Stantec

To:	Jerald Schnabel	From:	Paul Kos
	Riverbend Industries Inc.		Denver, CO 80222
File:	April 2023 Monitoring Summary	Date:	May 31, 2023

Reference: April 2023 Geotechnical Monitoring Summary Pikeview Quarry

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this April 2023 Geotechnical Monitoring Summary for the Pikeview Quarry. The Pikeview Quarry is situated along the foothills of the Rocky Mountains, northwest of Colorado Springs, Colorado. Riverbend Industries Inc. (Riverbend, formerly Continental Materials Corp.) operates the quarry, which is currently closed and undergoing reclamation. A geotechnical monitoring program was established to monitor reclamation activities which will affect the geotechnical performance of the existing and reclaimed slopes during and following reclamation grading. This report presents the geotechnical monitoring results for the slope reclamation activities at the site through the month of April 2023. Continuous monitoring by the robotic survey system began in 2010 and has continued through the month of April 2023. Visual inspections of the slopes were performed by Riverbend employees and Stantec engineers.

1.1 PURPOSE

The purpose of this report is to summarize the April 2023 geotechnical monitoring results and verify the geotechnical performance of the existing and reclaimed slopes with respect to the historical performance record. The goals of the geotechnical instrumentation monitoring program can be described as:

- Meet corporate risk management requirements,
- Provide ongoing slope monitoring and advance warning of any changed conditions that could pose a hazard to workers or to the public,
- Document the geotechnical performance of the slope, and
- Document monthly site grading activities and construction quality assurance.

1.2 MONITORING SUMMARY

Major components of the instrumentation monitoring program are listed in Table 1 and shown on Figure 1.

Table 1 Monitoring Frequency

Monitoring Type	Frequency
Visual inspection	Daily (Riverbend or Stantec) and Monthly (Stantec)
Robotic theodolite/prism	Continuous
Drone inspection	Monthly
Compaction testing	Every 5,000 yd^3 (min.)

2.0 VISUAL INSPECTIONS

Inspections are completed daily by site personnel and monthly by Stantec personnel to document visual observations of slope conditions, including conditions of instability (i.e., cracking, slumping, over-steepened slopes, seeps, perched boulders, rock falls, erosion, and areas undercut by construction or maintenance activities). Certain areas of the landslide have been designated as safety exclusion zones, and these areas are inspected from adjacent locations.

On working days, site operators inspect their work areas for signs of instability daily before starting work per site safety rules and regulations. The daily inspection starts by reviewing any prism alerts/alarms and inspecting those areas before work begins in that area. The daily inspection also includes visual observations of the quarry walls and floor for any changes. No changes to the quarry conditions were identified during daily inspections in April 2023. The notes from the daily inspections are included in Table A-1 in Appendix A.

Stantec conducted visual inspections of the Pikeview Quarry slopes on April 13, 2023. The engineering inspections were conducted by traversing each area of the mine and observing the uphill slope and the downhill slope for signs of instability, and areas in need of maintenance. Slopes that have been graded and are 2 horizontal (H):1 vertical (V) or shallower are also traversed on foot. The findings are listed below, and photographs of notable observations are included on Figure 2 in Appendix A.

- Reclamation grading began in February 2022 and continued throughout April 2023.
- Operators continue to place compacted material in the buttress zone. Material was excavated from the North and Lower Borrow Areas. Material is initially excavated in benches for the majority of the excavation to efficiently remove the material; these benches are removed for final grading to create the reclamation surface.
- Compaction testing continues at the rate of at least one test per 5,000 cubic yards of fill placed in the buttress area.
- No cracking was observed on the native granite slopes above the extents of the disturbed area.
- Known cracks were monitored for changes. Currently the cracks are not growing in any of the areas on the slopes of the site. The hummocky field in the area immediately above the southern extent of the slide shows evidence of previous cracking, but they are not fresh or active. No new or open cracks were found immediately inside or next to the slide area.
- The slope below the first bench has been placed to the final grade, and this slope was traversed on foot and examined for cracks or signs of instability by Stantec engineers. No cracks or signs of instability were identified.
- A safety buffer zone is being kept between the active work areas and the toe of the slide to stop any rocks that might come loose during grading operations. Compacted fill is placed in the buffer zone as the buttress fill is placed.
- Offsite topsoil was stockpiled at the base of the buttress area with the additional topsoil and growth medium. The topsoil stockpiles contain a sufficient volume of material to place cover on all disturbed areas of the mine. Topsoil imports will continue, and any excess topsoil may be placed at increased thickness so that all topsoil is used in reclaiming the mine.
- Rock was being screened, sorted, and stockpiled as riprap for use as erosion protection in the channels.
- The culvert remains cleared but mostly blocked inside. Riverbend has partially cleared the debris, but access limitations and supports within the culvert inhibit clearing all the debris. Riverbend has procured a pump and will begin pumping operations if any water collects behind the culvert. Riverbend inspects the

culvert for ponded water following rain events, and should any water be observed, it will be removed using pumps. To date, no ponding has been observed.

