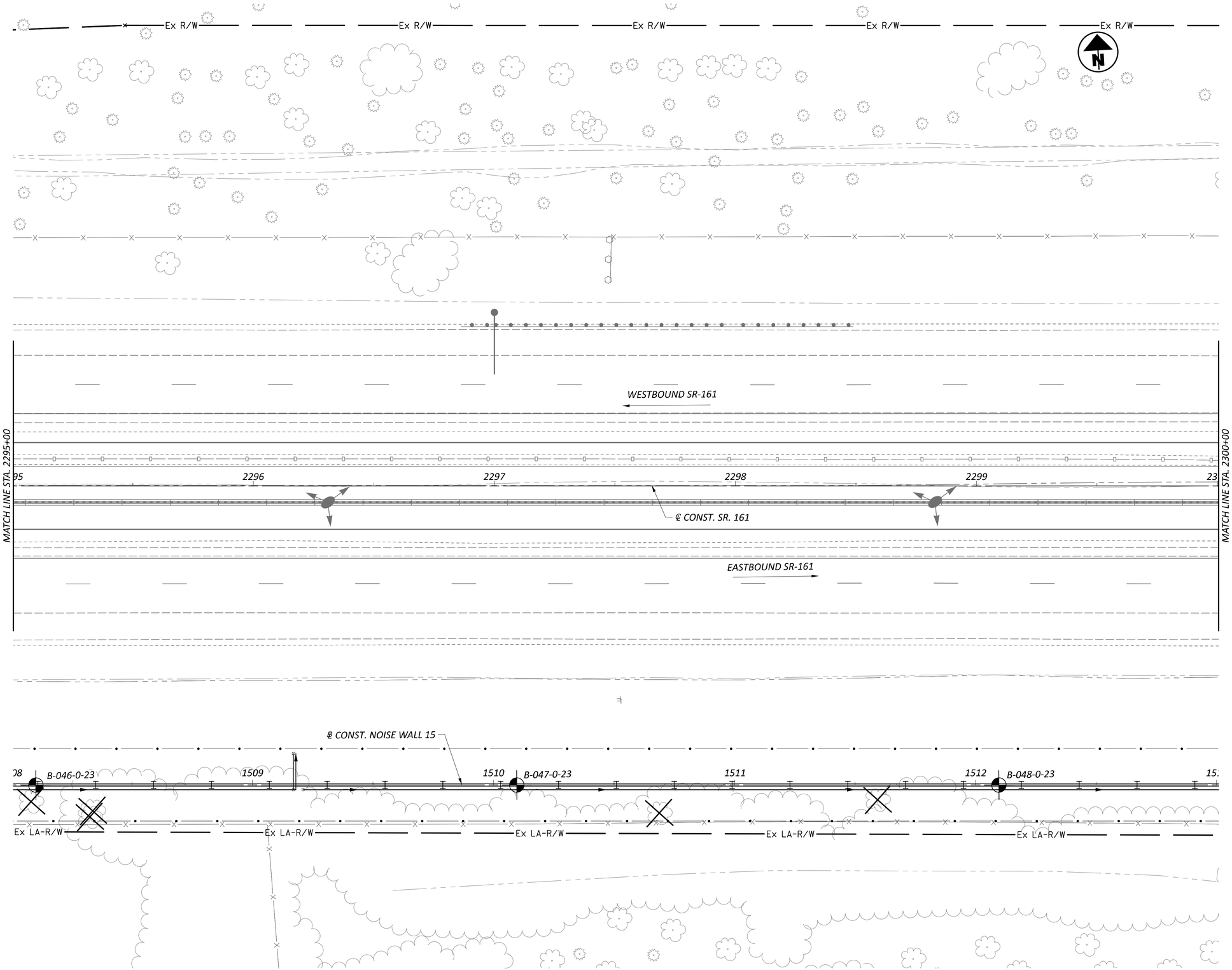
DESIGN AGENCY

BORING PLAN - NOISE WALL 15
STA. 2290+00.00 TO STA. 2295+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40



HORIZONTAL SCALE IN FEET

0 10 20 40

BORING PLAN - NOISE WALL 15
STA. 2295+00.00 TO STA. 2300+00.00

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 34 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:59:07 PM USER: kevinj
J:\GEOTECH\Geotech Connect Projects\2023\W-23-107 FRA-161-15.80 NOISE WALLS\117607\400-Engineering\Geotechnical\Sheets\117607_BPLW15-13.dgn

DESIGN AGENCY
RESOURCE INTERNATIONAL
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNER JAS

REVIEWER DEK MM-DD-YY

PROJECT ID 117607

SHEET P.0 | TOTAL 0

FRA-161-15.80 NOISE WALLS

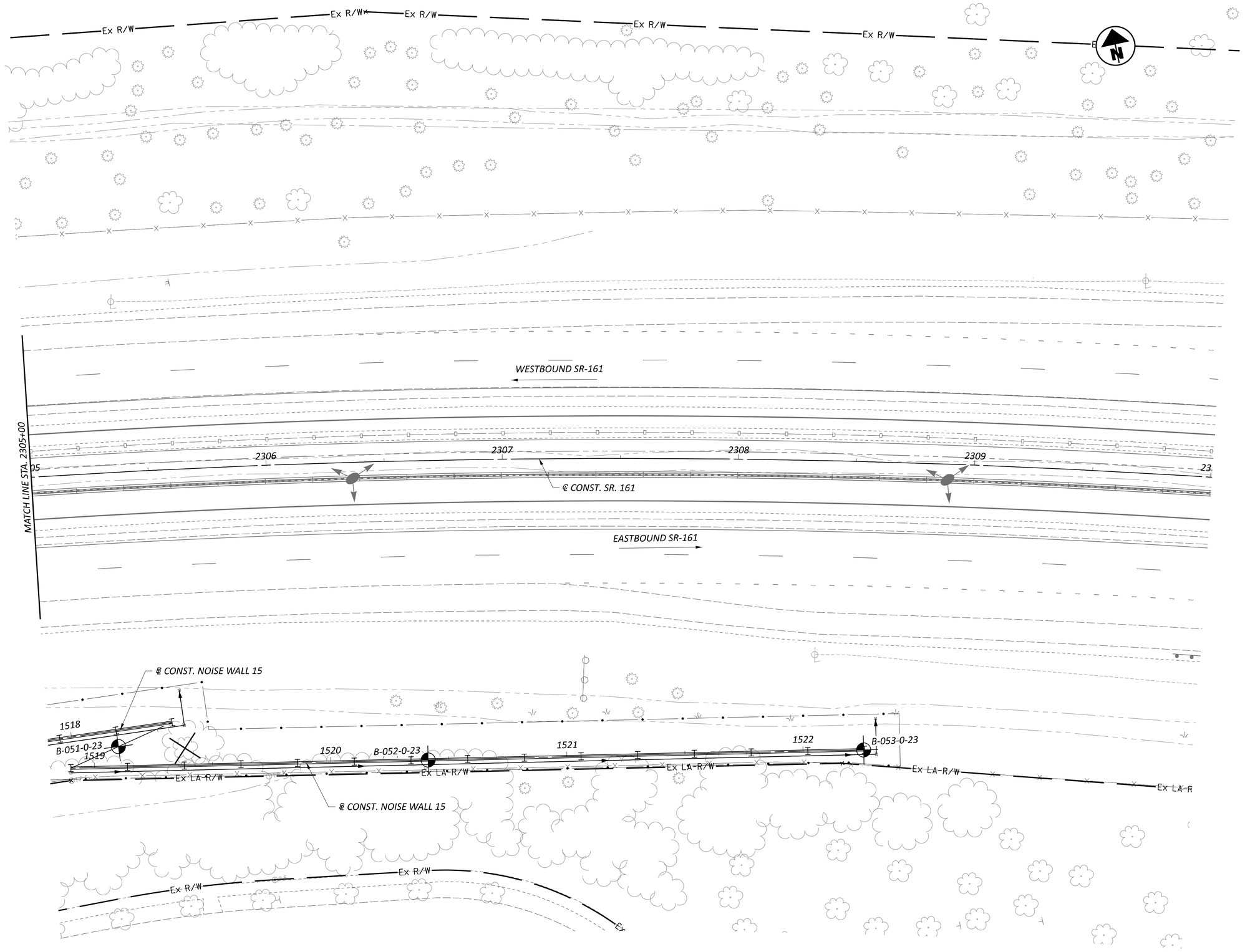
MODEL: CLP_SR161 - Plan 3S PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:59:10 PM USER: kevinj
J:\GEOTECH\Geotech Connect Projects\2023\W-23-107 FRA-161-15.80 NOISE WALLS\117607\400-Engineering\Geotechnical\Sheets\117607_BPLW15-14.dgn

BORING PLAN - NOISE WALL 15
STA. 2300+00.00 TO STA. 2305+00.00

HORIZONTAL SCALE IN FEET
0 20
10 40

SHEET	P.0
TOTAL	0
PROJECT ID	117607
REVIEWER	DEK MM-DD-YY
DESIGNER	JAS
DESIGN AGENCY	RESOURCE INTERNATIONAL

6366 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949



HORIZONTAL SCALE IN FEET
0 10 20 40

BORING PLAN - NOISE WALL 15
STA. 2305+00.00 TO STA. 2310+00.00

FRA-161-15.80 NOISE WALLS

MODEL: CLP_SR161 - Plan 36 PAPERSIZE: 34x22 (in.) DATE: 1/18/2024 TIME: 3:59:14 PM USER: kevinj
J:\GEOTECH\Geotech Connect Projects\2023\W-23-107 FRA-161-15.80 NOISE WALLS\117607\400-Engineering\Geotechnical\Sheets\117607_BPLW15-15.dgn

DESIGN AGENCY
RESOURCE INTERNATIONAL
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNER: JAS
REVIEWER: DEK MM-DD-YY
PROJECT ID: 117607
SHEET: P.0 TOTAL: 0

APPENDIX II

SUMMARY OF BORINGS

FRA-161-15.80 Noise Walls
PID No. 117607
Rii Project No. W-23-107

Boring	Element	Latitude	Longitude	Elevation	Alignment	Station	Offset
B-001-0-23	Wall 3	40.080429	-82.864610	966.3	CL Wall 3	300+00	0
B-002-0-23		40.080609	-82.863925	968.1		302+00	0
B-003-0-23		40.080806	-82.863307	969.1		304+00	0
B-004-0-23		40.081003	-82.862692	969.2		305+76	0
B-005-0-23	Wall 6	40.087831	-82.843714	961.5	CL Wall 6	600+00	0
B-006-0-23		40.088035	-82.843136	968.1		601+77	0
B-007-0-23		40.088248	-82.842572	969.0		603+60	0
B-008-0-23		40.088448	-82.842015	970.0		605+28	0
B-009-0-23	Wall 8	40.086999	-82.844104	960.9	CL SR 161	2192+50	123' RT
B-010-0-23		40.087252	-82.843476	961.8		2194+50	113' RT
B-011-0-23		40.087493	-82.842814	964.3		2196+50	111' RT
B-012-0-23		40.087734	-82.842176	967.1		2198+50	117' RT
B-013-0-23		40.087953	-82.841539	967.4	CL Wall 8	808+00	0
B-014-0-23		40.088209	-82.840922	966.4		810+00	0
B-015-0-23		40.088482	-82.840308	966.5		812+00	0
B-016-0-23		40.088693	-82.839666	968.4		814+00	0
B-017-0-23		40.088908	-82.839020	970.7		816+00	0
B-018-0-23		40.089106	-82.838365	975.5		818+00	0
B-019-0-23		40.089329	-82.837734	974.9		820+00	0
B-020-0-23		40.089531	-82.837178	974.3		821+73	0
B-021-0-23		40.089729	-82.836617	974.1		823+48	0
B-022-0-23	Wall 11	40.090031	-82.835839	975.0	CL Wall 11	1100+00	0
B-023-0-23		40.090244	-82.835195	977.0		1102+00	0
B-024-0-23		40.090471	-82.834551	979.6		1104+00	0
B-025-0-23		40.090688	-82.833893	980.2		1106+00	0
B-026-0-23		40.090906	-82.833225	979.8		1108+00	0
B-027-0-23		40.091062	-82.832539	981.5		1110+00	0
B-028-0-23		40.091197	-82.831841	982.2		1112+00	0
B-029-0-23		40.091321	-82.831138	983.0		1114+00	0
B-030-0-23		40.091378	-82.830480	983.0		1115+84	0
B-031-0-23	Wall 9	40.090580	-82.836109	974.5	CL Wall 9	900+16	0
B-032-0-23		40.090809	-82.835481	975.2		902+00	0
B-033-0-23		40.091043	-82.834836	977.2		904+00	0
B-034-0-23		40.091273	-82.834170	979.3		906+00	0
B-035-0-23		40.091443	-82.833496	981.4		908+00	0
B-036-0-23		40.091597	-82.832807	983.2		910+00	0
B-037-0-23		40.091724	-82.832101	984.9		912+00	0
B-038-0-23	Wall 12	40.091445	-82.828386	979.3	CL Wall 12	120+00	0
B-039-0-23		40.091317	-82.827731	986.4		121+89	0
B-040-0-23		40.091207	-82.827079	987.0		123+75	0
B-041-0-23		40.091033	-82.826474	988.2		125+52	0
B-042-0-23	Wall 15	40.090577	-82.811738	1030.3	CL Wall 15	1500+29	0
B-043-0-23		40.090545	-82.811039	1035.0		1502+16	0
B-044-0-23		40.090479	-82.810313	1038.3		1504+27	0
B-045-0-23		40.090452	-82.809651	1038.9		1506+08	0
B-046-0-23		40.090415	-82.808921	1039.1		1508+10	0
B-047-0-23		40.090391	-82.808171	1039.2		1510+10	0
B-048-0-23		40.090360	-82.807478	1037.4		1512+10	0
B-049-0-23		40.090327	-82.806756	1038.9		1514+10	0
B-050-0-23		40.090286	-82.806054	1038.0		1516+10	0
B-051-0-23		40.090226	-82.805330	1038.1		1518+19.3	7' RT
B-052-0-23		40.090130	-82.804859	1038.6		1520+41	0
B-053-0-23		40.090039	-82.804245	1036.5		1522+26	0

APPENDIX III

DESCRIPTION OF SOIL AND ROCK TERMS

DESCRIPTION OF SOIL TERMS

The following terminology was used to describe soils throughout this report and is generally adapted from ASTM 2487/2488.

Granular Soils – USCS GW, GP, GM, GC, SW, SP, SM, SC, ML (non-plastic)
The relative compactness of granular soils is described as:

Description	Blows per foot – SPT (N_{60})		
Very Loose	Below		5
Loose	5	-	10
Medium Dense	11	-	30
Dense	31	-	50
Very Dense	Over		50

Cohesive Soils – USCS ML, CL, OL, MH, CH, OH, PT
The relative consistency of cohesive soils is described as:

Description	Unconfined Compression (tsf)		
Very Soft	Less than		0.25
Soft	0.25	-	0.5
Medium Stiff	0.5	-	1.0
Stiff	1.0	-	2.0
Very Stiff	2.0	-	4.0
Hard	Over		4.0

Gradation - The following size-related denominations are used to describe soils:

Soil Fraction		Size
Boulders		Larger than 12”
Cobbles		12” to 3”
Gravel	coarse	3” to ¾”
	fine	¾” to 4.75 mm (¾” to #4 Sieve)
Sand	coarse	4.75 mm to 2.0 mm (#4 to #10 Sieve)
	medium	2.0 mm to 0.42 mm (#10 to #40 Sieve)
	fine	0.42 mm to 0.074 mm (#40 to #200 Sieve)
Silt		0.074 mm to 0.005 mm (#200 to 0.005 mm)
Clay		Smaller than 0.005 mm

Modifiers of Components – The following modifiers indicate the range of percentages of the minor soil components:

Term	Range		
Trace	0%	-	10%
Little	10%	-	20%
Some	20%	-	35%
And	35%	-	50%

Moisture Table - The following moisture-related denominations are used to describe cohesive soils:

Term	Range
Dry	0% to 10%
Damp	>2% below Plastic Limit
Moist	2% below to 2% above Plastic Limit
Very Moist	>2% above Plastic Limit
Wet	≥ Liquid Limit

Organic Content – The following terms are used to describe organic soils:

Term	Organic Content (%)
Slightly organic	2-4
Moderately organic	4-10
Highly organic	>10

Bedrock – The following terms are used to describe bedrock hardness:

Term	Parameter
Very Weak	Can be carved with knife and scratched by fingernail.
Weak	Can be grooved or gouged with knife readily.
Slightly Strong	Can be grooved or gouged 0.05 in deep with knife.
Moderately Strong	Can be scratched with knife or pick.
Strong	Can be scratched with knife or pick with difficulty.
Very Strong	Cannot be scratched by knife or pick. Hard repeated blows of hammer to detach specimen.
Extremely Strong	Cannot be scratched by knife or pick. Hard repeated blows of hammer to chip hand specimen.

DESCRIPTION OF ROCK TERMS

The following terminology was used to describe the rock throughout this report and is generally adapted from ASTM D5878 and the ODOT Specifications for Geotechnical Explorations.

Weathering – Describes the degree of weathering of the rock mass:

Description	Field Parameter
Unweathered	No evidence of any chemical or mechanical alteration of the rock mass. Mineral crystals have a right appearance with no discoloration. Fractures show little or not staining on surfaces.
Slightly Weathered	Slight discoloration of the rock surface with minor alterations along discontinuities. Less than 10% of the rock volume presents alteration.
Moderately Weathered	Portions of the rock mass are discolored as evident by a dull appearance. Surfaces may have a pitted appearance with weathering "halos" evident. Isolated zones of varying rock strengths due to alteration may be present. 10 to 15% of the rock volume presents alterations.
Highly Weathered	Entire rock mass appears discolored and dull. Some pockets of slightly to moderately weathered rock may be present and some areas of severely weathered materials may be present.
Severely Weathered	Majority of the rock mass reduced to a soil-like state with relic rock structure discernable. Zones of more resistant rock may be present but the material can generally be molded and crumbled by hand pressures.

Strength of Bedrock – The following terms are used to describe the relative strength of bedrock:

Description	Field Parameter
Very Weak	Can be carved with knife and scratched by fingernail. Pieces 1 in. thick can be broken by finger pressure.
Weak	Can be grooved or gouged with knife readily. Small, thin pieces can be broken by finger pressure.
Slightly Strong	Can be grooved or gouged 0.05 in deep with knife. 1 in. size pieces from hard blows of geologist hammer.
Moderately Strong	Can be scratched with knife or pick. 1/4 in. size grooves or gouges from blows of geologist hammer.
Strong	Can be scratched with knife or pick with difficulty. Hard hammer blows to detach hand specimen.
Very Strong	Cannot be scratched by knife or pick. Hard repeated blows of geologist hammer to detach hand specimen.
Extremely Strong	Cannot be scratched by knife or pick. Hard repeated blows of geologist hammer to chip hand specimen.

Bedding Thickness – Description of bedding thickness as the average perpendicular distances between bedding surfaces:

Description	Thickness
Very Thick	Greater than 36 inches
Thick	18 to 36 inches
Medium	10 to 18 inches
Thin	2 to 10 inches
Very Thin	0.4 to 2 inches
Laminated	0.1 to 0.4 inches
Thinly Laminated	Less than 0.1 inches

Fracturing – Describes the degree and condition of fracturing (fault, joint, or shear):

Degree of Fracturing

Description	Spacing
Unfractured	Greater than 10 feet
Intact	3 to 10 feet
Slightly Fractured	1 to 3 feet
Moderately Fractured	

Aperture Width

Description	Width
Open	Greater than 0.2 inches
Narrow	0.05 to 0.2 inches
Tight	Less than 0.05 inches

Surface Roughness

Description	Criteria
Very Rough	Near vertical steps and ridges occur on surface
Slightly Rough	Asperities on the surfaces distinguishable
Slickensided	Surface has smooth, glassy finish, evidence of Striations

RQD – Rock Quality Designation (calculation shown in report) and Rock Quality (ODOT, GB 3, January 13, 2006):

RQD %	Rock Index Property Classification (based on RQD, not slake durability index)
0 – 25%	Very Poor
26 – 50%	Poor
51 – 70%	Fair
71 – 85%	Good
86 – 100%	Very Good

APPENDIX IV

BORING LOGS: B-001-0-23 THROUGH B-053-0-23

ROCK CORE PHOTOGRAPHS

BORING LOGS

Definitions of Abbreviations

AS = Auger sample

GI = Group index as determined from the Ohio Department of Transportation classification system

HP = Unconfined compressive strength as determined by a hand penetrometer (tons per square foot)

LL_o = Oven-dried liquid limit as determined by ASTM D4318. Per ASTM D2487, if LL_o/LL is less than 75 percent, soil is classified as "organic".

LOI = Percent organic content (by weight) as determined by ASTM D2974 (loss on ignition test)

PID = Photo-ionization detector reading (parts per million)

QR = Unconfined compressive strength of intact rock core sample as determined by ASTM D2938 (pounds per square inch)

QU = Unconfined compressive strength of soil sample as determined by ASTM D2166 (pounds per square foot)

RC = Rock core sample

REC = Ratio of total length of recovered soil or rock to the total sample length, expressed as a percentage

RQD = Rock quality designation – estimate of the degree of jointing or fracture in a rock mass, expressed as a percentage:

$$\frac{\sum \text{segments equal to or longer than 4.0 inches}}{\text{core run length}} \times 100$$

S = Sulfate content (parts per million)

SPT = Standard penetration test blow counts, per ASTM D1586. Driving resistance recorded in terms of blows per 6-inch interval while letting a 140-pound hammer free fall 30 inches to drive a 2-inch outer diameter (O.D.) split spoon sampler a total of 18 inches. The second and third intervals are added to obtain the number of blows per foot (N_m).

N_{60} = Measured blow counts corrected to an equivalent (60 percent) energy ratio (ER) by the following equation: $N_{60} = N_m*(ER/60)$

SS = Split spoon sample

2S = For instances of no recovery from standard SS interval, a 2.5 inch O.D. split spoon is driven the full length of the standard SS interval plus an additional 6.0 inches to obtain a representative sample. Only the final 6.0 inches of sample is retained. Blow counts from 2S sampling are not correlated with N_{60} values.

3S = Same as 2S, but using a 3.0 inch O.D. split spoon sampler.

