

**Tutela Heights Slope Monitoring
Inclinometer and Survey Data
Brantford, Ontario
December 23, 2022**

Project No. IDG 180462

Prepared for:

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1. Introduction

In-Depth Geotechnical Inc. was retained by the City of Brantford to monitor slope conditions at the Tutela Heights Road site, along portions of the Grand River southern bank. The monitoring program consists of *a)* acquiring field survey data on a quarterly basis; *b)* evaluating the observed movements; and *c)* summarizing the findings in this report.

Specifically, this Monitoring Report provides an update on monitoring data from *a)* inclinometers and *b)* survey points, collected up to August 12, 2022, and May 5, 2022, respectively.

Inclinometer data was collected by In-Depth Geotechnical, while movements of survey points were measured/surveyed by the Survey Department – City of Brantford.

2. Field Monitoring Procedures

2.1 Inclinometers

Three inclinometer casings were installed on the subject area between September 28 and October 8, 2015. Approximate inclinometer locations are illustrated in Appendix One (Page 1).

Depths of installation below ground surface were as follows:

BH-01: 25.76 m;
BH-02: 24.99 m; and
BH-03: 32.49 m.

Inclinometer casing has two orthogonal sets of grooves. During installation, the primary orientation of grooves (A-A) were set pointing to the face of the slope, while the secondary orientation (B-B) were aligned parallel to the face of the slope.

Initial baseline readings for the three inclinometer casings was completed on October 15, 2015. Subsequent monitoring readings were completed on the following dates:

1. November 6, 2015;
2. December 18, 2015;
3. January 15, 2016;
4. April 12, 2016;
5. May 16, 2016;
6. August 27, 2018;
7. October 4, 2018;
8. November 2, 2018;
9. January 10, 2019;
10. February 4, 2019;
11. May 10, 2019;
12. September 18, 2019;
13. October 23, 2019;
14. March 5, 2020;
15. July 17, 2020;
16. November 23, 2020;
17. March 3, 2021;
18. May 27, 2021;
19. August 27, 2021;
20. October 7, 2021; and
21. December 8, 2021.
22. March 14, 2022
23. April 6, 2022
24. June 23, 2022, and
25. August 12, 2022.

The summarized inclinometer data is attached into Appendix One. The data is provided in tables and plot formats. These data values refer to recorded displacements versus depth, along the A-A and B-B orientations. Displacements from base line readings are reported in *mm*. Depths, in meters, are referred from the ground surface to the center of probe at the time of the recording.

Attached to this submission, we have included Animation Plots illustrating the progression of deformations for both, *out-of-plane* and *in-plane* deformations for each inclinometer. These files are in MP4 format, available to run in most computers.

2.2 Survey Points

Nineteen survey points were installed by JC Cohoon Engineering with their locations illustrated in Appendix Two (Page 1). Installation date was January 13, 2015.

Baseline readings were recorded on January 15, 2015, with subsequent readings completed on the following dates:

April 24, 2015;
November 5, 2015;
May 8, 2018;
December 11, 2018;
May 8, 2019;
November 11, 2019;
April 3, 2020;
December 3, 2020;
March 23, 2021;
November 23, 2021; and
May 5, 2022 (last record).

Survey readings consist of elevations and horizontal displacements measured with respect of the original or baseline readings. Summarized survey point data is attached into Appendix Two in tabular format. The last two sets of survey measurements are displayed into E-W and N-S alignments. This decomposition of total movements allows for interpretation of observed displacements in terms of field orientation.

3. Monitoring data – Summary

Based on the updated data the following observations can be made:

3.1 Inclinometers

1. At *Inclinometer BH01* location, maximum rate of ground displacement is less than 0.0008 mm/day, or less than 0.28 mm/years. This corresponds to displacements perpendicular to the face of slope (out-of-plane). It is noted that this maximum rate of displacement corresponds to readings taken on August 12.
2. At *Inclinometer BH02* location, maximum rate of ground displacement is less than 0.0019 mm/day, or less than 0.69 mm/years. The ground mass at this location exhibits a small counter-clockwise rotation above the 8 m depth elevation. This is consistent with visual observations of ground surface, which exhibits a step-down type of localized slope failure. Below the 8 m depth, the soil mass is not showing significant movements. This trend is being confirmed with all readings recorded after August 27, 2021.
3. At *Inclinometer BH03* location, maximum rate of ground displacement is less than 0.0008 mm/day, or less than 0.31 mm/years. This corresponds to displacements perpendicular to the face of slope (towards the Grand River, or out-of-plane displacements), with readings taken on August 12, 2022.
4. In relation to *inclinometer data*, recorded readings display small amounts of fluctuations (back and forth); these fluctuations can be associated in part a) to small ground motion due to temperature/weather-related changes through the seasons; and b) to intrinsic small variations of the inclinometer probe. Overall, inclinometer readings exhibit a satisfactory level of consistency, suggesting that they are working as required and/or expected.
5. Details of the actual rate of lateral displacements from inclinometer locations can be appreciated in the tables and depth-plots attached in Appendix One.

3.2 Survey Iron Bars (SIB)

1. Details of the actual rate of displacements/settlements can be appreciated in the tables attached into Appendix Two, as well as the summary Table 1, included below.
2. Iron Bars corresponding to MP 01-14 and MP 06-14 are no longer functional, as reported on our previous submission.
3. All other survey points registered low values for rate of vertical displacements (settlements), i.e., less than 30 mm/yr. The latest data set from May 5, 2022 confirms the trend from previous data sets.
4. *Survey Point No. 11-14* exhibited rate of *settlements of 28.72* mm/year.
5. In terms of horizontal displacements, the latest survey data show large rate of displacements on the following locations:

07-14 62.91 mm/year (North);
08-14 101.20 mm/year (North);
11-14 58.81 mm/year (North); and 71.11 mm/year (West); and
14-14 51.97 mm/year (North).

6. In relation to survey points, the rate of displacement values listed above corresponds to the *latest set* of readings, May 5, 2022.
7. It is considered that future monitoring readings will reinforce actual trends of ground mass displacements/settlements while filtering out spurious displacements correlated to weather- or operator-related errors.

Table No. 1

MP	Rate of Displacements ⁽¹⁾					
	Last Reading: May 5, 2022					
	Vertical orientation (settlement)		N-S Orientation		E-W Orientation	
01-14	n/a	n/a	n/a	n/a	n/a	n/a
02-14	13.68	down	12.31	North	8.21	East
03-14	13.68	down	12.31	North	4.10	East
04-14	n/a	down	n/a	n/a	n/a	n/a
05-14	13.68	down	21.88	North	10.94	East
06-14	n/a	n/a	n/a	n/a	n/a	n/a
07-14	9.57	down	62.91	North	4.10	West
08-14	24.62	down	101.20	North	24.62	West
09-14	20.51	down	34.19	North	6.84	East
10-14	6.84	down	6.84	North	0.00	East
11-14	28.72	down	58.81	North	71.11	West
12-14	9.57	down	17.78	North	15.04	West
13-14	5.47	down	8.21	North	2.74	West
14-14	10.94	down	51.97	North	2.74	West
15-14	12.31	down	4.10	South	5.47	East
16-14	25.98	down	24.62	North	6.84	East
17-14	9.57	down	1.37	South	4.10	East
18-14	6.84	down	0.00	South	0.00	
19-14	6.84	down	4.10	North	0.00	

⁽¹⁾ Displacements in mm/year

8. In terms of cumulative SIB displacements, the following Table No. 2 illustrates the up-to-date information:

Table No. 2

MP	Cumulative Displacements ⁽²⁾					
	Last Reading: May 5, 2022					
	Vertical orientation (settlement)		N-S Orientation		E-W Orientation	
01-14	50	down(n/a)	4	South	15	West
02-14	100	down	90	North	60	East
03-14	100	down	90	North	30	East
04-14	130	down(n/a)	30	North	40	East
05-14	100	down	160	North	80	East
06-14	120	down(n/a)	70	North	50	East
07-14	70	down	460	North	30	West
08-14	180	down	740	North	180	West
09-14	150	down	250	North	50	East
10-14	50	down	50	North	0	East
11-14	220	down	430	North	520	West
12-14	70	down	130	North	110	West
13-14	40	down	60	North	20	West
14-14	80	down	380	North	20	West
15-14	90	down	30	South	40	East
16-14	190	down	180	North	50	East
17-14	70	down	10	South	30	East
18-14	50	down	0	n/a	0	n/a
19-14	50	down	30	North	0	n/a

⁽²⁾ Displacements in mm

9. Cumulative vertical settlements equal or greater than 120 mm were noted on SIB Nos. *04-14; 06-14; 08-14; 09-14; 11-14; and 16-14.*
10. North-South horizontal displacements equal or greater than 120 mm were noted on SIB Nos. *05-14; 07-14; 09-14; 11-14; 12-14; 14-14; and 16-14.* Maximum displacement of about 740 mm north-wise was recorded on SIB No. *08-14.*
11. East-West horizontal displacements equal or greater than 120 mm were noted on SIB Nos. *08-14; and 11-14.* Maximum displacement of about 520 mm west-wise was recorded on SIB No. *11-14.*

4. Closure

We trust that the present quarterly update report fulfills your present requirements. Should you have any question, please feel free to contact the undersigned.

Sincerely,

In-Depth Geotechnical Inc.



Gabriel Sedran, P.Eng., Ph.D.
President

Appendix One

Inclinometer Data

Updated with inclinometer data from fieldwork completed on June 23, 2022

Inclinometer Locations

Appendix One - Page 1

Inclinometer BH 01

Table for *A-A* Alignment and depth profile

Appendix One - Pages 2 to 4

Table for *B-B* Alignment and depth profile

Appendix One - Pages 5 to 7

Inclinometer BH 02

Table for *A-A* Alignment and depth profile

Appendix One - Pages 8 to 10

Table for *B-B* Alignment and depth profile

Appendix One - Pages 11 to 13

Inclinometer BH 03

Table for *A-A* Alignment and depth profile

Appendix One - Pages 14 to 16

Table for *B-B* Alignment and depth profile

Appendix One - Pages 17 to 19



Inclinometer BH01 A-A Alignment

Displacements along plane perpendicular to the face of slope

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Profile Change in mm

	0	1	2	3	4	5	6	7	8	9	10	11
Depth m	October 10, 2015	November 6, 2015	December 18, 2015	January 15, 2016	April 12, 2016	May 16, 2016	August 27, 2018	October 4, 2018	November 2, 2018	January 10, 2019	February 4, 2019	May 10, 2019
0.21	0.00	0.37	0.76	1.05	1.96	1.08	1.36	1.17	1.60	1.80	1.92	1.92
0.82	0.00	0.21	0.51	1.06	1.55	0.86	1.58	1.15	1.48	1.64	1.84	1.84
1.43	0.00	0.22	0.48	0.88	1.31	0.59	1.02	0.62	0.94	1.04	1.17	1.16
2.04	0.00	0.17	0.40	0.80	1.20	0.51	0.84	0.49	0.80	0.87	1.01	1.01
2.65	0.00	0.15	0.40	0.80	1.19	0.50	0.67	0.30	0.49	0.69	0.81	0.81
3.26	0.00	0.13	0.38	0.76	1.13	0.45	0.55	0.18	0.35	0.51	0.62	0.61
3.87	0.00	0.13	0.35	0.75	1.11	0.44	0.64	0.29	0.45	0.59	0.70	0.41
4.48	0.00	0.13	0.34	0.73	1.11	0.45	0.67	0.32	0.47	0.61	0.72	0.43
5.09	0.00	0.13	0.35	0.73	1.11	0.46	0.64	0.29	0.45	0.60	0.70	0.41
5.70	0.00	0.15	0.35	0.76	1.11	0.48	0.67	0.32	0.51	0.67	0.73	0.47
6.31	0.00	0.14	0.34	0.74	1.06	0.46	0.63	0.28	0.47	0.63	0.68	0.43
6.92	0.00	0.17	0.35	0.76	1.07	0.50	0.75	0.42	0.60	0.73	0.80	0.53
7.52	0.00	0.16	0.34	0.74	1.04	0.47	0.67	0.35	0.51	0.65	0.71	0.45
8.13	0.00	0.18	0.35	0.70	0.99	0.47	0.68	0.35	0.50	0.63	0.67	0.42
8.74	0.00	0.18	0.32	0.66	0.93	0.42	0.60	0.28	0.41	0.54	0.57	0.33
9.35	0.00	0.14	0.29	0.65	0.87	0.38	0.49	0.17	0.33	0.48	0.46	0.30
9.96	0.00	0.14	0.29	0.65	0.85	0.38	0.44	0.13	0.29	0.45	0.44	0.29
10.57	0.00	0.12	0.30	0.67	0.85	0.40	0.50	0.22	0.40	0.59	0.59	0.47
11.18	0.00	0.14	0.33	0.70	0.87	0.46	0.62	0.37	0.55	0.72	0.73	0.62
11.79	0.00	0.12	0.30	0.67	0.81	0.43	0.57	0.30	0.48	0.66	0.67	0.56
12.40	0.00	0.14	0.33	0.69	0.84	0.46	0.64	0.35	0.53	0.71	0.72	0.63
13.01	0.00	0.12	0.28	0.65	0.80	0.41	0.60	0.33	0.50	0.64	0.67	0.54
13.62	0.00	0.12	0.26	0.64	0.77	0.41	0.59	0.31	0.48	0.58	0.61	0.47
14.23	0.00	0.13	0.23	0.57	0.71	0.38	0.55	0.26	0.41	0.46	0.46	0.30
14.84	0.00	0.14	0.20	0.52	0.66	0.35	0.52	0.21	0.36	0.37	0.38	0.22
15.45	0.00	0.15	0.18	0.48	0.64	0.33	0.50	0.18	0.33	0.30	0.33	0.19
16.06	0.00	0.15	0.16	0.47	0.61	0.32	0.49	0.18	0.30	0.22	0.25	0.09
16.67	0.00	0.12	0.14	0.44	0.56	0.29	0.43	0.13	0.26	0.18	0.20	0.07
17.28	0.00	0.14	0.18	0.44	0.53	0.28	0.40	0.14	0.24	0.19	0.22	0.08
17.89	0.00	0.19	0.19	0.45	0.52	0.31	0.45	0.26	0.29	0.24	0.27	0.13
18.50	0.00	0.19	0.22	0.43	0.50	0.30	0.43	0.24	0.27	0.20	0.24	0.09
19.11	0.00	0.17	0.20	0.40	0.45	0.29	0.39	0.21	0.23	0.21	0.26	0.10
19.72	0.00	0.17	0.22	0.39	0.43	0.32	0.40	0.23	0.24	0.19	0.24	0.06
20.33	0.00	0.14	0.19	0.35	0.38	0.29	0.37	0.24	0.24	0.18	0.25	0.11
20.94	0.00	0.13	0.15	0.31	0.33	0.27	0.34	0.24	0.27	0.22	0.28	0.19
21.55	0.00	0.11	0.11	0.21	0.31	0.20	0.26	0.14	0.19	0.16	0.16	0.06
22.16	0.00	0.10	0.09	0.15	0.25	0.16	0.19	0.07	0.09	0.01	0.02	-0.11
22.76	0.00	0.10	0.08	0.13	0.23	0.15	0.20	0.10	0.13	0.02	0.05	-0.05
23.37	0.00	0.08	0.05	0.09	0.18	0.14	0.17	0.07	0.12	0.03	0.04	-0.04
23.98	0.00	0.02	0.00	0.03	0.09	0.07	0.08	0.01	0.05	0.03	0.01	-0.05
24.59	0.00	0.02	0.03	0.04	0.09	0.09	0.12	0.06	0.11	0.09	0.09	0.06
25.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH01 A-A Alignment

Displacements along plane perpendicular to the face of slope

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Profile Change in mm

	0	12	13	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	September 18, 2019	October 23, 2019	March 5, 2020	July 17, 2020	November 26, 2020	March 3, 2021	May 27, 2021	August 27, 2021	October 7, 2021	December 8, 2021	March 14, 2022
0.21	0.00	1.19	1.00	1.48	1.02	0.64	2.21	2.05	1.16	1.19	1.63	1.50
0.82	0.00	1.25	1.08	1.33	1.17	1.05	2.34	2.25	1.35	1.37	1.75	1.58
1.43	0.00	0.58	0.40	0.60	0.44	0.41	1.61	1.51	0.62	0.61	0.98	0.79
2.04	0.00	0.50	0.32	0.50	0.39	0.35	1.54	1.43	0.57	0.57	0.89	0.74
2.65	0.00	0.30	0.00	0.29	0.16	0.09	1.30	1.19	0.30	0.33	0.65	0.50
3.26	0.00	0.15	-0.15	0.09	-0.01	-0.10	1.03	0.97	0.06	0.07	0.35	0.18
3.87	0.00	0.27	-0.02	0.19	0.09	0.02	0.24	1.04	0.18	0.20	0.44	0.25
4.48	0.00	0.29	0.01	0.23	0.13	0.02	0.26	1.06	0.18	0.21	0.42	0.30
5.09	0.00	0.23	-0.07	0.18	0.06	-0.06	0.22	1.01	0.12	0.11	0.39	0.26
5.70	0.00	0.29	-0.01	0.25	0.14	0.03	0.34	1.12	0.26	0.24	0.51	0.38
6.31	0.00	0.26	-0.04	0.20	0.10	-0.02	0.28	1.07	0.20	0.21	0.44	0.32
6.92	0.00	0.45	0.15	0.38	0.28	0.17	0.47	1.22	0.38	0.41	0.61	0.49
7.52	0.00	0.35	0.04	0.26	0.16	0.05	0.34	1.08	0.25	0.27	0.48	0.35
8.13	0.00	0.33	0.04	0.24	0.14	0.04	0.29	1.02	0.20	0.25	0.42	0.28
8.74	0.00	0.27	-0.03	0.15	0.07	-0.06	0.20	0.91	0.12	0.17	0.32	0.17
9.35	0.00	0.19	-0.12	0.12	-0.03	-0.13	0.14	0.82	0.03	0.06	0.26	0.12
9.96	0.00	0.14	-0.17	0.07	-0.09	-0.20	0.08	0.77	-0.03	-0.03	0.19	0.06
10.57	0.00	0.30	-0.03	0.25	0.08	0.02	0.33	1.03	0.21	0.18	0.46	0.37
11.18	0.00	0.45	0.13	0.41	0.24	0.19	0.47	1.18	0.38	0.33	0.60	0.51
11.79	0.00	0.39	0.07	0.34	0.18	0.12	0.42	1.12	0.31	0.27	0.52	0.44
12.40	0.00	0.47	0.14	0.43	0.28	0.21	0.55	1.23	0.41	0.37	0.66	0.58
13.01	0.00	0.42	0.14	0.38	0.26	0.18	0.47	1.13	0.34	0.35	0.58	0.51
13.62	0.00	0.39	0.12	0.33	0.21	0.13	0.39	1.02	0.24	0.28	0.46	0.39
14.23	0.00	0.29	0.06	0.16	0.09	-0.01	0.16	0.74	-0.01	0.11	0.18	0.06
14.84	0.00	0.24	0.02	0.08	0.03	-0.09	0.07	0.62	-0.12	0.04	0.06	-0.06
15.45	0.00	0.23	-0.01	0.04	0.01	-0.11	0.03	0.56	-0.17	0.00	0.01	-0.12
16.06	0.00	0.20	-0.01	-0.03	-0.03	-0.17	-0.07	0.40	-0.29	-0.06	-0.14	-0.29
16.67	0.00	0.14	-0.07	-0.08	-0.08	-0.20	-0.12	0.35	-0.35	-0.14	-0.21	-0.34
17.28	0.00	0.16	-0.05	-0.05	-0.06	-0.18	-0.08	0.41	-0.30	-0.11	-0.15	-0.27
17.89	0.00	0.22	0.03	0.01	0.01	-0.13	-0.05	0.46	-0.23	-0.04	-0.14	-0.25
18.50	0.00	0.21	0.02	-0.03	-0.03	-0.17	-0.10	0.41	-0.28	-0.10	-0.20	-0.30
19.11	0.00	0.17	0.01	-0.03	-0.02	-0.17	-0.09	0.42	-0.29	-0.08	-0.21	-0.28
19.72	0.00	0.13	0.04	-0.05	-0.03	-0.15	-0.12	0.38	-0.31	-0.10	-0.24	-0.31
20.33	0.00	0.14	0.08	0.03	0.06	-0.05	-0.03	0.52	-0.17	0.00	-0.12	-0.17
20.94	0.00	0.21	0.17	0.17	0.18	0.11	0.17	0.70	0.05	0.17	0.09	0.04
21.55	0.00	0.17	0.12	0.01	0.06	-0.04	-0.04	0.47	-0.15	-0.01	-0.14	-0.17
22.16	0.00	0.07	0.03	-0.17	-0.08	-0.18	-0.25	0.21	-0.35	-0.17	-0.40	-0.46
22.76	0.00	0.11	0.08	-0.09	0.00	-0.09	-0.17	0.31	-0.25	-0.10	-0.30	-0.35
23.37	0.00	0.08	0.07	-0.06	0.00	-0.07	-0.15	0.37	-0.21	-0.08	-0.26	-0.28
23.98	0.00	0.03	0.00	-0.05	-0.02	-0.08	-0.12	0.44	-0.15	-0.09	-0.20	-0.20
24.59	0.00	0.11	0.08	0.09	0.10	0.06	0.06	0.05	0.05	0.07	0.03	0.02
25.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH01 A-A Alignment