- Visual inspections of the Pikeview Quarry did not reveal any evidence of large-scale instability outside of the landslide areas previously identified. No bulging, rippling, over-steepening, depressions, slumps, or dry slip-offs were observed in areas that have been graded and/or reclaimed.

3.0 PRISM SURVEY

A Leica Robotic station is used to continuously survey the prisms onsite to document slope movements. The station records the location of each prism every hour. There are currently 15 active prisms; 2 prisms were control points located outside the slope movement area and 13 prisms were located on the slopes surrounding the landslide area. As the slope is backfilled and graded, the existing prisms will be removed, and additional prisms will be installed. No prisms were removed in April. A log of prism removals and installations is included in Appendix B. The prism locations are shown on the current topography in Figure 3, and the proposed prism locations are shown on the reclamation topography in Figure 4. Both figures are included in Appendix B.

The monitoring software, GeoMos, has been programed to provide automatic alerts if there is a movement recorded that is greater than 0.35 feet, if a prism cannot be located, or if there are communication errors. Following each alert, Riverbend clears the area of concern until the data can be reviewed and the slope can be inspected. Riverbend made sure that there were no workers in the area before inspecting the slope. On April 1, an alert for potential movement was received from prism NP2. The prism location was inspection, and there were no signs of movement. All previous alerts for potential movement have been attributed to weather or animal activity, and no alerts have been associated with slope movements. Other alerts were determined to be caused by a power outage, equipment operations blocking the prism, weather conditions, or sun glare. The alerts are listed in Table 2.

Table 2 Alert Summary

Date(s)	Alert	Cause/Actions taken	Alert Resolved
Apr 1	NP2 regression limit received	Single alert. No work during alert. Prism inspected and no signs of movement.	Apr 1
Apr 2 to Apr 3	No communication	Computer shut down automatically. No work being performed during this time.	Apr 3
Apr 4	Points not found	Snow and fog. No work being performed at time of alerts.	Apr 4
Apr 4 to Apr 5	P5 not found	Snow on prism blocking signal.	Apr 4
Apr 4 to Apr 5	P2 not found	Snow on prism blocking signal.	Apr 4
Apr 5 to Apr 6	Points not found	Snow and fog. No work being performed at time of alerts.	Apr 6
Apr 12	P5, CP6, and P70 not found	Equipment movement blocking prism.	Apr 12
Apr 14 to Apr 15	Points not found	Snow, rain, and fog. No work being performed at time of alerts.	Apr 14
Apr 16	CP7 and P70 not found	Single events. Possible animal activity. No work being performed at time of alerts.	Apr 17
Apr 19	P2 not found	Single event. Equipment movement blocking prism. No fill being placed at time of alert.	Apr 19

Apr 19	P32 not found	Single event. Possible animal activity. No work being performed at time of alert.	Apr 19
Apr 22	Points not found	Snow and fog. No work being performed at time of alerts.	Apr 22
Apr 23	Points not found	Snow and fog. No work being performed at time of alerts.	Apr 23
Apr 25	P32 not found	Single event. Equipment movement blocking prism.	Apr 25
Apr 25 to Apr 27	Points not found	Snow and fog. No work being performed at time of alerts.	Apr 26
Apr 27	NP2 not found	Prism was located on the edge of a steep slope that eroded. Limited to surficial erosion and not a sign of a failure. Sheep tracks were noted in the area. No work being performed at time of alerts.	Apr 28
Apr 27 to Apr 28	Points not found	Snow and fog. No work being performed at time of alerts.	Apr 28
Apr 29	Communication errors	Planned outage while excavating around the Leica building. Additional spotters in place during outage.	Apr 29

The prism monitoring results for transverse and height displacements, monthly change, and cumulative change are summarized in Table 3 below. The transverse displacement measures the change in the horizontal distance from the robotic station to the prism; positive displacements indicate less distance between the station and prism (movement towards the total station). The height displacement measures the change in the vertical distance from the robotic station to the prism; positive displacements indicate upward movement. The values for the last reading in the month are included in Table 3. The monthly delta is the most recent reading cumulative delta displacement (horizontal, lateral, and vertical) subtracted from the last reading from the previous month. The cumulative delta values are a total displacement and are not associated with a direction. The transverse, height, and cumulative delta displacements are the total displacement over the life of the monitoring, which was reset when the Leica station was moved in July 2022. According to Leica documentation, the survey accuracy is +/-4 mm+1.5 ppm for prisms located greater than 500m from the station; these equates to an accuracy of +/-0.016 ft.

The data show stable conditions with no movement for all 15 prisms with recorded displacements limited to data scatter and not actual movements. Prisms BR1, BR2, and NP66 are located above the landslide, and these prisms previously recorded slope creep movements at slow velocity. This settlement was likely related to the landslide material consolidating under its own weight. The data suggest that the creep movements have essentially been halted by the placement of the buttress. New prisms are placed in areas where slope creep movements are likely to be recorded; therefore, slope creep movements being recorded at more locations is expected to occur. Plots of the transverse and height displacements for each prism are included in Appendix B.

