

INTEROFFICE COMMUNICATION

TO: Cody Notz, P.E., District Geotechnical Engineer, District 11
COPY: Brian Logston, P.E., Office of Geotechnical Engineering
FROM: Andrew Jalbrzikowski, Office of Geotechnical Engineering
Paul Painter, Office of Geotechnical Engineering
DATE: February 15, 2024
SUBJECT: BEL-250-8.15 PID 113235 Geophysical Exploration Summary

Pursuant to your request, the Office of Geotechnical Engineering (OGE) has completed an electrical resistivity (ER) survey and induced polarization (IP) survey for the subject project.

This section of US 250 traverses steep terrain and has historically been prone to landslides. It is understood the current retaining wall has reached its end of service life and is scheduled to be replaced. The current retaining wall consists of driven h-piles with whalers supporting steel sheet piling.

On May 3, 2023, a retaining wall boring was completed by Terracon. Overburden soil consisting of gravel and stone fragments with sand (A-1-b) was encountered to the top of rock. Sandstone bedrock underlain by shale was encountered at elevation 1017.6. The sandstone was described as severely weathered and weak. The shale was described as weak to slightly strong. From elevation 1010.9 to 1005.6, a "void" was encountered but no notes of tool drop were shown on the boring log. The void is near the elevation coal was encountered at historic boring B-001-0-16, completed approximately 210 feet south. Historic boring B-001-0-16 completed 75 feet north did not encounter coal, but it was only extended to a depth of 16.9 feet or an approximate elevation of 1018.9. Elevations of the historic borings were determined using the provided coordinates and digital elevation models from the Ohio Statewide Imagery Program (OSIP) and the USGS 3DEP map service. An exploration plan and the boring logs are attached.

In August 2023, district personnel requested geophysical testing to determine if the void extends below the proposed wall alignment. The following is a discussion of the field exploration and results of the geophysical exploration. The latitude, longitude, and elevation values used to create the ER and IP profiles are from a Trimble R6 Receiver and TSC3 data collector utilizing the ODOT VRS network. The geophysical field work was completed on February 5, 2024.

The ER and IP data was collected with an Advanced Geosciences Inc. (AGI) SuperSting R8 control unit. For both surveys, thirty-three electrodes were spaced approximately 5 feet apart as close as possible to the proposed wall alignment. This was the only suitable location on site. The proximity of the existing steel wall did cause some interference. The electrodes were used to measure the potential field with Dipole-Dipole and Strong Gradient Arrays. For the IP survey, chargeability was measured for three seconds after the measurement of the potential field. The data was processed, and surface elevation corrected using AGI's EarthImager 2D software. Inverted resistivity sections and the induced potential section are attached.

The ER section shows a contrast slightly above the top of rock as encountered in B-001-0-23. A high resistivity zone is indicated to the south of B-001-0-23, but it is in the normal range of earth materials and not considered to be an anomaly. This is confirmed by positive chargeability values in the same area of the IP section. A faint localized resistivity contrast is present in the area noted as a void on

the boring log. The IP section shows a faint negative chargeability zone in the same contrast area. This could indicate the presence of clay minerals, but it is unlikely an indication of an air-filled void.

Attached are an exploration plan, boring logs, resistivity section and IP section.

If you have any questions, please feel free to contact me at 614-275-1305.