TR = Top of rock

W = Initial water level measured during drilling

▽ = Water level measured at completion of drilling

Classification Test Data

Gradation (as defined on Description of Soil Terms):

GR = % Gravel
SA = % Sand
SI = % Silt
CL = % Clay

Atterberg Limits:

LL = Liquid limit
PL = Plastic limit
PI = Plasticity Index
WC = Water content (%)

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 300+00 / 0'	**EXPLORATION ID B-001-0-23**	
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 3		
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 966.3 (MSL) EOB: 15.0 ft.		PAGE 1 OF 1
START: 11/22/23 END: 11/22/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.080429, -82.864610		

MATERIAL DESCRIPTION AND NOTES	ELEV. 966.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.3' -TOPSOIL (3.5")	966.0																	
HARD, BROWN **SILT AND CLAY**, LITTLE GRAVEL, TRACE SAND, DAMP.		1	6 10 12	32	56	SS-1	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	
		2																
		3																
	962.0	4	11 50/4"	-	100	SS-2	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
SANDSTONE : GRAY, HIGHLY WEATHERED.	961.3	TR																
SANDSTONE : BROWN AND GRAY, MODERATELY TO SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, IRON STAINED, PYRITIC, FRACTURED, NARROW APERTURE, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE CONDITION. -HIGHLY FRACTURED AND HEAVILY IRON STAINED FROM 5.0' - 7.0' -@ 6.6' - 7.0' 60 DEGREE FRACTURE		5																
		6																
		7	0		80	NQ2-1											CORE	
		8																
		9																
-@ 10.3' - 10.8' 45 DEGREE FRACTURE AND HEAVILY IRON STAINED		10																
		11																
-@10.8' - 13.6' SPECKLES OF PYRITE THROUGHOUT		12	45		100	NQ2-2											CORE	
		13																
		14																
	951.3	EOB 15																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 23.5 LBS CEMENT / 12 LBS BENTONITE POWDER / 20 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
1

Boring:
B-001-0-23

RC-1: 5.0-10.0’
REC (%):80
RQD (%):0

RC-2: 10.0-15.0’
REC (%):100
RQD (%):45

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 302+00 / 0'	**EXPLORATION ID B-002-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 3	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 968.1 (MSL) EOB: 15.3 ft.	PAGE 1 OF 1
START: 11/22/23 END: 11/22/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.080609, -82.863925	

MATERIAL DESCRIPTION AND NOTES	ELEV. 968.1	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
0.4' -TOPSOIL (4.5")	967.7																	
HARD, BROWN-GRAY **CLAY**, SOME SILT, LITTLE COARSE TO FINE SAND, TRACE SAND AND GRAVEL, MOIST. -@2.8' - 3.4' COBBLES	965.1	1 2 3	3 5 7	17	56	SS-1	4.5+	3	5	8	34	50	55	21	34	20	A-7-6 (19)	
VERY DENSE, GRAY **GRAVEL WITH SAND AND SILT**, DAMP.	963.5	4	14 17 50/2"	-	100	SS-2	4.5+	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
SANDSTONE : GRAY, HIGHLY WEATHERED.	962.1	TR 5 6																
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, PYRITIC, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE. -@6.0' - 9.7' APPROXIMATELY 4MM PYRITE NODULES THROUGHOUT -@9.7' CLAY SEAM		7 8 9 10	0		68	NQ2-1											CORE	
-@10.25' - 12.0' MANY PYRITE FLECKS THROUGHOUT -@11.0' - 15.75' FEW PYRITE FLECKS	952.9	11 12 13 14 EOB 15	53		96	NQ2-2											CORE	

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 23.5 LBS CEMENT / 12 LBS BENTONITE POWDER / 20 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
2

Boring:
B-002-0-23

RC-1: 6.0-10.25’
REC (%):68
RQD (%):0

RC-2: 10.25-15.25’
REC (%):96
RQD (%):53

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 304+00 / 0'	**EXPLORATION ID B-003-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 3	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 969.1 (MSL) EOB: 15.0 ft.	PAGE 1 OF 1
START: 11/20/23 END: 11/22/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.080806, -82.863307	

MATERIAL DESCRIPTION AND NOTES	ELEV. 969.1	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
0.5' -TOPSOIL (5.5")	968.6																	
HARD, BROWN **SILT AND CLAY**, TRACE GRAVEL		1	3 5 6	16	47	SS-1	4.5+	-	-	-	-	-	-	-	-	-	A-6a (V)	
		2																
		3																
	964.4	4	5 6 50/3"	-	60	SS-2	4.5+	-	-	-	-	-	-	-	-	-	A-6a (V)	
SANDSTONE : BROWN, HIGHLY WEATHERED.	964.1	TR																
SANDSTONE : BROWN TO GRAY, MODERATELY TO SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, PYRITIC, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE. -@7.0' - 9.0' HIGHLY FRACTURED, RED IRON OXIDE STAINING IN FRACTURES		5	0		80	NQ2-1												CORE
		6																
		7																
		8																
		9																
-@10.0' - 11.0' 4MM PYRITE NODULES THROUGHOUT -@11.0' - 11.2' CLAY SEAM -@11.2' - 13.5' MANY TINY PYRTIE SPECKS THROUGHOUT		10	55		100	NQ2-2												CORE
		11																
		12																
		13																
		14																
-@13.5' - 15.0' LITTLE PYRITE	954.1	EOB 15																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 23.5 LBS CEMENT / 12 LBS BENTONITE POWDER / 20 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
3

Boring:
B-003-0-23

RC-1: 5.0-10.0'
REC (%):80
RQD (%):0

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
4

Boring:
B-003-0-23

RC-2: 10.0-15.0'
REC (%):100
RQD (%):55

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 305+76 / 0'	**EXPLORATION ID B-004-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 3	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 969.2 (MSL) EOB: 15.0 ft.	PAGE 1 OF 1
START: 11/20/23 END: 11/20/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.081003, -82.862692	

MATERIAL DESCRIPTION AND NOTES	ELEV. 969.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.4' -TOPSOIL (5.0")	968.8																	
HARD, MOTTLED BROWN **CLAY**, SOME SILT, TRACE COARSE TO FINE SAND, MOIST.		1	3 4 7	16	36	SS-1	4.5+	0	1	6	35	58	52	20	32	21	A-7-6 (18)	
		2																
		3																
		4	4 4 7	16	50	SS-2	4.5+	-	-	-	-	-	-	-	-	19	A-7-6 (V)	
	963.7	5																
SANDSTONE : GRAY, HIGHLY WEATHERED.		TR 6	50/2"	-	100	SS-3	-	-	-	-	-	-	-	-	-	10	Rock (V)	
		7																
		8																
	959.2	9	50/2"	-	100	SS-4	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, PYRITIC, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE. -@11.8' - 12.4' FRACTURE -@13.3' - 15.0' MANY TINY PYRITE NODULES THROUGHOUT		10																
		11																
		12	0		75	NQ2-1											CORE	
		13																
		14																
	954.2	EOB 15																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 23.5 LBS CEMENT / 12 LBS BENTONITE POWDER / 20 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
5

Boring:
B-004-0-23

RC-1: 10.0-15.0’
REC (%):75
RQD (%):0

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 600+00 / 0'	**EXPLORATION ID B-005-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 6	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 961.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/20/23 END: 11/20/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.087831, -82.843714	

MATERIAL DESCRIPTION AND NOTES	ELEV. 961.5	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
0.4' -TOPSOIL (5.0")	961.1																	
VERY STIFF TO HARD, DARK BROWN TO BROWNISH GRAY **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE GRAVEL, DAMP TO MOIST.		1	6 8 8	23	72	SS-1	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		2																
		3																
		4	5 6 10	23	56	SS-2	4.5+	-	-	-	-	-	-	-	-	22	A-6a (V)	
		5																
		6	8 16 23	56	100	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		7																
		8																
		9	7 7 8	22	56	SS-4	4.5+	9	11	16	31	33	28	16	12	13	A-6a (7)	
		10																
	948.5	11	4 4 5	13	33	SS-5	2.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
MEDIUM DENSE, DARK GRAY **COARSE AND FINE SAND**, LITTLE SILT, TRACE GRAVEL, WET.		12																
		13																
▽ 946.8		14	5 5 8	19	47	SS-6	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
W 946.0	946.0	15																
DENSE TO VERY DENSE, DARK GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, WET.		16	21 21 16	53	50	SS-7	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
		17																
		18																
		19	31 15 25	58	53	SS-8	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
		20																
		21																
		22	9 10 16	37	53	SS-9	-	51	17	10	13	9	NP	NP	NP	13	A-1-b (0)	
	938.5	23																
DENSE, DARK GRAY **COARSE AND FINE SAND**, TRACE FINE GRAVEL, TRACE SILT, WET.		24	8 12 18	43	64	SS-10	-	-	-	-	-	-	-	-	-	18	A-3a (V)	
	936.5	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 15.5' AND UPON COMPLETION @ 14.7'; CAVE-IN DEPTH @ 11.8'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 601+77 / 0'	**EXPLORATION ID B-006-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 6	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 968.1 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/20/23 END: 11/20/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088035, -82.843136	

MATERIAL DESCRIPTION AND NOTES	ELEV. 968.1	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
0.5' -TOPSOIL (5.5")	967.6																	
HARD, BROWN **SILT AND CLAY**, SOME CLAY, TRACE FINE GRAVEL, DAMP.		1	6 10 12	32	78	SS-1	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		2																
		3																
		4	7 12 13	36	75	SS-2	4.5+	7	11	16	32	34	29	17	12	14	A-6a (7)	
		5																
		6																
		7	7 9 11	29	100	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
	960.1	8																
DENSE TO MEDIUM DENSE, BROWN GRAY **GRAVEL WITH SAND, SILT, AND CLAY**, MOIST.		9	6 11 16	39	72	SS-4	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
		10																
		11																
		12	7 17 16	48	33	SS-5	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
		13																
W 954.6		14	9 15 16	45	0	SS-6	-	-	-	-	-	-	-	-	-	-		
▽ 952.6		15	13	-	67	2S-6A	-	-	-	-	-	-	-	-	-	15	A-2-4 (V)	
		16																
		17	21 18 15	48	44	SS-7	-	36	19	14	19	12	24	17	7	11	A-2-4 (0)	
	947.6	18																
DENSE, GRAY **COARSE AND FINE SAND**, LITTLE FINE GRAVEL, LITTLE SILT, WET.		19	16 12 8	29	64	SS-8	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
		20																
	945.1	21																
DENSE, GRAY **GRAVEL WITH SAND**, TRACE SILT, WET.		22	10 12 12	35	83	SS-9	-	-	-	-	-	-	-	-	-	12	A-3a (V)	
		23																
	943.1	24	16 15 15	43	97	SS-10	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
EOB		25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 13.5' AND UPON COMPLETION @ 15.5'; CAVE-IN DEPTH @ 12.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 603+60 / 0'	**EXPLORATION ID B-007-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 6	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 969.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/17/23 END: 11/17/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088248, -82.842572	

MATERIAL DESCRIPTION AND NOTES	ELEV. 969.0	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
0.4' -TOPSOIL (5.0")	968.6																	
HARD, BROWN TO BROWNISH GRAY **SILTY CLAY**, LITTLE COARSE TO FINE SAND, TRACE GRAVEL, DAMP TO MOIST.		1	5 5 7	17	83	SS-1	4.5+	4	10	13	31	42	34	18	16	21	A-6b (10)	
		2																
		3																
		4	12 14 15	42	36	SS-2	4.5+	-	-	-	-	-	-	-	-	16	A-6b (V)	
		5																
		6																
		7	8 12 16	40	100	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
		8																
		9	9 9 10	27	0	SS-4	-	-	-	-	-	-	-	-	-	-		
		10	22	-	100	2S-4A	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
		11																
		12	8 8 8	23	78	SS-5	4.5+	-	-	-	-	-	-	-	-	13	A-6b (V)	
	956.0	13																
MEDIUM DENSE TO VERY DENSE, GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST TO WET.		14	12 19 20	56	83	SS-6	-	-	-	-	-	-	-	-	-	7	A-1-b (V)	
		15																
		16																
		17	13 13 17	43	83	SS-7	-	24	39	15	12	10	NP	NP	NP	12	A-1-b (0)	
		18																
		19	15 16 36	75	100	SS-8	-	-	-	-	-	-	-	-	-	14	A-1-b (V)	
▽ 948.5		20																
W 948.0		21																
		22	16 20 18	55	42	SS-9	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
		23																
		24	5 7 8	22	44	SS-10	-	-	-	-	-	-	-	-	-	17	A-1-b (V)	
	944.0	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND UPON COMPLETION @ 20.5'; CAVE-IN DEPTH @ 13.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:55 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 605+28 / 0'	**EXPLORATION ID B-008-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 6	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 970.0 (MSL) EOB: 27.5 ft.	PAGE 1 OF 1
START: 11/17/23 END: 11/17/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088448, -82.842015	

MATERIAL DESCRIPTION AND NOTES	ELEV. 970.0	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
0.3' -TOPSOIL (4.0")	969.7																	
HARD, BROWN TO BROWN/GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP.		1	10 14 18	46	75	SS-1	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		2																
		3																
		4	10 10 21	45	61	SS-2	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		5																
		6	13 16 16	46	0	SS-3	-	-	-	-	-	-	-	-	-	-		
		7																
		8	28	-	67	2S-3A	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		9	5 7 10	24	69	SS-4	4.5+	13	11	16	30	30	16	14	2	10	A-4a (5)	
		10																
		11																
		12	5 9 24	48	78	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
	957.0	13																
VERY DENSE TO DENSE, GRAY **GRAVEL WITH SAND**, LITTLE SILT, MOIST.		14	29 29 28	82	0	SS-6	-	-	-	-	-	-	-	-	-	-		
		15																
		16																
		17	10 17 17	49	44	SS-7	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	952.0	18																
VERY STIFF TO HARD, GRAY **SANDY SILT**, SOME CLAY, SOME FINE GRAVEL, DAMP. -COBBLES FROM 18.0' - 18.5'		19	6 8 8	23	36	SS-8	4.5+	27	10	13	27	23	24	14	10	10	A-4a (3)	
▽ 949.9		20																
W 949.0		21																
		22	10 7 7	20	44	SS-9	3.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
	947.0	23																
MEDIUM DENSE, BROWN TO BROWNISH GRAY **COARSE AND FINE SAND**, TRACE FINE GRAVEL, TRACE SILT, WET.		24	3 4 4	12	69	SS-10	-	-	-	-	-	-	-	-	-	17	A-3a (V)	
		25																
		26																
		27	3 6 10	23	100	SS-11	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
	942.5	EOB																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND UPON COMPLETION @ 20.1'; CAVE-IN DEPTH @ 13.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 2192+50 / 123' RT	**EXPLORATION ID B-009-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL SR 161	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 960.9 (MSL) EOB: 25.5 ft.	PAGE 1 OF 1
START: 11/2/23 END: 11/2/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.086999, -82.844104	

MATERIAL DESCRIPTION AND NOTES	ELEV. 960.9	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
0.3' -TOPSOIL (4.0")	960.6																	
HARD, BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP.		1	5 8 13	30	50	SS-1	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		2																
		3																
-COBBLES @ 4.0'		4	22 50/3"	-	50	SS-2	4.5+	-	-	-	-	-	-	-	-	8	A-6a (V)	
	955.4	5																
DENSE TO VERY DENSE, LIGHT BROWN **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP.		6																
		7	9 15 19	49	69	SS-3	-	-	-	-	-	-	-	-	-	7	A-4a (V)	
		8																
		9	24 26 14	58	36	SS-4	-	-	-	-	-	-	-	-	-	10	A-4a (V)	
	950.4	10	▽ 950.6															
MEDIUM DENSE TO VERY DENSE, DARK GRAY TO GRAY **GRAVEL WITH SAND AND SILT**, MOIST.		11																
		12	W 948.9 9 10 8	26	64	SS-5	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
		13																
		14	11 13 16	42	33	SS-6	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
		15																
		16																
		17	15 18 18	52	33	SS-7	-	-	-	-	-	-	-	-	-	20	A-2-4 (V)	
		18																
		19	10 14 14	40	47	SS-8	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
	940.4	20																
DENSE TO VERY DENSE, GRAY **SILTY SAND**, TRACE CLAY, TRACE FINE GRAVEL, MOIST.		21																
		22	12 20 20	58	56	SS-9	-	-	-	-	-	-	-	-	-	9	A-4a (V)	
		23																
		24	5 9 13	32	0	SS-10	-	-	-	-	-	-	-	-	-	-		
	935.4	25	21	-	100	2S-10A	-	-	-	-	-	-	-	-	-	7	A-4a (V)	
			EOB															

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 12.0' AND UPON COMPLETION @ 10.3'; CAVE-IN DEPTH @ 19.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 2194+49 / 112' RT	**EXPLORATION ID B-010-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL SR 161	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 961.8 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/3/23 END: 11/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.087252, -82.843476	

MATERIAL DESCRIPTION AND NOTES	ELEV. 961.8	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
0.3' -TOPSOIL (4.0")	961.5																	
HARD, BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE GRAVEL, DAMP TO MOIST.		1	8 12 12	35	33	SS-1	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
		2																
		3																
-COBBLES FROM 3.8' - 4.5'		4	15 45 18	91	42	SS-2	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
	956.3	5																
MEDIUM DENSE TO DENSE, BROWN **GRAVEL WITH SAND AND SILT**, WET.		6																
		7	11 9 9	26	56	SS-3	-	44	16	14	16	10	27	19	8	7	A-2-4 (0)	
		8																
		9	9 11 12	33	67	SS-4	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
		10																
▽ 950.6		11	6 8 11	27	0	SS-5	-	-	-	-	-	-	-	-	-	-		
W 949.3		12	7	-	100	2S-5A	-	-	-	-	-	-	-	-	-	19	A-2-4 (V)	
		13																
		14	10 10 10	29	0	SS-6	-	-	-	-	-	-	-	-	-	-		
		15	5	-	100	2S-6A	-	-	-	-	-	-	-	-	-	15	A-2-4 (V)	
	946.1	16																
HARD, BROWN **SANDY SILT**, LITTLE CLAY, TRACE FINE GRAVEL, DAMP.		17	7 8 10	26	47	SS-7	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	
		18																
		19	5 8 13	30	75	SS-8	4.5+	12	11	14	39	24	26	17	9	12	A-4a (6)	
		20																
		21																
		22	9 16 17	48	78	SS-8	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
		23																
		24	10 15 13	40	67	SS-10	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	
	936.8	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 12.5' AND UPON COMPLETION @ 11.2'; CAVE-IN DEPTH @ 13.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 2196+50 / 111' RT	**EXPLORATION ID B-011-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL SR 161	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 964.3 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/3/23 END: 11/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.087493, -82.842814	

MATERIAL DESCRIPTION AND NOTES	ELEV. 964.3	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
0.3' -TOPSOIL (3.5")	964.0																	
STIFF TO HARD, BROWN TO GRAY **SILT AND CLAY**, "AND" COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP TO MOIST.			5 7 9	23	53	SS-1	4.5+	-	-	-	-	-	-	-	-	21	A-6a (V)	
			7 9 10	27	61	SS-2	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		▽ 956.5	4 6 6	17	81	SS-3	4.5+	17	11	15	30	27	27	16	11	12	A-6a (5)	
			5 5 8	19	89	SS-4	3.75	-	-	-	-	-	-	-	-	14	A-6a (V)	
			2 3 5	12	56	SS-5	2.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
	948.8		1 2 4	9	53	SS-6	1.25	-	-	-	-	-	-	-	-	15	A-6a (V)	
LOOSE TO DENSE, BROWN **GRAVEL WITH SAND**, TRACE SILT, TRACE CLAY, WET.		W 948.3	3 6 7	19	39	SS-7	-	-	-	-	-	-	-	-	-	20	A-1-b (V)	
			2 2 4	9	67	SS-8	-	9	68	17	1	5	NP	NP	NP	22	A-1-b (0)	
-HEAVE @ 21.0' AND 23.0'			5 9 11	29	100	SS-9	-	-	-	-	-	-	-	-	-	14	A-1-b (V)	
	939.3	EOB	7 10 14	35	100	SS-10	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 16.0' AND UPON COMPLETION @ 7.8'; CAVE-IN DEPTH @ 13.9'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 800+72 / 117' RT	**EXPLORATION ID B-012-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL SR 161	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 967.1 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/3/23 END: 11/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.087734, -82.842176	

MATERIAL DESCRIPTION AND NOTES	ELEV. 967.1	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
0.3' -TOPSOIL (4.0")	966.8																	
HARD, LIGHT BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.			5 6 9	22	53	SS-1	4.5+	-	-	-	-	-	-	-	-	18	A-6a (V)	
			14 16 28	63	72	SS-2	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
-COBBLES FROM 4.8' - 5.2' -AUGER REFUSAL @ 5.2'. OFFSET 7.0' SW, CONTINUED SAMPLING AT 6.0'			11 13 16	42	78	SS-3	4.5+	8	10	15	33	34	30	17	13	11	A-6a (8)	
			20 28 16	63	47	SS-4	-	-	-	-	-	-	-	-	-	10	A-6a (V)	
			5 18 12	43	33	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
	954.1																	
DENSE TO VERY DENSE, DARK GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		▽ 952.2	7 14 18	46	53	SS-6	-	46	21	8	18	7	NP	NP	NP	8	A-1-b (0)	
			15 18 10	40	72	SS-7	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
		W 948.6	17 18 18	52	61	SS-8	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
	946.6																	
HARD, BROWN **SANDY SILT**, LITTLE CLAY, TRACE FINE GRAVEL, MOIST.			18 34 26	86	50	SS-9	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
	942.1	EOB	6 9 12	30	47	SS-10	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 18.5' AND UPON COMPLETION @ 14.9'; CAVE-IN DEPTH @ 18.5'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 802+72 / 0'	**EXPLORATION ID B-013-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 967.4 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/3/23 END: 11/3/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.087953, -82.841539	

MATERIAL DESCRIPTION AND NOTES	ELEV. 967.4	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
0.4' -TOPSOIL (5.0")	967.0																	
HARD, LIGHT BROWN TO BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	5 7 10	24	61	SS-1	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	
		2																
		3																
		4	9 10 13	33	58	SS-2	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		5																
		6																
		7	11 10 11	30	100	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		8																
	956.9	9	7 8 11	27	61	SS-4	4.5+	9	8	16	35	32	28	15	13	12	A-6a (8)	
DENSE TO VERY DENSE, GRAY **COARSE AND FINE SAND**, TRACE FINE GRAVEL, TRACE SILT, DAMP.		10																
		11	10 17 41	84	64	SS-5	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
		12																
▽ 953.2		13																
		14	18 15 16	45	33	SS-6	-	-	-	-	-	-	-	-	-	6	A-3a (V)	
	951.9	15																
W 951.4 MEDIUM DENSE TO VERY DENSE, GRAY **GRAVEL WITH SAND AND SILT**, MOIST.		16																
		17	5 8 11	27	61	SS-7	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
		18																
		19	14 24 14	55	47	SS-8	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
-AUGER LOST IN BORING @ 18.5' - 23.5'		20																
		21																
		22	9 12 10	32	44	SS-9	-	65	10	6	12	7	23	16	7	11	A-2-4 (0)	
		23																
	942.4	24	23 23 21	63	47	SS-10	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
EOB		25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 16.0' AND UPON COMPLETION @ 14.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 804+72 / 0'	**EXPLORATION ID B-014-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 966.4 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/6/23 END: 11/2/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088209, -82.840922	