Displacements along plane perpendicular to the face of slope

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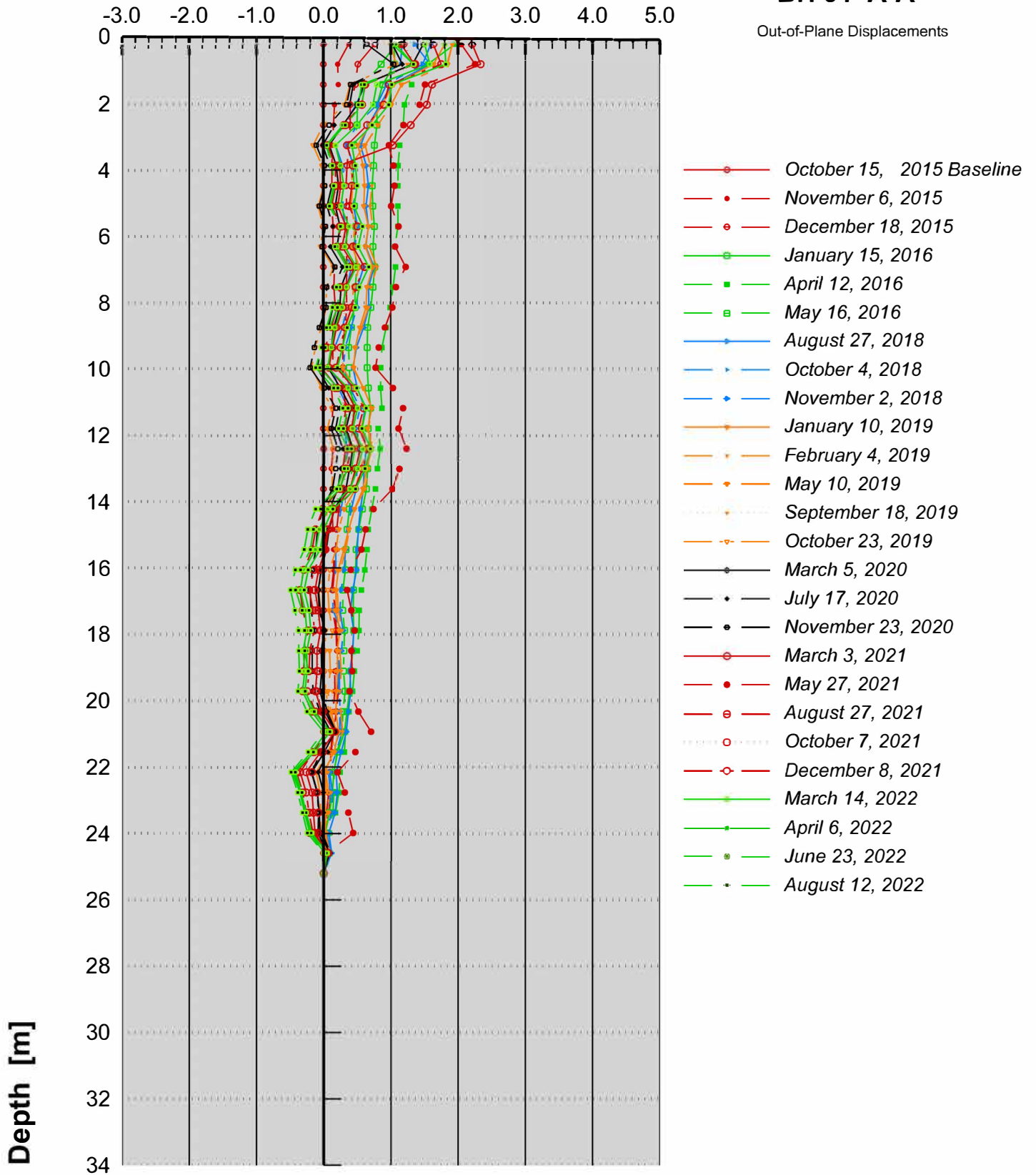
Profile Change in mm

	0	23	24								
Depth m	October 10, 2015	April 6, 2022	June 23, 2022	August 12, 2022							
0.21	0.00	1.80	1.07	1.02							
0.82	0.00	1.82	1.34	1.34							
1.43	0.00	1.02	0.57	0.61							
2.04	0.00	0.97	0.52	0.58							
2.65	0.00	0.73	0.29	0.33							
3.26	0.00	0.42	0.04	0.05							
3.87	0.00	0.48	0.12	0.13							
4.48	0.00	0.50	0.17	0.15							
5.09	0.00	0.45	0.11	0.09							
5.70	0.00	0.58	0.27	0.25							
6.31	0.00	0.52	0.20	0.17							
6.92	0.00	0.68	0.39	0.35							
7.52	0.00	0.54	0.24	0.20							
8.13	0.00	0.47	0.21	0.13							
8.74	0.00	0.36	0.09	0.05							
9.35	0.00	0.28	0.03	-0.03							
9.96	0.00	0.21	-0.05	-0.11							
10.57	0.00	0.50	0.22	0.15							
11.18	0.00	0.64	0.37	0.29							
11.79	0.00	0.57	0.30	0.23							
12.40	0.00	0.70	0.41	0.35							
13.01	0.00	0.61	0.35	0.31							
13.62	0.00	0.47	0.24	0.20							
14.23	0.00	0.14	-0.04	-0.12							
14.84	0.00	0.00	-0.15	-0.23							
15.45	0.00	-0.05	-0.19	-0.28							
16.06	0.00	-0.23	-0.34	-0.42							
16.67	0.00	-0.28	-0.41	-0.49							
17.28	0.00	-0.21	-0.31	-0.42							
17.89	0.00	-0.19	-0.28	-0.37							
18.50	0.00	-0.25	-0.28	-0.37							
19.11	0.00	-0.24	-0.23	-0.36							
19.72	0.00	-0.27	-0.27	-0.38							
20.33	0.00	-0.13	-0.14	-0.24							
20.94	0.00	0.10	0.09	0.00							
21.55	0.00	-0.13	-0.15	-0.23							
22.16	0.00	-0.44	-0.42	-0.48							
22.76	0.00	-0.33	-0.32	-0.38							
23.37	0.00	-0.26	-0.26	-0.31							
23.98	0.00	-0.17	-0.19	-0.24							
24.59	0.00	0.06	0.04	0.00							
25.20	0.00	0.00	0.00	0.00							

Displacements [mm]

Tutela Heights BH 01 A-A

Out-of-Plane Displacements



Inclinometer BH01 B-B Alignment

Displacements along plane parallel to the face of slope

continues on next page

Profile Change in mm

	0	1	2	3	4	5	6	7	8	9	10	11
Depth m	October 10, 2015	November 6, 2015	December 18, 2015	January 15, 2016	April 12, 2016	May 16, 2016	August 27, 2018	October 4, 2018	November 2, 2018	January 10, 2019	February 4, 2019	May 10, 2019
0.21	0.00	0.24	1.23	1.30	1.69	0.95	0.34	1.69	2.17	3.23	2.63	3.19
0.82	0.00	0.35	1.20	1.08	1.43	0.65	-0.04	1.22	1.63	2.59	2.27	2.61
1.43	0.00	-0.11	0.54	0.33	0.52	-0.29	-1.19	0.15	0.68	1.42	1.06	1.25
2.04	0.00	-0.53	0.12	-0.01	0.08	-0.63	-2.29	-1.03	-0.59	0.40	-0.07	0.21
2.65	0.00	0.20	1.01	0.90	1.08	0.45	-0.90	0.35	0.82	1.85	1.38	1.66
3.26	0.00	0.10	0.90	0.84	1.01	0.41	-0.86	0.36	0.85	1.71	1.37	1.59
3.87	0.00	0.08	0.84	0.77	0.91	0.32	-0.95	0.26	0.77	1.57	1.21	1.42
4.48	0.00	0.16	0.87	0.75	0.89	0.36	-0.86	0.31	0.82	1.62	1.30	1.44
5.09	0.00	0.15	0.82	0.71	0.84	0.31	-0.91	0.23	0.73	1.48	1.19	1.31
5.70	0.00	0.15	0.83	0.74	0.88	0.37	-0.80	0.35	0.87	1.65	1.31	1.47
6.31	0.00	0.10	0.77	0.68	0.80	0.31	-0.86	0.23	0.75	1.53	1.16	1.31
6.92	0.00	0.09	0.74	0.66	0.70	0.23	-1.05	0.13	0.53	1.28	0.91	1.08
7.52	0.00	0.09	0.72	0.64	0.69	0.21	-1.05	0.10	0.50	1.26	0.89	1.08
8.13	0.00	0.02	0.73	0.64	0.69	0.22	-1.01	0.11	0.53	1.21	0.87	1.04
8.74	0.00	0.21	0.67	0.56	0.61	0.15	-1.05	0.19	0.43	1.08	0.71	0.85
9.35	0.00	0.33	0.61	0.44	0.55	0.08	-1.13	0.12	0.24	0.78	0.59	0.52
9.96	0.00	0.33	0.61	0.41	0.54	0.09	-1.06	0.12	0.23	0.76	0.58	0.47
10.57	0.00	0.27	0.58	0.37	0.50	0.08	-1.15	0.06	0.23	0.77	0.62	0.53
11.18	0.00	0.22	0.54	0.36	0.45	0.04	-1.21	0.10	0.27	0.83	0.72	0.70
11.79	0.00	0.18	0.51	0.34	0.41	0.01	-1.24	0.06	0.26	0.84	0.71	0.66
12.40	0.00	0.18	0.50	0.33	0.39	0.00	-1.12	0.08	0.26	0.87	0.72	0.70
13.01	0.00	0.20	0.53	0.32	0.42	0.05	-1.04	0.17	0.31	0.96	0.71	0.77
13.62	0.00	0.18	0.49	0.26	0.37	0.01	-1.01	0.10	0.31	0.90	0.65	0.68
14.23	0.00	0.17	0.47	0.27	0.36	0.02	-0.95	0.10	0.35	0.90	0.69	0.77
14.84	0.00	0.09	0.41	0.20	0.29	-0.03	-1.01	0.03	0.26	0.77	0.55	0.60
15.45	0.00	0.03	0.38	0.19	0.28	-0.04	-0.88	0.06	0.10	0.73	0.51	0.47
16.06	0.00	0.06	0.35	0.15	0.28	-0.06	-0.85	0.04	0.07	0.67	0.39	0.37
16.67	0.00	0.05	0.35	0.15	0.26	-0.01	-0.77	0.03	0.06	0.59	0.42	0.36
17.28	0.00	0.02	0.31	0.13	0.23	-0.01	-0.72	-0.01	0.04	0.55	0.40	0.30
17.89	0.00	-0.03	0.23	0.10	0.19	-0.03	-0.78	-0.13	-0.01	0.46	0.26	0.17
18.50	0.00	-0.04	0.11	0.06	0.16	-0.03	-0.78	-0.19	-0.06	0.36	0.13	0.04
19.11	0.00	-0.06	0.05	0.03	0.13	-0.09	-0.75	-0.26	-0.09	0.18	-0.04	-0.19
19.72	0.00	-0.02	0.03	0.01	0.11	-0.10	-0.72	-0.27	-0.11	0.08	-0.11	-0.30
20.33	0.00	0.02	0.05	0.01	0.13	-0.08	-0.63	-0.18	-0.10	0.08	-0.09	-0.25
20.94	0.00	0.08	0.03	-0.03	0.06	-0.08	-0.60	-0.21	-0.10	0.06	-0.11	-0.24
21.55	0.00	0.02	0.09	0.04	0.05	-0.02	-0.46	-0.10	-0.04	0.01	-0.09	-0.20
22.16	0.00	0.00	0.07	0.03	0.02	-0.03	-0.41	-0.12	-0.09	-0.02	-0.11	-0.22
22.76	0.00	-0.05	0.05	0.02	0.00	-0.02	-0.32	-0.08	-0.07	-0.02	-0.09	-0.19
23.37	0.00	-0.03	0.06	0.04	0.00	0.01	-0.24	-0.01	-0.08	0.04	-0.03	-0.10
23.98	0.00	-0.10	-0.06	-0.09	-0.09	-0.08	-0.30	-0.12	-0.18	-0.13	-0.16	-0.23
24.59	0.00	-0.06	-0.03	-0.07	-0.06	-0.05	-0.20	-0.08	-0.13	-0.14	-0.14	-0.22
25.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH01 B-B Alignment

Displacements along plane parallel to the face of slope

continued from previous page

Profile Change in mm

	0	12	13	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	September 18, 2019	October 23, 2019	March 5, 2020	July 17, 2020	November 26, 2020	March 3, 2021	May 27, 2021	August 27, 2021	October 7, 2021	December 8, 2021	March 14, 2022
0.21	0.00	1.53	2.17	2.94	2.37	5.11	3.32	2.44	2.83	2.15	3.75	3.59
0.82	0.00	1.05	1.64	2.40	1.90	4.70	2.68	1.68	2.20	1.45	2.92	2.67
1.43	0.00	-0.21	0.53	1.06	0.63	3.55	1.34	0.38	1.02	0.39	1.59	1.46
2.04	0.00	-1.42	-0.70	-0.03	-0.48	2.35	0.30	-0.55	0.02	-0.64	0.67	0.59
2.65	0.00	0.07	0.79	1.40	0.93	1.92	1.48	0.66	1.21	0.47	1.78	1.64
3.26	0.00	0.20	0.85	1.34	1.02	1.65	1.51	0.72	1.24	0.81	1.85	1.76
3.87	0.00	0.10	0.74	1.24	0.92	1.49	1.35	0.56	1.09	0.69	1.63	1.59
4.48	0.00	0.13	0.81	1.31	0.96	1.55	1.43	0.62	1.11	0.78	1.63	1.52
5.09	0.00	0.08	0.73	1.25	0.90	1.47	1.28	0.51	0.98	0.68	1.50	1.40
5.70	0.00	0.27	0.90	1.40	1.16	1.68	1.51	1.29	1.24	0.98	1.75	1.65
6.31	0.00	0.17	0.81	1.23	0.99	1.52	1.36	1.15	1.07	0.90	1.53	1.39
6.92	0.00	0.03	0.58	0.93	0.73	1.24	1.00	0.81	0.74	0.64	1.14	1.02
7.52	0.00	0.02	0.54	0.91	0.72	1.22	0.98	0.83	0.76	0.61	1.15	1.01
8.13	0.00	0.04	0.60	0.97	0.77	1.22	0.98	0.81	0.75	0.64	1.11	0.95
8.74	0.00	-0.01	0.51	0.83	0.66	1.08	0.79	0.61	0.60	0.67	0.94	0.81
9.35	0.00	-0.24	0.33	0.53	0.49	0.80	0.48	0.33	0.38	0.47	0.58	0.55
9.96	0.00	-0.21	0.35	0.53	0.47	0.79	0.43	0.26	0.31	0.45	0.49	0.44
10.57	0.00	-0.19	0.35	0.58	0.52	0.75	0.47	0.38	0.37	0.54	0.61	0.61
11.18	0.00	-0.10	0.41	0.72	0.67	0.92	0.70	0.66	0.64	0.73	0.86	0.91
11.79	0.00	-0.10	0.39	0.68	0.64	0.88	0.70	0.69	0.63	0.72	0.85	0.91
12.40	0.00	-0.03	0.42	0.70	0.67	0.89	0.72	0.75	0.69	0.73	0.91	0.99
13.01	0.00	0.07	0.46	0.79	0.75	0.93	0.80	0.85	0.79	0.75	0.92	1.01
13.62	0.00	-0.01	0.36	0.70	0.67	0.84	0.69	0.78	0.73	0.66	0.80	0.97
14.23	0.00	0.05	0.40	0.75	0.72	0.87	0.79	0.86	0.84	0.75	0.86	1.07
14.84	0.00	-0.04	0.32	0.57	0.60	0.74	0.57	0.65	0.66	0.62	0.65	0.87
15.45	0.00	-0.12	0.45	0.49	0.52	0.67	0.50	0.55	0.54	0.51	0.56	0.76
16.06	0.00	-0.13	0.46	0.41	0.46	0.60	0.40	0.44	0.44	0.42	0.45	0.64
16.67	0.00	-0.07	0.45	0.43	0.42	0.51	0.41	0.49	0.49	0.43	0.50	0.67
17.28	0.00	-0.08	0.39	0.35	0.37	0.45	0.37	0.40	0.39	0.36	0.41	0.57
17.89	0.00	-0.14	0.27	0.22	0.28	0.34	0.26	0.24	0.17	0.22	0.28	0.44
18.50	0.00	-0.19	0.17	0.07	0.16	0.20	0.10	0.05	-0.03	0.08	0.07	0.19
19.11	0.00	-0.24	0.08	-0.08	0.00	0.06	-0.07	-0.15	-0.20	-0.08	-0.14	-0.07
19.72	0.00	-0.27	0.02	-0.20	-0.07	-0.04	-0.21	-0.29	-0.32	-0.22	-0.27	-0.25
20.33	0.00	-0.21	0.04	-0.21	-0.04	-0.03	-0.21	-0.28	-0.29	-0.18	-0.26	-0.26
20.94	0.00	-0.21	0.05	-0.15	-0.04	-0.04	-0.17	-0.17	-0.21	-0.14	-0.20	-0.21
21.55	0.00	-0.27	0.00	-0.17	-0.06	-0.04	-0.15	-0.19	-0.22	-0.17	-0.25	-0.28
22.16	0.00	-0.27	-0.01	-0.19	-0.11	-0.09	-0.19	-0.21	-0.34	-0.21	-0.26	-0.30
22.76	0.00	-0.20	0.01	-0.16	-0.06	-0.07	-0.19	-0.17	-0.32	-0.21	-0.26	-0.29
23.37	0.00	-0.14	0.04	-0.05	0.04	0.03	-0.06	0.01	-0.11	-0.06	-0.06	-0.09
23.98	0.00	-0.25	-0.01	-0.15	-0.07	-0.09	-0.13	-0.11	-0.23	-0.15	-0.16	-0.23
24.59	0.00	-0.21	-0.03	-0.17	-0.10	-0.11	-0.17	-0.12	-0.26	-0.17	-0.18	-0.25
25.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH01 B-B Alignment