Table 3 Prism Summary

Prism ID	Cumulative Transverse Displacement (ft)	Cumulative Height Displacement (ft)	Monthly Delta (ft)	Cumulative Delta (ft)	Notes / Recommendations
BR1	-0.062	-0.136	0.0145	0.2355	Previous slope creep movements.
BR2	-0.029	-0.167	0.0189	0.2591	Previous slope creep movements.
CP6	0.004	-0.015	-0.0130	0.0223	
CP7	0.079	-0.002	-0.0043	0.0835	
NP2	0.084	-0.015	0.0499	0.0994	
NP3	0.026	-0.009	0.0067	0.0352	
NP66	0.030	-0.107	0.0081	0.1223	Previous slope creep movements.
P1	-0.011	-0.024	-0.0112	0.0294	
P2	-0.012	-0.016	-0.0082	0.0219	
P5	-0.008	-0.009	-0.0139	0.0139	
P25	-0.014	0.010	-0.0135	0.0172	
P32	-0.018	0.007	-0.0178	0.0227	
P33	0.004	-0.016	-0.0039	0.1469	
P69A	0.056	-0.053	0.0002	0.1858	
P70	-0.012	0.002	0.0028	0.0296	

4.0 DRONE SURVEY

The site was flown for aerial imagery using an unmanned aircraft system (UAS or ‘drone’) on April 25, 2023. The imagery was inspected for signs of instability and used to supplement the onsite visual inspections. Features noted in the aerial imagery review were inspected during Stantec’s engineering inspection and are summarized in Section 2 above. The imagery was also used to create site topography.

The April topography was also compared to the March topography to identify changes in the site topography. Comparison of the two surveys showed the placement of the fill material at the toe of the landslide. Fill material is excavated from the Shop Borrow Area or imported from offsite projects, including the North Borrow Area. No slope movements or other changes in topography were identified. The current imagery and topography are included in Figures 1 and 3, and the comparison surface is included as Figure 5 in Appendix C.

As previously reported in the September 2020 monitoring report, there are limitations with the method of comparing drone surveys from different months. The drone data indicate changes in the slopes along each of the reclamation benches, buildings, and areas with trees or shrubs. These areas are stable, and the changes are the result of survey limitations on or near vertical slopes.

5.0 COMPACTION TESTING

Fill placement started on February 25, 2022 and continued throughout April 2023. Fill was excavated from the Shop, Lower, and North Borrow Areas and placed in the buttress and buffer zones. All fill is moisture conditioned as necessary and then compacted. Compaction testing began April 2022 and occurs at the rate of at least one test per 5,000 yd^3 placed. During April, approximately 103,000 yd^3 was placed and compacted. This volume placed in the buttress zone required at least 21 compaction tests. There were 58 compaction tests taken in April. As of April 30, 2022, a total of approximately 2,409,000 yd^3 had been placed and compacted. This required at least 482 compaction tests, and 859 tests have been taken. There were no failing tests in April; all tests met the minimum compaction requirement of 90%. The compaction testing results are summarized in Appendix D, and the testing locations are shown on Figure 6.

6.0 RECLAMATION PROGRESS

Riverbend has initiated reclamation grading at the Pikeview Quarry and has contracted with Stantec to provide EPCM services through completion. As an updated feature of our monthly report, we provide progress of activities, anticipated milestone schedule and a one month look ahead to better communicate project objectives. A phased or 'gated" approach will be used to complete the reclamation process going forward (See milestone schedule below)

Phase 1 - Value Engineering and issue RFP to qualified contractors

Phase 2 - Commercial negotiations with successful contractor

Phase 3 - Execution planning and Contractor readiness review

Phase 4 - Site Construction execution

Phase 5 - Final revegetation (season 2)

Task/Milestone	Estimated Dates
Phase 1 – Issue RFP to Bidders	Completed June 2021
Phase 1 – RFP Evaluation & Recommendation	Completed July 2021
Phase 2 – Constructor Contract Award	Completed January 2022
Phase 3 – Project Kick-off with successful Contractor	Completed February 4, 2022
Phase 4 – Contractor Mobilization to Site	Completed February 2022
Phase 4 – Reclamation Grading	February 2022 to present
Phase 4 – Contractor Demobilize from Site	Fall 2023
Phase 5 – Final Revegetation season 2 Begins	2023 until acceptance

Progress of activities this month:

- Contractor continued earth moving activities
- Quality assurance testing continued
- Importing topsoil material continued, but at a decreased rate
- Processing of riprap continued

- Geotechnical monitoring continued
- Ongoing coordination with USFS and the City of Colorado Springs to obtain approval to excavate the remaining material from USFS land

Work planned for next month includes:

- Continue reclamation grading
- Continue importing topsoil material
- Continue processing riprap
- Continue geotechnical monitoring
- Planning for placing topsoil and revegetation of areas that have reached the final grade. This is mostly the area below the lowest terrace.
- Remove and replace prisms on an as-needed basis. Prisms along the lowest terrace and buttress toe are being planned for installation in May.
- Continue working with USFS and the City of Colorado Springs to obtain approval to excavate the remaining material from USFS land.

7.0 CONCLUSIONS

The data collected in April 2023 demonstrate compliance with the reclamation grading plan. The buttress fill is being placed and compacted as intended and specified.