MATERIAL DESCRIPTION AND NOTES	ELEV. 966.4	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
0.5' -TOPSOIL (5.5")	965.9																	
HARD, LIGHT BROWN TO GRAY **SILTY CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	3 3 6	13	72	SS-1	4.5+	-	-	-	-	-	-	-	-	21	A-6b (V)	
		2																
		3																
		4	5 5 7	17	47	SS-2	4.5+	8	6	12	34	40	40	19	21	15	A-6b (12)	
		5																
		6																
		7	4 6 9	22	53	SS-3	4.5+	-	-	-	-	-	-	-	-	15	A-6b (V)	
		8																
		9	16 14 10	35	64	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
		10																
		11																
		▽ 954.6 12	5 5 8	19	72	SS-5	4.25	-	-	-	-	-	-	-	-	12	A-6b (V)	
	953.4																	
MEDIUM DENSE TO DENSE, GRAY **GRAVEL WITH SAND AND SILT**, WET.		W 952.9 13																
		14	8 14 16	43	33	SS-6	-	-	-	-	-	-	-	-	-	15	A-2-4 (V)	
		15																
		16																
		17	5 8 8	23	61	SS-7	-	43	25	11	13	8	28	20	8	12	A-2-4 (0)	
		18																
		19	6 8 9	24	78	SS-8	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
		20																
		21																
		22	9 8 10	26	36	SS-9	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)	
	943.4	23																
MEDIUM DENSE, GRAY **SANDY SILT**, TRACE CLAY, TRACE FINE GRAVEL, MOIST.		24	5 7 8	22	39	SS-10	-	-	-	-	-	-	-	-	-	19	A-4a (V)	
	941.4	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 13.5' AND UPON COMPLETION @ 11.8'; CAVE-IN DEPTH @ 12.3'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 806+72 / 0'	**EXPLORATION ID B-015-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 966.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/23/23 END: 10/23/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088482, -82.840308	

MATERIAL DESCRIPTION AND NOTES	ELEV. 966.5	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
0.7' -TOPSOIL (8.0")	965.8																	
VERY STIFF, BROWNISH GRAY TO GRAY **SILTY CLAY**, SOME COARSE TO FINE SAND, TRACE GRAVEL AND SAND, DAMP TO MOIST.			3 4 4	12	61	SS-1	3.50	-	-	-	-	-	-	-	-	19	A-6b (V)	
			10 30 11	59	100	SS-2	4.00	-	-	-	-	-	-	-	-	13	A-6b (V)	
			8 11 13	35	47	SS-3	3.50	16	8	13	33	30	34	18	16	13	A-6b (8)	
		▽ 956.5	9 6 8	20	50	SS-4	3.50	-	-	-	-	-	-	-	-	13	A-6b (V)	
			6 6 10	23	39	SS-5	3.50	-	-	-	-	-	-	-	-	13	A-6b (V)	
		W 951.5	6 7 5	17	47	SS-6	3.50	-	-	-	-	-	-	-	-	12	A-6b (V)	
	951.0																	
HARD, BROWN **SANDY SILT**, "AND" FINE GRAVEL, LITTLE CLAY, DAMP.			17 30 25	79	44	SS-7	-	-	-	-	-	-	-	-	-	13	A-4a (V)	
			19 24 26	72	56	SS-8	-	42	13	8	24	13	26	17	9	10	A-4a (0)	
			10 18 14	46	53	SS-9	-	-	-	-	-	-	-	-	-	11	A-4a (V)	
	941.5	EOB	9 15 17	46	69	SS-10	-	-	-	-	-	-	-	-	-	9	A-4a (V)	

NOTES: SEEPAGE @ 14.0'; GROUNDWATER INTIALLY ENCOUNTERED @ 15.0' AND UPON COMPLETION @ 10.0'; CAVE-IN DEPTH @ 14.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 808+72 / 0'	**EXPLORATION ID B-016-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 968.4 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/23/23 END: 10/23/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088693, -82.839666	

MATERIAL DESCRIPTION AND NOTES	ELEV. 968.4	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
0.6' -TOPSOIL (7.0")	967.8																	
VERY STIFF TO HARD, LIGHT BROWN TO BROWN **SILT AND CLAY**, SOME COARSE TO FINE GRAVEL, LITTLE FINE GRAVEL, DAMP TO MOIST.		1	5 5 5	14	50	SS-1	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	
		2																
		3																
		4	8 8 9	24	100	SS-2	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		5																
		6																
		7	11 11 12	33	58	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		8																
		9	8 13 13	37	56	SS-4	4.5+	14	11	15	33	27	28	16	12	10	A-6a (6)	
		10																
		11	7 7 7	20	78	SS-5	3.00	-	-	-	-	-	-	-	-	13	A-6a (V)	
		12																
		13																
		▽ 954.6																
		14	5 11 9	29	44	SS-6	3.00	-	-	-	-	-	-	-	-	13	A-6a (V)	
	952.9	15																
MEDIUM DENSE TO VERY DENSE, GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		16																
		17	12 12 12	35	61	SS-7	-	50	23	9	12	6	23	17	6	10	A-1-b (0)	
		W 950.4																
		18																
		19	11 9 9	26	56	SS-8	-	-	-	-	-	-	-	-	-	14	A-1-b (V)	
		20																
		21																
		22	16 16 17	48	83	SS-9	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
		23																
		24	13 31 32	91	89	SS-10	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
	943.4	EOB 25																

NOTES: SEEPAGE @ 17.5'; GROUNDWATER INTIALLY ENCOUNTERED @ 18.0' AND UPON COMPLETION @ 13.8'; CAVE-IN DEPTH @ 21.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 810+72 / 0'	**EXPLORATION ID B-017-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 970.7 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/23/23 END: 10/23/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.088908, -82.839020	

MATERIAL DESCRIPTION AND NOTES	ELEV. 970.7	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
0.4' -TOPSOIL (5.0")	970.3																	
HARD TO VERY STIFF, BROWN TO GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	6 9 12	30	81	SS-1	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	
		2																
		3																
		4	20 22 20	60	36	SS-2	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		5																
		6	12 11 11	32	89	SS-3	4.5+	9	10	16	37	28	28	17	11	10	A-6a (6)	
		7																
		8																
		9	7 10 15	36	86	SS-4	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		10																
		11																
		12	5 5 6	16	33	SS-5	4.00	-	-	-	-	-	-	-	-	11	A-6a (V)	
		13																
		14	5 5 12	24	44	SS-6	3.50	-	-	-	-	-	-	-	-	10	A-6a (V)	
	955.2	15																
DENSE TO VERY DENSE, GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP TO MOIST.		16																
		17	10 12 15	39	53	SS-7	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
W	952.7	18																
		19	10 15 20	50	78	SS-8	-	45	15	12	22	6	NP	NP	NP	11	A-2-4 (0)	
		20																
		21																
		22	15 30 28	84	100	SS-9	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
		23																
	945.7	24	13 17 26	62	69	SS-10	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
EOB		25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 18.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 812+76 / 0'	**EXPLORATION ID B-018-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 975.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/23/23 END: 10/23/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.089106, -82.838365	

MATERIAL DESCRIPTION AND NOTES	ELEV. 975.5	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
0.4' -TOPSOIL (5.0")	975.1																	
VERY STIFF TO HARD, BROWN TO GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP TO MOIST.		1	6 10 12	32	58	SS-1	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	
		2																
		3																
		4	12 13 19	46	92	SS-2	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		5																
		6																
		7	17 13 15	40	92	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	8 9 11	29	94	SS-4	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		10																
		11																
		12	7 8 8	23	72	SS-5	3.25	13	11	15	35	26	24	15	9	12	A-4a (5)	
		13																
		14	6 8 9	24	89	SS-6	3.25	-	-	-	-	-	-	-	-	12	A-4a (V)	
		15																
		16																
		17	3 4 5	13	81	SS-7	2.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
	957.5	18																
DENSE TO VERY DENSE, BROWN-GRAY TO GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		19	8 13 14	39	58	SS-8	-	61	15	8	11	5	26	20	6	8	A-1-b (0)	
		20																
		21																
		22	11 29 34	91	0	SS-9	-	-	-	-	-	-	-	-	-	-		
	953.0	TR																
SHALE : GRAY, HIGHLY WEATHERED.		23	38	-	100	2S-9A	-	-	-	-	-	-	-	-	-	8	Rock (V)	
		24	28 50/3"	-	89	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	950.5	EOB																
		25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 16.4'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 814+72 / 0'	**EXPLORATION ID B-019-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 974.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/23/23 END: 10/23/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.089329, -82.837734	

MATERIAL DESCRIPTION AND NOTES	ELEV. 974.9	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
0.3' - TOPSOIL (4.0")	974.6																	
HARD, BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	7 9 9	26	83	SS-1	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
		2																
		3																
		4	8 12 16	40	94	SS-2	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
	969.4	5																
MEDIUM DENSE, BROWN **GRAVEL WITH SAND AND SILT**, MOIST.		6																
		7	4 7 3	14	61	SS-3	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
	966.9	8																
VERY STIFF TO HARD, GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP TO MOIST.		9	3 5 6	16	100	SS-4	4.25	12	11	17	35	25	24	14	10	11	A-4a (5)	
		10																
		11	4 5 6	16	56	SS-5	2.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		12																
		13																
		14	6 8 10	26	44	SS-6	2.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
		15																
	956.9	16																
MEDIUM DENSE TO DENSE, GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		17	5 6 9	22	89	SS-7	3.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
		18																
		19	10 12 15	39	47	SS-8	-	53	18	10	13	6	24	18	6	9	A-1-b (0)	
		20																
W 953.9		21																
		22	8 9 8	24	56	SS-9	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
	951.9																	
SHALE : GRAY, HIGHLY WEATHERED.		TR 23																
		24	50/5"	-	100	SS-10	-	-	-	-	-	-	-	-	-	9	Rock (V)	
	949.9	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 17.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 816+46 / 0'	**EXPLORATION ID B-020-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 974.3 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/27/23 END: 10/27/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.089531, -82.837178	

MATERIAL DESCRIPTION AND NOTES	ELEV. 974.3	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
0.4' -TOPSOIL (4.5")	973.9																	
HARD, BROWN TO GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE TO LITTLE FINE GRAVEL, DAMP TO MOIST.		1	5 5 7	17	44	SS-1	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
		2																
		3																
		4	6 10 15	36	11	SS-2	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		5																
		6																
		7	10 10 14	35	58	SS-3	4.5+	8	10	15	34	33	29	17	12	12	A-6a (7)	
		8																
		9	9 9 10	27	58	SS-4	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		10																
		11																
		12	4 6 8	20	58	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		13																
		14	4 6 8	20	56	SS-6	4.5+	11	11	15	34	29	26	15	11	10	A-6a (6)	
		15																
		16																
		17	4 16 15	45	56	SS-7	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
	956.3	18																
SHALE : GRAY, HIGHLY WEATHERED.		TR 19	50/5"	-	67	SS-8	-	-	-	-	-	-	-	-	-	9	Rock (V)	
		20																
		21	50/5"	-	56	SS-9	-	-	-	-	-	-	-	-	-	4	Rock (V)	
		22																
		23																
		24	50/6"	-	73	SS-10	-	-	-	-	-	-	-	-	-	4	Rock (V)	
	949.3	EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 17.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 818+03 / 0'	**EXPLORATION ID B-021-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 8	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 974.1 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/27/23 END: 10/27/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.089729, -82.836617	

MATERIAL DESCRIPTION AND NOTES	ELEV. 974.1	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
0.3' -TOPSOIL (3.0")	973.8																	
HARD, BROWN TO GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE TO LITTLE FINE GRAVEL, DAMP TO MOIST.		1	6 8 8	23	44	SS-1	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
		2																
		3																
		4	17 19 19	55	64	SS-2	4.5+	9	10	15	33	33	31	17	14	10	A-6a (8)	
		5																
		6	10 12 12	35	64	SS-3	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
		7																
		8																
		9	9 9 12	30	72	SS-4	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
		10																
		11																
		12	8 10 13	33	64	SS-5	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
		13																
		14	6 7 9	23	72	SS-6	4.5+	19	11	14	32	24	26	15	11	11	A-6a (5)	
		15																
		16																
		17	12 12 12	35	0	SS-7	-	-	-	-	-	-	-	-	-	-		
	955.9	18	12	-	58	2S-7A	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
		TR																
SHALE : GRAY, HIGHLY WEATHERED.		19	9 50/3"	-	100	SS-8	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		20																
		21	39 50/2"	-	100	SS-9	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		22																
		23																
		24	50/3"	-	100	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	949.1	EOB																
		25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 19.7'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1100+00 / 0'	**EXPLORATION ID B-022-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 975.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/30/23 END: 10/30/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090031, -82.835839	

MATERIAL DESCRIPTION AND NOTES	ELEV. 975.0	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
0.3' - TOPSOIL (4.0")	974.7																	
VERY STIFF TO HARD, BROWN **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP TO MOIST.		1	9 14 17	45	67	SS-1	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
		2																
		3																
		4	11 14 17	45	44	SS-2	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		5																
		6																
		7	8 8 9	24	39	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
		8																
		9	3 3 3	9	56	SS-4	3.00	12	10	15	36	27	25	15	10	13	A-4a (6)	
	965.3 ▽	10																
		11																
		12	3 3 4	10	39	SS-5	2.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	962.0	13																
VERY STIFF TO HARD, GRAY **SANDY SILT**, SOME FINE GRAVEL, TRACE CLAY, DAMP.		14	5 7 8	22	78	SS-6	-	-	-	-	-	-	-	-	-	14	A-4a (V)	
	W 959.0	15																
		16																
		17	7 14 15	42	50	SS-7	-	26	21	15	28	10	24	17	7	9	A-4a (1)	
		18																
		19	5 9 10	27	72	SS-8	-	-	-	-	-	-	-	-	-	10	A-4a (V)	
	954.6	20																
SHALE : GRAY, HIGHLY WEATHERED.	TR	21	50/3"	-	33	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		22																
		23																
		24	45 50/3"	-	83	SS-10	-	-	-	-	-	-	-	-	-	7	Rock (V)	
	950.0	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 16.0' AND UPON COMPLETION @ 9.7'; CAVE-IN DEPTH @ 17.6'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1102+00 / 0'	**EXPLORATION ID B-023-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 977.0 (MSL) EOB: 24.5 ft.	PAGE 1 OF 1
START: 10/30/23 END: 10/30/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090244, -82.835195	

MATERIAL DESCRIPTION AND NOTES	ELEV. 977.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.3' -TOPSOIL (4.0")	976.7																	
VERY STIFF TO HARD, BROWN TO GRAY **SANDY SILT**, SOME CLAY, TRACE FINE GRAVEL, DAMP TO MOIST.			7 10 12	32	67	SS-1	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	
			6 6 6	17	75	SS-2	4.5+	8	11	16	39	26	25	16	9	14	A-4a (6)	
			4 5 8	19	50	SS-3	4.00	-	-	-	-	-	-	-	-	10	A-4a (V)	
			4 5 9	20	61	SS-4	3.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
	966.5	TR																
SHALE : GRAY, HIGHLY WEATHERED.			42 50/3"	-	100	SS-5	-	-	-	-	-	-	-	-	-	4	Rock (V)	
	962.6		50/3"	-	100	SS-6	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SHALE : BLACK, HIGHLY WEATHERED, WEAK, VERY FINE GRAINED, LAMINATED, HIGHLY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, DISTURBED, SEAMY, VERY POOR SURFACE.			0		0	NQ2-1											CORE	
			0		35	NQ2-2											CORE	
			0		100	NQ2-3											CORE	
	952.5	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 16.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
6

Boring:
B-023-0-23

RC-1: 14.4-15.0’
REC (%):0
RQD (%):0

RC-2: 15.0-19.5’
REC (%):35
RQD (%):0

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
7

Boring:
B-023-0-23

RC-3: 19.5-24.5’
REC (%):100
RQD (%):0

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1104+00 / 0'	**EXPLORATION ID B-024-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 979.6 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/31/23 END: 10/31/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090471, -82.834551	

MATERIAL DESCRIPTION AND NOTES	ELEV. 979.6	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
0.1' -TOPSOIL (1.0")	979.5																	
HARD, BROWN **CLAY**, SOME SILT, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	5 5 8	19	47	SS-1	4.5+	-	-	-	-	-	-	-	-	19	A-7-6 (V)	
		2																
		3																
		4	8 10 16	37	78	SS-2	4.5+	3	4	10	35	48	42	20	22	17	A-7-6 (13)	
	974.1	5																
VERY STIFF TO HARD, BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP.		6																
		7	17 28 26	78	78	SS-3	4.5+	-	-	-	-	-	-	-	-	9	A-6a (V)	
		8																
		9	28 18 12	43	33	SS-4	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		10																
		11																
	966.6	12	5 6 5	16	36	SS-5	2.50	-	-	-	-	-	-	-	-	10	A-6a (V)	
DENSE TO VERY DENSE, GRAY TO BLACK **GRAVEL WITH SAND AND SILT**, LITTLE CLAY, MOIST.		13																
		14	10 17 21	55	67	SS-6	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
		15																
		16																
		17	10 14 15	42	92	SS-7	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
		18																
		19	6 14 17	45	75	SS-8	-	40	14	12	21	13	25	18	7	11	A-2-4 (0)	
		20																
		21																
		22	6 11 50/4"	-	75	SS-9	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
	956.6	23	TR															
SHALE : GRAY, HIGHLY WEATHERED.		24	50/6"	-	36	SS-10	-	-	-	-	-	-	-	-	-	3	Rock (V)	
	954.6	25	EOB															

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 18.5'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1106+00 / 0'	**EXPLORATION ID B-025-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 980.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 10/31/23 END: 10/31/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090688, -82.833893	

MATERIAL DESCRIPTION AND NOTES	ELEV. 980.2	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
0.2' -TOPSOIL (1.5")	980.0																	
HARD, BROWN **SILT AND CLAY**, LITTLE GRAVEL AND SAND, DAMP.		1	4 5 7	17	50	SS-1	4.5+	-	-	-	-	-	-	-	-	20	A-6a (V)	
		2																
		3																
		4	8 12 17	42	61	SS-2	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		5																
		6																
		7	12 17 21	55	61	SS-3	4.5+	10	10	16	34	30	27	16	11	8	A-6a (6)	
		8																
		9	10 13 14	39	64	SS-4	4.5+	-	-	-	-	-	-	-	-	10	A-6a (V)	
	969.7	10																
DENSE TO VERY DENSE, BROWN **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP TO MOIST.		11	18 21 27	69	83	SS-5	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
		12																
		13																
		14	9 12 15	39	78	SS-6	-	38	23	12	17	10	27	20	7	6	A-2-4 (0)	
		15																
		16																
		17	14 21 28	71	64	SS-7	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
		18																
		19	12 22 30	75	39	SS-8	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
-SHALE FRAGMENTS PRESENT THROUGHOUT		20																
	W 959.2	21																
		22	12 16 13	42	61	SS-9	-	-	-	-	-	-	-	-	-	14	A-2-4 (V)	
		23																
		24	8 15 17	46	61	SS-10	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
	955.2	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 15.3'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1108+00 / 0'	**EXPLORATION ID B-026-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 979.8 (MSL) EOB: 25.5 ft.	PAGE 1 OF 1
START: 10/31/23 END: 10/31/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090906, -82.833225	

MATERIAL DESCRIPTION AND NOTES	ELEV. 979.8	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
0.3' -TOPSOIL (4.0")	979.5																	
VERY STIFF TO HARD, LIGHT BROWN **SILTY CLAY**, "AND" FINE TO COARSE SAND, LITTLE FINE GRAVEL, DAMP TO MOIST.			4 5 13	26	67	SS-1	4.5+	-	-	-	-	-	-	-	-	17	A-6b (V)	
			18 18 16	49	39	SS-2	4.5+	-	-	-	-	-	-	-	-	19	A-6b (V)	
			9 13 15	40	89	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
	969.3		4 4 4	12	50	SS-4	4.00	19	24	12	23	22	36	19	17	14	A-6b (4)	
MEDIUM DENSE TO DENSE, BROWN TO DARK GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST.			3 4 5	13	56	SS-5	-	-	-	-	-	-	-	-	-	20	A-2-4 (V)	
			14 15 16	45	0	SS-6	-	-	-	-	-	-	-	-	-	-		
			7	-	100	2S-6A	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
	961.8		14 14 10	35	72	SS-7	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	
DENSE, GRAY TO BLACK **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		W 961.3																
-SHALE FRAGMENTS PRESENT THROUGHOUT			9 9 14	33	0	SS-8	-	-	-	-	-	-	-	-	-	-		
			14	-	100	2S-8A	-	-	-	-	-	-	-	-	-	14	A-1-b (V)	
			12 15 17	46	75	SS-9	-	50	20	11	11	8	24	18	6	10	A-1-b (0)	
			11 14 13	39	0	SS-10	-	-	-	-	-	-	-	-	-	-		
	954.3	EOB	8	-	100	2S-10A	-	-	-	-	-	-	-	-	-	15	A-1-b (V)	

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 18.5' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 13.5'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1110+00 / 0'	**EXPLORATION ID B-027-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 981.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/1/23 END: 11/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091062, -82.832539	

MATERIAL DESCRIPTION AND NOTES	ELEV. 981.5	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
0.3' -TOPSOIL (3.5")	981.2																	
HARD, LIGHT BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE GRAVEL, DAMP.		1	7															
		2	13 19	46	61	SS-1	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		3																
		4	11															
		5	13 15	40	67	SS-2	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		6	13															
		7	16 15	45	64	SS-3	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		8																
		9	8 5 7	17	61	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
	971.0	10																
LOOSE TO VERY DENSE, GRAY **GRAVEL WITH SAND AND SILT**, TRACE TO LITTLE CLAY, DAMP.		11	3															
		12	3 3	9	67	SS-5	-	-	-	-	-	-	-	-	-	14	A-2-4 (V)	
		13																
		14	4															
		15	4 5	13	58	SS-6	-	35	20	14	19	12	29	19	10	14	A-2-4 (0)	
		16																
		17	7 16 18	49	67	SS-7	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
		18																
		19	6															
		20	9 12	30	67	SS-8	-	54	20	8	13	5	28	18	10	10	A-2-4 (0)	
W	960.5	21																
		22	12															
		23	14 24	55	78	SS-9	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
	958.5	TR																
SHALE : GRAY, HIGHLY WEATHERED.		24	23 50/5"	-	27	SS-10	-	-	-	-	-	-	-	-	-	4	Rock (V)	
	956.5	EOB																
		25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 16.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1112+00 / 0'	**EXPLORATION ID B-028-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 982.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/1/23 END: 11/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091197, -82.831841	