Displacements along plane parallel to the face of slope

continued from previous page

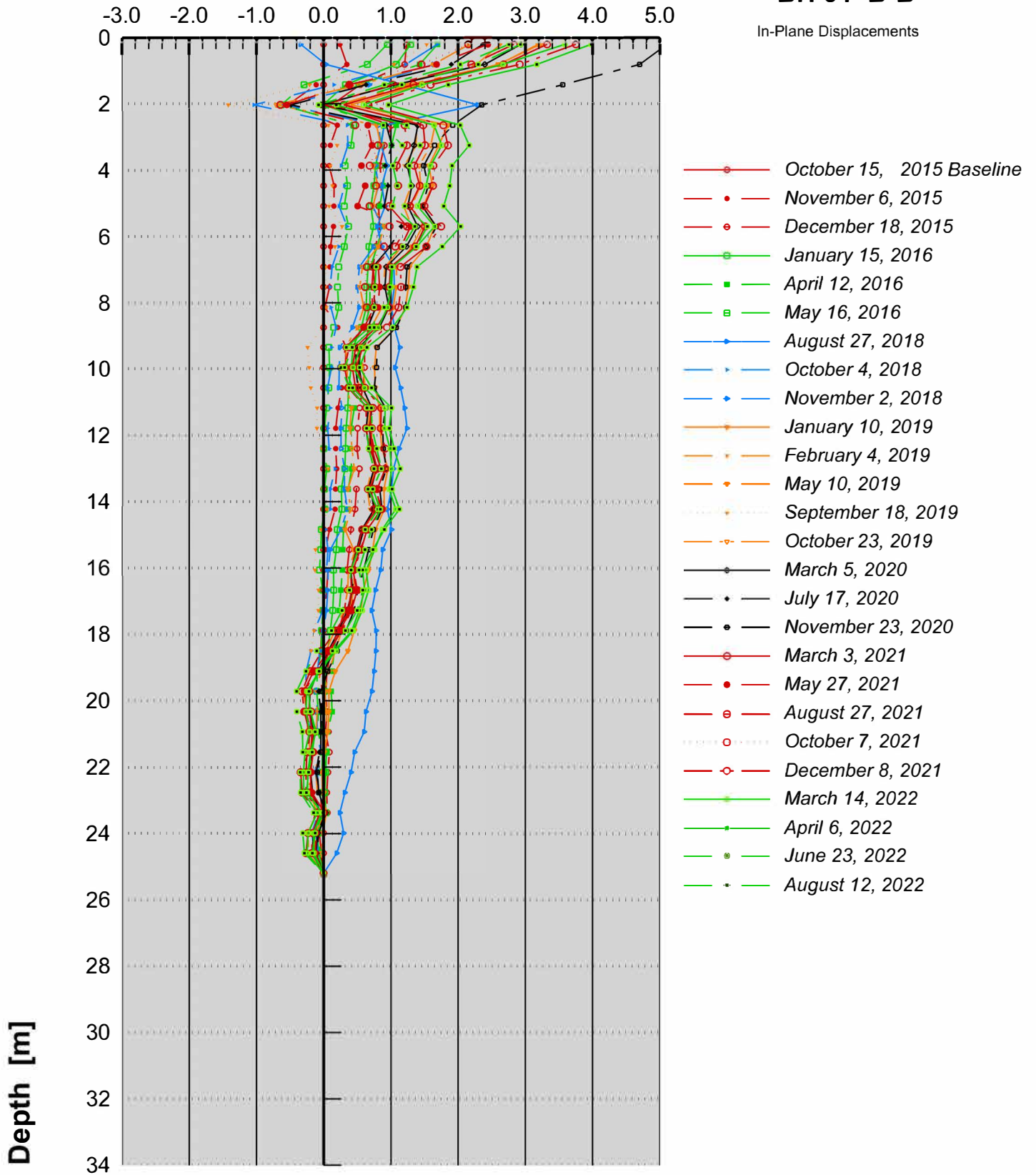
Profile Change in mm

Depth m	0	23	24	25							
	October 10, 2015	April 6, 2022	June 23, 2022	August 12, 2022							
0.21	0.00	3.98	2.93	2.76							
0.82	0.00	3.17	2.30	2.03							
1.43	0.00	1.85	1.16	0.90							
2.04	0.00	0.97	0.19	-0.07							
2.65	0.00	2.03	1.23	0.89							
3.26	0.00	2.16	1.44	1.17							
3.87	0.00	1.91	1.28	1.03							
4.48	0.00	1.87	1.30	1.09							
5.09	0.00	1.79	1.21	1.03							
5.70	0.00	2.04	1.54	1.36							
6.31	0.00	1.77	1.38	1.18							
6.92	0.00	1.39	1.02	0.78							
7.52	0.00	1.34	0.99	0.76							
8.13	0.00	1.24	0.90	0.75							
8.74	0.00	1.03	0.69	0.75							
9.35	0.00	0.65	0.34	0.43							
9.96	0.00	0.54	0.26	0.31							
10.57	0.00	0.71	0.38	0.43							
11.18	0.00	1.01	0.65	0.71							
11.79	0.00	0.98	0.64	0.72							
12.40	0.00	1.05	0.67	0.79							
13.01	0.00	1.14	0.75	0.86							
13.62	0.00	1.02	0.66	0.73							
14.23	0.00	1.13	0.81	0.84							
14.84	0.00	0.90	0.62	0.71							
15.45	0.00	0.73	0.52	0.61							
16.06	0.00	0.58	0.41	0.53							
16.67	0.00	0.61	0.39	0.58							
17.28	0.00	0.53	0.27	0.50							
17.89	0.00	0.42	0.12	0.33							
18.50	0.00	0.15	-0.10	0.13							
19.11	0.00	-0.08	-0.26	-0.07							
19.72	0.00	-0.23	-0.40	-0.22							
20.33	0.00	-0.19	-0.40	-0.20							
20.94	0.00	-0.11	-0.31	-0.12							
21.55	0.00	-0.19	-0.31	-0.17							
22.16	0.00	-0.23	-0.35	-0.22							
22.76	0.00	-0.24	-0.34	-0.25							
23.37	0.00	-0.03	-0.15	-0.01							
23.98	0.00	-0.15	-0.31	-0.12							
24.59	0.00	-0.14	-0.28	-0.17							
25.20	0.00	0.00	0.00	0.00							

Displacements [mm]

Tutela Heights BH 01 B-B

In-Plane Displacements



Inclinometer BH02 A-A Alignment

Displacements along plane perpendicular to the face of slope
Profile Change in mm

continues on next page

	0	1	2	3	4	5	6	7	8	9	10	11
Depth m	October 10, 2015	November 6, 2015	December 18, 2015	January 15, 2016	April 12, 2016	May 16, 2016	August 27, 2018	October 4, 2018	November 2, 2018	January 10, 2019	February 4, 2019	May 10, 2019
0.31	0.00	-0.12	-0.70	-1.89	-1.30	-1.70	1.38	1.48	0.08	-0.07	-0.08	0.19
0.92	0.00	0.03	-0.25	-0.72	-0.16	-0.49	0.37	0.44	-0.46	-0.33	-0.50	-0.12
1.53	0.00	0.05	0.03	0.02	0.70	0.42	0.09	0.13	-0.45	-0.15	-0.30	0.08
2.14	0.00	0.21	0.09	-0.25	0.22	-0.03	0.10	0.03	-0.27	-0.09	-0.07	0.27
2.75	0.00	0.34	0.12	-0.34	-0.15	-0.40	-0.33	-0.43	-0.36	-0.35	-0.27	0.05
3.36	0.00	0.20	-0.09	-0.67	-0.55	-0.79	-1.06	-1.17	-0.92	-1.07	-0.97	-0.70
3.97	0.00	0.17	-0.04	-0.60	-0.52	-0.75	-1.01	-1.13	-0.95	-1.23	-1.12	-0.88
4.58	0.00	0.07	-0.14	-0.43	-0.49	-0.70	-0.73	-0.82	-0.62	-1.07	-0.93	-0.72
5.19	0.00	0.02	-0.23	-0.21	-0.10	-0.30	0.14	0.08	0.22	-0.19	-0.04	0.14
5.80	0.00	0.05	-0.11	0.70	0.87	0.71	1.37	1.29	1.40	1.22	1.42	1.61
6.41	0.00	0.07	-0.11	0.64	0.72	0.56	0.85	0.73	0.80	1.22	0.98	1.20
7.02	0.00	0.06	-0.05	0.28	0.43	0.27	0.42	0.29	0.37	0.71	0.44	0.64
7.62	0.00	0.14	0.01	-0.01	0.14	-0.09	0.17	0.08	0.17	0.41	0.14	0.33
8.23	0.00	0.24	0.15	0.05	0.20	-0.06	0.26	0.17	0.23	0.46	0.21	0.36
8.84	0.00	0.21	0.06	-0.02	0.14	-0.10	0.04	-0.08	0.01	0.25	0.03	0.19
9.45	0.00	0.19	0.03	-0.01	0.13	-0.06	0.06	-0.03	0.05	0.19	0.01	0.14
10.06	0.00	0.16	-0.01	-0.02	0.13	-0.04	0.09	-0.03	0.05	0.25	0.07	0.20
10.67	0.00	0.16	-0.01	-0.03	0.12	-0.03	0.11	-0.03	0.05	0.24	0.10	0.22
11.28	0.00	0.19	0.03	-0.05	0.12	-0.04	0.15	0.05	0.09	0.29	0.14	0.27
11.89	0.00	0.20	0.05	-0.04	0.14	-0.03	0.19	0.09	0.15	0.33	0.19	0.31
12.50	0.00	0.23	0.08	-0.04	0.12	-0.05	0.12	0.02	0.07	0.24	0.09	0.20
13.11	0.00	0.23	0.08	-0.04	0.09	-0.06	0.14	0.04	0.09	0.23	0.10	0.20
13.72	0.00	0.20	0.07	-0.05	0.07	-0.09	0.23	0.13	0.21	0.32	0.23	0.30
14.33	0.00	0.19	0.05	-0.08	0.01	-0.13	0.00	-0.12	-0.01	0.06	-0.02	0.06
14.94	0.00	0.20	0.07	-0.04	0.08	-0.05	0.18	0.09	0.18	0.24	0.15	0.24
15.55	0.00	0.21	0.07	-0.09	0.03	-0.11	0.10	0.06	0.08	0.15	0.08	0.16
16.16	0.00	0.20	0.08	-0.08	0.03	-0.09	0.09	0.07	0.09	0.15	0.12	0.20
16.77	0.00	0.14	0.06	-0.04	0.04	-0.06	0.07	0.04	0.09	0.16	0.11	0.21
17.38	0.00	0.05	-0.14	-0.21	-0.22	-0.30	-0.47	-0.54	-0.45	-0.46	-0.48	-0.42
17.99	0.00	-0.10	-0.23	-0.27	-0.24	-0.30	-0.34	-0.41	-0.32	-0.29	-0.31	-0.24
18.60	0.00	0.01	-0.10	-0.17	-0.12	-0.17	-0.10	-0.16	-0.10	-0.07	-0.09	-0.03
19.21	0.00	0.06	-0.09	-0.22	-0.23	-0.26	-0.17	-0.22	-0.20	-0.15	-0.18	-0.13
19.82	0.00	0.35	0.20	-0.01	0.01	-0.06	0.15	0.15	0.11	0.21	0.13	0.20
20.43	0.00	0.27	0.19	0.03	0.08	0.01	0.19	0.21	0.17	0.24	0.19	0.25
21.04	0.00	0.20	0.14	-0.01	0.03	-0.03	0.13	0.15	0.12	0.20	0.13	0.19
21.65	0.00	0.13	0.11	0.04	0.10	0.08	0.18	0.18	0.17	0.21	0.18	0.22
22.26	0.00	-0.04	-0.06	-0.06	0.12	0.12	0.19	0.19	0.19	0.21	0.20	0.22
22.86	0.00	-0.11	-0.10	-0.09	0.01	0.04	0.07	0.08	0.09	0.09	0.10	0.10
23.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH02 A-A Alignment

Displacements along plane perpendicular to the face of slope
Profile Change in mm

continued from previous page

	0	12	13	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	September 18, 2019	October 23, 2019	March 5, 2020	July 17, 2020	November 26, 2020	March 3, 2021	May 27, 2021	August 27, 2021	October 7, 2021	December 8, 2021	March 14, 2022
0.31	0.00	1.97	2.04	0.74	2.17	2.66	1.17	2.18	3.40	1.75	2.31	2.97
0.92	0.00	0.57	0.54	0.03	0.64	1.44	0.21	0.83	1.47	0.48	1.10	0.78
1.53	0.00	0.18	0.17	0.06	0.18	0.67	0.07	0.37	0.58	-0.08	0.72	0.13
2.14	0.00	0.38	0.38	0.35	0.45	0.29	0.42	0.78	0.72	0.18	0.90	0.69
2.75	0.00	-0.23	-0.16	0.13	0.01	-0.22	0.18	0.47	0.32	0.20	0.59	0.47
3.36	0.00	-1.35	-1.21	-0.70	-0.96	-1.06	-0.75	-0.47	-0.66	-0.49	-0.31	-0.44
3.97	0.00	-1.22	-1.14	-0.93	-0.95	-1.05	-1.04	-0.76	-0.86	-0.74	-0.62	-0.76
4.58	0.00	-0.82	-0.78	-0.76	-0.64	-0.73	-0.79	-0.60	-0.58	-0.48	-0.47	-0.59
5.19	0.00	0.12	0.17	0.17	0.33	0.28	0.36	0.50	0.52	0.53	0.61	0.46
5.80	0.00	1.54	1.58	1.71	1.83	1.97	1.99	2.15	2.12	2.02	2.19	2.12
6.41	0.00	1.05	1.07	1.31	1.34	1.42	1.52	1.67	1.57	1.46	1.68	1.65
7.02	0.00	0.48	0.51	0.72	0.73	0.64	0.88	0.99	0.92	0.84	1.00	0.97
7.62	0.00	0.22	0.27	0.29	0.39	0.36	0.53	0.65	0.62	0.53	0.64	0.62
8.23	0.00	0.32	0.36	0.30	0.51	0.46	0.57	0.72	0.78	0.69	0.65	0.67
8.84	0.00	0.14	0.14	0.12	0.30	0.17	0.40	0.55	0.53	0.42	0.47	0.48
9.45	0.00	0.10	0.12	0.07	0.25	0.20	0.38	0.52	0.50	0.41	0.45	0.45
10.06	0.00	0.14	0.15	0.13	0.29	0.26	0.35	0.51	0.50	0.44	0.45	0.44
10.67	0.00	0.11	0.11	0.14	0.25	0.20	0.34	0.49	0.42	0.37	0.41	0.39
11.28	0.00	0.17	0.20	0.19	0.33	0.32	0.43	0.59	0.56	0.47	0.53	0.53
11.89	0.00	0.24	0.25	0.23	0.38	0.38	0.46	0.61	0.61	0.52	0.53	0.54
12.50	0.00	0.13	0.13	0.08	0.23	0.25	0.32	0.45	0.48	0.36	0.36	0.37
13.11	0.00	0.18	0.16	0.10	0.27	0.31	0.35	0.47	0.53	0.40	0.38	0.38
13.72	0.00	0.33	0.30	0.23	0.42	0.47	0.49	0.63	0.68	0.55	0.52	0.52
14.33	0.00	0.05	0.03	-0.04	0.15	0.17	0.20	0.31	0.35	0.26	0.20	0.22
14.94	0.00	0.22	0.20	0.12	0.29	0.29	0.29	0.39	0.44	0.33	0.26	0.26
15.55	0.00	0.17	0.15	0.05	0.23	0.29	0.31	0.41	0.52	0.32	0.26	0.29
16.16	0.00	0.21	0.21	0.10	0.28	0.32	0.35	0.47	0.55	0.35	0.31	0.31
16.77	0.00	0.22	0.20	0.13	0.30	0.31	0.34	0.45	0.49	0.35	0.34	0.32
17.38	0.00	-0.43	-0.47	-0.52	-0.38	-0.44	-0.44	-0.35	-0.36	-0.42	-0.46	-0.49
17.99	0.00	-0.23	-0.27	-0.31	-0.17	-0.21	-0.26	-0.18	-0.17	-0.25	-0.29	-0.31
18.60	0.00	-0.01	-0.03	-0.08	0.04	0.03	-0.01	0.10	0.12	0.02	-0.01	-0.01
19.21	0.00	-0.09	-0.11	-0.17	-0.05	-0.02	-0.01	0.11	0.17	0.00	0.03	0.03
19.82	0.00	0.26	0.25	0.17	0.31	0.38	0.35	0.50	0.63	0.37	0.39	0.45
20.43	0.00	0.31	0.29	0.23	0.35	0.40	0.35	0.50	0.60	0.38	0.40	0.44
21.04	0.00	0.24	0.23	0.17	0.29	0.35	0.30	0.45	0.55	0.33	0.34	0.39
21.65	0.00	0.23	0.22	0.20	0.27	0.29	0.26	0.37	0.40	0.28	0.33	0.33
22.26	0.00	0.23	0.22	0.21	0.24	0.26	0.24	0.30	0.30	0.25	0.31	0.30
22.86	0.00	0.10	0.09	0.10	0.11	0.10	0.11	0.12	0.10	0.11	0.18	0.16
23.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH02 A-A Alignment

*Displacements along plane perpendicular to the face of slope
Profile Change in mm*