None of the data collected in April 2023 indicate evidence of any large-scale movements that increase risk to workers or to the public. Shallow surface erosion continues to occur requiring ongoing maintenance and cleanup.

- Restricted access to the ungraded landslide slopes should continue.
- All monitoring should continue at current frequencies.
- All alerts shall continue to be taken seriously even if data errors are suspected.

LEGEND

- Permit/Affected Lands Boundary
- City Grading Permit Boundary
- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent
- Existing Prism
- Removed Prism

N

0 300' 600'

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Client/Project
RIVERBEND INDUSTRIES INC.

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
SITE MAP

Revision
#

Date
2023.05.31

Drawn By
PK

Figure No.
1

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Appendix A

Visual Inspections

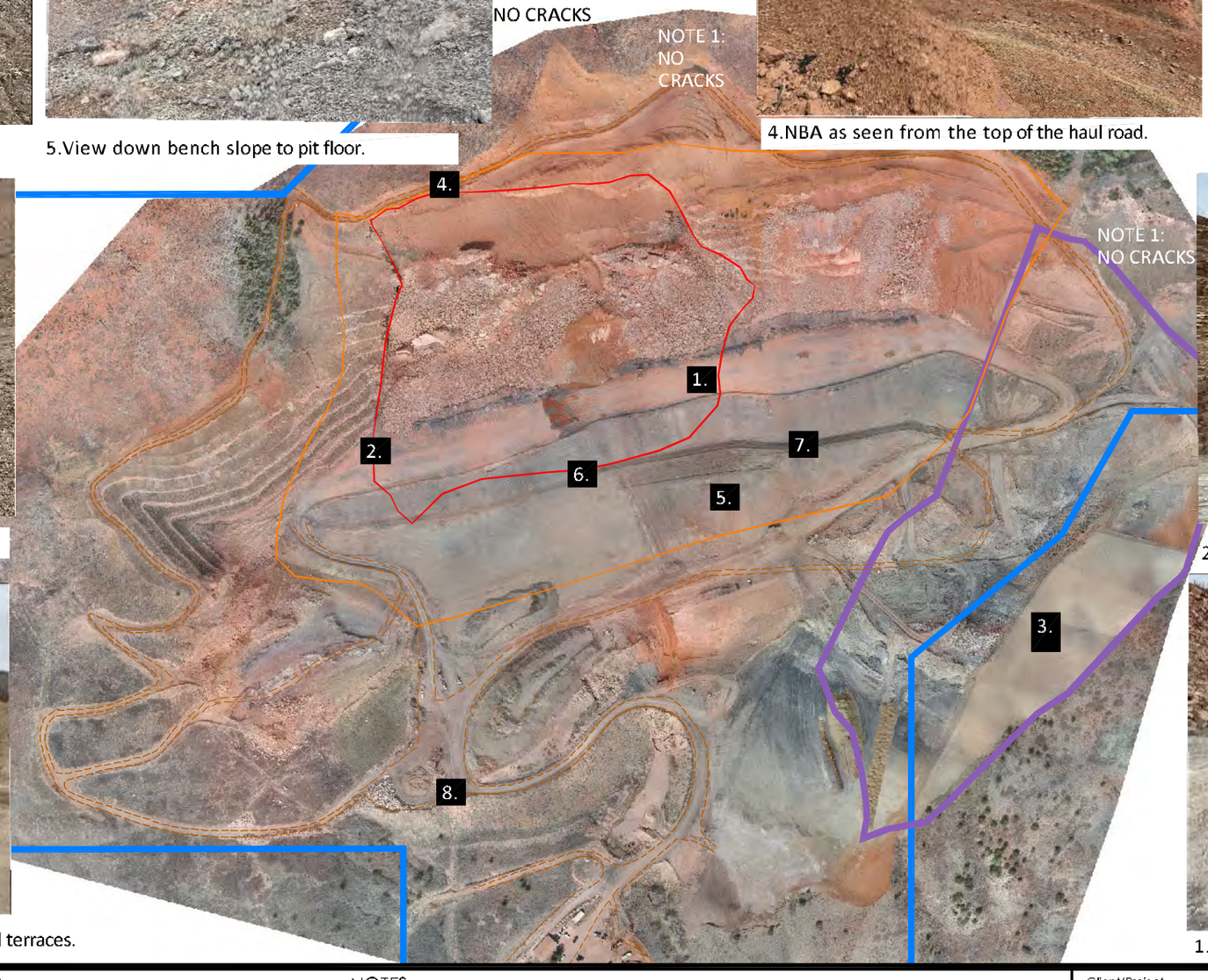
6. View south on slope of first bench

5.View down bench slope to pit floor.

4.NBA as seen from the top of the haul road.

3. North Borrow Area as seen from the pit floor.

7. View south on slope of first bench.



2. Slide area to the west of the pit floor.

8. Riprap sorted and stored on site for swales and terraces.

1. View north on compacted pit floor.

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LEGEND

- Permit/Affected Lands Boundary
- City Grading Permit Boundary
- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent
- Observed Crack

NOTES

1. NO CRACKS OBSERVED IN THIS AREA.
2. ALL PHOTOS TAKEN APRIL 13, 2023.

N

0 400' 800'

Client/Project
RIVERBEND INDUSTRIES INC.