MATERIAL DESCRIPTION AND NOTES	ELEV. 982.2	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
0.3' - TOPSOIL (4.0")	981.9																	
VERY STIFF TO HARD, BROWNISH GRAY TO GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP TO MOIST.		1 2 3 4 5 6 7 8 9 10	6 8 10	26	64	SS-1	4.5+	-	-	-	-	-	-	-	-	18	A-6a (V)	
			11 15 18	48	83	SS-2	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
			10 11 14	36	72	SS-3	4.5+	17	10	13	31	29	31	17	14	12	A-6a (7)	
	971.7		4 6 10	23	58	SS-4	3.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
MEDIUM DENSE TO DENSE, GRAY TO BROWN **COARSE AND FINE SAND**, SOME SILT, TRACE CLAY, TRACE FINE GRAVEL, DAMP TO MOIST.		11 12 13 14 15 16	23 13 15	40	64	SS-5	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
	966.2	TR	5 8 8	23	100	SS-6	-	1	32	38	22	7	NP	NP	NP	3	A-3a (0)	
SHALE : GRAY, HIGHLY WEATHERED.		16 17 18 19 20 21 22 23 24 25	40 50/2"	-	63	SS-7	-	-	-	-	-	-	-	-	-	4	Rock (V)	
			50/5"	-	33	SS-8	-	-	-	-	-	-	-	-	-	4	Rock (V)	
			50/2"	-	0	SS-9	-	-	-	-	-	-	-	-	-	-		
	957.2	EOB	50/0"	-		SS-10	-	-	-	-	-	-	-	-	-	-		

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 15.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1114+00 / 0'	**EXPLORATION ID B-029-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 983.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/1/23 END: 11/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091321, -82.831138	

MATERIAL DESCRIPTION AND NOTES	ELEV. 983.0	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
0.3' - TOPSOIL (4.0")	982.7																	
HARD TO VERY STIFF, BROWN TO GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP TO MOIST.			3 5 9	20	53	SS-1	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	
			4 6 8	20	81	SS-2	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
			4 7 10	24	89	SS-3	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
			4 5 7	17	61	SS-4	4.5+	19	11	14	34	22	26	15	11	11	A-6a (5)	
			3 3 7	14	81	SS-5	2.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
	967.5		2 3 4	10	42	SS-6	2.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
MEDIUM STIFF TO VERY STIFF, BLACK TO GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP TO MOIST.			4 7 9	23	56	SS-7	3.00	-	-	-	-	-	-	-	-	9	A-4a (V)	
			2 2 3	7	56	SS-8	2.25	12	15	16	34	23	25	15	10	13	A-4a (4)	
	960.0		1 1 2	4	33	SS-9	0.75	-	-	-	-	-	-	-	-	14	A-4a (V)	
VERY DENSE, DARK GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST. -SHALE FRAGMENTS IN SS-10	958.0	EOB	8 19 23	60	83	SS-10	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)	

NOTES: SEEPAGE @ 22.4' - 25.0' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 13.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:56 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1115+84 / 0'	**EXPLORATION ID B-030-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 11	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 983.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/1/23 END: 11/1/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091378, -82.830480	

MATERIAL DESCRIPTION AND NOTES	ELEV. 983.0	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
0.4' -TOPSOIL (5.0")	982.6																	
VERY STIFF TO HARD, BROWN TO DARK BROWN TO GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE TO LITTLE FINE GRAVEL, DAMP TO MOIST.		1	3 6 9	22	78	SS-1	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	
		2																
		3																
		4	5 6 8	20	100	SS-2	4.5+	9	11	15	35	30	30	17	13	15	A-6a (7)	
		5																
		6	4 8 12	29	94	SS-3	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		7																
		8																
		9	4 5 7	17	86	SS-4	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		10																
		11	2 3 5	12	39	SS-5	3.25	-	-	-	-	-	-	-	-	13	A-6a (V)	
		12																
		13	2 2 5	10	50	SS-6	2.00	20	11	14	32	23	27	15	12	14	A-6a (5)	
		14																
		15	2 4 5	13	61	SS-7	3.00	-	-	-	-	-	-	-	-	13	A-6a (V)	
	965.0	16																
VERY DENSE, DARK GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST.		17	8 20 20	58	86	SS-8	-	-	-	-	-	-	-	-	-	7	A-2-4 (V)	
	962.5	18																
SHALE : GRAY, HIGHLY WEATHERED.		19																
		20	34 50/2"	-	50	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		21																
		22																
		23	50/3"	-	0	SS-10	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	958.0	24																
	EOB	25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 22.3'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 900+16 / 0'	**EXPLORATION ID B-031-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 974.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/16/23 END: 11/16/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090580, -82.836109	

MATERIAL DESCRIPTION AND NOTES	ELEV. 974.5	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
0.5' -TOPSOIL (5.5")	974.0																	
HARD, BROWN TO GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP TO MOIST.		1	4 5 7	17	78	SS-1	4.5+	-	-	-	-	-	-	-	-	19	A-4a (V)	
		2																
		3																
		4	18 9 7	23	0	SS-2	-	-	-	-	-	-	-	-	-	-		
		5	9	-	0	2S-2A	-	-	-	-	-	-	-	-	-	-		
-COBBLES @ 6.0'-6.5'		6	30 16 12	40	83	SS-3	4.5+	-	-	-	-	-	-	-	-	10	A-4a (V)	
		7																
		8																
		9	13 10 10	29	78	SS-4	4.5+	-	-	-	-	-	-	-	-	11	A-4a (V)	
		10																
		11																
		12	6 6 7	19	83	SS-5	4.5+	11	10	16	36	27	25	15	10	12	A-4a (6)	
		13																
		14	6 7 8	22	0	SS-6	-	-	-	-	-	-	-	-	-	-		
		15	12	-	100	2S-6A	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
		16	4 5 5	14	75	SS-7	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
		17																
		18																
		19	3 4 10	20	83	SS-8	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
	W 954.7	20																
	954.0 ▽ 954.0																	
MEDIUM DENSE, DARK GRAY **GRAVEL WITH SAND**, TRACE SILT, TRACE CLAY, MOIST.		21																
-SHALE FRAGMENTS PRESENT THROUGHOUT		22	4 8 10	26	78	SS-9	-	39	35	11	9	6	NP	NP	NP	16	A-1-b (0)	
		23																
-1.5' OF HEAVING SANDS @23.5'		24	8 8 12	29	92	SS-10	-	-	-	-	-	-	-	-	-	16	A-1-b (V)	
	949.5	25	EOB															

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 19.8' AND UPON COMPLETION @ 20.5'; CAVE-IN DEPTH @ 13.8'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 902+00 / 0'	**EXPLORATION ID B-032-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 975.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/16/23 END: 11/16/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090809, -82.835481	

MATERIAL DESCRIPTION AND NOTES	ELEV. 975.2	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
0.4' -TOPSOIL (5.0")	974.8																	
HARD, BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP.		1	9 14 14	40	86	SS-1	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		2																
		3																
		4	8 8 9	24	61	SS-2	4.5+	9	10	19	34	28	27	16	11	11	A-6a (6)	
		5																
		6																
		7	7 20 14	49	56	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		8																
		9	5 8 9	24	75	SS-4	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
		10																
		11	5 7 8	22	0	SS-5	-	-	-	-	-	-	-	-	-	-		
		12	12	-	67	2S-5A	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
		13																
		14	6 8 9	24	0	SS-6	-	-	-	-	-	-	-	-	-	-		
	959.5	15	12	-	33	2S-6A	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
MEDIUM DENSE TO DENSE, GRAY **GRAVEL WITH SAND AND SILT**, LITTLE CLAY, MOIST.		16																
		17	4 9 9	26	53	SS-7	-	41	14	12	21	12	24	16	8	8	A-2-4 (0)	
W 956.7		18																
		19	8 10 11	30	50	SS-8	-	-	-	-	-	-	-	-	-	15	A-2-4 (V)	
▽ 954.7		20																
		21																
		22	15 22 18	58	64	SS-9	-	-	-	-	-	-	-	-	-	16	A-2-4 (V)	
		23																
	950.2	24	5 8 12	29	67	SS-10	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)	
EOB		25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 18.5' AND UPON COMPLETION @ 20.5'; CAVE-IN DEPTH @ 15.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 904+00 / 0'	**EXPLORATION ID B-033-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 977.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/16/23 END: 11/16/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091043, -82.834836	

MATERIAL DESCRIPTION AND NOTES	ELEV. 977.2	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
0.4' - TOPSOIL (5.0")	976.8																	
HARD, BROWN TO GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP.		1	7 12 14	37	67	SS-1	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
		2																
		3																
		4	10 10 10	29	81	SS-2	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
		5																
		6																
		7	8 20 14	49	47	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
		8																
		9	6 9 10	27	83	SS-4	4.5+	12	9	16	39	24	25	15	10	11	A-4a (6)	
		10																
		11																
		12	6 7 8	22	78	SS-5	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
	964.2	13																
DENSE, GRAY TO BLACK **GRAVEL**, SOME FINE TO COARSE SAND, LITTLE SILT, MOIST. -LIMESTONE FRAGMENTS IN SS-6		14	7 13 12	36	56	SS-6	-	-	-	-	-	-	-	-	-	4	A-1-a (V)	
		15																
		16																
		17	8 12 11	33	72	SS-7	-	59	21	9	- 11 -		NP	NP	NP	7	A-1-a (0)	
	959.2	18																
MEDIUM DENSE TO DENSE, DARK GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST.		W 958.7																
		19	9 13 12	36	64	SS-8	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
-SHALE FRAGMENTS PRESENT THROUGHOUT		▽ 956.7																
		21																
		22	17 15 15	43	44	SS-9	-	-	-	-	-	-	-	-	-	12	A-2-4 (V)	
		23																
		24	12 10 10	29	59	SS-10	-	-	-	-	-	-	-	-	-	18	A-2-4 (V)	
	952.2	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 18.5' AND UPON COMPLETION @ 20.5'; CAVE-IN DEPTH @ 14.5'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 906+00 / 0'	**EXPLORATION ID B-034-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 979.3 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/16/23 END: 11/16/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091273, -82.834170	

MATERIAL DESCRIPTION AND NOTES	ELEV. 979.3	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
0.4 - TOPSOIL (5.0")	978.9																	
HARD, BROWN **SILT AND CLAY**, LITTLE GRAVEL AND SAND, DAMP.		1	6 10 13	33	92	SS-1	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
		2																
		3																
		4	7 8 10	26	75	SS-2	4.5+	11	10	15	38	26	30	18	12	14	A-6a (7)	
		5																
		6	10 12 14	37	89	SS-3	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	
		7																
-ROOT FIBERS IN SS-4		8																
		9	9 10 10	29	36	SS-4	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	
	968.8	10																
DENSE TO VERY DENSE, GRAY **GRAVEL**, LITTLE COARSE TO FINE SAND, TRACE SILT, DAMP.		11																
		12	7 15 20	50	0	SS-5	-	-	-	-	-	-	-	-	-	-		
		13	18	-	100	2S-5A	-	-	-	-	-	-	-	-	-	6	A-1-a (V)	
		14	20 14 18	46	69	SS-6	-	74	10	6	- 10 -		NP	NP	NP	4	A-1-a (0)	
		15																
		16																
		17	10 10 11	30	72	SS-7	-	-	-	-	-	-	-	-	-	6	A-1-a (V)	
		18																
		19	12 14 10	35	39	SS-8	-	-	-	-	-	-	-	-	-	6	A-1-a (V)	
	958.8	20																
MEDIUM DENSE TO VERY DENSE, BLACK **GRAVEL WITH SAND AND SILT**, MOIST.		W 958.3 21																
-SHALE FRAGMENTS PRESENT THROUGHOUT		22	6 7 10	24	75	SS-9	-	-	-	-	-	-	-	-	-	16	A-2-4 (V)	
		23																
		24	8 11 42	76	69	SS-10	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
	954.3	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 14.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 908+00 / 0'	**EXPLORATION ID B-035-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 981.4 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/15/23 END: 11/15/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091443, -82.833496	

MATERIAL DESCRIPTION AND NOTES	ELEV. 981.4	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
0.4' - TOPSOIL (5.0")	981.0																	
HARD, BROWN TO GRAY **SILTY CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP.		1	7 9 12	30	36	SS-1	4.5+	-	-	-	-	-	-	-	-	17	A-6b (V)	
		2																
		3																
		4	10 15 17	46	83	SS-2	4.5+	13	8	13	38	28	34	18	16	12	A-6b (9)	
		5																
		6	13 18 20	55	39	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
		7																
		8																
		9	6 12 14	37	89	SS-4	4.5+	-	-	-	-	-	-	-	-	13	A-6b (V)	
		10																
-CHERT FRAGMENTS IN SS-5		11	8 9 9	26	47	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-6b (V)	
	968.4	12																
MEDIUM DENSE, BROWN TO BLACK **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP. -SHALE FRAGMENTS IN SS-6		13																
		14	6 7 6	19	83	SS-6	-	-	-	-	-	-	-	-	-	16	A-2-4 (V)	
	965.9	15																
DENSE, GRAY **COARSE AND FINE SAND**, LITTLE GRAVEL, TRACE SILT, DAMP.		16																
		17	7 13 18	45	42	SS-7	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
	963.4	18																
DENSE TO VERY DENSE, DARK GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		19	10 14 18	46	69	SS-8	-	57	17	9	15	2	NP	NP	NP	8	A-1-b (0)	
W 961.7		20																
		21																
		22	5 11 12	33	64	SS-9	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
		23																
		24	18 24 20	63	50	SS-10	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
	956.4	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 19.7' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 14.3'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 910+00 / 0'	**EXPLORATION ID B-036-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 983.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/15/23 END: 11/15/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091597, -82.832807	

MATERIAL DESCRIPTION AND NOTES	ELEV. 983.2	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
0.4' -TOPSOIL (4.5")	982.8																	
HARD, BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	9 10 11	30	0	SS-1	-	-	-	-	-	-	-	-	-	-		
		2																
		3	12	-	100	2S-1A	4.5+	-	-	-	-	-	-	-	-	20	A-6a (V)	
		4	6 6 11	24	72	SS-2	4.25	-	-	-	-	-	-	-	-	23	A-6a (V)	
		5																
		6																
		7	9 9 9	26	83	SS-3	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
		8																
		9	6 7 7	20	100	SS-4	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	
		10																
		11																
		12	6 7 7	20	36	SS-5	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
	970.2	13																
SOFT, DARK BROWN **SILTY CLAY**, SOME FINE TO COARSE SAND, SOME FINE GRAVEL, DAMP.		14	5 7 8	22	39	SS-6	-	33	15	13	29	10	38	21	17	12	A-6b (2)	
		15																
		16																
		17	10 10 17	39	0	SS-7	-	-	-	-	-	-	-	-	-	-		
	964.7	18	20	-	67	2S-7A	-	-	-	-	-	-	-	-	-	11	A-6b (V)	
DENSE, DARK GRAY **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, MOIST.		19	11 13 12	36	69	SS-8	-	31	31	16	20	2	23	17	6	11	A-1-b (0)	
	962.7	20																
DENSE TO VERY DENSE, GRAY **GRAVEL WITH SAND, SILT, AND CLAY**, WET.		W 962.2 21	10 18 35	76	0	SS-9	-	-	-	-	-	-	-	-	-	-		
		22	12	-	100	2S-9A	-	-	-	-	-	-	-	-	-	23	A-2-6 (V)	
		23																
		24	10 17 17	49	33	SS-10	-	-	-	-	-	-	-	-	-	20	A-2-6 (V)	
	958.2	EOB 25																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 21.0' AND DRY UPON COMPLETION; CAVE-IN DEPTH @ 14.3'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 912+00 / 0'	**EXPLORATION ID B-037-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 9	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 984.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/15/23 END: 11/15/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091724, -82.832101	

MATERIAL DESCRIPTION AND NOTES	ELEV. 984.9	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
0.4' - TOPSOIL (5.0")	984.5																	
VERY STIFF TO HARD, LIGHT BROWN **SILTY CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, MOIST.			5 7 9	23	50	SS-1	4.5+	-	-	-	-	-	-	-	-	19	A-6b (V)	
			4 5 7	17	100	SS-2	4.5+	-	-	-	-	-	-	-	-	20	A-6b (V)	
			4 5 9	20	72	SS-3	4.5+	9	8	13	40	30	37	18	19	16	A-6b (11)	
			5 6 5	16	94	SS-4	4.5+	-	-	-	-	-	-	-	-	19	A-6b (V)	
	971.9		4 4 5	13	61	SS-5	3.50	-	-	-	-	-	-	-	-	18	A-6b (V)	
MEDIUM DENSE TO DENSE, BROWN **SANDY SILT**, SOME CLAY AND GRAVEL, MOIST TO DAMP.			4 7 7	20	53	SS-6	-	-	-	-	-	-	-	-	-	17	A-4a (V)	
			3 9 13	32	0	SS-7	-	-	-	-	-	-	-	-	-	-		
	966.7	▽ 966.7	16	-	75	SS-7A	-	28	16	12	33	11	28	19	9	13	A-4a (2)	
DENSE, GRAY **GRAVEL WITH SAND**, TRACE SILT, MOIST.		W 965.1	13 16 16	46	100	SS-8	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	964.4																	
DENSE, DARK GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST.			9 14 15	42	0	SS-9	-	-	-	-	-	-	-	-	-	-		
			14	-	100	SS-9A	-	-	-	-	-	-	-	-	-	16	A-2-4 (V)	
			12 12 15	39	61	SS-10	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)	
	959.9	EOB																

NOTES: GROUNDWATER INTIALLY ENCOUNTERED @ 19.8' AND UPON COMPLETION @ 18.2'; CAVE-IN DEPTH @ 19.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 120+00 / 0'	**EXPLORATION ID B-038-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 12	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 979.3 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/5/23 END: 12/5/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091445, -82.828386	

MATERIAL DESCRIPTION AND NOTES	ELEV. 979.3	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
0.3' - ASPHALT (3.0")	979.0																	
0.5' - CONCRETE (6.5")	978.5																	
0.3' - AGGREGATE BASE (3.5")	978.2																	
VERY STIFF TO HARD, BROWN TO GRAY **SILTY CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, MOIST.		1	6 7 7	20	0	SS-1	-	-	-	-	-	-	-	-	-	-		
		2																
		3	9	-	67	2S-1A	4.5+	-	-	-	-	-	-	-	-	15	A-6b (V)	
		4	7 10 20	43	50	SS-2	4.5+	-	-	-	-	-	-	-	-	14	A-6b (V)	
		5																
		6	6 6 9	22	0	SS-3	-	-	-	-	-	-	-	-	-	-		
		7																
		8	14	-	100	2S-3A	4.5+	17	9	10	32	32	39	18	21	14	A-6b (10)	
		9	5 6 9	22	33	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
		10																
		11	4 5 5	14	81	SS-5	4.00	-	-	-	-	-	-	-	-	20	A-6b (V)	
	966.3	12																
LOOSE TO MEDIUM DENSE, BROWN **SANDY SILT**, SOME FINE GRAVEL, LITTLE CLAY, MOIST.		13																
	963.8	14	7 13 20	48	50	SS-6	-	-	-	-	-	-	-	-	-	9	A-4a (V)	
LOOSE TO MEDIUM DENSE, GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST.		15																
		16																
		17	14 15 10	36	39	SS-7	4.5+	50	13	7	22	8	26	21	5	8	A-2-4 (0)	
		18																
		19	9 18 5	33	81	SS-8	-	-	-	-	-	-	-	-	-	18	A-2-4 (V)	
	958.8	20																
VERY STIFF, BROWN **SILT AND CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, MOIST.		21																
	956.3	22	5 6 8	20	56	SS-9	-	-	-	-	-	-	-	-	-	23	A-2-4 (V)	
SHALE : BLACK, HIGHLY WEATHERED.		TR 23																
	954.3	24	14 11 11	32	72	SS-10	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		EOB 25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 14.3'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. PAVEMENT PATCHED WITH COLD PATCH ASPHALT. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:57 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 121+41.21 / 0'	**EXPLORATION ID B-039-0-23**	
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 12		
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 986.4 (MSL) EOB: 20.0 ft.		PAGE 1 OF 1
START: 12/4/23 END: 12/4/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091317, -82.827731		

MATERIAL DESCRIPTION AND NOTES	ELEV. 986.4	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (5.5")	985.9																	
HARD, BROWN **CLAY**, LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL, MOIST.		1	7	16	0	SS-1	-	-	-	-	-	-	-	-	-	-		
		2	5 6															
		3	9	-	100	2S-1A	4.5+	-	-	-	-	-	-	-	-	19	A-7-6 (V)	
		4	4 6	19	0	SS-2	-	-	-	-	-	-	-	-	-	-		
		5	7 10	-	50	2S-2A	4.5+	-	-	-	-	-	-	-	-	18	A-7-6 (V)	
		6	8															
		7	8 6	20	81	SS-3	4.5+	28	9	7	25	31	50	20	30	16	A-7-6 (13)	
		8																
		9	9	27	75	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-7-6 (V)	
	975.9	10	9 10															
SHALE : GRAY, HIGHLY WEATHERED.		TR 11	10/0"	-		SS-5	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	972.4	12																
SHALE : GRAY, MODERATELY WEATHERED, WEAK, VERY FINE GRAINED, LAMINATED, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, DISTURBED, SEAMY, POOR SURFACE.		13	50/4"	-	0	SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		14	0		0	NQ2-1											CORE	
		15																
		16																
		17	43		100	NQ2-2											CORE	
		18																
		19																
	966.4	EOB 20																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 11.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
8

Boring:
B-039-0-23

RC-1: 14.0-15.0'
REC (%):0
RQD (%):0

RC-2: 15.0-20.0'
REC (%):100
RQD (%):43

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 123+26.79 / 0'	**EXPLORATION ID B-040-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 12	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 987.0 (MSL) EOB: 21.0 ft.	PAGE 1 OF 1
START: 12/4/23 END: 12/4/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091207, -82.827079	