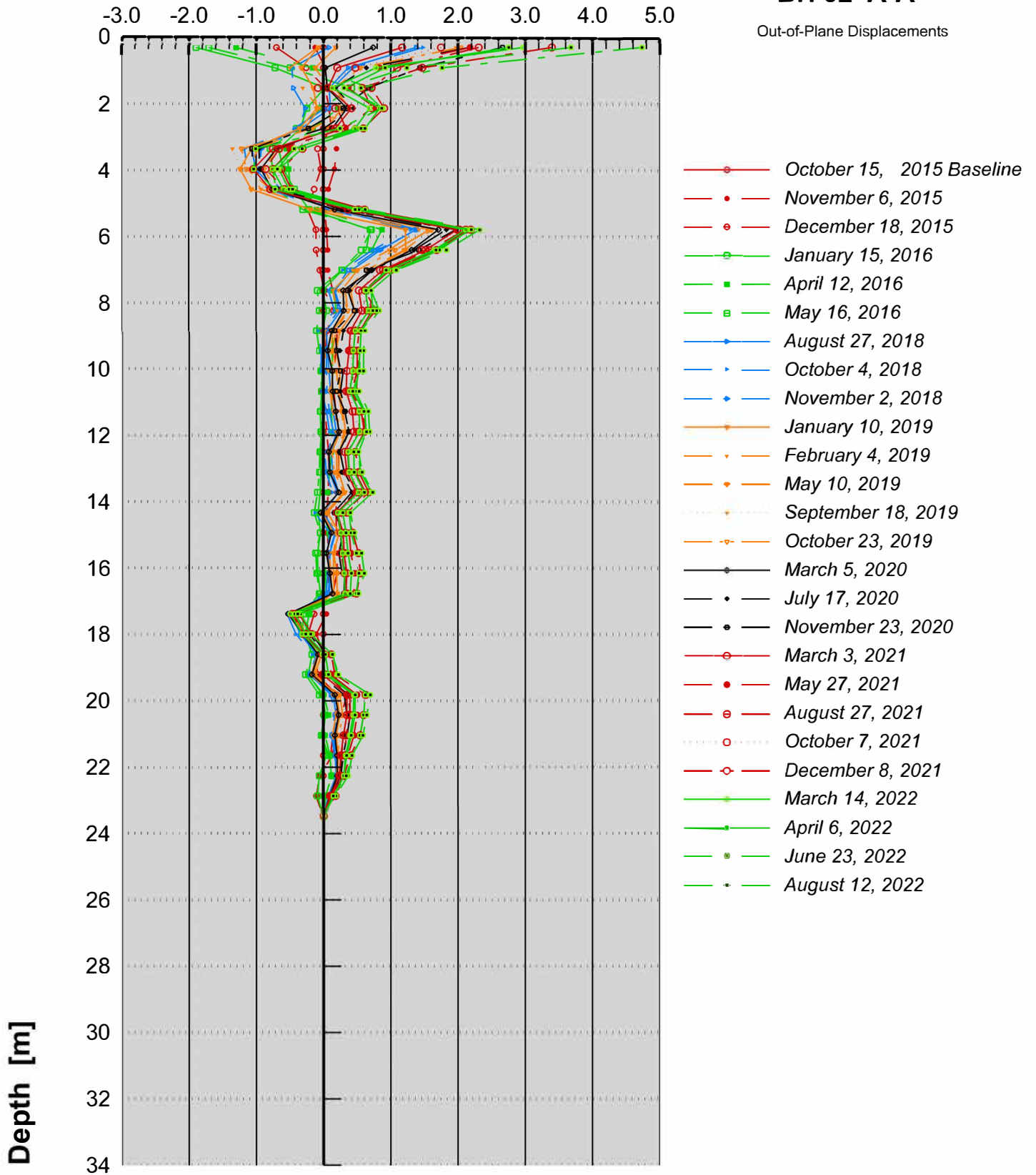
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	0	23	24	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	April 6, 2022	June 23, 2022	August 12, 2022								
0.31	0.00	2.75	3.68	4.73								
0.92	0.00	0.92	1.24	1.77								
1.53	0.00	0.33	0.31	0.56								
2.14	0.00	0.84	0.89	0.87								
2.75	0.00	0.62	0.56	0.25								
3.36	0.00	-0.31	-0.43	-1.01								
3.97	0.00	-0.67	-0.68	-1.03								
4.58	0.00	-0.51	-0.46	-0.72								
5.19	0.00	0.53	0.62	0.47								
5.80	0.00	2.18	2.32	2.20								
6.41	0.00	1.72	1.83	1.67								
7.02	0.00	1.06	1.08	0.93								
7.62	0.00	0.71	0.71	0.64								
8.23	0.00	0.74	0.83	0.79								
8.84	0.00	0.56	0.62	0.56								
9.45	0.00	0.55	0.60	0.55								
10.06	0.00	0.52	0.60	0.54								
10.67	0.00	0.48	0.53	0.44								
11.28	0.00	0.62	0.67	0.60								
11.89	0.00	0.63	0.69	0.64								
12.50	0.00	0.45	0.52	0.52								
13.11	0.00	0.46	0.55	0.58								
13.72	0.00	0.61	0.72	0.73								
14.33	0.00	0.29	0.38	0.40								
14.94	0.00	0.34	0.41	0.46								
15.55	0.00	0.37	0.49	0.57								
16.16	0.00	0.42	0.53	0.61								
16.77	0.00	0.40	0.49	0.52								
17.38	0.00	-0.42	-0.34	-0.38								
17.99	0.00	-0.26	-0.16	-0.19								
18.60	0.00	0.03	0.14	0.13								
19.21	0.00	0.08	0.20	0.23								
19.82	0.00	0.47	0.62	0.70								
20.43	0.00	0.47	0.60	0.65								
21.04	0.00	0.41	0.54	0.59								
21.65	0.00	0.35	0.43	0.43								
22.26	0.00	0.30	0.37	0.34								
22.86	0.00	0.16	0.19	0.15								
23.47	0.00	0.00	0.00	0.00								

Displacements [mm]

Tutela Heights BH 02 A-A

Out-of-Plane Displacements



Inclinometer BH02 B-B Alignment

Displacements along plane parallel to the face of slope
Profile Change in mm

continues on next page

	0	1	2	3	4	5	6	7	8	9	10	11
Depth m	October 10, 2015	November 6, 2015	December 18, 2015	January 15, 2016	April 12, 2016	May 16, 2016	August 27, 2018	October 4, 2018	November 2, 2018	January 10, 2019	February 4, 2019	May 10, 2019
0.31	0.00	0.65	0.17	0.57	-0.07	0.40	1.56	1.84	1.11	1.31	1.42	0.45
0.92	0.00	0.76	0.40	0.79	-0.11	0.24	1.40	1.65	1.08	1.17	1.46	0.49
1.53	0.00	0.57	0.15	0.90	-0.19	0.29	0.96	1.06	0.87	0.75	1.12	0.28
2.14	0.00	0.42	0.12	1.09	0.20	0.69	0.74	0.61	0.72	0.93	1.27	0.50
2.75	0.00	0.60	0.31	0.97	0.18	0.58	1.15	1.07	1.18	1.44	1.70	0.92
3.36	0.00	0.66	0.72	1.74	0.81	1.12	2.14	1.95	2.08	2.48	2.67	2.00
3.97	0.00	0.82	0.84	1.86	1.07	1.35	1.96	1.84	1.98	2.47	2.56	1.88
4.58	0.00	0.89	1.07	1.75	1.00	1.28	0.90	0.86	1.14	1.48	1.55	0.90
5.19	0.00	0.90	1.05	1.35	0.60	0.82	-0.01	0.02	0.36	0.44	0.52	-0.24
5.80	0.00	0.77	0.90	1.19	0.39	0.63	0.00	0.05	0.46	0.35	0.53	-0.21
6.41	0.00	0.73	0.85	1.45	0.64	0.90	0.52	0.56	0.93	0.90	1.17	0.44
7.02	0.00	0.80	0.89	1.29	0.65	0.96	0.68	0.76	1.00	0.96	1.15	0.56
7.62	0.00	0.82	0.94	1.44	0.79	1.08	0.68	0.74	1.04	1.04	1.32	0.73
8.23	0.00	0.83	0.95	1.41	0.80	1.04	0.69	0.76	1.02	0.96	1.22	0.65
8.84	0.00	0.83	0.95	1.39	0.82	1.04	0.71	0.72	0.96	0.96	1.20	0.65
9.45	0.00	0.90	0.99	1.40	0.81	1.01	0.79	0.75	0.99	0.95	1.21	0.69
10.06	0.00	0.90	0.99	1.41	0.81	0.99	0.86	0.85	1.08	0.99	1.24	0.72
10.67	0.00	0.84	1.02	1.44	0.83	1.01	0.99	1.00	1.17	1.10	1.32	0.84
11.28	0.00	0.80	1.00	1.38	0.80	0.98	0.91	0.93	1.10	0.99	1.23	0.75
11.89	0.00	0.79	0.95	1.42	0.80	1.03	0.93	0.94	1.17	1.01	1.27	0.83
12.50	0.00	0.68	0.86	1.44	0.81	1.08	0.88	0.86	1.13	0.92	1.21	0.74
13.11	0.00	0.55	0.85	1.34	0.72	1.07	0.98	0.87	1.04	0.81	1.32	0.59
13.72	0.00	0.47	0.86	1.30	0.69	1.07	0.88	0.74	0.96	0.68	1.23	0.52
14.33	0.00	0.43	0.85	1.31	0.72	1.13	0.65	0.68	0.93	0.57	1.12	0.41
14.94	0.00	0.34	0.72	1.25	0.65	1.10	0.53	0.61	0.84	0.45	1.03	0.32
15.55	0.00	0.22	0.60	1.16	0.56	1.07	0.54	0.65	0.85	0.45	1.04	0.29
16.16	0.00	0.25	0.66	1.15	0.56	1.04	0.46	0.67	0.85	0.46	0.94	0.33
16.77	0.00	0.26	0.74	1.08	0.50	0.88	0.38	0.66	0.67	0.62	0.82	0.49
17.38	0.00	0.40	0.95	0.99	0.71	1.03	0.55	0.89	0.80	0.79	0.86	0.67
17.99	0.00	0.65	0.92	0.88	0.67	0.81	0.67	1.04	0.95	0.91	0.91	0.93
18.60	0.00	0.85	1.31	1.29	1.21	1.34	1.41	1.83	1.73	1.72	1.67	1.71
19.21	0.00	0.63	0.76	0.81	0.80	0.65	0.94	1.23	1.22	1.26	1.13	1.26
19.82	0.00	0.57	0.64	0.58	0.56	0.38	0.69	0.94	0.93	1.02	0.81	0.97
20.43	0.00	0.63	0.77	0.55	0.58	0.36	0.70	0.93	0.85	0.88	0.77	0.94
21.04	0.00	0.69	0.85	0.82	0.84	0.73	1.00	1.10	1.10	1.02	1.04	1.14
21.65	0.00	0.26	0.47	0.38	0.51	0.51	0.63	0.59	0.64	0.54	0.61	0.61
22.26	0.00	-0.15	-0.03	-0.06	0.00	0.00	0.10	0.07	0.06	0.01	0.09	0.09
22.86	0.00	-0.24	-0.24	-0.25	-0.19	-0.20	-0.17	-0.16	-0.19	-0.20	-0.15	-0.16
23.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH02 B-B Alignment

Displacements along plane parallel to the face of slope
Profile Change in mm

continued from previous page

	0	12	13	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	September 18, 2019	October 23, 2019	March 5, 2020	July 17, 2020	November 26, 2020	March 3, 2021	May 27, 2021	August 27, 2021	October 7, 2021	December 8, 2021	March 14, 2022
0.31	0.00	1.83	2.37	0.31	0.94	2.89	1.06	1.15	2.84	-0.36	-0.09	1.38
0.92	0.00	1.30	1.71	0.09	0.39	2.52	1.05	1.06	2.66	-0.09	0.25	1.41
1.53	0.00	0.54	0.86	-0.45	-0.36	1.09	0.43	0.41	2.00	-0.61	-0.30	0.69
2.14	0.00	0.47	0.80	-0.04	-0.26	0.37	0.84	0.55	2.08	-0.17	0.05	1.21
2.75	0.00	1.20	1.56	0.65	0.61	1.25	1.65	1.27	2.74	0.67	0.78	1.97
3.36	0.00	2.09	2.58	1.69	1.65	2.55	2.67	2.25	3.81	1.71	1.86	3.00
3.97	0.00	1.83	2.35	1.53	1.37	2.21	2.42	1.98	3.48	1.51	1.74	2.58
4.58	0.00	0.75	1.30	0.50	0.32	0.94	1.17	0.79	2.35	0.47	0.60	1.48
5.19	0.00	-0.30	0.22	-0.75	-0.76	-0.15	-0.04	-0.43	1.28	-0.37	-0.49	0.23
5.80	0.00	-0.29	0.21	-0.68	-0.66	-0.10	-0.03	-0.51	1.19	-0.30	-0.54	0.25
6.41	0.00	0.38	0.86	0.07	0.03	0.54	0.70	0.26	1.81	0.28	0.13	0.92
7.02	0.00	0.52	0.99	0.22	0.18	0.70	0.85	0.40	1.93	0.39	0.27	1.05
7.62	0.00	0.58	0.98	0.41	0.26	0.68	1.00	0.54	1.97	0.50	0.39	1.13
8.23	0.00	0.43	0.84	0.30	0.08	0.66	0.84	0.40	1.83	0.29	0.27	1.00
8.84	0.00	0.41	0.79	0.26	0.13	0.59	0.74	0.35	1.72	0.09	0.19	0.87
9.45	0.00	0.45	0.81	0.26	0.17	0.61	0.78	0.38	1.83	0.13	0.13	0.87
10.06	0.00	0.51	0.84	0.29	0.23	0.71	0.90	0.50	1.96	0.29	0.26	0.99
10.67	0.00	0.71	1.01	0.46	0.39	0.82	0.98	0.61	2.10	0.44	0.34	1.11
11.28	0.00	0.62	0.88	0.39	0.42	0.85	1.02	0.64	2.13	0.45	0.37	1.05
11.89	0.00	0.75	0.91	0.51	0.54	0.93	1.11	0.74	2.25	0.80	0.53	1.22
12.50	0.00	0.66	0.80	0.46	0.45	0.73	0.98	0.58	2.00	0.64	0.38	1.09
13.11	0.00	0.71	0.67	0.43	0.48	0.62	1.03	0.48	1.83	0.63	0.46	1.00
13.72	0.00	0.60	0.50	0.35	0.35	0.42	0.90	0.25	1.57	0.42	0.27	0.70
14.33	0.00	0.34	0.35	0.23	0.22	0.21	0.62	0.02	1.21	0.20	0.05	0.43
14.94	0.00	0.26	0.23	0.23	0.19	0.06	0.55	-0.04	1.11	0.21	0.06	0.38
15.55	0.00	0.34	0.24	0.29	0.24	0.04	0.57	-0.04	1.03	0.32	0.12	0.38
16.16	0.00	0.36	0.30	0.27	0.26	0.06	0.58	0.00	1.11	0.34	0.14	0.35
16.77	0.00	0.54	0.47	0.39	0.41	0.36	0.71	0.29	1.57	0.43	0.38	0.74
17.38	0.00	0.73	0.59	0.51	0.59	0.67	0.77	0.57	1.87	0.62	0.56	0.77
17.99	0.00	0.98	0.94	0.84	0.93	1.04	1.05	0.99	2.33	0.95	0.89	1.17
18.60	0.00	1.72	1.76	1.64	1.76	1.86	1.78	1.80	3.15	1.69	1.66	1.93
19.21	0.00	1.28	1.33	1.19	1.32	1.45	1.42	1.57	1.79	1.38	1.47	1.73
19.82	0.00	0.96	1.05	0.91	1.06	1.23	1.14	1.34	1.54	1.07	1.16	1.39
20.43	0.00	0.91	1.04	0.92	1.03	1.21	1.09	1.29	1.51	1.04	1.05	1.30
21.04	0.00	1.16	1.17	1.13	1.16	1.24	1.28	1.28	1.40	1.16	1.18	1.34
21.65	0.00	0.61	0.61	0.61	0.58	0.65	0.70	0.64	0.72	0.60	0.57	0.68
22.26	0.00	0.12	0.10	0.10	0.07	0.15	0.18	0.11	0.18	0.10	0.03	0.14
22.86	0.00	-0.17	-0.16	-0.18	-0.17	-0.18	-0.16	-0.18	-0.15	-0.17	-0.23	-0.15
23.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH02 B-B Alignment

Displacements along plane parallel to the face of slope
Profile Change in mm

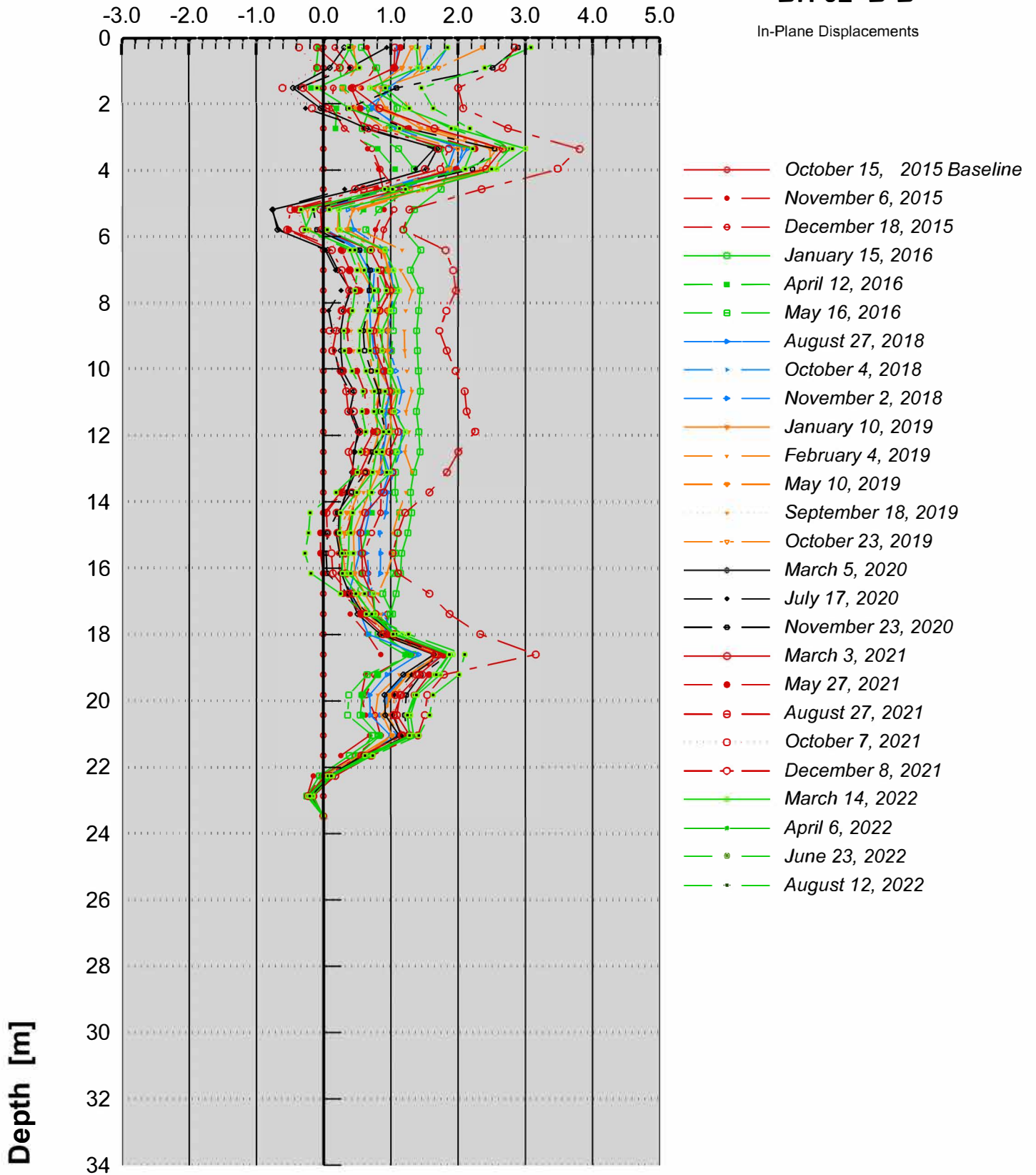
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	0	23	24									
Depth m	October 10, 2015	April 6, 2022	June 23, 2022	August 12, 2022								
0.31	0.00	0.38	1.85	3.08								
0.92	0.00	0.54	1.56	2.40								
1.53	0.00	-0.10	0.92	1.46								
2.14	0.00	0.39	1.28	1.63								
2.75	0.00	1.13	1.90	2.18								
3.36	0.00	2.22	2.77	2.81								
3.97	0.00	2.09	2.50	2.11								
4.58	0.00	0.91	1.22	1.03								
5.19	0.00	-0.33	0.09	-0.15								
5.80	0.00	-0.24	0.06	-0.28								
6.41	0.00	0.47	0.70	0.40								
7.02	0.00	0.61	0.81	0.50								
7.62	0.00	0.76	0.93	0.47								
8.23	0.00	0.66	0.76	0.43								
8.84	0.00	0.55	0.69	0.30								
9.45	0.00	0.53	0.70	0.31								
10.06	0.00	0.64	0.79	0.43								
10.67	0.00	0.76	0.92	0.59								
11.28	0.00	0.75	0.87	0.57								
11.89	0.00	0.89	0.97	0.63								
12.50	0.00	0.79	0.87	0.55								
13.11	0.00	0.73	0.94	0.51								
13.72	0.00	0.50	0.72	0.19								
14.33	0.00	0.26	0.44	-0.20								
14.94	0.00	0.24	0.41	-0.22								
15.55	0.00	0.28	0.45	-0.27								
16.16	0.00	0.28	0.41	-0.18								
16.77	0.00	0.48	0.61	0.25								
17.38	0.00	0.72	0.72	0.64								
17.99	0.00	1.08	1.04	1.26								
18.60	0.00	1.86	1.87	2.10								
19.21	0.00	1.65	1.68	2.02								
19.82	0.00	1.35	1.38	1.63								
20.43	0.00	1.24	1.25	1.58								
21.04	0.00	1.28	1.28	1.42								
21.65	0.00	0.65	0.62	0.73								
22.26	0.00	0.09	0.07	0.12								
22.86	0.00	-0.22	-0.23	-0.20								
23.47	0.00	0.00	0.00	0.00								