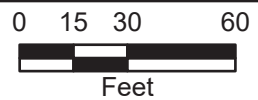
Thank you,

AMJ

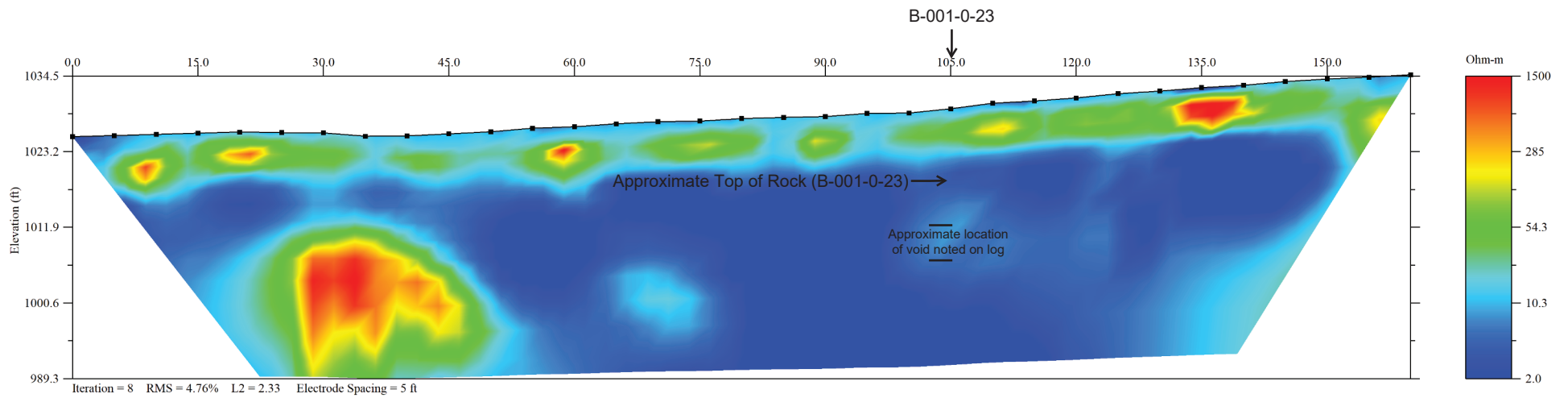
Attachments: Site plan, boring logs & geophysical exploration results.