MATERIAL DESCRIPTION AND NOTES	ELEV. 987.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.4' -TOPSOIL (5.0")	986.6																	
HARD, BROWN TO GRAY **SILT AND CLAY**, LITTLE TO TRACE SAND AND GRAVEL, DAMP TO MOIST.		1	3 6 8	20	72	SS-1	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	
		2																
		3																
		4	6 7 9	23	69	SS-2	4.5+	-	-	-	-	-	-	-	-	20	A-6a (V)	
		5																
		6																
		7	4 6 8	20	81	SS-3	4.5+	7	9	15	37	32	33	18	15	18	A-6a (9)	
		8																
		9	4 6 8	20	47	SS-4	4.5+	-	-	-	-	-	-	-	-	18	A-6a (V)	
	976.5	10																
SHALE : GRAY, HIGHLY WEATHERED.		TR 11	8 15 50/3"	-	87	SS-5	-	-	-	-	-	-	-	-	-	10	Rock (V)	
	973.0	12	50/3"	-	60	SS-6	-	-	-	-	-	-	-	-	-	2	Rock (V)	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE. -@14.3' IRON STAINING IN FRACTURE -@15.0' - 15.2' ZONE OF FRACTURES -@15.7' CLAY SEAM	971.0	13																
		14																
		15	0		37	NQ2-1											CORE	
		16																
		17																
		18																
SHALE : GRAY, MODERATELY WEATHERED, WEAK, FINE GRAINED, LAMINATED, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, DISTURBED, SEAMY, POOR SURFACE.	967.7	19	0		100	NQ2-2											CORE	
	966.0	20																
SILTSTONE : GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG, VERY FINE GRAINED, VERY THIN, HIGHLY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, DISTURBED, SEAMY, FAIR SURFACE.		EOB 21																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 94 LBS CEMENT / 25 LBS BENTONITE POWDER / 40 GAL WATER. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:57 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
9

Boring:
B-040-0-23

RC-1: 14.0-16.0'
REC (%):37
RQD (%):0

RC-2: 16.0-21.0'
REC (%):100
RQD (%):0

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 124+97.00 / 0'	**EXPLORATION ID B-041-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 12	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 988.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 12/4/23 END: 12/4/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.091033, -82.826474	

MATERIAL DESCRIPTION AND NOTES	ELEV. 988.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (5.5")	987.7																	
VERY STIFF, BROWN **SILTY CLAY**, SOME TO LITTLE SAND, LITTLE GRAVEL, MOIST.		1	4 5 7	17	64	SS-1	3.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
		2																
		3																
		4	5 5 10	22	67	SS-2	3.00	6	12	19	34	29	30	17	13	15	A-6a (7)	
	982.7	5																
VERY DENSE, GRAY **GRAVEL WITH SAND AND SILT**, TRACE CLAY, MOIST.		6																
	980.2	7	13 32 35	96	69	SS-3	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
SHALE : GRAY, HIGHLY WEATHERED.		TR 8																
		9	10 21 29	72	89	SS-4	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		10																
		11	50/6"	-	100	SS-5	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		12																
		13																
		14	36 50/5"	-	100	SS-6	-	-	-	-	-	-	-	-	-	4	Rock (V)	
	972.2	15																
SHALE : GRAY, MODERATELY TO SLIGHTLY WEATHERED, WEAK, FINE GRAINED, LAMINATED TO THIN BEDDED, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, DISTURBED, SEAMY, POOR TO GOOD SURFACE. -0.3' CLAYSTONE SEAM @ 16.0' -@17.4' CLAY SEAM -@18.0' CLAY SEAM		16																
		17																
		18	20		68	NQ2-1											CORE	
		19																
		20																
-SILTSTONE SEAM @ 21.4'-23.0'		21																
		22	40		100	NQ2-2											CORE	
	963.2	23																
		EOB 24																
		25																

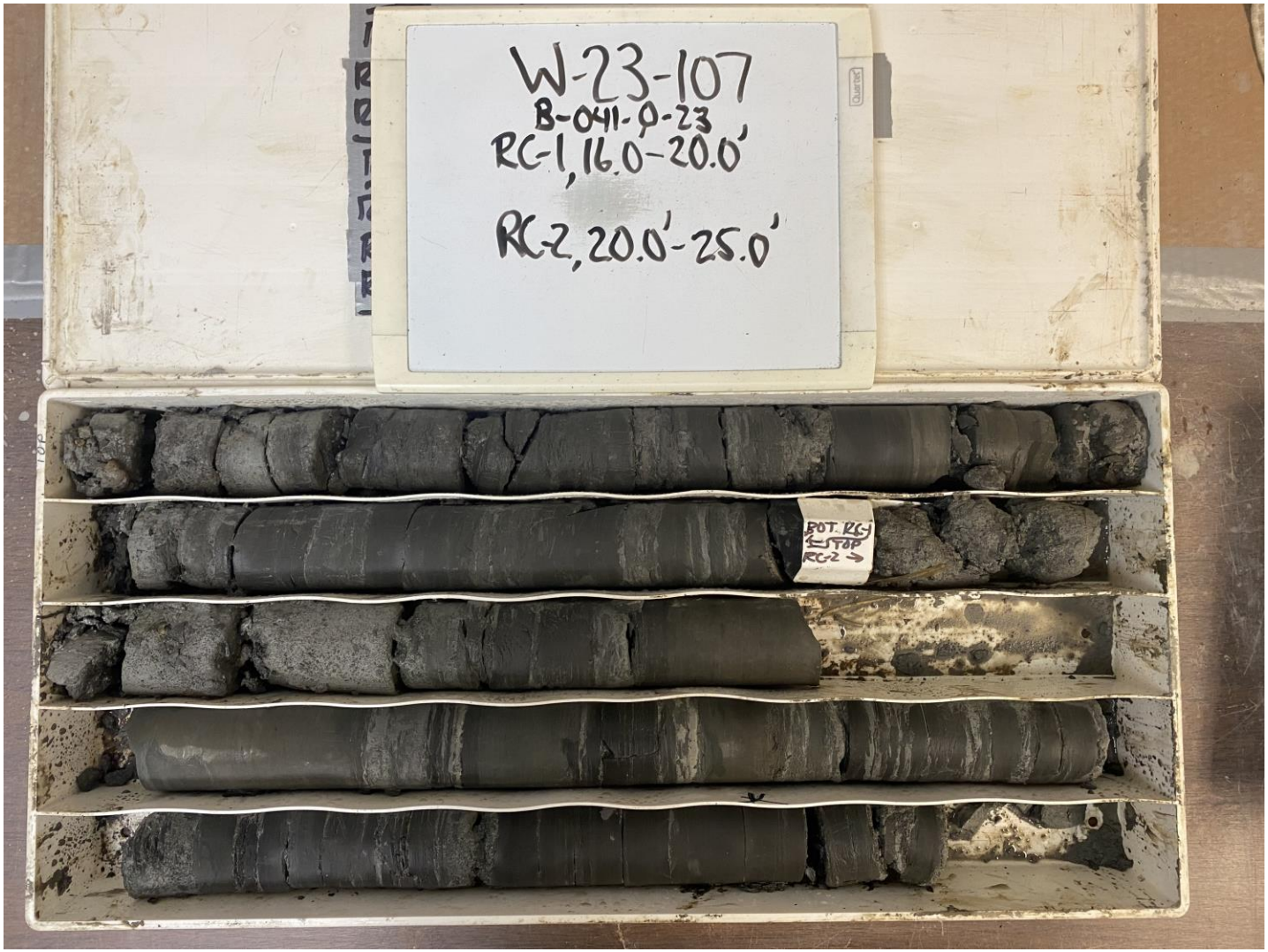
NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 12.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 94 LBS CEMENT / 25 LBS BENTONITE POWDER / 40 GAL WATER. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:57 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
10



Boring:
B-041-0-23

RC-1: 16.0-20.0'
REC (%):68
RQD (%):20

RC-2: 20.0-25.0'
REC (%):100
RQD (%):40

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1500+29 / 0'	**EXPLORATION ID B-042-0-23**	
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15		
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1030.3 (MSL) EOB: 24.0 ft.		PAGE 1 OF 1
START: 11/9/23 END: 11/9/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090577, -82.811738		

MATERIAL DESCRIPTION AND NOTES	ELEV. 1030.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.6' -TOPSOIL (6.5")	1029.7																	
HARD, BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.			3 8 8	23	44	SS-1	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
			14 14 13	39	0	SS-2	-	-	-	-	-	-	-	-	-	-		
			17	-	100	2S-2A	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
			4 5 6	16	58	SS-3	4.5+	9	11	16	37	27	27	16	11	15	A-6a (6)	
			4 8 8	23	58	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-6a (V)	
	1019.3	TR																
SANDSTONE : GRAY, HIGHLY WEATHERED.			40 42 50/2"	-	100	SS-5	-	-	-	-	-	-	-	-	-	6	Rock (V)	
			50/0"	-		SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			50/3"	-	67	SS-7	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1012.3																	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATLY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE.			58		75	NQ2-1											CORE	
			68		92	NQ2-2											CORE	
	1006.3	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 16.9'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
11

Boring:
B-042-0-23

RC-1: 18.0-19.0'
REC (%):75
RQD (%):58

RC-2: 19.0-24.0'
REC (%):92
RQD (%):68

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1502+16 / 0'	**EXPLORATION ID B-043-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1035.0 (MSL) EOB: 24.5 ft.	PAGE 1 OF 1
START: 11/9/23 END: 11/9/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090545, -82.811039	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1035.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (5.5")	1034.5																	
HARD, BROWN **SANDY SILT**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, MOIST TO DAMP.			3 5 9	20	72	SS-1	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
			7 8 8	23	72	SS-2	4.5+	-	-	-	-	-	-	-	-	15	A-4a (V)	
			3 5 8	19	100	SS-3	4.5+	14	11	14	34	27	27	17	10	16	A-4a (5)	
			4 5 14	27	61	SS-4	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
	1024.5	TR																
SANDSTONE : GRAY, HIGHLY WEATHERED.			20 50/5"	-	55	SS-5	-	-	-	-	-	-	-	-	-	6	Rock (V)	
			20 30 35	94	67	SS-6	-	-	-	-	-	-	-	-	-	12	Rock (V)	
			50/4"	-	38	SS-7	-	-	-	-	-	-	-	-	-	6	Rock (V)	
	1016.5																	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE.			0		75	NQ2-1											CORE	
	1013.4																	
SHALE : GRAY, MODERATELY WEATHERED, WEAK, FINE GRAINED, LAMINATED, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, DISTURBED, SEAMY, POOR SURFACE.	1012.5		33		68	NQ2-2											CORE	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE.	1010.5	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 15.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:57 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
12

Boring:
B-043-0-23

RC-1: 18.5-19.5’
REC (%):75
RQD (%):0

RC-2: 19.5-24.5’
REC (%):68
RQD (%):33

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1504+27 / 0'	**EXPLORATION ID B-044-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1038.3 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/14/23 END: 11/14/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090479, -82.810313	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1038.3	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
0.3' -TOPSOIL (4.0")	1038.0																	
HARD, LIGHT BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP TO MOIST.		1	4															
		2	7 6	19	67	SS-1	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	
		3																
		4	12															
		5	13 13	37	33	SS-2	-	-	-	-	-	-	-	-	-	9	A-6a (V)	
		6																
		7	10 12 12	35	100	SS-3	4.5+	15	10	14	39	22	30	17	13	14	A-6a (6)	
		8																
		9	8 9 13	32	67	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		10																
		11	6															
		12	10 9	27	72	SS-5	4.5+	-	-	-	-	-	-	-	-	11	A-6a (V)	
	1025.3	13																
SANDSTONE : GRAY, HIGHLY WEATHERED.		TR																
		14	50/4"	-	63	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		15																
		16	38															
		17	50/4"	-	84	SS-7	-	-	-	-	-	-	-	-	-	10	Rock (V)	
		18																
		19	50/6"	-	100	SS-8	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		20																
		21	50/6"	-	100	SS-9	-	-	-	-	-	-	-	-	-	5	Rock (V)	
		22																
		23																
		24	50/5"	-	100	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	
	1013.3	25																
		EOB																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 12.8'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1506+08 / 0'	**EXPLORATION ID B-045-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1038.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/14/23 END: 11/14/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090452, -82.809651	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1038.9	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
0.3' -TOPSOIL (4.0")	1038.6																	
HARD, LIGHT BROWN TO BROWN **CLAY**, "AND" SILT, TRACE COARSE TO FINE SAND, DAMP.		1	5 5 6	16	56	SS-1	4.5+	0	3	8	51	38	48	20	28	17	A-7-6 (17)	
		2																
		3																
		4	9 10 12	32	50	SS-2	4.5+	-	-	-	-	-	-	-	-	14	A-7-6 (V)	
		5																
		6																
		7	10 13 13	37	100	SS-3	4.5+	-	-	-	-	-	-	-	-	14	A-7-6 (V)	
	1030.9	8																
HARD, BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, MOIST.		9	8 12 13	36	83	SS-4	-	11	13	16	7	53	28	17	11	12	A-6a (5)	
		10																
		11	4 6 15	30	78	SS-5	-	-	-	-	-	-	-	-	-	13	A-6a (V)	
	1025.9	12																
SILTSTONE : GRAY TO DARK GRAY, HIGHLY WEATHERED.		13 TR	50/4"	-	75	SS-6	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		14																
		15																
		16	50/4"	-	88	SS-7	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		17																
		18																
		19	50/4"	-	86	SS-8	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		20																
		21	50/2"	-	75	SS-9	-	-	-	-	-	-	-	-	-	6	Rock (V)	
		22																
		23																
		24	50/0"	-		SS-10	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	1013.9	25 EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 13.9'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:57 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1508+10 / 0'	**EXPLORATION ID B-046-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1039.1 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/10/23 END: 11/10/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090415, -82.808921	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1039.1	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
0.5' -TOPSOIL (5.5")	1038.6																	
HARD, BROWNISH GRAY **CLAY**, "AND" SILT, LITTLE FINE GRAVEL, LITTLE COARSE TO FINE SAND, DAMP.		1	5 7 8	22	44	SS-1	4.5+	20	3	9	31	37	42	20	22	16	A-7-6 (12)	
		2																
		3																
		4	12 14 14	40	50	SS-2	4.5+	-	-	-	-	-	-	-	-	14	A-7-6 (V)	
	1033.6	5																
HARD, BROWNISH GRAY **SILT AND CLAY**, SOME COARSE TO FINE SAND, SOME FINE GRAVEL, MOIST.		6	15 16 16	46	0	SS-3	-	-	-	-	-	-	-	-	-	-		
		7	10	-	42	2S-3A	4.5+	21	10	14	31	24	27	16	11	15	A-6a (4)	
		8	8 12 15	39	64	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
	1028.6	9																
SANDSTONE : GRAY, HIGHLY WEATHERED.		10 TR																
		11	11 18 16	49	42	SS-5	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		12																
		13																
		14	6 16 32	69	61	SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		15																
		16	50/4"	-	100	SS-7	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		17																
		18																
	1020.1	19	50/4"	-	50	SS-8	-	-	-	-	-	-	-	-	-	-	Rock (V)	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE. -@21.3' - 21.5' SHALE		20	0		33	NQ2-1											CORE	
-@22.5' CLAY SEAM		21																
		22																
		23	37		93	NQ2-2											CORE	
	1014.6	24																
-@ 24.5'-25.0' SHALE		25 EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 15.2'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

000-23 RII STA ODOT BORING LOG (8.5X11) - OH DOT.GDT - 1/11/24 07:57 - U:\GI8\PROJECTS\2023\W-23-107.GPJ

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
13

Boring:
B-046-0-23

RC-1: 19.0-20.0'
REC (%):33
RQD (%):0

RC-2: 20.0-25.0'
REC (%):93
RQD (%):37

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1510+10 / 0'	**EXPLORATION ID B-047-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1039.2 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/10/23 END: 11/10/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090391, -82.808171	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1039.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (6.0")	1038.7																	
HARD, BROWN **SILT AND CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP.			4 8 11	27	44	SS-1	4.5+	-	-	-	-	-	-	-	-	22	A-6a (V)	
			11 17 19	52	81	SS-2	4.5+	11	9	13	36	31	31	17	14	11	A-6a (8)	
			5 6 8	20	75	SS-3	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
			5 7 8	22	58	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
	1028.7																	
HARD, BROWN **SANDY SILT**, LITTLE CLAY, SOME FINE GRAVEL, DAMP.			12 14 12	37	61	SS-5	4.5+	23	14	13	32	18	26	17	9	11	A-4a (3)	
	1026.2	TR																
SILTSTONE : GRAY, HIGHLY WEATHERED.			15 20 16	52	36	SS-6	-	-	-	-	-	-	-	-	-	6	Rock (V)	
			19 15 50/6"	-	54	SS-7	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	1020.2		50/4"	-	100	SS-8	-	-	-	-	-	-	-	-	-	13	Rock (V)	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE.			0		42	NQ2-1											CORE	
-@22.4' CLAY SEAM -@ 19.0' - 25.0' RED IRON STAINING THROUGHOUT			55		92	NQ2-2											CORE	
	1014.2	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 14.9'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
14

Boring:
B-047-0-23

RC-1: 19.0-20.0'
REC (%):42
RQD (%):0

RC-2: 20.0-25.0'
REC (%):92
RQD (%):55

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1512+10 / 0'	**EXPLORATION ID B-048-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1037.4 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/10/23 END: 11/10/23	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090360, -82.807478	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1037.4	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
0.5' -TOPSOIL (6.0")	1036.9																	
HARD, BROWN TO GRAY **SILTY CLAY**, SOME COARSE TO FINE SAND, TRACE FINE GRAVEL, DAMP TO MOIST.		1	3 3 5	12	39	SS-1	4.5+	-	-	-	-	-	-	-	-	19	A-6b (V)	
		2																
		3																
		4	6 7 7	20	100	SS-2	4.5+	10	5	19	32	34	36	17	19	14	A-6b (10)	
		5																
		6	6 6 11	24	33	SS-3	4.5+	-	-	-	-	-	-	-	-	17	A-6b (V)	
		7																
		8																
		9	6 8 10	26	69	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
	1026.9	10																
VERY STIFF TO HARD, GRAY **SANDY SILT**, SOME CLAY, LITTLE FINE GRAVEL, DAMP.		11	5 6 9	22	83	SS-5	4.5+	18	11	14	33	24	26	16	10	11	A-4a (4)	
		12																
		13																
		14	3 4 5	13	64	SS-6	3.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
	1021.4	15																
SHALE : BROWN, SEVERELY WEATHERED.		TR 16	28 35 50/3"	-	40	SS-7	-	-	-	-	-	-	-	-	-	0	Rock (V)	
		17																
		18																
		19	15 24 26	72	83	SS-8	-	-	-	-	-	-	-	-	-	13	Rock (V)	
		20																
		21	50/3"	-	0	SS-9	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		22																
		23																
	1012.4	EOB 24	11 10 15	36	50	SS-10	-	-	-	-	-	-	-	-	-	20	Rock (V)	
		25																

NOTES: GROUNDWATER NOT ENCOUNTERED DURING DRILLING; CAVE-IN DEPTH @ 16.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LBS. BENTONITE CHIPS AND SOIL CUTTINGS. .

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1514+10 / 0'	**EXPLORATION ID B-049-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1038.9 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/10/23 END: 11/10/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090327, -82.806756	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1038.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (5.5")	1038.4																	
VERY STIFF TO HARD, BROWN **CLAY**, SOME SILT, SOME FINE GRAVEL, TRACE COARSE TO FINE SAND, MOIST TO DAMP.			1 3 4	10	53	SS-1	2.25	28	2	5	27	38	53	20	33	25	A-7-6 (16)	
			5 6 8	20	100	SS-2	4.00	-	-	-	-	-	-	-	-	21	A-7-6 (V)	
	1033.4																	
HARD, GRAY **SANDY SILT**, TRACE GRAVEL, MOIST TO DAMP.			3 4 6	14	44	SS-3	4.00	-	-	-	-	-	-	-	-	14	A-4a (V)	
			8 13 16	42	89	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
			4 8 10	26	83	SS-5	4.5+	8	14	16	34	28	26	16	10	12	A-4a (5)	
			5 7 14	30	100	SS-6	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
	1023.4	TR																
SILTSTONE : GRAY, HIGHLY WEATHERED.			50/3"	-	-	SS-7	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			50/0"	-	-	SS-8	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	1018.9		0		0	NQ2-1											CORE	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE.			28		42	NQ2-2											CORE	
	1013.9	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 17.1'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
15

Boring:
B-049-0-23

RC-1: 19.0-20.0’
REC (%):0
RQD (%):0

RC-2: 20.0-25.0’
REC (%):42
RQD (%):28

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1516+10 / 0'	**EXPLORATION ID B-050-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1038.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/13/23 END: 11/13/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090286, -82.806054	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1038.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (5.5")	1037.5																	
VERY STIFF TO HARD, BROWN TO GRAY **SILTY CLAY**, SOME COARSE TO FINE SAND, LITTLE FINE GRAVEL, DAMP TO MOIST.			2 4 5	13	56	SS-1	4.00	-	-	-	-	-	-	-	-	20	A-6b (V)	
			5 7 6	19	72	SS-2	3.25	13	8	13	39	27	37	19	18	15	A-6b (9)	
			8 10 10	29	64	SS-3	4.00	-	-	-	-	-	-	-	-	15	A-6b (V)	
			4 5 11	23	36	SS-4	4.5+	-	-	-	-	-	-	-	-	9	A-6b (V)	
	1027.5																	
DENSE, BROWN **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP.			18 15 12	39	64	SS-5	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
	1025.0	TR																
SILTSTONE : GRAY, HIGHLY WEATHERED.			6 16 32	69	39	SS-6	-	-	-	-	-	-	-	-	-	8	Rock (V)	
			50/5"	-	40	SS-7	-	-	-	-	-	-	-	-	-	12	Rock (V)	
	1019.0		50/4"	-	75	SS-8	-	-	-	-	-	-	-	-	-	7	Rock (V)	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACES, BLOCKY, GOOD SURFACE. -@21.0' RED STAINING			0		25	NQ2-1											CORE	
			82		100	NQ2-2											CORE	
	1013.0	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 13.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
16

Boring:
B-050-0-23

RC-1: 19.0-20.0'
REC (%):0
RQD (%):25

RC-2: 20.0-25.0'
REC (%):100
RQD (%):82

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1519+10.6 / 8.77' LT	**EXPLORATION ID B-051-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1038.1 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/13/23 END: 11/13/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090226, -82.805330	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1038.1	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
0.5' -TOPSOIL (5.5")	1037.6																	
HARD, BROWN **SILTY CLAY**, LITTLE GRAVEL AND SAND, DAMP.		1	3 6 7	19	39	SS-1	4.5+	-	-	-	-	-	-	-	-	19	A-6b (V)	
		2																
		3																
		4	10 10 12	32	83	SS-2	4.5+	7	6	12	43	32	40	19	21	13	A-6b (12)	
	1032.6	5																
VERY DENSE, BROWN TO GRAY **GRAVEL WITH SAND AND SILT**, DAMP.		6	36 26 22	69	61	SS-3	-	-	-	-	-	-	-	-	-	6	A-2-4 (V)	
-@ 6.0' - 8.0' COBBLES		7																
		8																
		9	17 19 32	73	72	SS-4	-	-	-	-	-	-	-	-	-	6	A-2-4 (V)	
		10																
		11																
		12	14 17 29	66	44	SS-5	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
		13																
		14	50/3"	-	50	SS-6	-	-	-	-	-	-	-	-	-	17	Rock (V)	
	1021.8	TR																
SILTSTONE : GRAY, HIGHLY WEATHERED.		16	50/4"	-	88	SS-7	-	-	-	-	-	-	-	-	-	5	A-2-4 (V)	
	1019.1	17																
		18																
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE.		19	50		75	NQ2-1											CORE	
		20																
-VERTICAL FRACTURE @ 20.3', 20.9', 23.2' AND 24.7'		21																
		22	50		97	NQ2-2											CORE	
		23																
	1013.1	24																
		EOB 25																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 14.8'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 94 LBS CEMENT / 25 LBS BENTONITE POWDER / 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
17

Boring:
B-051-0-23

RC-1: 19.0-20.0'
REC (%):75
RQD (%):50

RC-2: 20.0-25.0'
REC (%):97
RQD (%):50

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1520+41 / 0'	**EXPLORATION ID B-052-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1038.6 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/13/23 END: 11/13/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090130, -82.804859	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1038.6	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
0.3' - TOPSOIL (4.0")	1038.3																	
HARD, BROWN **SILT AND CLAY**, LITTLE GRAVEL AND SAND, DAMP.		1	6 7 10	24	78	SS-1	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	
		2																
		3																
		4	12 13 13	37	69	SS-2	4.5+	7	8	13	43	29	33	18	15	13	A-6a (9)	
		5																
	1031.8	6	18 50/4"	-	90	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)	
MEDIUM DENSE, BROWN **GRAVEL WITH SAND AND SILT**, DAMP. -COBBLES @ 6.5'-8.0'		7																
		8																
		9	12 10 8	26	53	SS-4	-	44	16	11	21	8	27	17	10	7	A-2-4 (0)	
	1028.1	10																
SILTSTONE : GRAY, HIGHLY WEATHERED.		TR 11	10 25 35	86	56	SS-5	-	-	-	-	-	-	-	-	-	8	Rock (V)	
		12																
		13																
		14	28 19 42	88	61	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
		15																
		16	50/3"	-	100	SS-7	-	-	-	-	-	-	-	-	-	8	Rock (V)	
		17																
		18																
	1019.6	19	50/3"	-	0	SS-8	-	-	-	-	-	-	-	-	-	9	Rock (V)	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE.		20	92		92	NQ2-1											CORE	
		21																
		22																
-SHALE SEAMS @ 22.6', 23.0, 24.2'		23	77		93	NQ2-2											CORE	
	1013.6	24																
		EOB 25																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 13.8'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
18

Boring:
B-052-0-23

RC-1: 19.0-20.0’
REC (%):92
RQD (%):92

RC-2: 20.0-25.0’
REC (%):93
RQD (%):77

RESOURCE INTERNATIONAL, INC.