Displacements [mm]

Tutela Heights BH 02 B-B

In-Plane Displacements



Inclinometer BH03 A-A Alignment

Displacements along plane perpendicular to the face of slope
Profile Change in mm

continues on next page

	0	1	2	3	4	5	6	7	8	9	10	11
Depth m	October 10, 2015	November 6, 2015	December 18, 2015	January 15, 2016	April 12, 2016	May 16, 2016	August 27, 2018	October 4, 2018	November 2, 2018	January 10, 2019	February 4, 2019	May 10, 2019
0.61	0.00	0.15	0.76	1.07	0.68	0.72	-1.80	-2.67	-1.80	-1.17	-0.96	-0.44
1.22	0.00	0.21	0.73	0.99	0.44	0.47	-0.86	-1.37	-0.94	-0.64	-0.41	0.01
1.83	0.00	0.15	0.58	0.76	0.10	0.15	-0.17	-0.45	-0.35	-0.17	-0.01	0.33
2.44	0.00	0.33	0.80	0.96	0.29	0.35	0.35	0.19	0.29	0.38	0.56	0.86
3.05	0.00	0.31	0.79	0.88	0.13	0.19	0.40	0.29	0.48	0.52	0.72	1.00
3.66	0.00	0.22	0.69	0.90	0.21	0.29	0.63	0.50	0.80	0.83	1.04	1.31
4.27	0.00	0.20	0.67	0.94	0.29	0.37	0.60	0.49	0.75	0.80	1.01	1.27
4.88	0.00	0.15	0.62	0.91	0.22	0.30	0.54	0.41	0.74	0.78	0.96	1.18
5.49	0.00	0.15	0.63	0.93	0.23	0.31	0.55	0.44	0.80	0.85	1.02	1.24
6.10	0.00	0.18	0.65	0.92	0.19	0.25	0.42	0.32	0.66	0.70	0.87	1.06
6.71	0.00	0.19	0.65	0.91	0.19	0.23	0.57	0.49	0.78	0.85	1.00	1.17
7.32	0.00	0.16	0.49	0.85	0.13	0.18	0.54	0.46	0.79	0.77	0.94	1.14
7.92	0.00	0.12	0.43	0.84	0.10	0.15	0.30	0.21	0.62	0.61	0.80	0.98
8.53	0.00	0.12	0.44	0.86	0.12	0.18	-0.03	-0.10	0.31	0.30	0.48	0.66
9.14	0.00	0.18	0.50	0.93	0.20	0.27	0.24	0.18	0.59	0.60	0.76	0.96
9.75	0.00	0.17	0.49	0.88	0.20	0.26	0.45	0.41	0.83	0.85	1.00	1.20
10.36	0.00	0.19	0.51	0.92	0.23	0.29	0.47	0.43	0.85	0.91	1.04	1.23
10.97	0.00	0.23	0.56	0.98	0.31	0.29	0.60	0.61	1.06	1.10	1.26	1.47
11.58	0.00	0.19	0.51	0.94	0.28	0.23	0.50	0.51	0.96	1.01	1.17	1.35
12.19	0.00	0.20	0.49	0.94	0.29	0.25	0.50	0.50	0.97	1.02	1.17	1.37
12.80	0.00	0.23	0.50	0.87	0.30	0.23	0.52	0.49	0.89	0.91	1.05	1.23
13.41	0.00	0.25	0.50	0.84	0.33	0.24	0.54	0.50	0.88	0.89	1.03	1.18
14.02	0.00	0.26	0.53	0.93	0.39	0.34	0.67	0.66	1.11	1.17	1.32	1.51
14.63	0.00	0.28	0.54	0.91	0.41	0.35	0.58	0.56	0.99	1.05	1.20	1.36
15.24	0.00	0.28	0.54	0.91	0.39	0.34	0.56	0.55	0.98	1.04	1.21	1.38
15.85	0.00	0.31	0.57	0.95	0.43	0.38	0.65	0.64	1.07	1.15	1.31	1.51
16.46	0.00	0.28	0.53	0.93	0.39	0.34	0.60	0.58	1.04	1.12	1.30	1.52
17.07	0.00	0.29	0.52	0.90	0.41	0.34	0.58	0.55	0.96	1.06	1.21	1.41
17.68	0.00	0.39	0.63	0.96	0.54	0.45	0.78	0.73	1.08	1.19	1.32	1.49
18.29	0.00	0.44	0.67	0.97	0.61	0.51	0.82	0.75	1.06	1.17	1.28	1.40
18.90	0.00	0.58	0.81	1.07	0.76	0.66	0.87	0.79	1.05	1.16	1.27	1.36
19.51	0.00	0.34	0.51	0.73	0.44	0.32	0.49	0.37	0.60	0.71	0.81	0.88
20.12	0.00	0.16	0.27	0.51	0.19	0.09	0.13	0.03	0.31	0.41	0.53	0.65
20.73	0.00	0.19	0.30	0.55	0.23	0.15	0.23	0.11	0.41	0.52	0.64	0.77
21.34	0.00	0.20	0.30	0.55	0.24	0.17	0.18	0.08	0.38	0.52	0.65	0.78
21.95	0.00	0.29	0.41	0.63	0.36	0.30	0.37	0.28	0.53	0.69	0.80	0.93
22.56	0.00	0.09	0.15	0.38	0.06	-0.02	-0.10	-0.19	0.12	0.27	0.41	0.57
23.16	0.00	0.18	0.28	0.49	0.23	0.15	0.23	0.12	0.39	0.54	0.66	0.80
23.77	0.00	0.30	0.43	0.57	0.39	0.30	0.44	0.31	0.53	0.67	0.75	0.86
24.38	0.00	0.30	0.42	0.53	0.38	0.29	0.29	0.12	0.31	0.45	0.51	0.59
24.99	0.00	0.44	0.53	0.74	0.48	0.45	0.58	0.47	0.73	0.87	0.99	1.12
25.60	0.00	0.51	0.59	0.81	0.55	0.56	0.72	0.61	0.92	1.07	1.21	1.37
26.21	0.00	0.73	0.86	1.04	0.89	0.86	1.08	0.93	1.19	1.33	1.45	1.57
26.82	0.00	0.55	0.66	0.80	0.67	0.64	0.84	0.67	0.89	1.02	1.13	1.22
27.43	0.00	0.74	0.85	0.99	0.87	0.84	1.03	0.86	1.06	1.19	1.30	1.39
28.04	0.00	0.11	0.19	0.29	0.20	0.16	0.28	0.10	0.29	0.42	0.52	0.59
28.65	0.00	-0.11	-0.11	-0.02	-0.15	-0.17	-0.11	-0.28	-0.08	0.06	0.17	0.25
29.26	0.00	0.09	0.06	0.15	0.03	0.04	0.07	-0.10	0.10	0.26	0.36	0.46
29.87	0.00	0.05	0.05	0.14	0.06	0.08	0.15	-0.03	0.15	0.30	0.40	0.47
30.48	0.00	0.18	0.18	0.24	0.17	0.19	0.26	0.07	0.22	0.38	0.44	0.52
31.09	0.00	-0.02	-0.03	0.02	-0.02	-0.02	0.02	-0.19	-0.07	0.08	0.10	0.13
31.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH03 A-A Alignment

Displacements along plane perpendicular to the face of slope
Profile Change in mm

continued from previous page

	0	12	13	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	September 18, 2019	October 23, 2019	March 5, 2020	July 17, 2020	November 26, 2020	March 3, 2021	May 27, 2021	August 27, 2021	October 7, 2021	December 8, 2021	March 14, 2022
0.61	0.00	-2.38	-2.58	-0.99	-2.11	-1.87	-1.12	-1.93	2.23	-2.47	-1.98	-1.21
1.22	0.00	-1.60	-1.36	-0.72	-1.54	-1.22	-0.86	-1.62	1.39	-1.70	-1.43	-0.80
1.83	0.00	-0.85	-0.52	-0.57	-0.94	-0.38	-0.27	-1.03	0.41	-0.96	-0.84	-0.42
2.44	0.00	0.00	0.35	0.24	-0.02	0.77	0.81	-0.02	-0.77	0.06	0.15	0.57
3.05	0.00	0.32	0.76	0.70	0.45	1.49	1.47	0.67	-1.45	0.82	0.84	1.24
3.66	0.00	0.61	1.04	1.10	0.80	1.86	1.92	1.15	-1.86	1.29	1.37	1.75
4.27	0.00	0.58	1.00	1.04	0.78	1.83	1.83	1.11	-1.81	1.25	1.33	1.69
4.88	0.00	0.44	0.85	0.90	0.64	1.65	1.73	1.02	-1.69	1.12	1.23	1.56
5.49	0.00	0.52	0.93	0.99	0.70	1.72	1.82	1.11	-1.77	1.22	1.35	1.65
6.10	0.00	0.32	0.74	0.82	0.52	1.51	1.66	0.94	-1.60	1.05	1.17	1.46
6.71	0.00	0.50	0.94	0.92	0.76	1.71	1.89	1.20	-1.83	1.31	1.38	1.60
7.32	0.00	0.51	0.96	1.09	0.83	1.75	1.88	1.21	-1.85	1.35	1.45	1.68
7.92	0.00	0.23	0.64	0.76	0.50	1.38	1.58	0.96	-1.56	1.02	1.17	1.45
8.53	0.00	-0.16	0.24	0.32	0.05	0.99	1.13	0.47	-1.07	0.49	0.67	0.93
9.14	0.00	0.14	0.53	0.62	0.35	1.32	1.37	0.71	-1.31	0.73	0.90	1.13
9.75	0.00	0.39	0.79	0.87	0.59	1.60	1.78	1.15	-1.73	1.15	1.33	1.60
10.36	0.00	0.44	0.85	0.94	0.69	1.74	2.09	1.50	-2.05	1.47	1.69	1.95
10.97	0.00	0.69	1.10	1.26	0.84	1.93	2.05	1.45	-1.98	1.44	1.64	1.83
11.58	0.00	0.53	0.94	1.07	0.67	1.76	1.92	1.36	-1.89	1.32	1.53	1.80
12.19	0.00	0.54	0.96	1.09	0.70	1.76	1.95	1.40	-1.92	1.36	1.57	1.85
12.80	0.00	0.54	0.96	1.05	0.65	1.58	1.76	1.23	-1.69	1.28	1.42	1.62
13.41	0.00	0.54	0.96	1.04	0.63	1.52	1.69	1.19	-1.62	1.23	1.37	1.56
14.02	0.00	0.75	1.14	1.31	0.89	1.87	2.09	1.60	-2.06	1.55	1.74	1.99
14.63	0.00	0.65	1.04	1.18	0.77	1.69	1.89	1.42	-1.85	1.40	1.57	1.79
15.24	0.00	0.64	1.02	1.18	0.77	1.70	1.91	1.46	-1.89	1.40	1.59	1.82
15.85	0.00	0.76	1.13	1.30	0.91	1.82	2.02	1.58	-1.99	1.51	1.71	1.92
16.46	0.00	0.73	1.09	1.31	0.91	1.84	2.07	1.65	-2.07	1.54	1.77	2.00
17.07	0.00	0.67	1.03	1.22	0.84	1.69	1.92	1.51	-1.90	1.43	1.62	1.85
17.68	0.00	0.83	1.22	1.35	0.97	1.76	1.96	1.58	-1.93	1.56	1.71	1.90
18.29	0.00	0.83	1.22	1.30	0.93	1.65	1.82	1.45	-1.78	1.48	1.60	1.76
18.90	0.00	0.85	1.25	1.28	0.92	1.57	1.71	1.37	-1.66	1.44	1.52	1.66
19.51	0.00	0.41	0.75	0.80	0.48	1.06	1.19	0.85	-1.11	0.97	1.02	1.13
20.12	0.00	0.08	0.40	0.53	0.18	0.80	0.96	0.66	-0.92	0.67	0.77	0.92
20.73	0.00	0.18	0.49	0.65	0.29	0.90	1.07	0.82	-1.06	0.78	0.91	1.07
21.34	0.00	0.20	0.51	0.69	0.35	0.94	1.14	0.91	-1.15	0.85	0.98	1.16
21.95	0.00	0.40	0.71	0.87	0.54	1.10	1.28	1.06	-1.29	1.03	1.14	1.29
22.56	0.00	-0.04	0.26	0.47	0.13	0.72	0.92	0.73	-0.98	0.61	0.77	0.95
23.16	0.00	0.25	0.55	0.72	0.41	0.93	1.11	0.91	-1.14	0.88	1.01	1.15
23.77	0.00	0.43	0.72	0.81	0.53	0.95	1.08	0.87	-1.04	0.96	1.03	1.12
24.38	0.00	0.20	0.45	0.51	0.23	0.60	0.70	0.50	-0.64	0.56	0.63	0.70
24.99	0.00	0.68	0.91	1.08	0.82	1.28	1.47	1.33	-1.54	1.25	1.40	1.55
25.60	0.00	0.90	1.13	1.36	1.09	1.60	1.81	1.72	-1.94	1.55	1.74	1.94
26.21	0.00	1.19	1.40	1.57	1.33	1.74	1.90	1.80	-1.96	1.72	1.85	1.99
26.82	0.00	0.90	1.10	1.22	1.01	1.35	1.48	1.38	-1.52	1.35	1.43	1.55
27.43	0.00	1.10	1.26	1.40	1.20	1.50	1.63	1.54	-1.66	1.50	1.59	1.70
28.04	0.00	0.34	0.47	0.60	0.42	0.70	0.80	0.72	-0.81	0.69	0.76	0.85
28.65	0.00	-0.01	0.11	0.27	0.10	0.37	0.49	0.44	-0.54	0.36	0.44	0.54
29.26	0.00	0.20	0.30	0.49	0.34	0.60	0.74	0.72	-0.84	0.59	0.69	0.81
29.87	0.00	0.26	0.36	0.52	0.40	0.61	0.72	0.71	-0.82	0.61	0.69	0.80
30.48	0.00	0.35	0.43	0.55	0.47	0.64	0.72	0.72	-0.82	0.64	0.70	0.79
31.09	0.00	0.06	0.10	0.14	0.09	0.17	0.23	0.23	-0.27	0.18	0.22	0.26
31.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH03 A-A Alignment

Displacements along plane perpendicular to the face of slope
Profile Change in mm