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
OBSERVATIONS FROM APRIL INSPECTION

Revision
#

Date
2023.05.31

Drawn By
PK

Figure No.
2

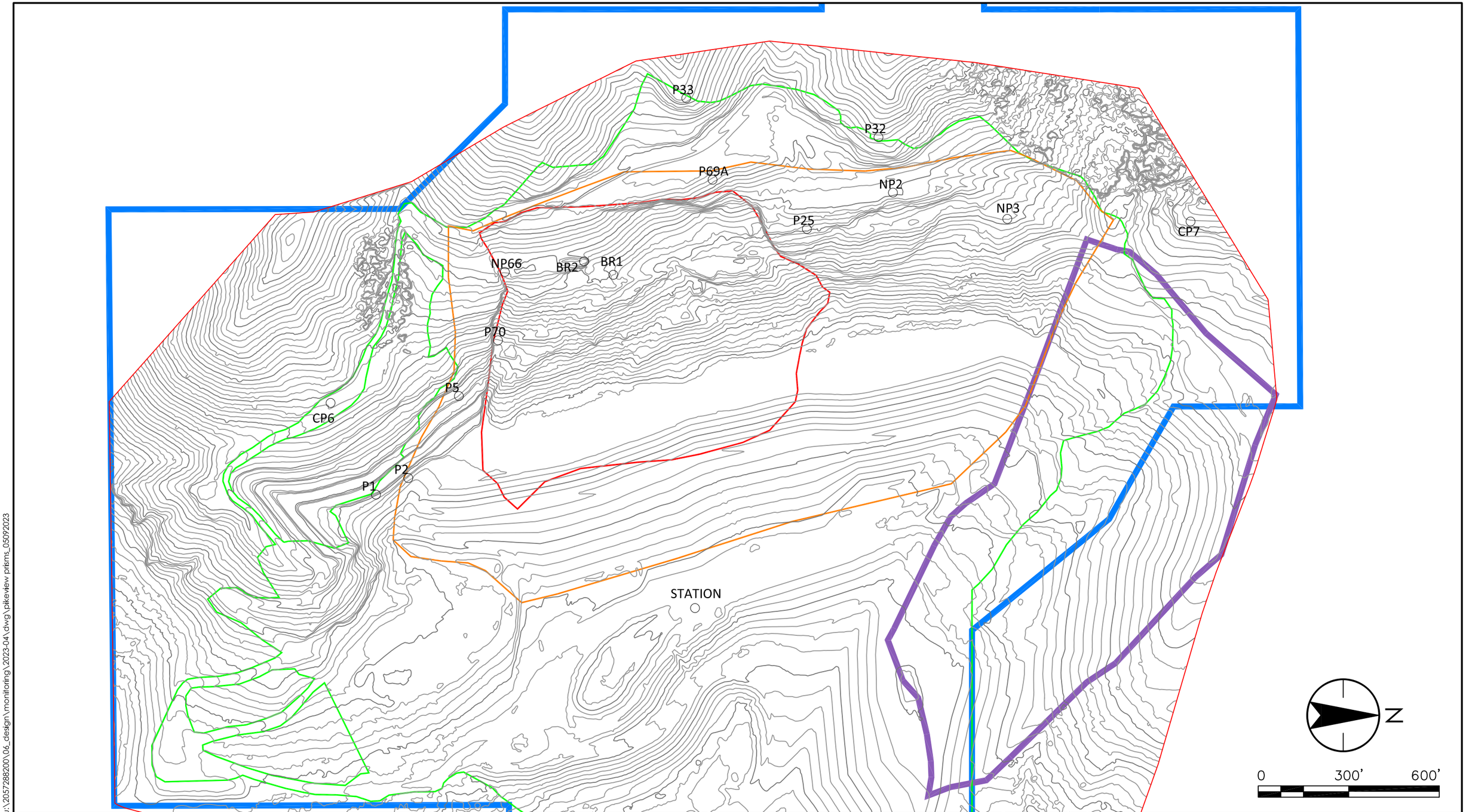
Stantec

Table A-1 Summary of Daily Inspections

Date	Notes	Inspection By
1-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
2-Apr-23	No work.	Not applicable
3-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
4-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
5-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
6-Apr-23	No movement observed but snow covered. Limited work.	Jerald Schnabel
7-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
8-Apr-23	No work.	Not applicable
9-Apr-23	No work.	Not applicable
10-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
11-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
12-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
13-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
14-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
15-Apr-23	No work.	Not applicable
16-Apr-23	No work.	Not applicable
17-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
18-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
19-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
20-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
21-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
22-Apr-23	No work.	Not applicable
23-Apr-23	No work.	Not applicable
24-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
25-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
26-Apr-23	No movement observed. No work due to weather.	Jerald Schnabel
27-Apr-23	No movement observed. No work due to wet conditions.	Jerald Schnabel
28-Apr-23	No movement observed. No work due to wet conditions.	Jerald Schnabel
29-Apr-23	No movement observed. Good to proceed.	Jerald Schnabel
30-Apr-23	No work.	Not applicable

Appendix B

Prism Survey



LEGEND

- Permit/Affected Lands Boundary
- City Grading Permit Boundary
- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent
- Existing Prism
- Removed Prism

1. PRISMS WILL BE INSTALLED AS EACH BENCH IS FINISHED.
2. ALL PRISMS WILL BE RETAINED AS LONG AS POSSIBLE.
3. TOPOGRAPHY FROM APRIL 25, 2023 DRONE SURVEY.
4. CONTOUR INTERVAL IS 10 FEET

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Client/Project
RIVERBEND INDUSTRIES INC.