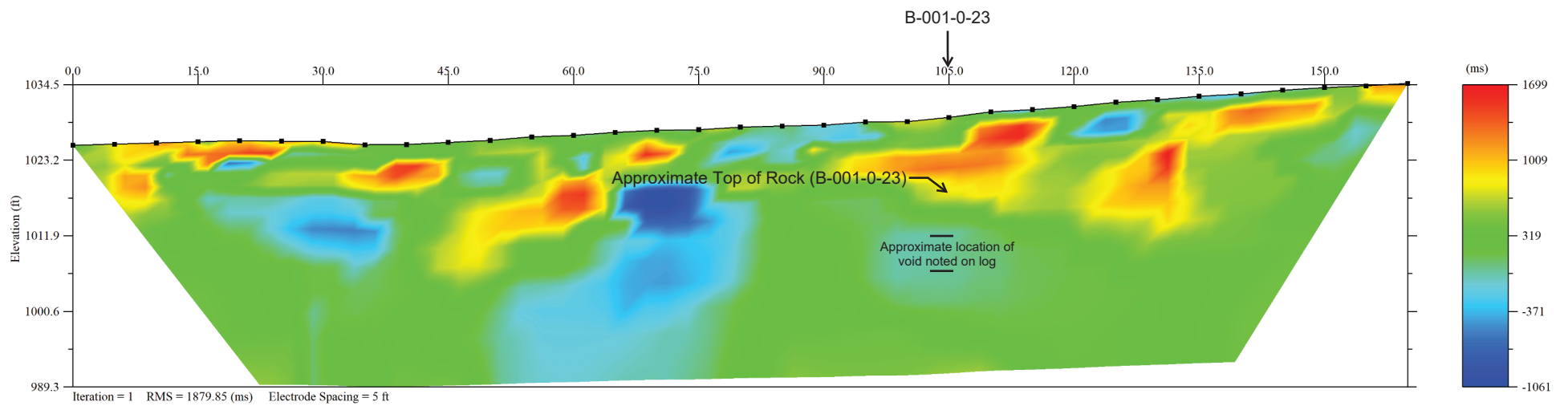
BEL-250-8.15
Exploration Plan



BEL-250-8.15 ER Survey Line Inverted Resistivity Section



BEL-250-8.15 Induced Polarization Section



N4225519 BEL-250-8.15 PID 118151 - Retaining Wall Replacement

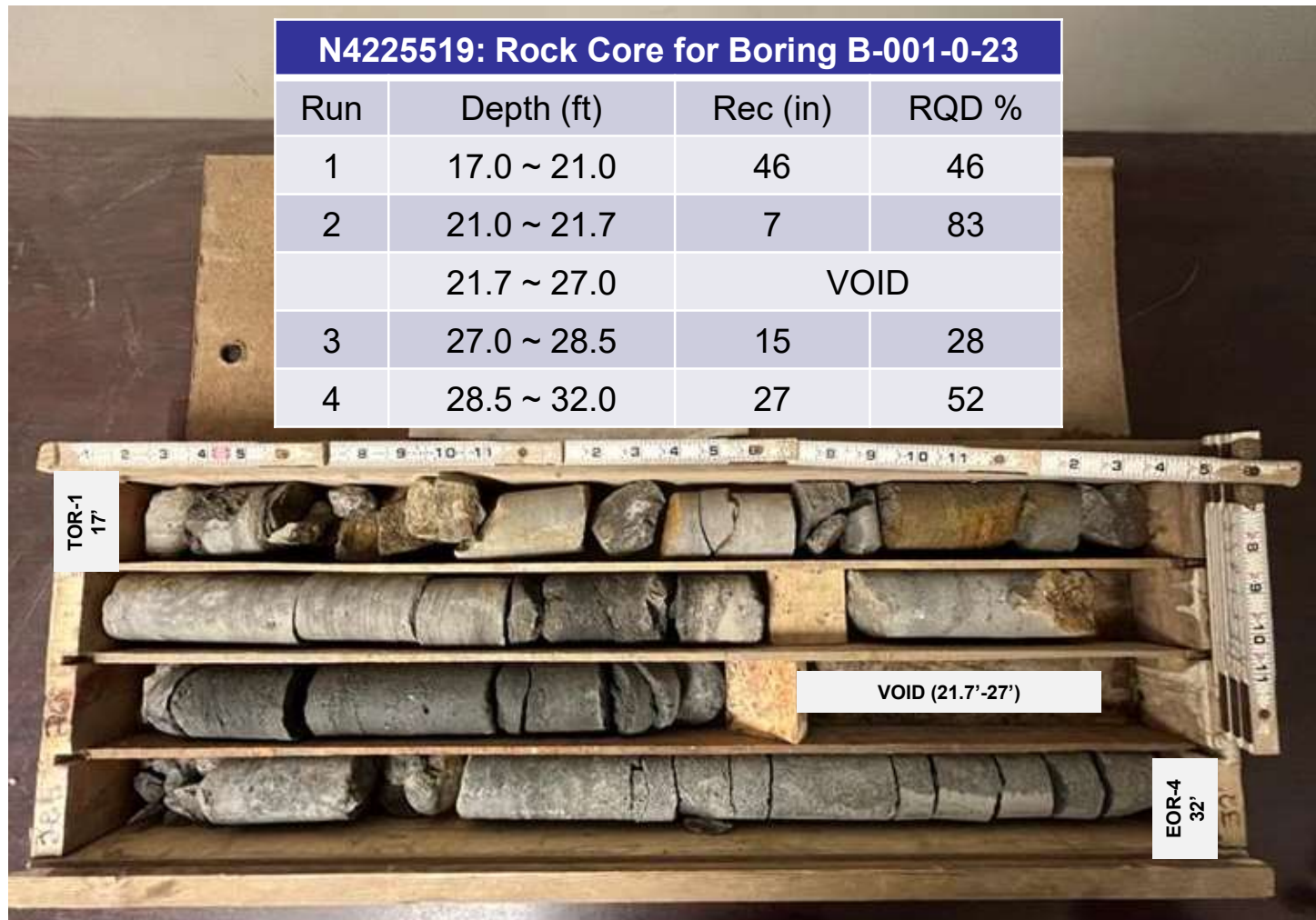


PHOTO 1: ROCK CORE OF BORING B-001-0-23, BOX 1 of 1

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Project Manager:</td><td style="padding: 2px;">BH</td></tr> <tr><td style="padding: 2px;">Drawn by:</td><td style="padding: 2px;">IR</td></tr> <tr><td style="padding: 2px;">Checked by:</td><td style="padding: 2px;">BH</td></tr> <tr><td style="padding: 2px;">Approved by:</td><td style="padding: 2px;">TM</td></tr> </table>	Project Manager:	BH	Drawn by:	IR	Checked by:	BH	Approved by:	TM	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Project No.</td><td style="padding: 2px;">N4225519</td></tr> <tr><td style="padding: 2px;">Scale:</td><td style="padding: 2px;">N.T.S.</td></tr> <tr><td style="padding: 2px;">File Name:</td><td style="padding: 2px;">Rockcore Photos</td></tr> <tr><td style="padding: 2px;">Date:</td><td style="padding: 2px;">05/09/2023</td></tr> </table>	Project No.	N4225519	Scale:	N.T.S.	File Name:	Rockcore Photos	Date:	05/09/2023	800 Morrison Road Columbus, Ohio 43230 PH. (614) 863-3113 FAX. (614) 863-0475	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: #f2f2f2;"> <th style="padding: 5px;">ROCK CORE PHOTO OF BORING B-001-0-23 (Box 1 of 1)</th> </tr> <tr> <td style="padding: 10px; text-align: center;"> BEL-250-8.15 