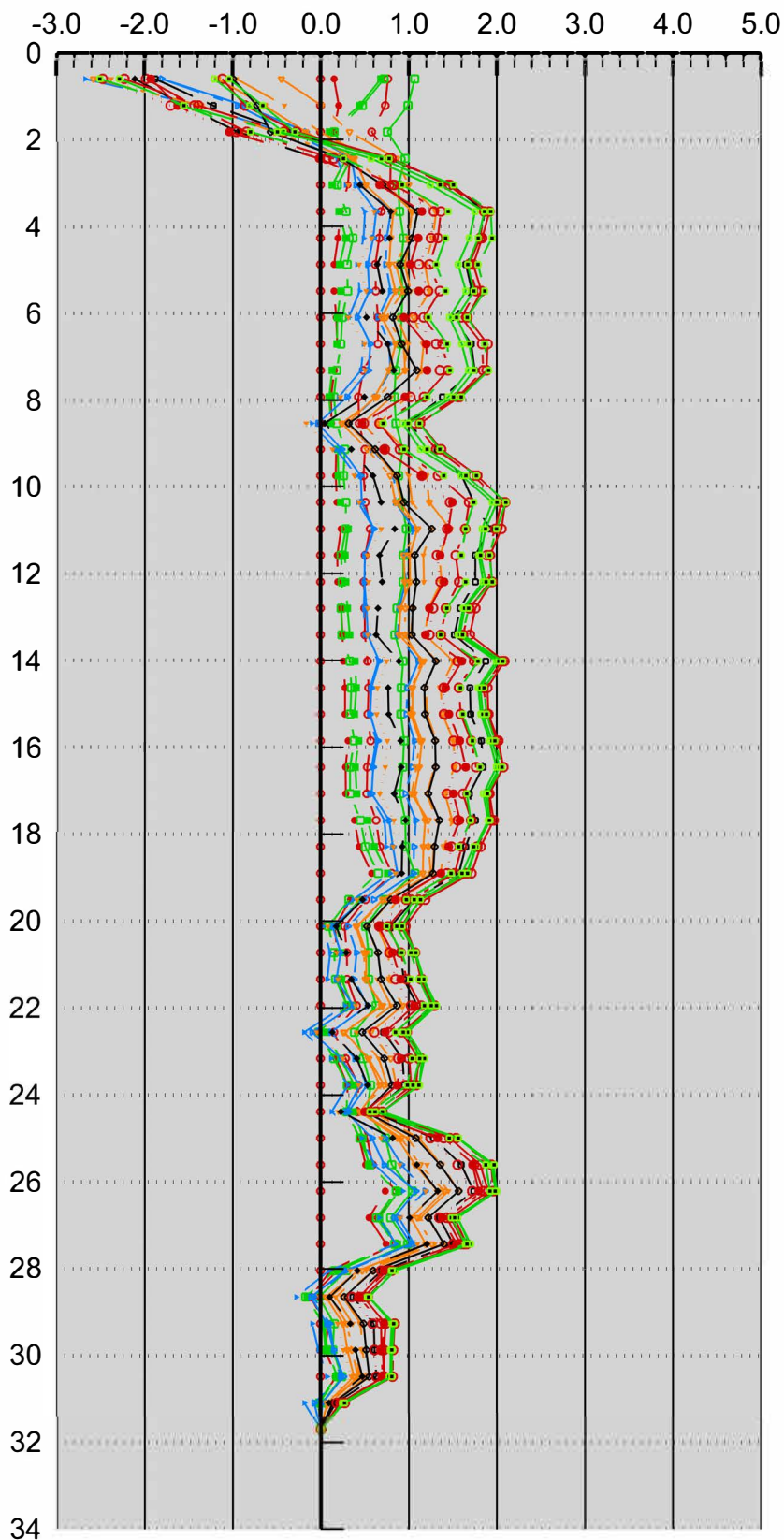
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Depth m	0	23	24									
	October 10, 2015	April 6, 2022	June 23, 2022	August 12, 2022								
0.61	0.00	-1.04	-2.50	-2.28								
1.22	0.00	-0.66	-1.56	-1.55								
1.83	0.00	-0.29	-0.80	-0.49								
2.44	0.00	0.69	0.26	0.78								
3.05	0.00	1.36	0.93	1.51								
3.66	0.00	1.86	1.45	1.93								
4.27	0.00	1.79	1.42	1.95								
4.88	0.00	1.67	1.31	1.79								
5.49	0.00	1.74	1.42	1.86								
6.10	0.00	1.54	1.22	1.66								
6.71	0.00	1.69	1.44	1.86								
7.32	0.00	1.74	1.47	1.91								
7.92	0.00	1.51	1.21	1.60								
8.53	0.00	1.00	0.71	1.12								
9.14	0.00	1.21	0.95	1.35								
9.75	0.00	1.65	1.40	1.77								
10.36	0.00	2.00	1.74	2.10								
10.97	0.00	1.87	1.65	2.00								
11.58	0.00	1.82	1.60	1.92								
12.19	0.00	1.88	1.65	1.95								
12.80	0.00	1.64	1.43	1.68								
13.41	0.00	1.58	1.36	1.61								
14.02	0.00	2.02	1.79	2.07								
14.63	0.00	1.81	1.59	1.85								
15.24	0.00	1.84	1.62	1.88								
15.85	0.00	1.95	1.72	1.98								
16.46	0.00	2.03	1.81	2.06								
17.07	0.00	1.88	1.66	1.89								
17.68	0.00	1.92	1.70	1.92								
18.29	0.00	1.77	1.57	1.74								
18.90	0.00	1.67	1.48	1.61								
19.51	0.00	1.13	0.98	1.06								
20.12	0.00	0.93	0.75	0.86								
20.73	0.00	1.08	0.92	1.02								
21.34	0.00	1.17	1.02	1.12								
21.95	0.00	1.32	1.18	1.25								
22.56	0.00	0.99	0.85	0.94								
23.16	0.00	1.18	1.04	1.13								
23.77	0.00	1.12	0.99	1.05								
24.38	0.00	0.70	0.56	0.62								
24.99	0.00	1.57	1.46	1.56								
25.60	0.00	1.96	1.87	1.97								
26.21	0.00	2.00	1.92	1.98								
26.82	0.00	1.55	1.48	1.52								
27.43	0.00	1.69	1.64	1.66								
28.04	0.00	0.84	0.80	0.81								
28.65	0.00	0.55	0.53	0.54								
29.26	0.00	0.84	0.81	0.83								
29.87	0.00	0.81	0.79	0.81								
30.48	0.00	0.80	0.78	0.81								
31.09	0.00	0.27	0.25	0.27								
31.70	0.00	0.00	0.00	0.00								

Displacements [mm]

Tutela Heights BH 03 A-A

Out-of-Plane Displacements



- October 15, 2015 Baseline
- November 6, 2015
- ◊— December 18, 2015
- ◻— January 15, 2016
- April 12, 2016
- ◻— May 16, 2016
- ▶— August 27, 2018
- ▶— October 4, 2018
- ◆— November 2, 2018
- ▶— January 10, 2019
- ▼— February 4, 2019
- ◆— May 10, 2019
- ◆— September 18, 2019
- ▼— October 23, 2019
- March 5, 2020
- July 17, 2020
- November 23, 2020
- March 3, 2021
- May 27, 2021
- ◊— August 27, 2021
- October 7, 2021
- December 8, 2021
- ◆— March 14, 2022
- ▶— April 6, 2022
- June 23, 2022
- ◆— August 12, 2022

Depth [m]

Inclinometer BH03 B-B Alignment

Displacements along plane parallel to the face of slope
Profile Change in mm

continues on next page

	0	1	2	3	4	5	6	7	8	9	10	11
Depth m	October 10, 2015	November 6, 2015	December 18, 2015	January 15, 2016	April 12, 2016	May 16, 2016	August 27, 2018	October 4, 2018	November 2, 2018	January 10, 2019	February 4, 2019	May 10, 2019
0.61	0.00	0.80	1.02	0.67	0.64	0.39	1.45	1.68	1.29	0.95	0.68	0.47
1.22	0.00	0.90	1.14	0.84	0.83	0.56	1.53	1.79	1.57	1.26	1.00	0.85
1.83	0.00	0.76	0.97	0.73	0.72	0.43	1.31	1.39	1.27	0.97	0.73	0.60
2.44	0.00	0.63	0.82	0.63	0.49	0.18	0.85	0.82	0.73	0.40	0.17	0.15
3.05	0.00	0.65	0.86	0.74	0.58	0.28	0.89	0.84	0.77	0.46	0.23	0.21
3.66	0.00	0.55	0.76	0.71	0.58	0.31	0.91	0.83	0.75	0.45	0.19	0.18
4.27	0.00	0.49	0.73	0.72	0.78	0.51	1.49	1.40	1.42	1.14	0.94	0.92
4.88	0.00	0.53	0.68	0.65	0.49	0.20	0.96	0.87	0.78	0.51	0.27	0.26
5.49	0.00	0.53	0.67	0.61	0.38	0.08	0.61	0.53	0.42	0.14	-0.10	-0.09
6.10	0.00	0.47	0.64	0.60	0.45	0.18	0.62	0.67	0.55	0.29	-0.01	0.01
6.71	0.00	0.41	0.61	0.61	0.44	0.20	0.78	0.90	0.78	0.52	0.27	0.29
7.32	0.00	0.38	0.67	0.64	0.46	0.26	0.77	0.83	0.71	0.57	0.33	0.34
7.92	0.00	0.41	0.71	0.72	0.53	0.31	0.76	0.80	0.72	0.54	0.36	0.39
8.53	0.00	0.49	0.77	0.77	0.63	0.40	1.17	1.20	1.09	0.90	0.75	0.76
9.14	0.00	0.52	0.76	0.78	0.64	0.40	1.19	1.16	1.10	0.93	0.76	0.77
9.75	0.00	0.44	0.68	0.68	0.53	0.29	0.84	0.80	0.71	0.54	0.37	0.37
10.36	0.00	0.52	0.78	0.73	0.63	0.39	0.96	0.86	0.83	0.61	0.51	0.52
10.97	0.00	0.43	0.69	0.67	0.50	0.37	0.79	0.72	0.62	0.41	0.30	0.31
11.58	0.00	0.44	0.72	0.72	0.56	0.42	0.86	0.80	0.65	0.50	0.35	0.35
12.19	0.00	0.42	0.69	0.69	0.52	0.36	0.79	0.72	0.53	0.40	0.26	0.21
12.80	0.00	0.41	0.69	0.68	0.51	0.31	0.70	0.56	0.39	0.25	0.12	0.02
13.41	0.00	0.38	0.68	0.73	0.52	0.35	0.75	0.64	0.54	0.41	0.33	0.23
14.02	0.00	0.36	0.67	0.71	0.47	0.33	0.72	0.60	0.55	0.43	0.34	0.26
14.63	0.00	0.42	0.70	0.77	0.50	0.36	0.63	0.44	0.34	0.21	0.10	-0.01
15.24	0.00	0.41	0.69	0.74	0.50	0.35	0.68	0.48	0.36	0.21	0.10	-0.01
15.85	0.00	0.43	0.69	0.71	0.52	0.35	0.73	0.53	0.32	0.22	0.09	-0.10
16.46	0.00	0.47	0.72	0.73	0.55	0.40	0.81	0.52	0.33	0.20	0.04	-0.17
17.07	0.00	0.51	0.70	0.73	0.61	0.40	0.84	0.57	0.40	0.26	0.11	-0.04
17.68	0.00	0.47	0.68	0.70	0.57	0.39	0.84	0.64	0.47	0.34	0.22	0.08
18.29	0.00	0.34	0.56	0.56	0.46	0.27	0.64	0.44	0.32	0.14	0.06	-0.11
18.90	0.00	0.29	0.52	0.50	0.38	0.25	0.64	0.48	0.42	0.25	0.18	0.06
19.51	0.00	0.26	0.47	0.44	0.32	0.17	0.36	0.18	0.12	-0.09	-0.10	-0.21
20.12	0.00	0.25	0.47	0.46	0.32	0.21	0.37	0.23	0.22	0.02	0.06	0.01
20.73	0.00	0.22	0.43	0.42	0.28	0.20	0.41	0.19	0.24	0.01	0.08	-0.01
21.34	0.00	0.32	0.57	0.58	0.48	0.39	0.64	0.44	0.53	0.30	0.40	0.33
21.95	0.00	0.39	0.65	0.64	0.57	0.47	0.84	0.66	0.76	0.53	0.60	0.54
22.56	0.00	0.45	0.73	0.72	0.69	0.56	1.03	0.87	0.99	0.72	0.81	0.75
23.16	0.00	0.59	0.89	0.89	0.82	0.74	1.18	1.04	1.25	0.97	1.12	1.09
23.77	0.00	0.64	0.94	0.91	0.85	0.77	1.22	1.05	1.26	0.99	1.11	1.08
24.38	0.00	0.34	0.58	0.52	0.45	0.37	0.73	0.53	0.75	0.45	0.57	0.54
24.99	0.00	0.47	0.65	0.64	0.56	0.52	0.88	0.75	1.02	0.71	0.84	0.83
25.60	0.00	0.35	0.51	0.56	0.42	0.42	0.57	0.48	0.74	0.40	0.56	0.59
26.21	0.00	-0.23	-0.13	-0.07	-0.24	-0.21	-0.14	-0.21	0.07	-0.25	-0.07	-0.04
26.82	0.00	-0.26	-0.13	-0.08	-0.23	-0.19	-0.12	-0.20	0.06	-0.17	-0.09	-0.08
27.43	0.00	-0.62	-0.52	-0.51	-0.60	-0.60	-0.58	-0.68	-0.46	-0.69	-0.63	-0.66
28.04	0.00	-0.84	-0.80	-0.78	-0.87	-0.89	-0.89	-0.95	-0.72	-0.93	-0.85	-0.87
28.65	0.00	-0.45	-0.44	-0.41	-0.49	-0.49	-0.52	-0.56	-0.29	-0.52	-0.45	-0.46
29.26	0.00	-0.19	-0.15	-0.19	-0.25	-0.23	-0.29	-0.34	-0.11	-0.32	-0.31	-0.34
29.87	0.00	-0.23	-0.13	-0.20	-0.19	-0.18	-0.25	-0.28	-0.10	-0.30	-0.34	-0.38
30.48	0.00	-0.20	-0.12	-0.23	-0.17	-0.20	-0.27	-0.30	-0.13	-0.34	-0.40	-0.45
31.09	0.00	0.26	0.33	0.23	0.32	0.27	0.25	0.25	0.36	0.15	0.08	-0.01
31.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH03 B-B Alignment

Displacements along plane parallel to the face of slope
Profile Change in mm

continued from previous page

	0	12	13	14	15	16	17	18	19	20	21	22
Depth m	October 10, 2015	September 18, 2019	October 23, 2019	March 5, 2020	July 17, 2020	November 26, 2020	March 3, 2021	May 27, 2021	August 27, 2021	October 7, 2021	December 8, 2021	March 14, 2022
0.61	0.00	1.31	1.28	0.82	0.37	1.25	0.96	1.13	0.69	0.80	0.93	0.65
1.22	0.00	1.44	1.30	1.35	0.82	1.75	1.59	1.79	1.38	1.60	1.76	1.45
1.83	0.00	1.13	0.84	1.05	0.66	1.37	1.27	1.49	1.23	1.35	1.60	1.37
2.44	0.00	0.44	0.23	0.45	0.00	0.71	0.51	0.75	0.54	0.57	0.87	0.58
3.05	0.00	0.32	0.10	0.34	-0.16	0.45	0.29	0.57	0.26	0.24	0.67	0.33
3.66	0.00	0.34	0.11	0.28	-0.13	0.38	0.20	0.45	0.20	0.16	0.54	0.17
4.27	0.00	1.00	0.77	1.02	0.55	1.06	0.93	1.16	0.93	0.88	1.31	0.98
4.88	0.00	0.42	0.25	0.33	0.00	0.43	0.35	0.55	0.30	0.33	0.70	0.28
5.49	0.00	0.05	-0.11	0.10	-0.36	0.04	0.05	0.17	-0.06	-0.06	0.34	0.07
6.10	0.00	-0.01	-0.02	0.24	-0.18	0.24	0.26	0.36	0.16	0.09	0.43	0.14
6.71	0.00	0.19	0.19	0.13	-0.02	0.48	0.49	0.58	0.50	0.41	0.61	0.31
7.32	0.00	0.10	0.13	0.19	-0.08	0.47	0.47	0.52	0.44	0.23	0.61	0.39
7.92	0.00	0.03	0.08	0.12	-0.22	0.35	0.25	0.31	0.19	-0.05	0.39	0.19
8.53	0.00	0.49	0.57	0.58	0.25	0.75	0.70	0.77	0.66	0.54	0.87	0.67
9.14	0.00	0.60	0.66	0.64	0.38	0.58	0.79	0.88	0.80	0.73	1.02	0.84
9.75	0.00	0.14	0.21	0.24	-0.06	0.37	0.28	0.37	0.27	0.20	0.52	0.35
10.36	0.00	0.23	0.28	0.36	0.03	0.50	-0.33	-0.31	-0.40	-0.39	-0.20	-0.42
10.97	0.00	0.05	0.16	0.33	-0.06	0.26	0.09	0.12	0.00	0.03	0.26	0.07
11.58	0.00	0.15	0.26	0.35	-0.01	0.38	0.32	0.40	0.27	0.26	0.52	0.35
12.19	0.00	0.07	0.17	0.25	-0.12	0.28	0.20	0.28	0.15	0.15	0.37	0.20
12.80	0.00	-0.06	0.04	0.08	-0.27	0.11	0.03	0.11	-0.04	-0.06	0.17	0.03
13.41	0.00	0.04	0.12	0.21	-0.12	0.36	0.33	0.40	0.30	0.11	0.42	0.35
14.02	0.00	0.03	0.10	0.21	-0.11	0.40	0.36	0.42	0.38	0.10	0.44	0.37
14.63	0.00	-0.17	-0.09	0.00	-0.34	0.06	0.00	0.06	0.04	-0.16	0.11	-0.01
15.24	0.00	-0.14	-0.05	0.02	-0.29	0.03	-0.06	0.01	-0.03	-0.15	0.07	-0.05
15.85	0.00	-0.11	-0.01	0.02	-0.28	-0.09	-0.20	-0.09	-0.20	-0.24	-0.06	-0.20
16.46	0.00	-0.09	0.01	-0.01	-0.26	-0.12	-0.26	-0.13	-0.26	-0.23	-0.09	-0.25
17.07	0.00	0.04	0.14	0.08	-0.09	0.02	-0.13	0.02	-0.14	-0.08	0.06	-0.09
17.68	0.00	0.15	0.25	0.19	0.06	0.16	0.07	0.20	0.06	0.11	0.24	0.11
18.29	0.00	-0.05	0.05	-0.02	-0.14	-0.03	-0.12	-0.01	-0.15	-0.07	0.05	-0.12
18.90	0.00	0.05	0.14	0.15	0.03	0.18	0.12	0.23	0.13	0.12	0.28	0.17
19.51	0.00	-0.29	-0.18	-0.20	-0.29	-0.21	-0.26	-0.16	-0.29	-0.31	-0.13	-0.22
20.12	0.00	-0.19	-0.14	-0.06	-0.18	-0.05	-0.09	0.06	-0.04	-0.24	-0.01	-0.03
20.73	0.00	-0.18	-0.10	-0.04	-0.14	-0.06	-0.08	0.06	-0.07	-0.23	0.00	-0.03
21.34	0.00	0.12	0.20	0.28	0.19	0.31	0.29	0.44	0.34	0.13	0.38	0.36
21.95	0.00	0.36	0.46	0.52	0.46	0.56	0.52	0.66	0.54	0.40	0.60	0.57
22.56	0.00	0.60	0.69	0.71	0.67	0.75	0.70	0.82	0.73	0.58	0.78	0.77
23.16	0.00	0.84	0.91	1.09	0.99	1.12	1.12	1.28	1.23	0.90	1.19	1.21
23.77	0.00	0.89	0.96	1.08	1.00	1.10	1.06	1.21	1.17	0.90	1.16	1.19
24.38	0.00	0.38	0.43	0.52	0.46	0.55	0.48	0.61	0.53	0.33	0.60	0.60
24.99	0.00	0.65	0.70	0.81	0.74	0.86	0.83	0.98	0.92	0.62	0.94	0.96
25.60	0.00	0.32	0.38	0.50	0.45	0.55	0.50	0.65	0.56	0.27	0.58	0.65
26.21	0.00	-0.27	-0.29	-0.10	-0.12	-0.04	-0.01	0.15	0.13	-0.31	0.04	0.17
26.82	0.00	-0.23	-0.27	-0.11	-0.12	-0.07	-0.06	0.08	0.02	-0.32	-0.02	0.10
27.43	0.00	-0.74	-0.74	-0.69	-0.70	-0.69	-0.70	-0.62	-0.67	-0.77	-0.66	-0.59
28.04	0.00	-0.97	-0.97	-0.88	-0.89	-0.85	-0.82	-0.74	-0.77	-0.92	-0.79	-0.72
28.65	0.00	-0.56	-0.55	-0.46	-0.48	-0.45	-0.44	-0.38	-0.40	-0.50	-0.42	-0.35
29.26	0.00	-0.39	-0.37	-0.38	-0.38	-0.41	-0.43	-0.41	-0.46	-0.41	-0.45	-0.39
29.87	0.00	-0.38	-0.34	-0.42	-0.42	-0.51	-0.56	-0.63	-0.67	-0.49	-0.59	-0.56
30.48	0.00	-0.41	-0.38	-0.51	-0.51	-0.64	-0.73	-0.84	-0.90	-0.66	-0.75	-0.79
31.09	0.00	0.10	0.11	-0.07	-0.06	-0.21	-0.33	-0.45	-0.54	-0.23	-0.34	-0.42
31.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Inclinometer BH03 B-B Alignment