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
EXISTING PRISMS WITH CURRENT SURFACE

Revision	Date
#	2023.05.31
Drawn By	Figure No.
PK	3

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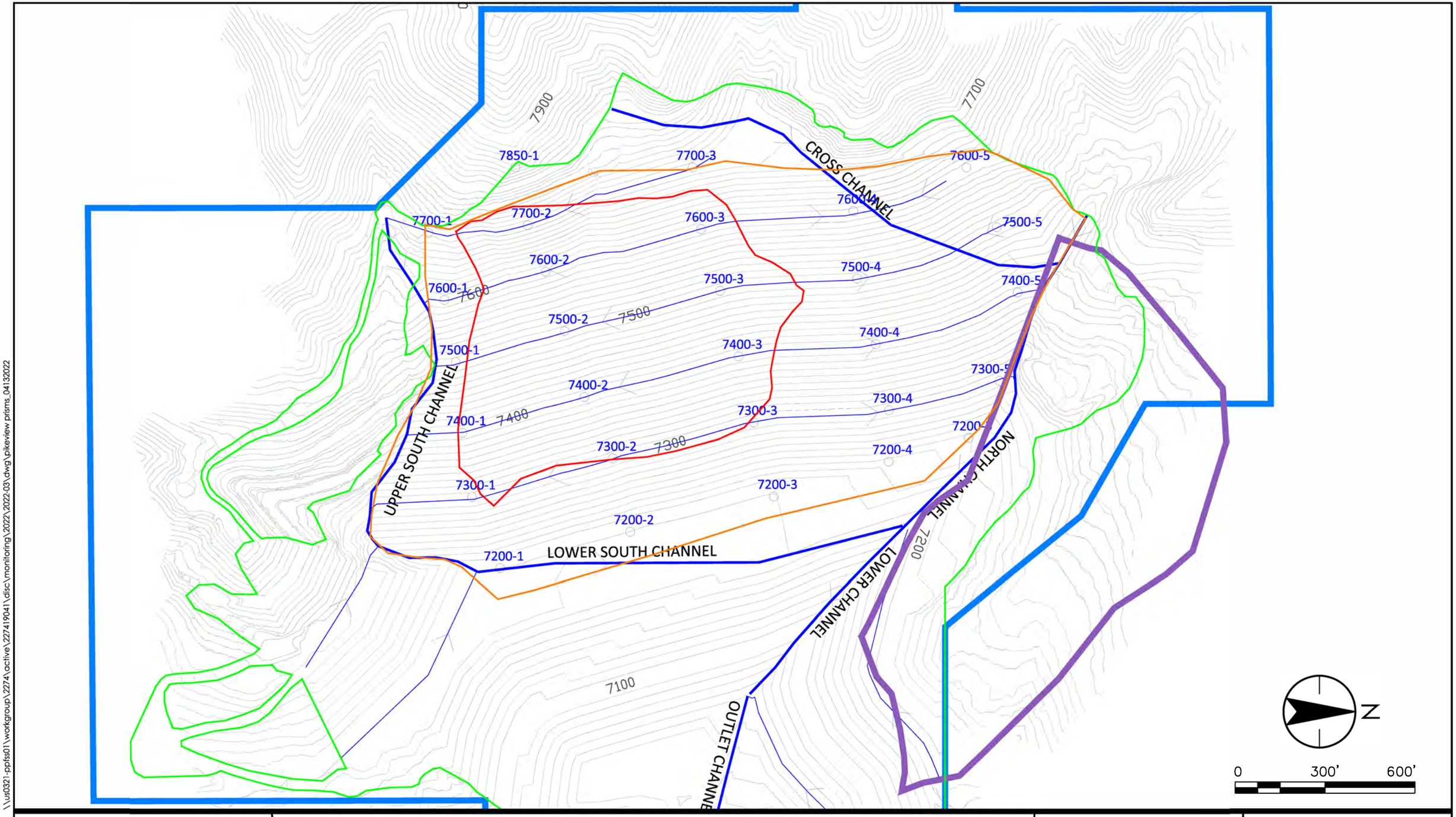

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LEGEND

- Permit/Affected Lands Boundary
- City Grading Permit Boundary
- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent
- Proposed Prism