PID 118151 - Retaining Wall Replacement Geotechnical Investigation Bridgeport, Belmont County, Ohio </td> </tr> </table>	ROCK CORE PHOTO OF BORING B-001-0-23 (Box 1 of 1)	BEL-250-8.15 PID 118151 - Retaining Wall Replacement Geotechnical Investigation Bridgeport, Belmont County, Ohio
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B-001-0-24



Run #:	Depth		Recovery		RQD	
NQ2-1	3.5'	5.5'	18/24	75%	10/24	42%
NQ2-2	5.5'	7.5'	18/24	75%	0/24	0%
NQ2-3	7.5'	9.5'	17/24	71%	0/24	0%
NQ2-4	9.5'	11.5'	20/24	83%	0/24	0%
NQ2-5	11.5'	13.5'	14/24	58%	0/24	0%

BEL-250-8.15 PID 118151

B-001-0-24



Run #:	Depth		Recovery		RQD	
NQ2-6	13.5'	15.5'	18/24	75%	0/24	0%
NQ2-7	15.5'	17.5'	13/24	54%	0/24	0%
NQ2-8	17.5'	19.5'	24/24	100%	12/24	50%
NQ2-9	19.5'	21.5'	24/24	100%	20/24	83%
NQ2-10	21.5'	23.5'	22/24	92%	3/24	13%

BEL-250-8.15 PID 118151

BR 15 27.5 BR 12 26.5 BR 11 23.5

ER 13 30.0

Run #:	Depth		Recovery		RQD	
NQ2-11	23.5'	25.5'	22/24	92%	0/24	0%
NQ2-12	25.5'	27.5'	17/24	71%	0/24	0%
NQ2-13	27.5'	30.0'	30/30	100%	16/30	53%
BEL-250-8.15 PID 118151						

B-002-0-24



Run #:	Depth		Recovery		RQD	
NQ2-1	3.5'	5.5'	24/24	100%	0/24	0%
NQ2-2	5.5'	7.5'	21/24	88%	0/24	0%
NQ2-3	7.5'	10.0'	28/30	93%	0/30	0%

BEL-250-8.15 PID 118151

Run #:	Depth		Recovery		RQD	
NQ2-4	10.0'	12.0'	24/24	100%	0/24	0%
NQ2-5	12.0'	15.0'	35/36	97%	32/36	88%
NQ2-6	15.0'	20.0'	60/60	100%	42/60	70%
BEL-250-8.15 PID 118151						

B-002-0-24



Run #:	Depth		Recovery		RQD	
NQ2-7	20.0'	25.0'	60/60	100%	15/60	25%
NQ2-8	25.0'	30.0'	57/60	95%	27/60	45%

BEL-250-8.15 PID 118151