Displacements along plane parallel to the face of slope
Profile Change in mm

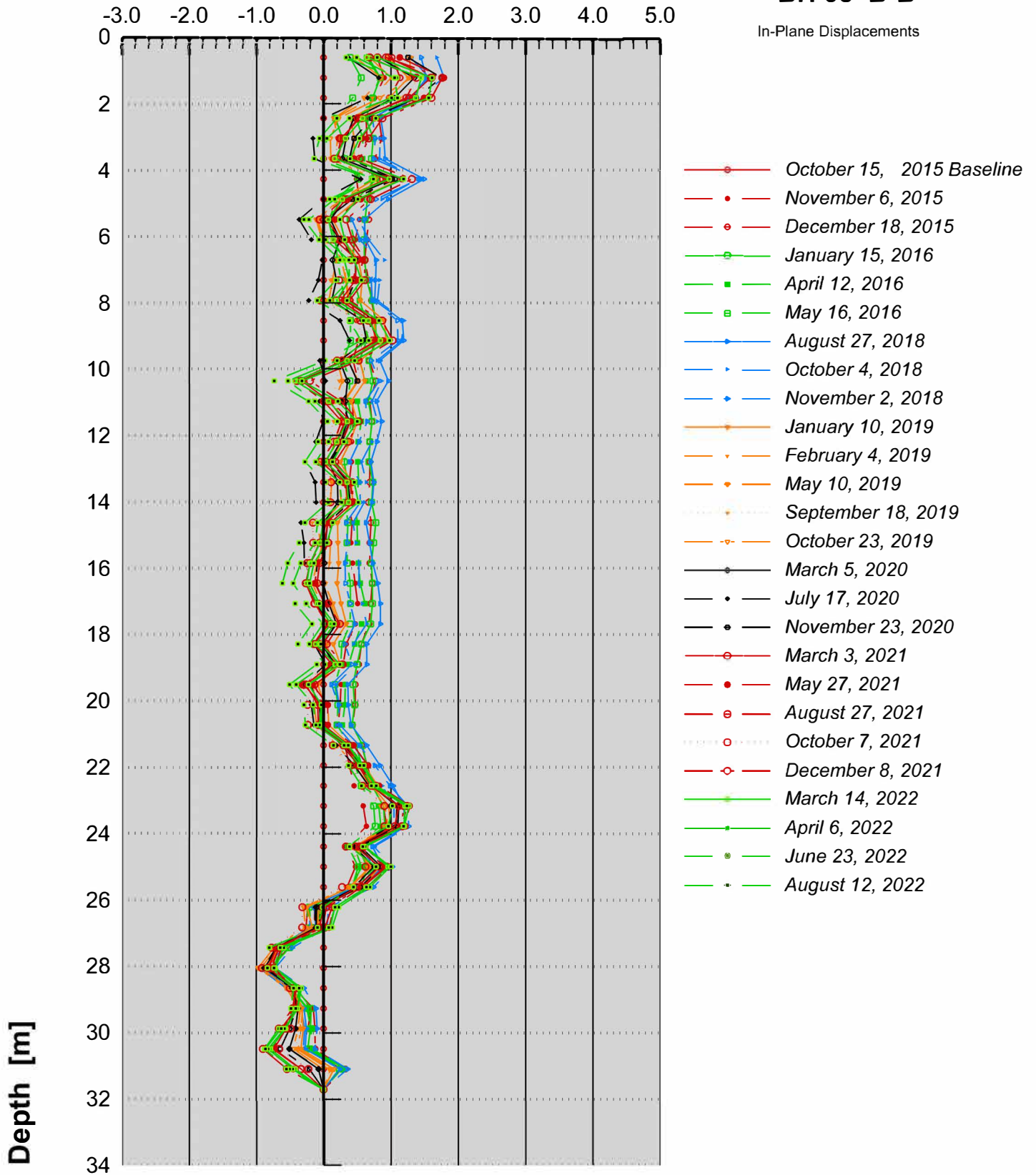
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Depth m	0	23	24									
	October 10, 2015	April 6, 2022	June 23, 2022	August 12, 2022								
0.61	0.00	0.80	0.49	0.34								
1.22	0.00	1.61	1.09	1.05								
1.83	0.00	1.56	1.01	1.10								
2.44	0.00	0.77	0.20	0.38								
3.05	0.00	0.53	-0.06	0.05								
3.66	0.00	0.39	-0.14	0.00								
4.27	0.00	1.19	0.71	0.74								
4.88	0.00	0.51	0.09	0.17								
5.49	0.00	0.24	-0.29	-0.22								
6.10	0.00	0.31	-0.07	0.03								
6.71	0.00	0.46	0.24	0.38								
7.32	0.00	0.56	0.18	0.39								
7.92	0.00	0.35	-0.09	0.09								
8.53	0.00	0.82	0.38	0.59								
9.14	0.00	0.98	0.55	0.67								
9.75	0.00	0.46	0.02	0.20								
10.36	0.00	-0.32	-0.73	-0.53								
10.97	0.00	0.21	-0.22	-0.13								
11.58	0.00	0.50	0.06	0.20								
12.19	0.00	0.30	-0.08	0.07								
12.80	0.00	0.13	-0.28	-0.12								
13.41	0.00	0.46	0.03	0.24								
14.02	0.00	0.52	0.07	0.27								
14.63	0.00	0.14	-0.28	-0.09								
15.24	0.00	0.05	-0.36	-0.12								
15.85	0.00	-0.14	-0.53	-0.34								
16.46	0.00	-0.21	-0.61	-0.45								
17.07	0.00	-0.06	-0.42	-0.26								
17.68	0.00	0.16	-0.17	-0.01								
18.29	0.00	-0.04	-0.38	-0.21								
18.90	0.00	0.24	-0.10	0.02								
19.51	0.00	-0.22	-0.51	-0.41								
20.12	0.00	-0.03	-0.29	-0.15								
20.73	0.00	-0.06	-0.27	-0.11								
21.34	0.00	0.37	0.15	0.30								
21.95	0.00	0.60	0.37	0.54								
22.56	0.00	0.78	0.56	0.71								
23.16	0.00	1.27	1.02	1.24								
23.77	0.00	1.20	0.96	1.19								
24.38	0.00	0.61	0.39	0.58								
24.99	0.00	0.99	0.78	1.00								
25.60	0.00	0.69	0.44	0.64								
26.21	0.00	0.22	-0.01	0.17								
26.82	0.00	0.13	-0.09	0.08								
27.43	0.00	-0.59	-0.81	-0.64								
28.04	0.00	-0.72	-0.83	-0.74								
28.65	0.00	-0.33	-0.44	-0.36								
29.26	0.00	-0.39	-0.48	-0.41								
29.87	0.00	-0.58	-0.67	-0.63								
30.48	0.00	-0.82	-0.88	-0.86								
31.09	0.00	-0.46	-0.50	-0.55								
31.70	0.00	0.00	0.00	0.00								

Displacements [mm]

Tutela Heights BH 03 B-B

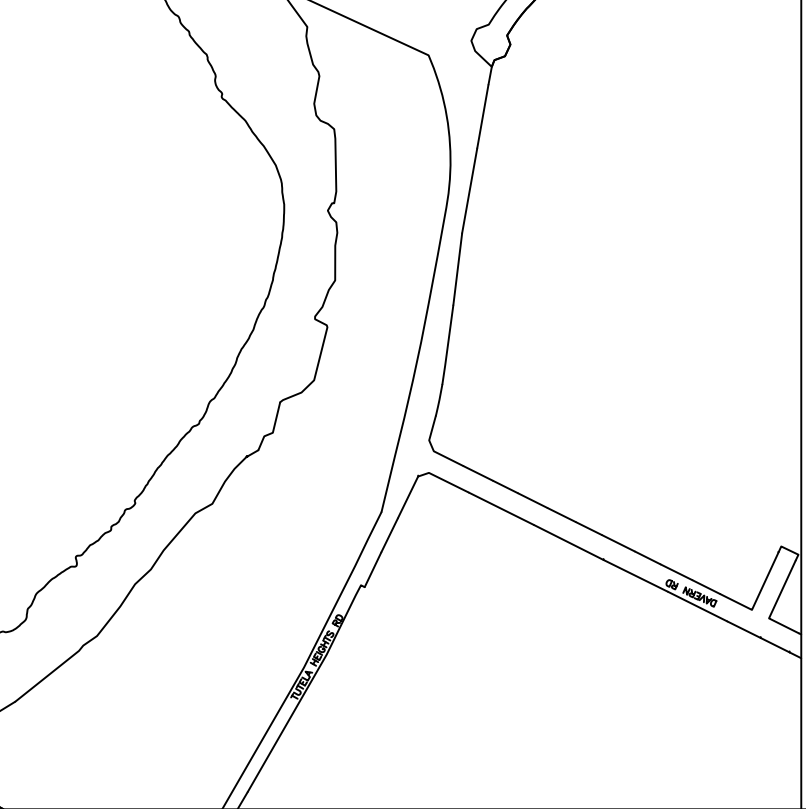
In-Plane Displacements



Appendix Two

Survey Data

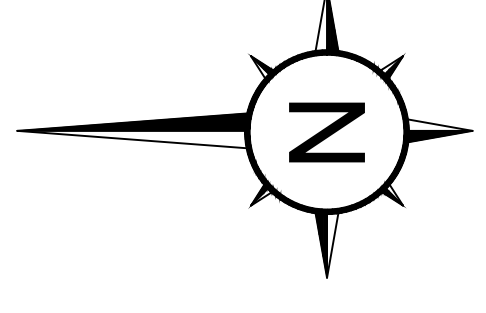
Updated with surface survey provided by City of Brantford – Survey Department
Survey Update completed on August 2022.
Last Field Survey completed on May 5, 2022.



KEY PLAN N.T.S.

- NOTES:
1. ALL ELEVATIONS & DISTANCES SHOWN ARE METRIC.
 2. MONITORING POINTS PLANTED ON JAN. 13/2015.
 3. HORIZONTAL MEASUREMENTS ACCURATE TO ±0.02m

- LEGEND:
- EXISTING ELEVATIONS
 - GENERAL DIRECTION OF MOVEMENT
 - EXISTING TOP OF SLOPE (JAN. 15, 2015)
 - EXISTING TOP OF SLOPE (APR. 24, 2015)



NO.	REVISIONS	DATE	BY
11	ADDED MAY 5/2022 SURVEY	05/18/22	C.D.
10	ADDED NOV 23/2021 SURVEY	11/24/21	J.M.B.
9	ADDED MAR 23/2021 SURVEY	03/26/21	J.M.B.
8	ADDED DEC 3/2020 SURVEY	03/26/21	C.D.
7	ADDED APR 3/2020 SURVEY	08/06/20	C.D.
6	ADDED NOV 11/2019 SURVEY	11/11/19	K.P.B.
5	ADDED MAY 8/2019 SURVEY	05/08/19	K.P.B.
4	ADDED DEC. 11/2018 SURVEY	12/11/18	K.P.B.
3	ADDED MAY 8/2018 SURVEY	05/08/18	K.P.B.
2	ADDED NOV. 5/2015 SURVEY	11/05/15	K.P.B.
1	ADDED APR. 24/2015 SURVEY	04/24/15	K.P.B.

May 18, 2022



TUTELA HEIGHTS ROAD SLOPE STABILITY CITY OF BRANTFORD

SITE PLAN

RATIO: HORIZ. VERT.	1:1000 N/A
DRAWN BY: J.M.B.	CHECKED BY: P.J.B.
DATE:	11-24-21

MONITORING POINT - MOVEMENT SUMMARY (PLANTED BARS)

	MP-01-14	MP-02-14	MP-03-14	MP-04-14	MP-05-14	MP-06-14	MP-07-14	MP-08-14	MP-09-14	MP-10-14	MP-11-14	MP-12-14	MP-13-14	MP-14-14	MP-15-14	MP-16-14	MP-17-14	MP-18-14	MP-19-14
JAN. 13/2015	225.99	224.16	216.41	205.93	199.24	203.01	198.54	202.13	198.52	200.05	207.59	204.28	202.96	212.07	212.07	204.28	210.25	218.75	221.72
APR. 24/2015	225.99	224.17	216.39	205.95	199.16	203.00	198.54	202.11	198.52	200.08	207.60	204.22	202.98	212.07	212.07	204.27	210.25	218.73	221.71
NOV. 5/2015	225.99	224.15	216.37	205.91	199.23	203.00	198.55	202.10	198.50	200.01	207.57	204.27	202.95	212.04	212.04	204.28	210.26	218.74	221.71
MAY 8/2018	225.99	224.13	216.37	205.88	199.16	202.94	198.52	202.06	198.48	200.00	207.57	204.27	202.95	212.03	212.03	204.21	210.24	218.73	221.69
DEC. 11/2018	225.94	224.12	216.37	205.85	199.15	202.94	198.50	202.09	198.46	200.03	207.53	204.21	202.99	212.02	212.02	204.21	210.24	218.72	221.70
MAY 8/2019	225.94	224.10	216.37	205.84	199.15	202.94	198.52	202.09	198.45	200.04	207.47	204.24	202.98	212.01	212.01	204.16	210.25	218.74	221.71
NOV. 11/2019	225.94	224.10	216.37	205.85	199.18	202.95	198.47	202.09	198.44	200.01	207.46	204.25	202.98	212.04	212.04	204.16	210.32	218.72	221.72
APR. 3/2020	BENT	BENT	BENT	205.81	199.19	202.96	198.48	202.01	198.41	200.02	207.40	204.22	202.98	212.00	212.00	204.15	210.19	218.71	221.67
DEC. 3/2020	BENT	BENT	BENT	205.82	199.15	202.93	198.49	202.02	198.39	199.95	207.38	204.22	202.92	211.98	211.98	204.16	210.21	218.70	221.68
MAR. 23/2021	BENT	BENT	BENT	205.79	199.14	202.94	198.51	202.03	198.40	199.99	207.39	204.22	202.95	211.99	211.99	204.11	210.17	218.69	221.68
NOV. 23/2021	BENT	BENT	BENT	205.80	199.14	202.89	198.49	202.04	198.38	199.91	207.41	204.21	202.91	211.99	211.99	204.13	210.21	218.70	221.67
MAY 5/2022	BENT	BENT	BENT	205.80	199.14	202.89	198.47	202.04	198.37	200.00	207.37	204.21	202.92	211.98	211.98	204.09	210.18	218.70	221.67

NOTE:
 1. MONITORING POINTS IN THIS CHART PLANTED ON JAN. 13/2015.
 2. NORTH/SOUTH/EAST/WEST (N.S.E.W.) CHANGE IS FROM THE JAN. 13/2015 LOCATIONS.
 3. NORTH/SOUTH/EAST/WEST (N.S.E.W.) CHANGE IS FROM THE JAN. 13/2015 LOCATIONS.
 4. STARTING APRIL 3 2020 MEASUREMENTS TAKEN BY CITY OF BRANTFORD SURVEY DEPARTMENT. ELEVATIONS ARE REFERRED TO COVD 192878 ADJUSTMENT



MP-01-14		A	B	C	D	E	F	G		
		Elevation			Horizontal Displacement					
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm	Alignment E cm	Alignment W cm
1	January 13, 2015	225.99	0	0	0	0	n/a	n/a	n/a	n/a
2	April 24, 2015	225.99	0	0	2	2	n/a	n/a	n/a	n/a
3	November 5, 2015	225.99	0	0	0	2	n/a	n/a	n/a	n/a
4	May 8, 2018	225.95	-4	-4	14	16	n/a	n/a	n/a	n/a
5	December 11, 2018	225.94	-1	-5	-2.1	13.9	12	7		
6	May 8, 2019	225.93	-1	-6	1.8	15.7	14	7		
7	November 11, 2019	225.94	1	-5	-0.1	15.5	4	15		
8	April 3, 2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9	December 3, 2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
10	March 23, 2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
11	November 23, 2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
12	May 5, 2022	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm
- V. As per Survey Drawing Notes, this iron bar has been bent and is no longer available for monitoring.

		Interpretation from last reading on May 5, 2022			
Time interval		Rate of settlement (accumulated)		Rate of horizontal displacement	
days	2669.00	n/a	mm/day	Total	E-W
years	7.31	n/a	mm/year	n/a	n/a
			down	n/a	n/a
				n/a	mm/day
				n/a	mm/year

MP-02-14		A	B	C	D	E	F	G	
		Elevation			Horizontal Displacement				
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm	Alignment W cm
1	January 13, 2015	224.16	0	0	0	0.0	n/a	n/a	n/a
2	April 24, 2015	224.17	1	1	2	2.0	n/a	n/a	n/a
3	November 5, 2015	224.15	-2	-1	0	2.0	n/a	n/a	n/a
4	May 8, 2018	224.13	-2	-3	2	4.0	n/a	n/a	n/a
5	December 11, 2018	224.12	-1	-4	-0.4	3.6	3	2	2
6	May 8, 2019	224.1	-2	-6	1.4	5.0	3	4	4
7	November 11, 2019	224.1	0	-6	3.1	8.1	7	4	4
8	April 3, 2020	224.09	-1	-7	-0.3	7.8	5	6	6
9	December 3, 2020	224.08	-1	-8	0.8	8.6	7	5	5
10	March 23, 2021	224.07	-1	-9	1.4	10.0	8	6	6
11	November 23, 2021	224.08	1	-8	-0.1	9.9	7	7	7
12	May 5, 2022	224.06	-2	-10	0.9	10.8	9	6	6

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.037 mm/day
years	13.676 mm/year
	down
	Total
	N-S
	E-W
	Rate of horizontal displacement
	0.041
	0.034
	0.022
	14.792
	12.308
	8.205
	mm/day
	mm/year

MP-03-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Partial Displacement [cm]	Horizontal Displacement		
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]		Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	216.41	0	0	0	n/a	n/a	n/a
2	April 24, 2015	216.39	-2	-2	2	n/a	n/a	n/a
3	November 5, 2015	216.43	4	2	1	n/a	n/a	n/a
4	May 8, 2018	216.37	-6	-4	0	n/a	n/a	n/a
5	December 11, 2018	216.37	0	-4	1.1	4	1	1
6	May 8, 2019	216.37	0	-4	0.3	4	2	2
7	November 11, 2019	216.37	0	-4	4.5	8	4	4
8	April 3, 2020	216.35	-2	-6	1.0	7	7	7
9	December 3, 2020	216.32	-3	-9	-8.5	1	1	1
10	March 23, 2021	216.32	0	-9	9.4	10	4	4
11	November 23, 2021	216.34	2	-7	-2.5	8	2	2
12	May 5, 2022	216.31	-3	-10	1.2	9	3	3

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.037 mm/day
years	13.676 mm/year down
	Total
	N-S 0.036
	E-W 0.011
	Total 4.103
	Rate of horizontal displacement
	N-S 0.034 mm/day
	E-W 0.011 mm/day
	Total 4.103 mm/year

MP-04-14		A	B	C	D	E	F	G
		Elevation			Horizontal Displacement			
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm S	Alignment E cm W
1	January 13, 2015	205.93	0	0	0	0	n/a	n/a
2	April 24, 2015	205.95	2	2	2	2	n/a	n/a
3	November 5, 2015	205.91	-4	-2	3	5	n/a	n/a
4	May 8, 2018	205.88	-3	-5	0	5	n/a	n/a
5	December 11, 2018	205.85	-3	-8	-0.5	4.5	4	2
6	May 8, 2019	205.84	-1	-9	-3.1	1.4	1	1
7	November 11, 2019	205.85	1	-8	4.9	6.3	6	2
8	April 3, 2020	205.81	-4	-12	-0.5	5.8	5	3
9	December 3, 2020	205.82	1	-11	0.9	6.7	6	3
10	March 23, 2021	205.79	-3	-14	0.0	6.7	6	3
11	November 23, 2021	205.8	1	-13	-1.7	5	3	4
12	May 5, 2022	n/a	n/a	n/a	n/a	n/a	n/a	n/a