PROJECT: FRA-161-15.80	DRILLING FIRM / OPERATOR: RII / TG	DRILL RIG: DIEDRICH D-50 (# 313)	STATION / OFFSET: 1522+26 / 0'	**EXPLORATION ID B-053-0-23**
TYPE: NOISE WALLS	SAMPLING FIRM / LOGGER: RII / MJ	HAMMER: AUTOMATIC	ALIGNMENT: CL WALL 15	
PID: 117607 SFN: NA	DRILLING METHOD: 3.25" HSA / NQ2	CALIBRATION DATE: 3/21/22	ELEVATION: 1036.5 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 11/14/23 END: 11/14/23	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 86.4	LAT / LONG: 40.090039, -82.804245	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1036.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
0.5' -TOPSOIL (6.0")	1036.0																	
VERY STIFF TO HARD, BROWN TO GRAY **SILTY CLAY**, SOME TO TRACE SAND, TRACE GRAVEL, MOIST.			1 2 5	10	47	SS-1	4.00	-	-	-	-	-	-	-	-	22	A-6b (V)	
			3 3 4	10	100	SS-2	4.25	4	8	13	33	42	35	19	16	18	A-6b (10)	
			2 3 4	10	83	SS-3	4.5+	-	-	-	-	-	-	-	-	17	A-6b (V)	
	1028.5																	
HARD, BROWN TO BROWN GRAY **SANDY SILT**, TRACE GRAVEL, DAMP TO MOIST.			3 5 7	17	78	SS-4	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
			5 7 9	23	94	SS-5	4.5+	13	13	14	29	31	25	15	10	12	A-4a (5)	
	1022.4	TR	5 50/2"	-	63	SS-6	-	-	-	-	-	-	-	-	-	12	Rock (V)	
SANDSTONE : GRAY, HIGHLY WEATHERED.			50/3"	-	100	SS-7	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	1017.5																	
SANDSTONE : GRAY, SLIGHTLY WEATHERED, STRONG, FINE GRAINED, THIN BEDDED, MODERATELY FRACTURED, NARROW APERTURES, SLIGHTLY ROUGH SURFACE, BLOCKY, GOOD SURFACE.			50		50	NQ2-1											CORE	
-@22.2' FRACTURE -@22.8' SHALE SEAM			68		100	NQ2-2											CORE	
-@24.0 CLAY SEAM	1011.5	EOB																

NOTES: GROUNDWATER NOT MEASURED UPON COMPLETION DUE TO INFLUENCE OF CORE WATER; CAVE-IN DEPTH @ 15.8'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 47 LBS CEMENT, 25 LBS BENTONITE POWDER AND 40 GAL WATER .

Project Name: FRA-161-15.80	**Location:** Franklin County, Ohio

Photo No.
19

Boring:
B-053-0-23

RC-1: 19.0-20.0'
REC (%):50
RQD (%):50

RC-2: 20.0-25.0'
REC (%):100
RQD (%):68

APPENDIX V

LABORATORY TEST RESULTS

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Phone (513) 769-6998

Unconfined Compressive Strength of Intact Rock Core Specimens

(ASTM D 7012-14)

Project: FRA-161-15.80
Project No.: W-23-107
Date of Testing: 1/8/2024
Test Performed by: KL/EM

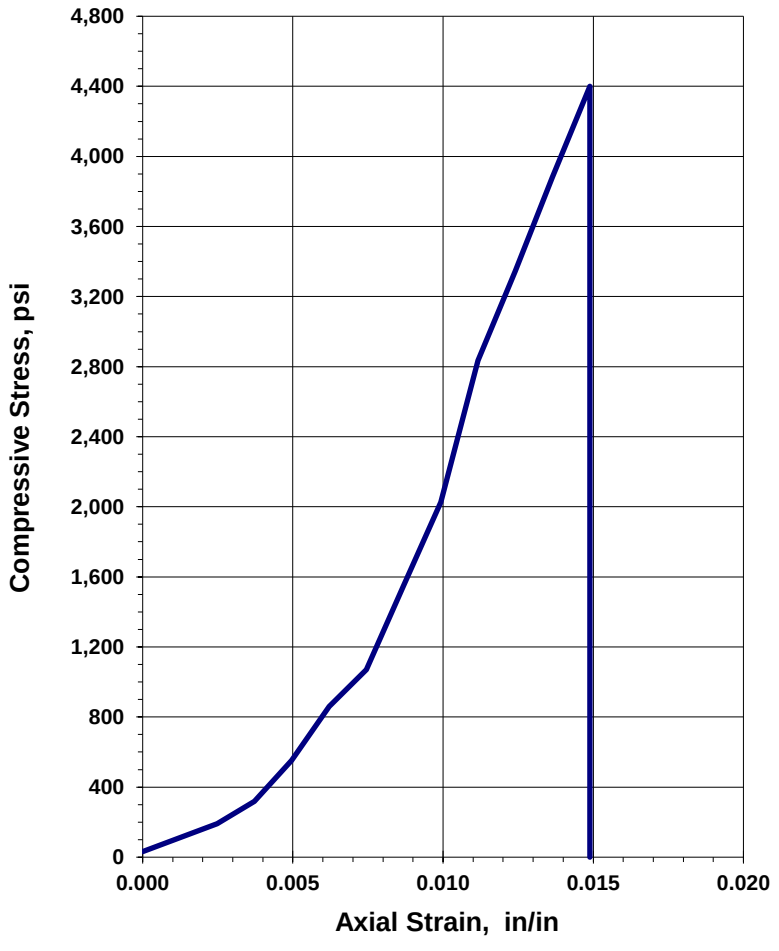
Rock Description: Gray Sandstone
Rock Formation:

Boring No.:	B-001-0-23		Average Length:	4.030	in
Sample No:	RC-2		Average Diameter:	1.993	in
Depth (ft):	14.0'	feet	Length to diameter ratio:	2.022	
Moisture condition:	As received		Cross Sectional Area:	3.120	in^2
Sample Mass:	470.86	grams	Volume:	0.0073	ft^3
Testing Temperature:	23	^oC	Unit Weight (sample specimen)*:	142.68	lbs/ft3
Rate of Loading:	62.1	lbs/sec	Failure Load:	13,727	lbs
Testing Time:	221	sec	Axial Strain at Failure:	0.0149	in/in
(Rate 2-15 min			Compressive Strength:	4,400	psi

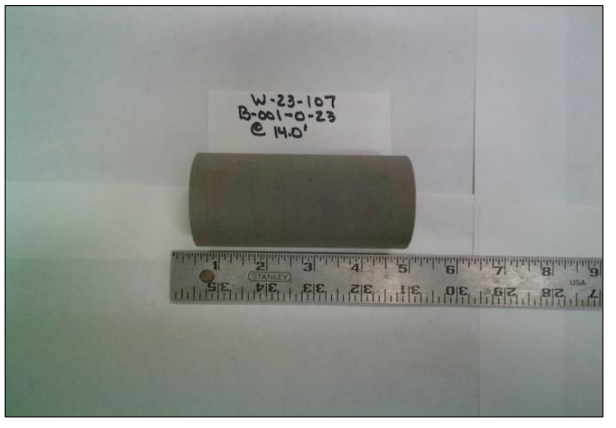
Sample Preparation: Per ASTM D4543

**Actual test sample used for unit weight prior to testing.*

Unconfined Compression Test



Before Testing



After Failure

REMARKS:

RESOURCE INTERNATIONAL, INC.

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Unconfined Compressive Strength of Intact Rock Core Specimens

(ASTM D 7012-14)

Project: FRA-161-15.80

Project No.: W-23-107

Date of Testing: 1/8/2024

Test Performed by: KL/EM

Rock Description: Gray Sandstone

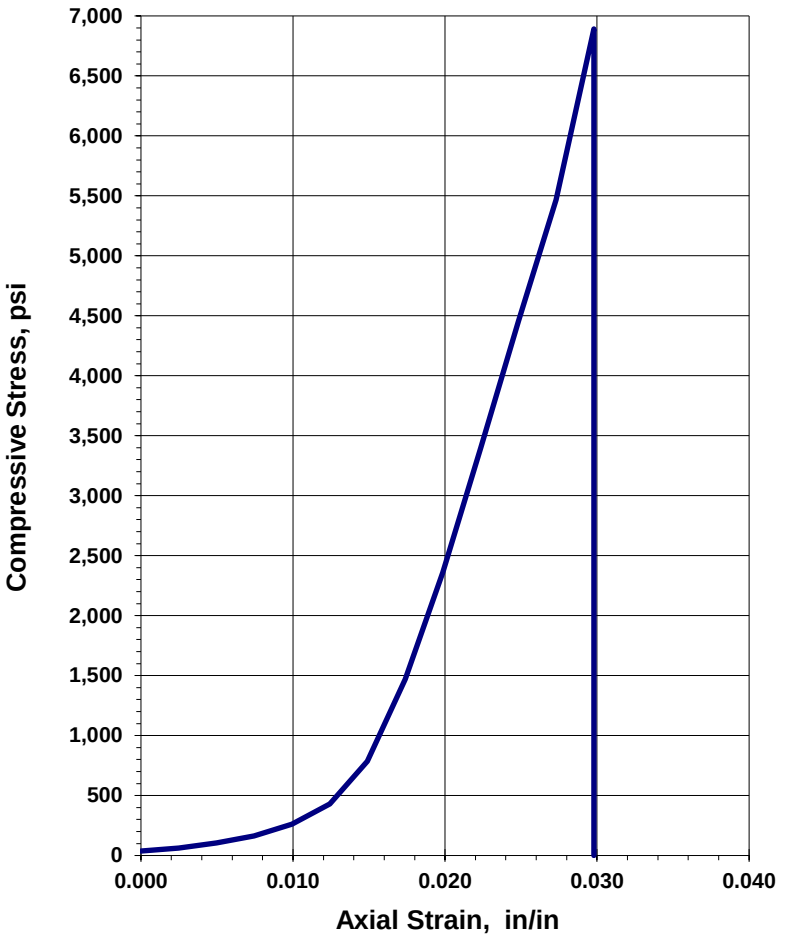
Rock Formation:

Boring No.:	B-003-0-23		Average Length:	4.028	in
Sample No:	RC-2		Average Diameter:	1.995	in
Depth (ft):	13.8'	feet	Length to diameter ratio:	2.019	
Moisture condition:	As received		Cross Sectional Area:	3.126	in^2
Sample Mass:	480.55	grams	Volume:	0.0073	ft^3
Testing Temperature:	23	^oC	Unit Weight (sample specimen)*:	145.39	lbs/ft3
Rate of Loading:	75.1	lbs/sec	Failure Load:	21,542	lbs
Testing Time:	287	sec	Axial Strain at Failure:	0.0298	in/in
(Rate 2-15 min			Compressive Strength:	6,891	psi

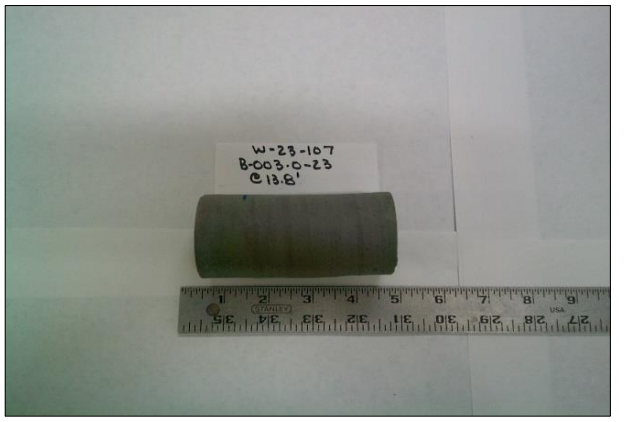
Sample Preparation: Per ASTM D4543

**Actual test sample used for unit weight prior to testing.*

Unconfined Compression Test



Before Testing



After Failure

REMARKS:

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Unconfined Compressive Strength of Intact Rock Core Specimens

(ASTM D 7012-14)

Project: FRA-161-15.80
Project No.: W-23-107
Date of Testing: 1/8/2024
Test Performed by: KL/EM

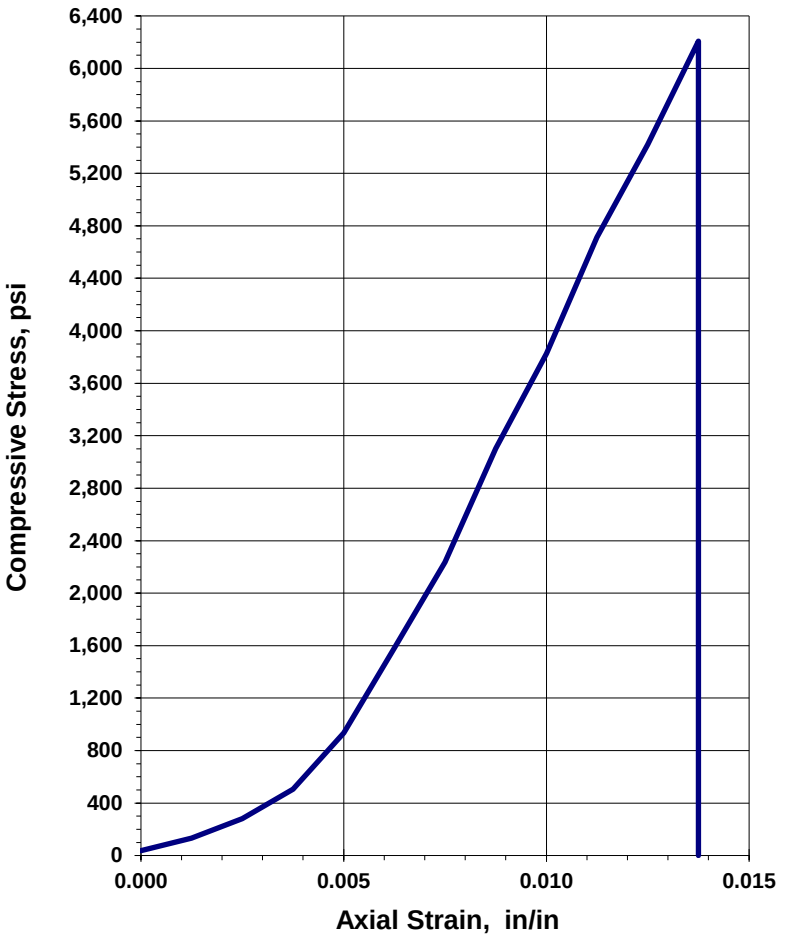
Rock Description: Gray Sandstone
Rock Formation:

Boring No.:	B-043-0-23		Average Length:	4.000	in
Sample No:	RC-2		Average Diameter:	1.988	in
Depth (ft):	21.00	feet	Length to diameter ratio:	2.012	
Moisture condition:	As received		Cross Sectional Area:	3.104	in^2
Sample Mass:	460.53	grams	Volume:	0.0072	ft^3
Testing Temperature:	23	^oC	Unit Weight (sample specimen)*:	141.30	lbs/ft3
Rate of Loading:	87.2	lbs/sec	Failure Load:	19,269	lbs
Testing Time:	221	sec	Axial Strain at Failure:	0.0138	in/in
(Rate 2-15 min			Compressive Strength:	6,208	psi

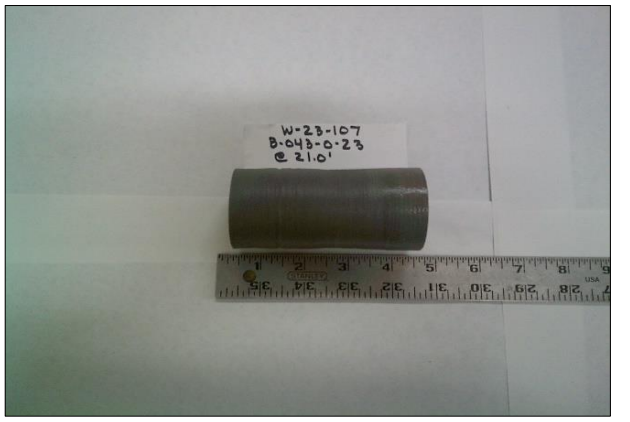
Sample Preparation: Per ASTM D4543

**Actual test sample used for unit weight prior to testing.*

Unconfined Compression Test



Before Testing



After Failure

REMARKS:

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Unconfined Compressive Strength of Intact Rock Core Specimens

(ASTM D 7012-14)

Project: FRA-161-15.80

Project No.: W-23-107

Date of Testing: 1/8/2024

Test Performed by: KL/EM

Rock Description: Gray Sandstone

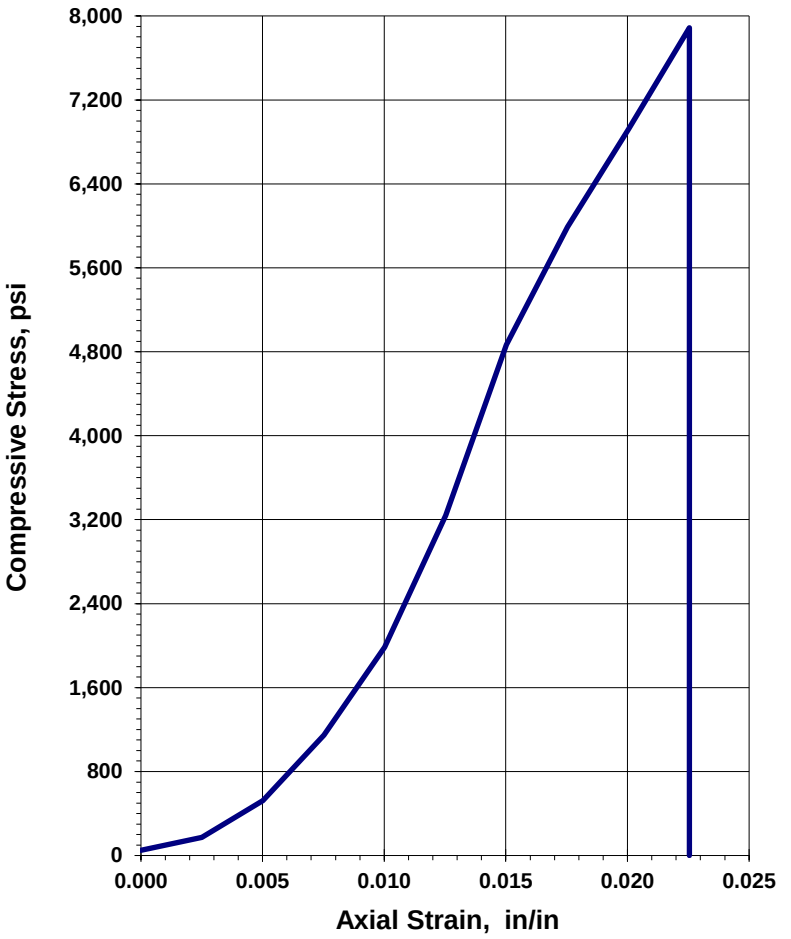
Rock Formation:

Boring No.:	B-046-0-23		Average Length:	3.992	in
Sample No:	RC-2		Average Diameter:	1.995	in
Depth (ft):	22.0'	feet	Length to diameter ratio:	2.001	
Moisture condition:	As received		Cross Sectional Area:	3.126	in^2
Sample Mass:	519.17	grams	Volume:	0.0072	ft^3
Testing Temperature:	23	^oC	Unit Weight (sample specimen)*:	158.49	lbs/ft3
Rate of Loading:	101.9	lbs/sec	Failure Load:	24,655	lbs
Testing Time:	242	sec	Axial Strain at Failure:	0.0225	in/in
(Rate 2-15 min			Compressive Strength:	7,887	psi

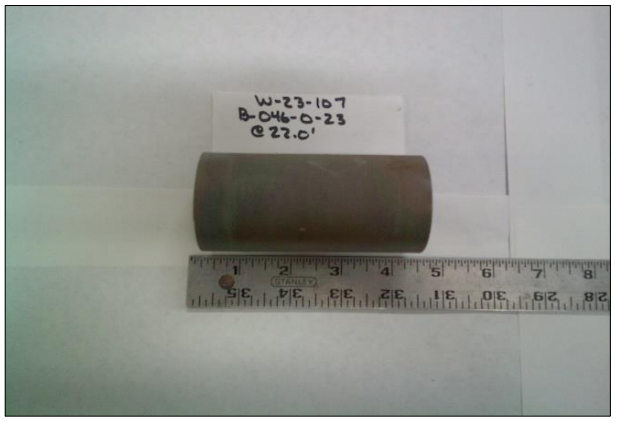
Sample Preparation: Per ASTM D4543

**Actual test sample used for unit weight prior to testing.*

Unconfined Compression Test



Before Testing



After Failure

REMARKS:

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Unconfined Compressive Strength of Intact Rock Core Specimens

(ASTM D 7012-14)

Project: FRA-161-15.80
Project No.: W-23-107
Date of Testing: 1/8/2024
Test Performed by: KL/EM

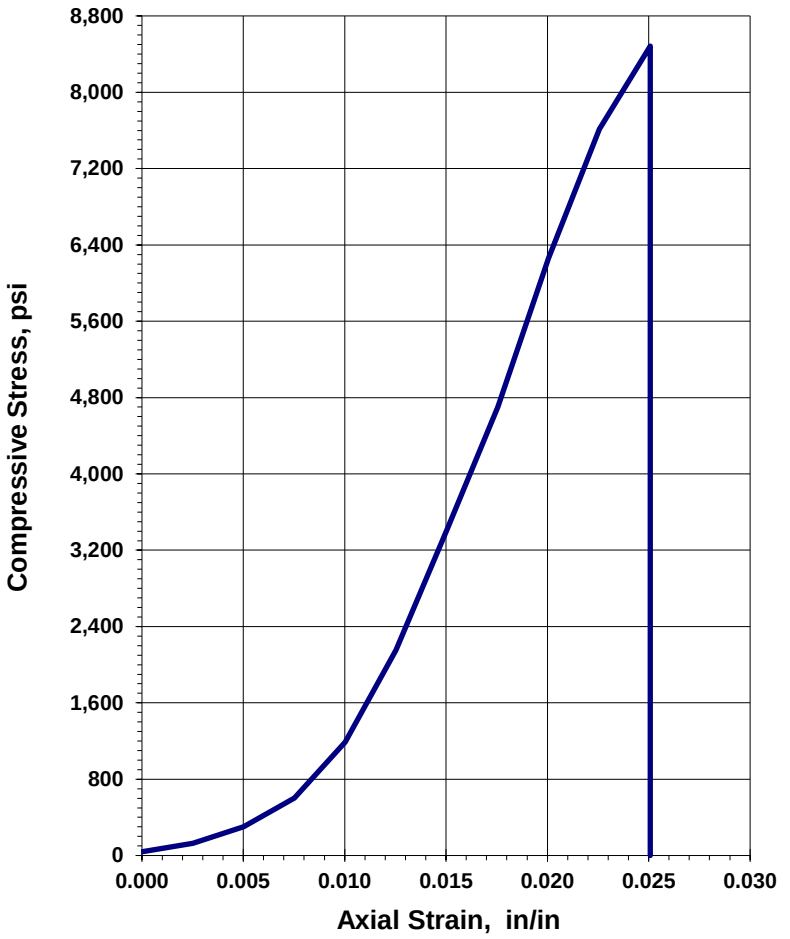
Rock Description: Gray Sandstone
Rock Formation:

Boring No.:	B-050-0-23		Average Length:	3.988	in
Sample No:	RC-2		Average Diameter:	1.985	in
Depth (ft):	21.0'	feet	Length to diameter ratio:	2.009	
Moisture condition:	As received		Cross Sectional Area:	3.095	in^2
Sample Mass:	455.36	grams	Volume:	0.0071	ft^3
Testing Temperature:	23	^oC	Unit Weight (sample specimen)*:	140.56	lbs/ft3
Rate of Loading:	108.5	lbs/sec	Failure Load:	26,255	lbs
Testing Time:	242	sec	Axial Strain at Failure:	0.0251	in/in
(Rate 2-15 min			Compressive Strength:	8,484	psi

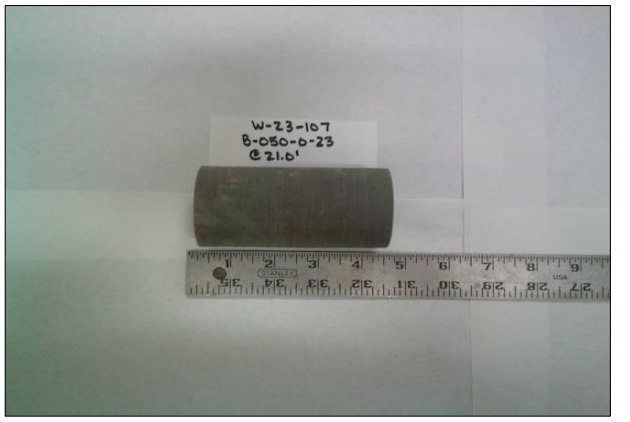
Sample Preparation: Per ASTM D4543

**Actual test sample used for unit weight prior to testing.*

Unconfined Compression Test



Before Testing



After Failure

REMARKS:

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Unconfined Compressive Strength of Intact Rock Core Specimens

(ASTM D 7012-14)

Project: FRA-161-15.80
Project No.: W-23-107
Date of Testing: 1/8/2024
Test Performed by: KL/EM

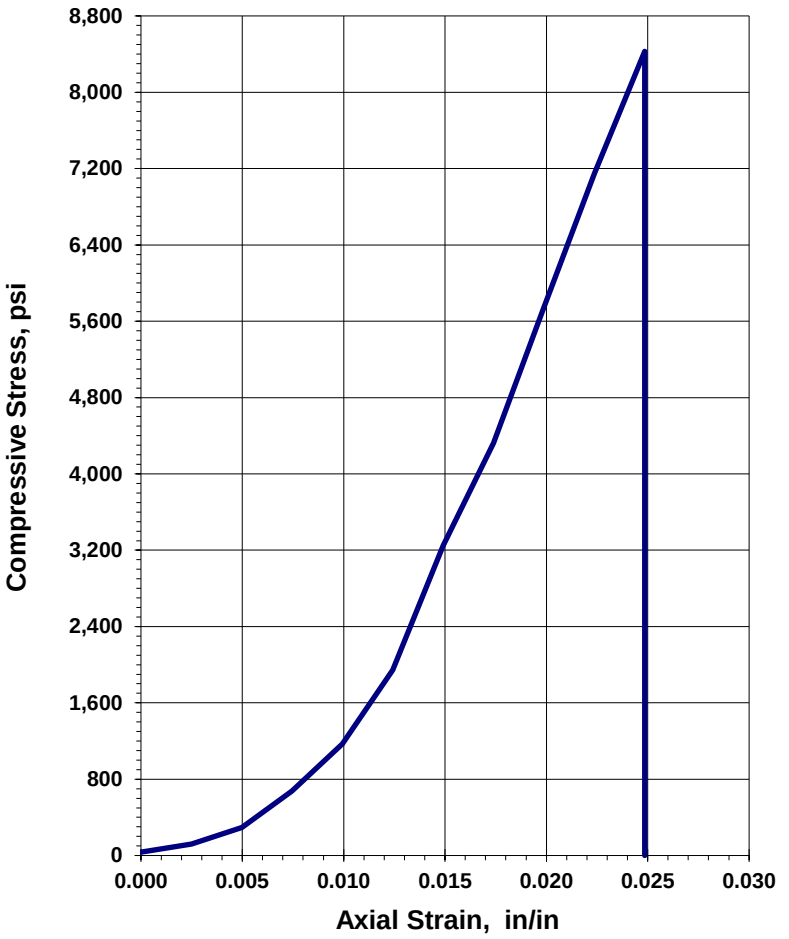
Rock Description: Gray Sandstone
Rock Formation:

Boring No.:	B-052-0-23		Average Length:	4.024	in
Sample No:	RC-2		Average Diameter:	1.993	in
Depth (ft):	21.20	feet	Length to diameter ratio:	2.019	
Moisture condition:	As received		Cross Sectional Area:	3.120	in^2
Sample Mass:	505.98	grams	Volume:	0.0073	ft^3
Testing Temperature:	23	^oC	Unit Weight (sample specimen)*:	153.55	lbs/ft3
Rate of Loading:	112.4	lbs/sec	Failure Load:	26,295	lbs
Testing Time:	234	sec	Axial Strain at Failure:	0.0249	in/in
(Rate 2-15 min			Compressive Strength:	8,429	psi

Sample Preparation: Per ASTM D4543

**Actual test sample used for unit weight prior to testing.*

Unconfined Compression Test



Before Testing

After Failure

REMARKS:

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Point Load Strength Index of Rock Specimens

(ASTM D 5731-08)

Project: FRA-161-15.80
Project No.: W-23-107
Date of Testing: 1/8/2024
Test Performed by: EM/KL

Rock Description: Gray Shale

Boring No.: B-23-0-23
Station / Offset: RC-3
Sample No. / Depth: 21.5'-23.5'

Test Apparatus: Forney-LA 0080
Serial Number: A125/AZ/0014
Date of Calibration: 4/25/2023

Sample No.	Test Type	Depth (ft)	Width (mm)	Diameter (mm)	Load (N)	D_e^2 (mm^2)	D_e (mm)	F	Is (MPa)	$Is_{(50)}$ (MPa)	σ_c (MPa)
1	a ⊥	21.5-23.5	49.7	21.1	503	1,336	36.5	0.87	0.38	0.33	4.52
2	a ⊥	21.5-23.5	49.6	25.8	783	1,631	40.4	0.91	0.48	0.44	5.76
3	a ⊥	21.5-23.5	49.7	23.1	525	1,463	38.3	0.89	0.36	0.32	4.31
4	a ⊥	21.5-23.5	49.7	28.5	814	1,802	42.5	0.93	0.45	0.42	5.42
5	a ⊥	21.5-23.5	49.7	30.0	854	1,895	43.5	0.94	0.45	0.42	5.41
6	a ⊥	21.5-23.5	49.7	25.1	916	1,589	39.9	0.90	0.58	0.52	6.92
7	a ⊥	21.5-23.5	49.7	24.6	816	1,555	39.4	0.90	0.52	0.47	6.30
8	a ⊥	21.5-23.5	49.7	22.6	798	1,429	37.8	0.88	0.56	0.49	6.70
9	a ⊥	21.5-23.5	49.7	21.5	789	1,361	36.9	0.87	0.58	0.51	6.96
10	a ⊥	21.5-23.5	49.7	22.5	801	1,427	37.8	0.88	0.56	0.49	6.73

STATISTICS	
Mean $Is_{(50)}$ ⊥	0.44 MPa (64 psi)
Mean $Is_{(50)}$ ‖	
$Ia_{(50)}$	

Specific Specimen Shape:

d = diametrical
a = axial
b = block
i = irregular lump
⊥ = perpendicular to bedding plane
‖ = parallel to bedding plane

Estimated Unaxial Compression, $\sigma_c = K*Is$

K = 12
*Per Section 206.1.3 of 2011 ODOT Rock Slope Design Guide

Mean σ_c = 5.90 MPa (0,856 psi)

Remarks: 1

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Point Load Strength Index of Rock Specimens
(ASTM D 5731-08)

Project: FRA-161-15.80
Project No.: W-23-107
Date of Testing: 1/8/2024
Test Performed by: EM/KL

Rock Description: Gray Shale

Boring No.: B-39-0-23
Station / Offset: RC-2
Sample No. / Depth: 15.0-20.0

Test Apparatus: Forney-LA 0080
Serial Number: A125/AZ/0014
Date of Calibration: 4/25/2023

Sample No.	Test Type	Depth (ft)	Width (mm)	Diameter (mm)	Load (N)	D_e^2 (mm^2)	D_e (mm)	F	Is (MPa)	$Is_{(50)}$ (MPa)	σ_c (MPa)
1	a ⊥	17.5-18.5	49.9	21.7	50	1,381	37.2	0.88	0.04	0.03	0.43
2	a ⊥	17.5-18.5	49.5	24.4	45	1,539	39.2	0.90	0.03	0.03	0.35
3	a ⊥	17.5-18.5	50.5	20.4	40	1,309	36.2	0.86	0.03	0.03	0.37
4	a ⊥	17.5-18.5	50.6	23.9	48	1,538	39.2	0.90	0.03	0.03	0.37
5	a ⊥	17.5-18.5	50.6	22.3	49	1,440	38.0	0.88	0.03	0.03	0.41
6	a ⊥	17.5-18.5	50.6	21.1	49	1,362	36.9	0.87	0.04	0.03	0.43
7	a ⊥	17.5-18.5	50.6	22.6	53	1,455	38.1	0.89	0.04	0.03	0.44
8	a ⊥	17.5-18.5	50.6	22.6	48	1,456	38.2	0.89	0.03	0.03	0.40
9	a ⊥	17.5-18.5	50.6	35.0	51	2,255	47.5	0.98	0.02	0.02	0.27
10	a ⊥	17.5-18.5	50.6	22.2	52	1,429	37.8	0.88	0.04	0.03	0.44

STATISTICS	
Mean $Is_{(50)}$ ⊥	0.03 MPa (4 psi)
Mean $Is_{(50)}$ ∥	
$Ia_{(50)}$	

Specific Specimen Shape:
d = diametrical
a = axial
b = block
i = irregular lump
⊥ = perpendicular to bedding plane
∥ = parallel to bedding plane

Estimated Unaxial Compression, σ_c = K*Is

K = 12
*Per Section 206.1.3 of 2011 ODOT Rock Slope Design Guide

Mean σ_c = 0.39 MPa (0,057 psi)

Remarks:

APPENDIX VI

CALCULATIONS – NOISE BARRIER FOUNDATION DEPTHS

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 300+00.00 to 305+76.00

Noise Wall 3

Rii

Prepared By: Dan Hayes, E.I.
Date prepared: Thursday, January 18, 2024

Checked By: Daniel E. Karch, P.E.
Date Checked: Thursday, January 18, 2024

No. of Borings: 4

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
300+00.00	1	14.00	24.00	965.50
300+24.00	2	14.00	24.00	965.50
300+48.00	3	14.00	24.00	966.50
300+72.00	4	14.00	24.00	966.50
300+96.00	5	14.00	24.00	966.50
301+20.00	6	14.00	24.00	966.50
301+44.00	7	14.00	24.00	967.00
301+68.00	8	14.00	24.00	967.00
301+92.00	9	14.00	24.00	967.00
302+16.00	10	14.00	24.00	967.50
302+40.00	11	14.00	24.00	967.50
302+64.00	12	14.00	24.00	967.50
302+88.00	13	14.00	24.00	968.00
303+12.00	14	14.00	24.00	968.00
303+36.00	15	14.00	24.00	968.50
303+60.00	16	14.00	24.00	968.50
303+84.00	17	14.00	24.00	968.50
304+08.00	18	14.00	24.00	968.50
304+32.00	19	14.00	24.00	968.50
304+56.00	20	14.00	24.00	968.50
304+80.00	21	14.00	24.00	968.50
305+04.00	22	14.00	24.00	968.50
305+28.00	23	14.00	24.00	968.50
305+52.00	24	14.00	24.00	968.50
305+76.00	25	14.00	24.00	968.50

Noise Wall ID: Noise Wall 3

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-001-0-23	300+00.00	301+00.00	966.30	965.50	966.30	962.00		24	14.00	3.0	3:1	300+00.00	300+96.00	1	5	7.00	958.50
B-002-0-23	302+00.00	303+00.00	968.10	967.00	968.10	963.50		24	14.00	4.0	4:1	301+20.00	302+88.00	6	13	8.50	958.50
B-003-0-23	304+00.00	304+88.00	969.10	968.50	969.10	964.40		24	14.00	7.0	5:1	303+12.00	304+80.00	14	21	7.00	961.50
B-004-0-23	305+76.00	305+76.00	969.20	968.50	969.20	963.70		24	14.00	0.0	Level	305+04.00	305+76.00	22	25	6.50	962.00

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 600+00.00 to 605+28.00

Noise Wall 6

Rii

Prepared By:	**Dan Hayes, E.I.**
Date prepared:	**Thursday, January 18, 2024**
Checked By:	**1/18/2024**
Date Checked:	**Thursday, January 18, 2024**

No. of Borings: **4**

Noise Wall: Noise Wall 6

FRA-161-15.80
PID: 117607

Design Data Sheet

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
600+00.00	1	14.00	24.00	960.50
600+24.00	2	14.00	24.00	960.50
600+48.00	3	14.00	24.00	960.50
600+72.00	4	14.00	24.00	960.50
600+96.00	5	14.00	12.00	961.50
601+08.00	6	14.00	12.00	962.50
601+20.00	7	14.00	12.00	963.50
601+32.00	8	14.00	12.00	964.50
601+44.00	9	14.00	12.00	965.50
601+56.00	10	14.00	12.00	966.00
601+68.00	11	14.00	24.00	966.50
601+92.00	12	14.00	24.00	967.00
602+16.00	13	14.00	24.00	968.00
602+40.00	14	14.00	24.00	968.00
602+64.00	15	14.00	24.00	968.00
602+88.00	16	14.00	24.00	968.50
603+12.00	17	14.00	24.00	968.50
603+36.00	18	14.00	24.00	968.50
603+60.00	19	14.00	24.00	968.50
603+84.00	20	14.00	24.00	968.50
604+08.00	21	14.00	24.00	968.50
604+32.00	22	14.00	24.00	968.50
604+56.00	23	14.00	24.00	969.00
604+80.00	24	14.00	24.00	969.00
605+04.00	25	14.00	24.00	969.00
605+28.00	26	14.00	24.00	969.00

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/1/2024

Noise Wall ID: Noise Wall 6

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-005-0-23	600+00.00	600+88.50	961.50	960.50	961.50			24	14.00	3.0	3:1	600+00.00	600+72.00	1	4	7.00	953.50
B-006-0-23	601+77.00	602+68.50	968.10	966.50	968.10			24	14.00	4.0	4:1	600+96.00	602+64.00	5	15	7.00	959.50
B-007-0-23	603+60.00	604+44.00	969.00	968.50	969.00			24	14.00	4.0	4:1	602+88.00	604+32.00	16	22	7.00	961.50
B-008-0-23	605+28.00	605+28.00	970.00	969.00	970.00			24	14.00	4.0	4:1	604+56.00	605+28.00	23	26	7.00	962.00

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/1/2024

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 800+00.00 to 823+48.00

Noise Wall 8

Rii

Prepared By: Dan Hayes, E.I.
Date prepared: Thursday, January 18, 2024

Checked By: Daniel E. Karch, P.E.
Date Checked: Thursday, January 18, 2024

No. of Borings: 10

Noise Wall: Noise Wall 8

FRA-161-15.80
PID: 117607

Design Data Sheet

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
800+00.00	1	14.00	24.00	966.00
800+24.00	2	14.00	24.00	966.00
800+48.00	3	14.00	24.00	966.00
800+72.00	4	14.00	24.00	966.00
800+96.00	5	14.00	24.00	966.50
801+20.00	6	14.00	24.00	966.50
801+44.00	7	14.00	24.00	966.50
801+68.00	8	14.00	24.00	966.50
801+92.00	9	14.00	24.00	966.50
802+16.00	10	14.00	24.00	966.50
802+40.00	11	14.00	24.00	966.50
802+64.00	12	14.00	24.00	966.50
802+88.00	13	14.00	24.00	966.50
803+12.00	14	14.00	24.00	966.50
803+36.00	15	14.00	24.00	966.50
803+60.00	16	14.00	24.00	966.50
803+84.00	17	14.00	24.00	966.50
804+08.00	18	14.00	24.00	966.00
804+32.00	19	14.00	24.00	966.00
804+56.00	20	14.00	24.00	965.50
804+80.00	21	14.00	24.00	965.50
805+04.00	22	14.00	24.00	965.50
805+28.00	23	14.00	24.00	964.50
805+52.00	24	14.00	24.00	964.50
805+76.00	25	14.00	24.00	964.50
806+00.00	26	14.00	24.00	964.50
806+24.00	27	14.00	24.00	964.50
806+48.00	28	14.00	24.00	964.50
806+72.00	29	14.00	24.00	965.50
806+96.00	30	14.00	24.00	965.50
807+20.00	31	14.00	24.00	966.00
807+44.00	32	14.00	24.00	966.50

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
807+68.00	33	14.00	24.00	966.50
807+92.00	34	14.00	24.00	967.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
808+16.00	35	14.00	24.00	967.00
808+40.00	36	14.00	24.00	967.00
808+64.00	37	14.00	24.00	967.50
808+88.00	38	14.00	24.00	967.50
809+12.00	39	14.00	24.00	967.50
809+36.00	40	14.00	24.00	967.50
809+60.00	41	14.00	24.00	968.00
809+84.00	42	14.00	24.00	968.50
810+08.00	43	14.00	24.00	968.50
810+32.00	44	14.00	24.00	969.00
810+56.00	45	14.00	24.00	969.50
810+80.00	46	14.00	16.00	970.00
810+96.00	47	14.00	16.00	970.00
811+12.00	48	14.00	16.00	970.50
811+28.00	49	14.00	16.00	971.00
811+44.00	50	14.00	14.00	971.00
811+58.00	51	14.00	14.00	971.50
811+72.00	52	14.00	24.00	972.00
811+96.00	53	14.00	24.00	972.50
812+20.00	54	14.00	24.00	973.00
812+44.00	55	14.00	24.00	974.00
812+68.00	56	14.00	24.00	975.00
812+92.00	57	14.00	24.00	975.00
813+16.00	58	14.00	24.00	975.00
813+40.00	59	14.00	24.00	975.00
813+64.00	60	14.00	24.00	975.00
813+88.00	61	14.00	24.00	975.00
814+12.00	62	14.00	24.00	974.50
814+36.00	63	14.00	24.00	974.50
814+60.00	64	14.00	24.00	974.00
814+84.00	65	14.00	24.00	974.00
815+08.00	66	14.00	24.00	974.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
815+32.00	67	14.00	24.00	974.00
815+56.00	68	14.00	24.00	974.00

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
815+80.00	69	14.00	24.00	974.00
816+04.00	70	14.00	24.00	974.00
816+28.00	71	14.00	24.00	973.50
816+52.00	72	14.00	24.00	973.50
816+76.00	73	14.00	24.00	973.50
817+00.00	74	14.00	24.00	973.50
817+24.00	75	14.00	24.00	973.50
817+48.00	76	14.00	24.00	973.50
817+72.00	77	14.00	24.00	973.50
817+96.00	78	14.00	12.00	973.50
818+08.00	79	14.00	24.00	973.50

Noise Wall ID: Noise Wall 8

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-012-0-23	800+72.00	801+72.00	967.10	966.00	967.10			24	14.00	0.0	Level	800+00.00	801+68.00	1	8	6.50	959.50
B-013-0-23	802+72.00	803+72.00	967.40	966.50	967.40			24	14.00	0.0	Level	801+92.00	803+60.00	9	16	6.50	960.00
B-014-0-23	804+72.00	805+72.00	966.40	965.50	966.40			24	14.00	0.0	Level	803+84.00	805+52.00	17	24	6.50	959.00
B-015-0-23	806+72.00	807+72.00	966.50	965.50	966.50			24	14.00	0.0	Level	805+76.00	807+68.00	25	33	6.50	959.00
B-016-0-23	808+72.00	809+72.00	968.40	967.50	968.40			24	14.00	0.0	Level	807+92.00	809+60.00	34	41	6.50	961.00
B-017-0-23	810+72.00	811+74.00	970.70	969.50	970.70	953.00		24	14.00	0.0	Level	809+84.00	811+72.00	42	52	6.50	963.00
B-018-0-23	812+76.00	813+74.00	975.50	975.00	975.50	953.00		24	14.00	6.0	5:1	811+96.00	813+64.00	53	60	7.00	968.00
B-019-0-23	814+72.00	815+59.00	974.90	974.00	974.90	951.90		24	14.00	0.0	Level	813+88.00	815+56.00	61	68	6.50	967.50
B-020-0-23	816+46.00	817+24.50	974.30	973.50	974.30	956.30		24	14.00	0.0	Level	815+80.00	817+24.00	69	75	6.50	967.00
B-021-0-23	818+03.00	818+03.00	974.10	973.50	974.10	955.90		24	14.00	0.0	Level	817+48.00	818+08.00	76	79	6.50	967.00

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 12/21/2023

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 900+00.00 to 912+70.00

Noise Wall 9

Rii

Prepared By:	**Dan Hayes, E.I.**
Date prepared:	**Thursday, January 18, 2024**
Checked By:	**Daniel E. Karch, P.E.**
Date Checked:	**Thursday, January 18, 2024**

# of Borings:	**7**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
900+00.00	1	14.00	16.00	973.50
900+16.00	2	14.00	24.00	973.50
900+40.00	3	14.00	24.00	973.50
900+64.00	4	14.00	24.00	973.50
900+88.00	5	14.00	24.00	974.00
901+12.00	6	14.00	24.00	974.00
901+36.00	7	14.00	16.00	974.00
901+52.00	8	14.00	16.00	974.00
901+68.00	9	14.00	16.00	974.00
901+84.00	10	14.00	24.00	974.50
902+08.00	11	14.00	24.00	974.50
902+32.00	12	14.00	24.00	974.50
902+56.00	13	14.00	24.00	974.50
902+80.00	14	14.00	24.00	975.00
903+04.00	15	14.00	24.00	975.50
903+28.00	16	14.00	24.00	976.00
903+52.00	17	14.00	24.00	976.00
903+76.00	18	14.00	24.00	976.00
904+00.00	19	14.00	24.00	976.00
904+24.00	20	14.00	24.00	976.50
904+48.00	21	14.00	24.00	976.50
904+72.00	22	14.00	24.00	977.00
904+96.00	23	14.00	24.00	977.00
905+20.00	24	14.00	24.00	977.50
905+44.00	25	14.00	24.00	977.50
905+68.00	26	14.00	24.00	978.00
905+92.00	27	14.00	24.00	978.50
906+16.00	28	14.00	24.00	978.50
906+40.00	29	14.00	24.00	978.50
906+64.00	30	14.00	24.00	978.50
906+88.00	31	14.00	24.00	979.00
907+12.00	32	14.00	24.00	979.50
907+36.00	33	14.00	24.00	979.50
907+60.00	34	14.00	24.00	980.00

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 12/21/2023

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
907+84.00	35	14.00	24.00	980.50
908+08.00	36	14.00	24.00	980.50
908+32.00	37	14.00	24.00	980.50
908+56.00	38	14.00	24.00	981.00
908+80.00	39	14.00	24.00	981.00
909+04.00	40	14.00	24.00	981.50
909+28.00	41	14.00	24.00	981.50
909+52.00	42	14.00	24.00	981.50
909+76.00	43	14.00	24.00	982.00
910+00.00	44	14.00	24.00	982.00
910+24.00	45	14.00	24.00	982.00
910+48.00	46	14.00	24.00	982.50
910+72.00	47	14.00	24.00	983.00
910+96.00	48	14.00	24.00	983.00
911+20.00	49	14.00	24.00	983.50
911+44.00	50	14.00	24.00	983.50
911+68.00	51	14.00	24.00	983.50
911+85.00	52	14.00	17.00	984.00
912+02.00	53	14.00	17.00	984.00
912+19.00	54	14.00	17.00	983.00
912+36.00	55	14.00	17.00	982.00
912+53.00	56	14.00	17.00	981.00
912+70.00	57	14.00	17.00	981.00

Noise Wall ID: Noise Wall 9

Boring ID	Boring STA. (ft)	Mid-Boring STA. (ft)	Boring Elev. (ft)	Shaft Elev. (ft)	Ex. Ground Elev.	Rock Elev. (ft)	Rock UCS (psi)	Post Spacing (ft)	Barrier Height	Cross Slope		From DS STA.	To DS STA.	From Post No.	To Post No.	DS Length (ft)	Bottom of DS Elev. (ft)
B-031-0-2	900+16.00	901+08.00	974.50	973.50	974.50			24	14.00	3.0	3:1	900+00.00	900+88.00	1	5	7.00	966.50
B-032-0-2	902+00.00	903+00.00	975.20	974.50	975.20			24	14.00	3.0	3:1	901+12.00	902+80.00	6	14	7.00	967.50
B-033-0-2	904+00.00	905+00.00	977.20	976.00	977.20			24	14.00	4.0	4:1	903+04.00	904+96.00	15	23	7.00	969.00
B-034-0-2	906+00.00	907+00.00	979.30	978.50	979.30			24	14.00	3.0	3:1	905+20.00	906+88.00	24	31	7.00	971.50
B-035-0-2	908+00.00	909+00.00	981.40	980.50	981.40			24	14.00	5.0	5:1	907+12.00	908+80.00	32	39	7.00	973.50
B-036-0-2	910+00.00	911+00.00	983.20	982.00	983.20			24	14.00	4.0	4:1	909+04.00	910+96.00	40	48	7.00	975.00
B-037-0-2	912+00.00	912+00.00	984.90	984.00	984.90			24	14.00	3.0	3:1	911+20.00	912+70.00	49	57	7.00	####

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 1100+00.00 to 1115+84.00

Noise Wall 11

Rii

Prepared By: Dan Hayes, E.I.
Date prepared: Thursday, January 18, 2024

Checked By: Daniel E. Karch, P.E.
Date Checked: Thursday, January 18, 2024

No. of Borings: 9

Noise Wall: Noise Wall 11

FRA-161-15.80
PID: 117607

Design Data Sheet

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1100+00.00	1	14.00	24.00	975.00
1100+24.00	2	14.00	24.00	975.00
1100+48.00	3	14.00	24.00	975.50
1100+72.00	4	14.00	24.00	976.00
1100+96.00	5	14.00	24.00	976.00
1101+20.00	6	14.00	24.00	976.00
1101+44.00	7	14.00	24.00	976.00
1101+68.00	8	14.00	24.00	976.50
1101+92.00	9	14.00	24.00	976.50
1102+16.00	10	14.00	24.00	976.50
1102+40.00	11	14.00	24.00	976.50
1102+64.00	12	14.00	24.00	976.50
1102+88.00	13	14.00	24.00	976.50
1103+12.00	14	14.00	24.00	977.00
1103+36.00	15	14.00	24.00	977.50
1103+60.00	16	14.00	24.00	978.00
1103+84.00	17	14.00	24.00	978.50
1104+08.00	18	14.00	24.00	979.00
1104+32.00	19	14.00	24.00	979.50
1104+56.00	20	14.00	24.00	979.50
1104+80.00	21	14.00	24.00	979.50
1105+04.00	22	14.00	24.00	979.50
1105+28.00	23	14.00	24.00	979.50
1105+52.00	24	14.00	24.00	980.00
1105+76.00	25	14.00	24.00	980.00
1106+00.00	26	14.00	24.00	980.00
1106+24.00	27	14.00	24.00	980.00
1106+48.00	28	14.00	24.00	980.00
1106+72.00	29	14.00	24.00	980.00
1106+96.00	30	14.00	24.00	980.00
1107+20.00	31	14.00	24.00	980.00
1107+44.00	32	14.00	24.00	979.50

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1107+68.00	33	14.00	24.00	979.50
1107+92.00	34	14.00	24.00	979.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1108+16.00	35	14.00	24.00	979.50
1108+40.00	36	14.00	24.00	979.50
1108+64.00	37	14.00	24.00	980.00
1108+88.00	38	14.00	24.00	980.00
1109+12.00	39	14.00	24.00	980.50
1109+36.00	40	14.00	24.00	981.00
1109+60.00	41	14.00	24.00	981.00
1109+84.00	42	14.00	24.00	981.00
1110+08.00	43	14.00	24.00	981.00
1110+32.00	44	14.00	24.00	981.00
1110+56.00	45	14.00	24.00	981.00
1110+80.00	46	14.00	24.00	981.50
1111+04.00	47	14.00	24.00	981.50
1111+28.00	48	14.00	24.00	981.50
1111+52.00	49	14.00	24.00	981.50
1111+76.00	50	14.00	24.00	981.50
1112+00.00	51	14.00	24.00	982.00
1112+24.00	52	14.00	24.00	982.00
1112+48.00	53	14.00	24.00	982.00
1112+72.00	54	14.00	24.00	982.00
1112+96.00	55	14.00	24.00	982.00
1113+20.00	56	14.00	24.00	982.00
1113+44.00	57	14.00	24.00	982.00
1113+68.00	58	14.00	24.00	982.00
1113+92.00	59	14.00	24.00	982.50
1114+16.00	60	14.00	24.00	982.50
1114+40.00	61	14.00	24.00	982.50
1114+64.00	62	14.00	24.00	982.50
1114+88.00	63	14.00	24.00	982.50
1115+12.00	64	14.00	24.00	982.50
1115+36.00	65	14.00	24.00	982.50
1115+60.00	66	14.00	24.00	982.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1115+84.00	67	14.00	24.00	982.50

Noise Wall ID: Noise Wall 11

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-022-0-23	1100+00.00	1101+00.00	975.00	975.00	975.00	954.60		24	14.00	0.0	Level	1100+00.00	1100+96.00	1	5	6.50	968.50
B-023-0-23	1102+00.00	1103+00.00	977.00	976.50	977.00	966.50		24	14.00	6.0	5:1	1101+20.00	1102+88.00	6	13	7.00	969.50
B-024-0-23	1104+00.00	1105+00.00	979.60	978.50	979.60	956.60		24	14.00	0.0	Level	1103+12.00	1104+80.00	14	21	6.50	972.00
B-025-0-23	1106+00.00	1107+00.00	980.20	980.00	980.20			24	14.00	0.0	Level	1105+04.00	1106+96.00	22	30	6.50	973.50
B-026-0-23	1108+00.00	1109+00.00	979.80	979.50	979.80			24	14.00	6.0	5:1	1107+20.00	1108+88.00	31	38	7.00	972.50
B-027-0-23	1110+00.00	1111+00.00	981.50	981.00	981.50	958.50		24	14.00	10.0	Level	1109+12.00	1110+80.00	39	46	6.50	974.50
B-028-0-23	1112+00.00	1113+00.00	982.20	982.00	982.20	966.20		24	14.00	0.0	Level	1111+04.00	1112+96.00	47	55	6.50	975.50
B-029-0-23	1114+00.00	1114+92.00	983.00	982.50	983.00			24	14.00	0.0	Level	1113+20.00	1114+88.00	56	63	6.50	976.00
B-030-0-23	1115+84.00	1115+84.00	983.00	982.50	983.00	962.50		24	14.00	0.0	Level	1115+12.00	1115+84.00	64	67	6.50	976.00

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 120+00.00 to 125+52.00

Noise Wall 12

Rii

Prepared By:	**Dan Hayes, E.I.**
Date prepared:	**Thursday, January 18, 2024**
Checked By:	**Daniel E. Karch, P.E.**
Date Checked:	**Thursday, January 18, 2024**

No. of Borings: **4**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
120+00.00	1	14.00	12.00	981.50
120+12.00	2	14.00	12.00	982.00
120+24.00	3	14.00	12.00	982.50
120+36.00	4	14.00	24.00	983.00
120+60.00	5	14.00	12.00	983.50
120+72.00	6	14.00	24.00	984.00
120+96.00	7	14.00	24.00	984.50
121+20.00	8	14.00	24.00	985.50
121+44.00	9	14.00	24.00	985.50
121+68.00	10	14.00	24.00	985.50
121+92.00	11	14.00	24.00	985.50
122+16.00	12	14.00	24.00	985.50
122+40.00	13	14.00	24.00	984.50
122+64.00	14	14.00	24.00	984.50
122+88.00	15	14.00	24.00	985.50
123+12.00	16	14.00	24.00	986.00
123+36.00	17	14.00	24.00	986.50
123+60.00	18	14.00	24.00	986.50
123+84.00	19	14.00	24.00	986.50
123+92.00	20	14.00	8.00	986.50
124+16.00	21	14.00	24.00	986.50
124+35.00	22	14.00	19.00	986.50
124+54.00	23	14.00	19.00	986.50
124+73.00	24	14.00	19.00	986.50
124+97.00	25	14.00	24.00	986.50

Noise Wall ID: Noise Wall 12

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-038-0-23	120+00.00	120+94.50	979.30	981.50	979.30	956.30		24	14.00	2.0	2:1	120+00.00	120+72.00	1	6	7.00	974.50
B-039-0-23	121+89.00	122+82.00	986.40	985.50	986.40	975.90		24	14.00	7.0	5:1	120+96.00	122+64.00	7	14	7.00	978.50
B-040-0-23	123+75.00	124+63.50	987.00	986.50	987.00	976.50		24	14.00	5.0	5:1	122+88.00	124+54.00	15	23	7.00	979.50
B-041-0-23	125+52.00	125+52.00	988.20	986.50	988.20	980.20		24	14.00	5.0	5:1	124+73.00	124+97.00	24	25	8.50	978.00

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 1500+00.00 to 1502+40.00

Noise Wall 15

Rii

Prepared By:	**Dan Hayes, E.I.**
Date prepared:	**Thursday, January 18, 2024**
Checked By:	**Daniel E. Karch, P.E.**
Date Checked:	**Thursday, January 18, 2024**

No. of Borings: **2**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1500+00.00	1	14.00	24.00	1029.00
1500+24.00	2	14.00	24.00	1029.00
1500+48.00	3	14.00	24.00	1029.50
1500+72.00	4	14.00	24.00	1030.00
1500+96.00	5	14.00	24.00	1030.50
1501+20.00	6	14.00	15.00	1031.00
1501+35.00	7	14.00	15.00	1032.00
1501+50.00	8	14.00	24.00	1032.00
1501+74.00	9	14.00	15.00	1032.50
1501+89.00	10	14.00	15.00	1032.50
1502+04.00	11	14.00	20.00	1033.00
1502+24.00	12	14.00	16.00	1034.00
1502+40.00	13	14.00	24.00	1034.50

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

Noise Wall ID: Noise Wall 15

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-042-0-23	1500+29.00	1501+22.50	1030.30	1029.00	1030.30	1019.30		24	14.00	3.5	4:1	1500+00.00	1501+20.00	1	6	7.00	1022.00
B-043-0-23	1502+16.00	1502+16.00	1035.00	1033.00	1035.00	1024.50		24	14.00	4.0	4:1	1501+35.00	1502+40.00	7	13	7.00	1026.00

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 1504+27.00 to 1518+43.00

Noise Wall 15

Rii

Prepared By: Dan Hayes, E.I.
Date prepared: Thursday, January 18, 2024

Checked By: Daniel E. Karch, P.E.
Date Checked: Thursday, January 18, 2024

No. of Borings: 8

Noise Wall: Noise Wall 15

FRA-161-15.80
PID: 117607

Design Data Sheet

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1504+27.00	14	14.00	24.00	1038.00
1504+51.00	15	14.00	24.00	1038.00
1504+75.00	16	14.00	24.00	1038.00
1504+99.00	17	14.00	24.00	1038.00
1505+23.00	18	14.00	24.00	1038.00
1505+47.00	19	14.00	24.00	1038.00
1505+71.00	20	14.00	24.00	1038.00
1505+95.00	21	14.00	24.00	1038.00
1506+19.00	22	14.00	24.00	1038.00
1506+43.00	23	14.00	24.00	1038.00
1506+67.00	24	14.00	24.00	1038.50
1506+91.00	25	14.00	24.00	1038.50
1507+15.00	26	14.00	24.00	1038.50
1507+39.00	27	14.00	24.00	1038.50
1507+63.00	28	14.00	24.00	1038.50
1507+87.00	29	14.00	24.00	1038.50
1508+11.00	30	14.00	24.00	1038.50
1508+35.00	31	14.00	24.00	1038.50
1508+59.00	32	14.00	24.00	1038.50
1508+83.00	33	14.00	24.00	1038.50
1509+07.00	34	14.00	24.00	1038.50
1509+31.00	35	14.00	24.00	1038.50
1509+55.00	36	14.00	24.00	1038.50
1509+79.00	37	14.00	24.00	1038.50
1510+03.00	38	14.00	24.00	1038.50
1510+27.00	39	14.00	24.00	1038.50
1510+51.00	40	14.00	24.00	1038.50
1510+75.00	41	14.00	24.00	1037.50
1510+99.00	42	14.00	24.00	1037.50
1511+23.00	43	14.00	24.00	1037.00
1511+47.00	44	14.00	24.00	1037.00
1511+71.00	45	14.00	24.00	1036.50

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1511+95.00	46	14.00	24.00	1036.50
1512+19.00	47	14.00	24.00	1036.50

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1512+43.00	48	14.00	24.00	1036.50
1512+67.00	49	14.00	24.00	1036.50
1512+91.00	50	14.00	24.00	1036.50
1513+15.00	51	14.00	24.00	1036.50
1513+39.00	52	14.00	24.00	1036.50
1513+63.00	53	14.00	24.00	1036.50
1513+87.00	54	14.00	24.00	1036.50
1514+11.00	55	14.00	24.00	1036.50
1514+35.00	56	14.00	24.00	1036.50
1514+59.00	57	14.00	24.00	1036.50
1514+83.00	58	14.00	24.00	1036.50
1515+07.00	59	14.00	24.00	1036.50
1515+31.00	60	14.00	24.00	1036.50
1515+55.00	61	14.00	24.00	1036.50
1515+79.00	62	14.00	24.00	1037.00
1516+03.00	63	14.00	24.00	1037.00
1516+27.00	64	14.00	24.00	1037.00
1516+51.00	65	14.00	24.00	1037.50
1516+75.00	66	14.00	24.00	1037.50
1516+99.00	67	14.00	24.00	1038.00
1517+23.00	68	14.00	24.00	1038.00
1517+47.00	69	14.00	24.00	1037.50
1517+71.00	70	14.00	24.00	1036.50
1517+95.00	71	14.00	24.00	1035.50
1518+19.00	72	14.00	24.00	1034.50
1518+43.00	73	14.00	24.00	1034.50

Boring Information and Design Recommendation

FRA-161-15.80
PID: 117607

Foundation Design

Noise Wall ID: Noise Wall 15

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-044-0-23	1504+27.00	1505+17.50	1038.30	1038.00	1038.30	1025.30		24	14.00	3.0	3:1			#REF!	17	7.00	1031.00
B-045-0-23	1506+08.00	1507+09.00	1038.90	1038.00	1038.90	1025.90		24	14.00	3.0	3:1	1505+23.00	1506+91.00	18	25	7.00	1031.00
B-046-0-23	1508+10.00	1509+10.00	1039.10	1038.50	1039.10	1028.60		24	14.00	3.0	3:1	1507+15.00	1509+07.00	26	34	7.00	1031.50
B-047-0-23	1510+10.00	1511+10.00	1039.20	1038.50	1039.20	1026.20		24	14.00	4.0	4:1	1509+31.00	1510+99.00	35	42	7.00	1031.50
B-048-0-23	1512+10.00	1513+10.00	1037.40	1036.50	1037.40	1021.40		24	14.00	7.0	5:1	1511+23.00	1512+91.00	43	50	7.00	1029.50
B-049-0-23	1514+10.00	1515+10.00	1038.90	1036.50	1038.90	1023.40		24	14.00	0.0	Level	1513+15.00	1515+07.00	51	59	6.50	1030.00
B-050-0-23	1516+10.00	1517+14.65	1038.00	1037.00	1038.00	1025.00		24	14.00	8.0	Level	1515+31.00	1516+99.00	60	67	6.50	1030.50
B-051-0-23	1518+19.30	1518+19.30	1038.10	1034.50	1038.10	1021.80		24	14.00	7.0	5:1	1517+23.00	1518+43.00	68	73	8.50	1026.00

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

Noise Wall Design

FRA-161-15.80
117607

Noise Wall Along SR 161 Sta. 1518+90.00 to 1522+26.00

Noise Wall 15

Rii

Prepared By:	**Dan Hayes, E.I.**
Date prepared:	**Thursday, January 18, 2024**
Checked By:	**Daniel E. Karch, P.E.**
Date Checked:	**Thursday, January 18, 2024**

No. of Borings: **3**

STA. (FT)	Post No.	Barrier Height (FT)	Post Spacing (FT)	Top of Shaft Elev. (MSL FT)
1518+90.00	74	14.00	24.00	1037.50
1519+14.00	75	14.00	24.00	1037.50
1519+38.00	76	14.00	24.00	1037.50
1519+62.00	77	14.00	24.00	1037.50
1519+86.00	78	14.00	24.00	1037.50
1520+10.00	79	14.00	24.00	1037.50
1520+34.00	80	14.00	24.00	1037.50
1520+58.00	81	14.00	24.00	1037.50
1520+82.00	82	14.00	24.00	1037.50
1521+06.00	83	14.00	24.00	1037.00
1521+30.00	84	14.00	16.00	1036.50
1521+46.00	85	14.00	24.00	1036.50
1521+70.00	86	14.00	24.00	1036.50
1521+94.00	87	14.00	24.00	1036.00
1522+18.00	88	14.00	24.00	1036.00

Noise Wall ID: Noise Wall 15

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-051-0-23	1519+10.60	1519+75.80	1038.10	1037.50	1038.10	1021.80		24	14.00	5.0	5:1	1518+90.00	1519+62.00	74	77	8.50	1029.00
B-052-0-23	1520+41.00	1521+33.50	1038.60	1037.50	1038.60	1028.10		24	14.00	5	5:1	1519+86.00	1521+30.00	78	84	7.00	1030.50
B-053-0-23	1522+26.00	1522+26.00	1036.50	1036.00	1036.50	1022.40		24	14.00	0	Level	1521+46.00	1522+18.00	85	88	9.50	1026.50

Rii
Prepared By: Dan Hayes, E.I.
Date prepared: 1/18/2024