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	2669.00
years	7.31
	Rate of horizontal displacement
	Total
	N-S
	E-W
	mm/day
	mm/year
	down
	n/a
	n/a
	n/a
	n/a
	n/a
	n/a
	n/a

MP-05-14		A	B	C	D	E	F	G	
		Elevation			Horizontal Displacement				
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm	Alignment W cm
1	January 13, 2015	199.24	0	0	0	0	n/a	n/a	n/a
2	April 24, 2015	199.16	-8	-8	1	1	n/a	n/a	n/a
3	November 5, 2015	199.23	7	-1	1	2	n/a	n/a	n/a
4	May 8, 2018	199.16	-7	-8	3	5	n/a	n/a	n/a
5	December 11, 2018	199.15	-1	-9	2.3	7.3	7	2	2
6	May 8, 2019	199.15	0	-9	-0.3	7.0	7	0	0
7	November 11, 2019	199.18	3	-6	4.4	11.4	11	3	3
8	April 3, 2020	199.18	0	-6	2.9	14.3	13	6	6
9	December 3, 2020	199.15	-3	-9	1.3	15.7	14	7	7
10	March 23, 2021	199.14	-1	-10	1.1	16.8	16	5	5
11	November 23, 2021	199.14	0	-10	0.0	14.9	14	5	5
12	May 5, 2022	199.14	0	-10	0.0	17.9	16	8	8

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.037 mm/day
years	13.676 mm/year down
	Total
	N-S 0.067
	E-W 0.030
	Total 24.464
	Rate of horizontal displacement
	N-S 0.060 mm/day
	E-W 0.030 mm/day
	Total 10.940 mm/year

MP-07-14		A	B	C	D	E	F	G
		Elevation			Horizontal Displacement			
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm S	Alignment E cm W
1	January 13, 2015	198.54	0	0	0	0	n/a	n/a
2	April 24, 2015	198.54	0	0	4	4	n/a	n/a
3	November 5, 2015	198.55	1	1	-2	2	n/a	n/a
4	May 8, 2018	198.52	-3	-2	5	7	n/a	n/a
5	December 11, 2018	198.50	-2	-4	0.1	7.1	7	1
6	May 8, 2019	198.52	2	-2	1.0	8.1	8	1
7	November 11, 2019	198.67	15	13	27.2	35.2	35	4
8	April 3, 2020	198.48	-19	-6	-0.2	35.1	35	2
9	December 3, 2020	198.49	1	-5	7.2	42.3	42	5
10	March 23, 2021	198.51	2	-3	0.8	43.1	43	3
11	November 23, 2021	198.49	-2	-5	0.0	43.1	43	3
12	May 5, 2022	198.47	-2	-7	3.0	46.1	46	3

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.026 mm/day
years	9.573 mm/year down
	Total
	N-S 0.173
	E-W 0.011
	Rate of horizontal displacement
	N-S 0.172 mm/day
	E-W 4.103 mm/year

MP-08-14												
		A	B	C	D	E	F	G				
Reading Number	Date	Elevation			Partial Displacement [cm]	Horizontal Displacement						
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]		Total cm	Alignment N cm	Alignment S cm	Alignment E cm	Alignment W cm		
1	January 13, 2015	202.13	0	0	0	0	n/a	n/a	0	n/a	n/a	n/a
2	April 24, 2015	202.11	-2	-2	4	4	n/a	n/a	4	n/a	n/a	n/a
3	November 5, 2015	202.10	-1	-3	-2	2	n/a	n/a	2	n/a	n/a	n/a
4	May 8, 2018	202.06	-4	-7	29	31	n/a	n/a	31	n/a	n/a	n/a
5	December 11, 2018	202.09	3	-4	5.7	36.7	35	11	36.7	35	11	11
6	May 8, 2019	201.97	-12	-16	9.9	46.6	45	12	46.6	45	12	12
7	November 11, 2019	201.99	2	-14	6.3	52.9	51	14	52.9	51	14	14
8	April 3, 2020	202.01	2	-12	3.9	56.8	55	14	56.8	55	14	14
9	December 3, 2020	201.96	-5	-17	7.0	63.8	62	15	63.8	62	15	15
10	March 23, 2021	201.94	-2	-19	1.0	64.8	63	15	64.8	63	15	15
11	November 23, 2021	201.98	4	-15	-1.0	63.8	62	15	63.8	62	15	15
12	May 5, 2022	201.95	-3	-18	12.4	76.2	74	18	76.2	74	18	18

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022					
Time interval		Rate of settlement (accumulated)		Rate of horizontal displacement	
days	years	0.067	24.616	0.285	104.150
2669.00	7.31	mm/day	mm/year	mm/day	mm/year
		down	down	0.067	24.616
				101.199	24.616
				0.277	101.199
				0.067	24.616

MP-09-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Partial Displacement [cm]	Horizontal Displacement		
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]		Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	198.52	0	0	0	n/a	n/a	n/a
2	April 24, 2015	198.52	0	0	3	n/a	n/a	n/a
3	November 5, 2015	198.50	-2	-2	-3	n/a	n/a	n/a
4	May 8, 2018	198.48	-2	-4	5	n/a	n/a	n/a
5	December 11, 2018	198.46	-2	-6	-0.5	4	2	2
6	May 8, 2019	198.45	-1	-7	3.6	7	4	4
7	November 11, 2019	198.44	-1	-8	5.0	13	1	1
8	April 3, 2020	198.41	-3	-11	2.3	15	3	3
9	December 3, 2020	198.39	-2	-13	5.3	20	5	5
10	March 23, 2021	198.4	1	-12	0.6	21	3	3
11	November 23, 2021	198.38	-2	-14	-1.0	20	3	3
12	May 5, 2022	198.37	-1	-15	5.3	25	5	5

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022				
Time interval	Rate of settlement (accumulated)		Rate of horizontal displacement	
	Total	N-S	E-W	
days	2669.00	0.056	mm/day	0.019
years	7.31	20.513	mm/year	6.838
			down	
		34.866		
		34.189		

MP-10-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Horizontal Displacement			
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	200.05	0	0	0	0	n/a	n/a
2	April 24, 2015	200.08	3	3	2	2	n/a	n/a
3	November 5, 2015	200.01	-7	-4	2	4	n/a	n/a
4	May 8, 2018	200.00	-1	-5	0	4	n/a	n/a
5	December 11, 2018	200.03	3	-2	-0.8	3.2	3	1
6	May 8, 2019	200.04	1	-1	1.9	5.1	5	1
7	November 11, 2019	200.01	-3	-4	-1.0	4.1	4	1
8	April 3, 2020	200.02	1	-3	-1.1	3.0	3	0
9	December 3, 2020	199.96	-6	-9	-1.0	2.0	2	0
10	March 23, 2021	199.99	3	-6	1.2	3.2	3	1
11	November 23, 2021	199.91	-8	-14	1.0	4.1	4	1
12	May 5, 2022	200	9	-5	0.9	5.0	5	0

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022				
Time interval	Rate of settlement (accumulated)		Rate of horizontal displacement	
	Total	E-W	N-S	E-W
days	2669.00	0.019 mm/day	0.019	0.000 mm/day
years	7.31	6.838 mm/year down	6.838	0.000 mm/year

MP-11-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Horizontal Displacement			
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	207.59	0	0	0	0	n/a	n/a
2	April 24, 2015	207.60	1	1	1	1	n/a	n/a
3	November 5, 2015	207.60	0	1	3	4	n/a	n/a
4	May 8, 2018	207.57	-3	-2	17	21	n/a	n/a
5	December 11, 2018	207.53	-4	-6	2.4	23.4	15	18
6	May 8, 2019	207.47	-6	-12	25.6	49.0	31	38
7	November 11, 2019	207.38	-9	-21	11.4	60.4	38	47
8	April 3, 2020	207.40	2	-19	2.8	63.3	40	49
9	December 3, 2020	207.38	-2	-21	1.4	64.7	41	50
10	March 23, 2021	207.39	1	-20	1.3	65.9	43	50
11	November 23, 2021	207.41	2	-18	-1.3	64.7	41	50
12	May 5, 2022	207.37	-4	-22	2.8	67.5	43	52

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022				
Time interval	Rate of settlement (accumulated)		Rate of horizontal displacement	
	Total	E-W	N-S	E-W
days	2669.00	0.082	0.253	0.195
years	7.31	28.719 mm/year mm/day	58.805 mm/year mm/day	71.113 mm/year mm/day

MP-12-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Horizontal Displacement			
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	204.28	0	0	0	0.0	n/a	n/a
2	April 24, 2015	204.22	-6	-6	4	4.0	n/a	n/a
3	November 5, 2015	204.27	5	-1	-2	2.0	n/a	n/a
4	May 8, 2018	204.27	0	-1	0	2.0	n/a	n/a
5	December 11, 2018	204.21	-6	-7	2.1	4.1	4	1
6	May 8, 2019	204.24	3	-4	5.9	10.0	8	6
7	November 11, 2019	204.25	1	-3	7.0	17.0	12	12
8	April 3, 2020	204.22	-3	-6	0.7	17.7	13	12
9	December 3, 2020	204.22	0	-6	-0.7	17.0	12	12
10	March 23, 2021	204.22	0	-6	0.1	17.0	13	11
11	November 23, 2021	204.21	-1	-7	0.0	17.0	13	11
12	May 5, 2022	204.21	0	-7	0.0	17.0	13	11

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022				
Time interval	Rate of settlement (accumulated)		Rate of horizontal displacement	
	Total	E-W	N-S	E-W
days	2669.00	0.026 mm/day	0.064	0.041 mm/day
years	7.31	9.573 mm/year down	23.289	15.043 mm/year

MP-13-14		A	B	C	D	E	F	G
		Elevation			Horizontal Displacement			
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm S	Alignment E cm W
1	January 13, 2015	202.96	0	0	0	0.0	n/a	n/a
2	April 24, 2015	202.98	2	2	1	1.0	n/a	n/a
3	November 5, 2015	202.96	-2	0	0	1.0	n/a	n/a
4	May 8, 2018	202.95	-1	-1	5	6.0	n/a	n/a
5	December 11, 2018	202.99	4	3	-1.0	5.0	5	0
6	May 8, 2019	202.98	-1	2	0.7	5.7	4	4
7	November 11, 2019	202.90	-8	-6	-0.7	5.0	5	0
8	April 3, 2020	202.98	8	2	-1.0	4.0	4	0
9	December 3, 2020	202.92	-6	-4	1.1	5.1	5	1
10	March 23, 2021	202.95	3	-1	0.3	5.4	5	2
11	November 23, 2021	202.91	-4	-5	-0.3	5.1	5	1
12	May 5, 2022	202.92	1	-4	1.2	6.3	6	2

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.015 mm/day
years	5.470 mm/year down
	Total
	0.024
	8.649
	Rate of horizontal displacement
	Total N-S EW
	0.022 0.007
	8.205 2.735
	mm/day mm/year

MP-14-14		A	B	C	D	E	F	G
		Elevation			Horizontal Displacement			
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm S	Alignment E cm W
1	January 13, 2015	212.07	0	0	0	0.0	n/a	n/a
2	April 24, 2015	212.07	0	0	5	5.0	n/a	n/a
3	November 5, 2015	212.04	-3	-3	0	5.0	n/a	n/a
4	May 8, 2018	212.03	-1	-4	22	27.0	n/a	n/a
5	December 11, 2018	212.02	-1	-5	0.0	27.0	27	1
6	May 8, 2019	212.01	-1	-6	2.1	29.2	29	3
7	November 11, 2019	212.04	3	-3	2.8	32.0	32	0
8	April 3, 2020	212.00	-4	-7	0.0	32.0	32	1
9	December 3, 2020	211.98	-2	-9	-2.0	30.0	30	1
10	March 23, 2021	212.01	3	-6	4.0	34.0	34	0
11	November 23, 2021	211.99	-2	-8	1.0	35.0	35	1
12	May 5, 2022	211.99	0	-8	3.0	38.1	38	2

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.030 mm/day
years	10.940 mm/year
	down
	Total
	N-S 0.143
	E-W 0.007
	Rate of horizontal displacement
	N-S 0.142 mm/day
	E-W 2.735 mm/year

MP-15-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Partial Displacement [cm]	Horizontal Displacement		
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]		Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	223.24	0	0	0	0.0	n/a	n/a
2	April 24, 2015	223.24	0	0	4	4.0	n/a	n/a
3	November 5, 2015	223.21	-3	-3	-3	1.0	n/a	n/a
4	May 8, 2018	223.16	-5	-8	3	4.0	n/a	n/a
5	December 11, 2018	223.22	6	-2	-2.6	1.4	1	1
6	May 8, 2019	223.22	0	-2	3.1	4.5	2	4
7	November 11, 2019	223.20	-2	-4	-1.3	3.2	1	3
8	April 3, 2020	223.18	-2	-6	1.3	4.5	2	4
9	December 3, 2020	223.21	3	-3	-0.9	3.6	3	2
10	March 23, 2021	223.17	-4	-7	-0.4	3.2	1	3
11	November 23, 2021	223.20	3	-4	1.8	5.0	3	4
12	May 5, 2022	223.15	-5	-9	0.0	5.0	3	4

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022				
Time interval	Rate of settlement (accumulated)		Rate of horizontal displacement	
	Total	E-W	N-S	E-W
days	2669.00	0.034 mm/day	0.019	0.015 mm/day
years	7.31	12.308 mm/year down	6.838	5.470 mm/year

MP-16-14		A	B	C	D	E	F	G	
		Elevation			Horizontal Displacement				
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm	Alignment W cm
1	January 13, 2015	204.28	0	0	0	0.0	n/a	n/a	n/a
2	April 24, 2015	204.27	-1	-1	2	2.0	n/a	n/a	n/a
3	November 5, 2015	204.28	1	0	-1	1.0	n/a	n/a	n/a
4	May 8, 2018	204.21	-7	-7	4	5.0	n/a	n/a	n/a
5	December 11, 2018	204.21	0	-7	-1.4	3.6	3	2	2
6	May 8, 2019	204.16	-5	-12	2.1	5.7	4	4	4
7	November 11, 2019	204.16	0	-12	3.3	8.9	8	4	4
8	April 3, 2020	204.15	-1	-13	0.5	9.5	9	3	3
9	December 3, 2020	204.16	1	-12	6.0	15.5	15	4	4
10	March 23, 2021	204.11	-5	-17	0.0	15.5	15	4	4
11	November 23, 2021	204.13	2	-15	-1.0	14.6	14	4	4
12	May 5, 2022	204.09	-4	-19	4.1	18.7	18	5	5

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.071 mm/day
years	25.984 mm/year
	down
	Total
	0.070
	Rate of horizontal displacement
	N-S
	0.067
	E-W
	0.019
	mm/day
	25.548
	24.616
	6.838
	mm/year

MP-17-14											
	A		B		C		D		E		G
Reading Number	Date	Elevation				Horizontal Displacement					
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm	Alignment E cm	Alignment W cm	
1	January 13, 2015	210.25	0	0	0	0.0	n/a	n/a	n/a	n/a	
2	April 24, 2015	210.25	0	0	1	1.0	n/a	n/a	n/a		
3	November 5, 2015	210.26	1	1	0	1.0	n/a	n/a	n/a		
4	May 8, 2018	210.24	-2	-1	2	3.0	n/a	n/a	n/a		
5	December 11, 2018	210.24	0	-1	0.2	3.2		1	3		
6	May 8, 2019	210.25	1	0	1.0	4.1		1	4		
7	November 11, 2019	210.32	7	7	-1.9	2.2		1	2		
8	April 3, 2020	210.19	-13	-6	0.6	2.8		2	2		
9	December 3, 2020	210.21	2	-4	-0.6	2.2		1	2		
10	March 23, 2021	210.17	-4	-8	-0.2	2.0		0	2		
11	November 23, 2021	210.21	4	-4	0.2	2.2		1	2		
12	May 5, 2022	210.18	-3	-7	0.9	3.2		1	3		

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022											
Time interval		Rate of settlement (accumulated)				Rate of horizontal displacement					
days	years	0.026	mm/day	9.573	mm/year	Total	N-S	E-W	0.012	0.004	0.011
2669.00	7.31				down	4.325	1.368	4.103			mm/day
											mm/year

MP-18-14		A	B	C	D	E	F	G	
		Elevation			Horizontal Displacement				
Reading Number	Date	Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]	Partial Displacement [cm]	Total cm	Alignment N cm	Alignment S cm	Alignment W cm
1	January 13, 2015	218.75	0	0	0	0	n/a	n/a	n/a
2	April 24, 2015	218.73	-2	-2	3	3	n/a	n/a	n/a
3	November 5, 2015	218.74	1	-1	-1	2	n/a	n/a	n/a
4	May 8, 2018	218.73	-1	-2	1	3	n/a	n/a	n/a
5	December 11, 2018	218.72	-1	-3	-0.8	2.2	2	1	1
6	May 8, 2019	218.74	2	-1	-1.2	1.0	0	1	1
7	November 11, 2019	218.72	-2	-3	-1.0	0.0	0	0	0
8	April 3, 2020	218.71	-1	-4	1.4	1.4	1	1	1
9	December 3, 2020	218.7	-1	-5	0.8	2.2	2	1	1
10	March 23, 2021	218.69	-1	-6	-2.2	0.0	0	0	0
11	November 23, 2021	218.70	1	-5	1.0	1.0	1	1	0
12	May 5, 2022	218.70	0	-5	-1.0	0.0	0	0	0

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.019 mm/day
years	6.838 mm/year down
	Total
	N-S 0.000
	E-W 0.000
	Rate of horizontal displacement
	N-S 0.000 mm/day
	E-W 0.000 mm/day

MP-19-14		A	B	C	D	E	F	G
Reading Number	Date	Elevation			Partial Displacement [cm]	Horizontal Displacement		
		Actual Elevation [m]	Partial Settlement [cm]	Accumulated Settlement [cm]		Total cm	Alignment N cm	Alignment S cm
1	January 13, 2015	221.72	0	0	0	0.0	n/a	n/a
2	April 24, 2015	221.71	-1	-1	4	4.0	n/a	n/a
3	November 5, 2015	221.71	0	-1	-3	1.0	n/a	n/a
4	May 8, 2018	221.69	-2	-3	2	3.0	n/a	n/a
5	December 11, 2018	221.70	1	-2	-0.8	2.2	1	2
6	May 8, 2019	221.71	1	-1	0.9	3.2	1	3
7	November 11, 2019	221.72	1	0	-1.7	1.4	1	1
8	April 3, 2020	221.67	-5	-5	0.8	2.2	1	2
9	December 3, 2020	221.68	1	-4	-0.8	1.4	1	1
10	March 23, 2021	221.68	0	-4	2.2	3.6	3	2
11	November 23, 2021	221.67	-1	-5	-1.4	2.2	2	1
12	May 5, 2022	221.67	0	-5	0.8	3.0	3	0

NOTES:

- I. Actual elevation: corresponds to elevation recorded at the date of reading.
- II. Partial settlement: corresponds to change of elevation since previous reading date.
- III. Accumulated settlement: corresponds to change of elevation since date of installation, i.e., January 13, 2015.
- IV. Resolution of displacements is ± 1 cm

Interpretation from last reading on May 5, 2022	
Time interval	Rate of settlement (accumulated)
days	0.019 mm/day
years	6.838 mm/year
	down
	Total
	N-S 0.011
	E-W 0.000
	Rate of horizontal displacement
	N-S 0.011 mm/day
	E-W 0.000 mm/day
	4.103 mm/year
	0.000 mm/year