NOTES

1. PRISMS WILL BE INSTALLED AS EACH BENCH IS FINISHED.
2. ALL PRISMS WILL BE RETAINED AS LONG AS POSSIBLE.

Client/Project
RIVERBEND INDUSTRIES INC.
PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
PROPOSED PRISMS WITH RECLAMATION SURFACE

Revision	Date
#	2023.05.31
Drawn By	Figure No.
PK	4

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Prism Log

Prism	Date	Action	Comment
CP2	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future
CP3	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future
NP1	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future
TOE2	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future
CP4	11-Mar-22	Prism Added	Control Point Replacement
CP5	11-Mar-22	Prism Added	Control Point Replacement
TS1	12-Mar-22	Prism Added	New Prism Added
TOE3	30-Mar-22	Prism Removed	Reclamation grading to affect buffer filling activities
TOE4	8-Apr-22	Prism Added	New Prism Added
TOE5	8-Apr-22	Prism Added	New Prism Added
BR1	8-Apr-22	Prism Added	New Prism Added
BR2	8-Apr-22	Prism Added	New Prism Added
NP1	22-Apr-22	Prism Removed	Originally NP1. Prism re-set in same spot and is now NP3
NP3	22-Apr-22	Prism Added	
TOE3	22-Apr-22	Prism Removed	Originally TOE3. Prism moved to a higher elevation and is now TOE6
TOE6	22-Apr-22	Prism Added	
TOE1	22-Apr-22	Prism Removed	Reclamation grading to affect buffer filling activities
P4	17-Jun-22	Prism Removed	Prism removed due to rock deterioration
P69	20-Jul-22	Prism Removed	Prism was originally P69. It has been re-set to Higher Elevation and is now P69A. Related to base station relocation.
P69A	20-Jul-22	Prism Added	
P35	20-Jul-22	Prism Renamed	Prism was originally P35. It has been re-set to Higher Elevation and is now CP6. Related to base station relocation.
CP6	20-Jul-22	Prism Added	
CP5	20-Jul-22	Prism Renamed	Prism was originally CP5. It has been re-set to Higher Elevation and is now CP7. Related to base station relocation.
CP7	20-Jul-22	Prism Added	
CP1	20-Jul-22	Prism Removed	Not in line of sight of new base station.
CP4	20-Jul-22	Prism Removed	Not in line of sight of new base station.
TOE4	20-Jul-22	Prism Removed	Not in line of sight of new base station.
TOE6	20-Jul-22	Prism Removed	Not in line of sight of new base station.
TOE5	4-Aug-2022	Prism Removed	Out of line of sight of base station.
P63	15-Aug-2022	Prism Removed	Out of line of sight of base station.

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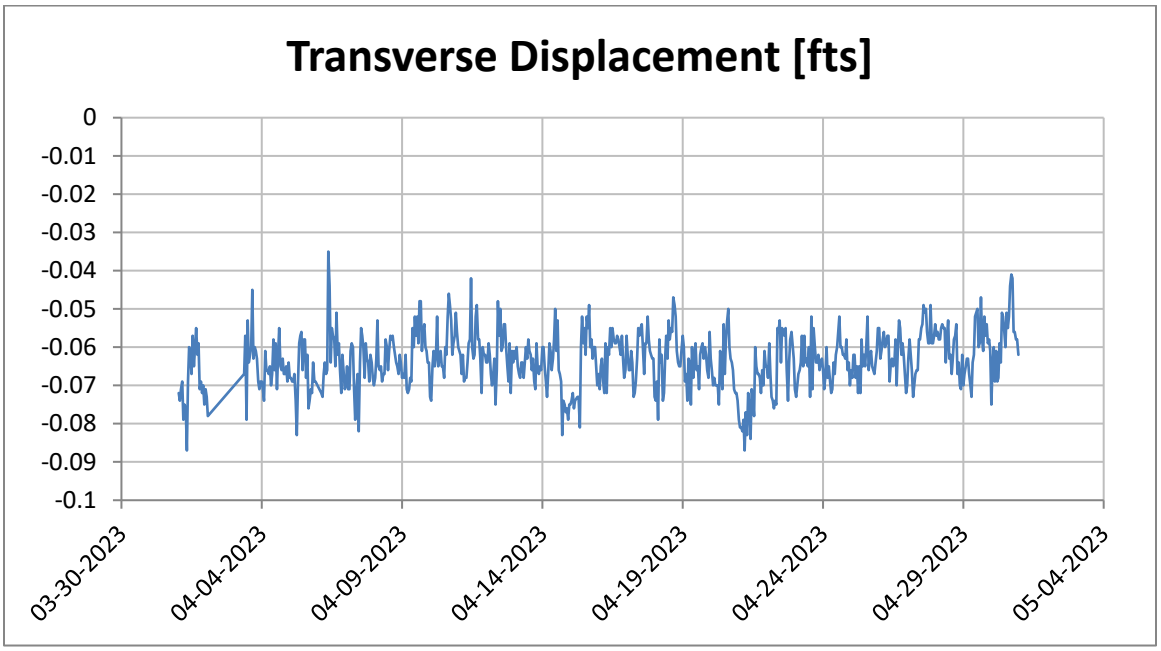
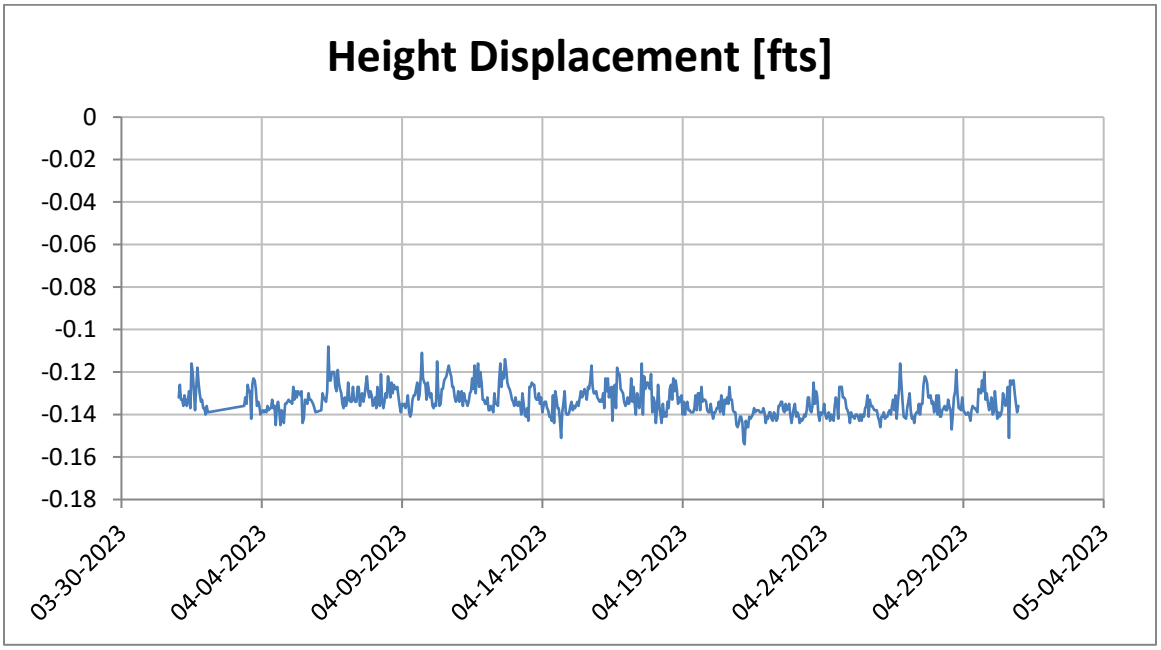
Prism BR1





Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Prism previously recorded slope creep movements with slow velocity.

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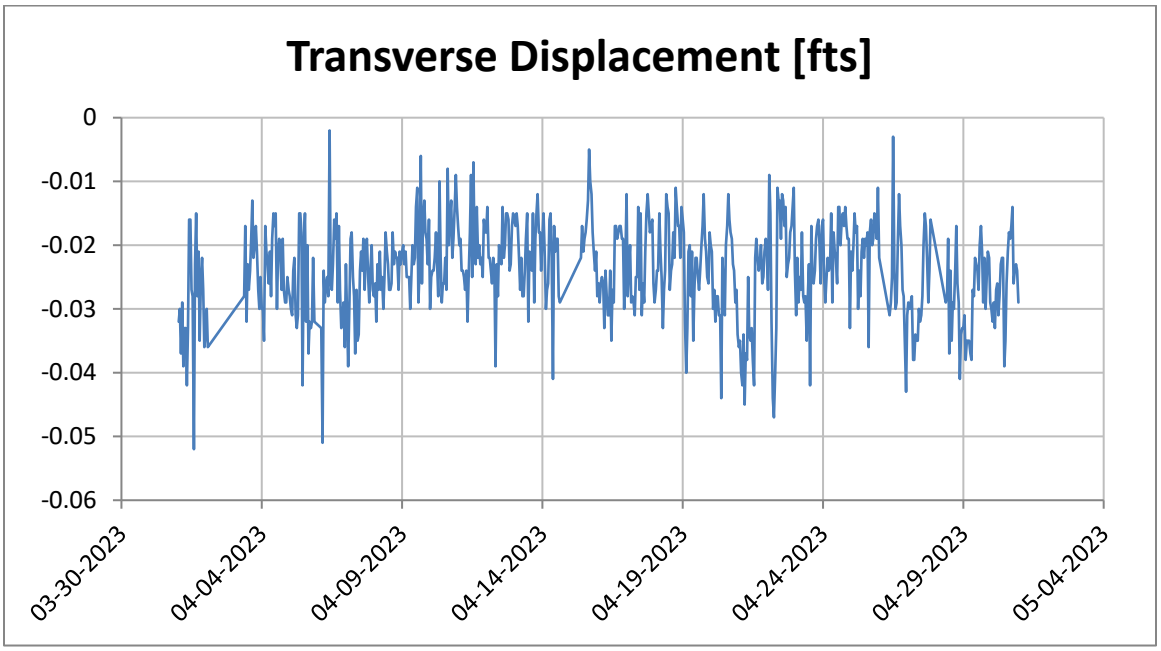
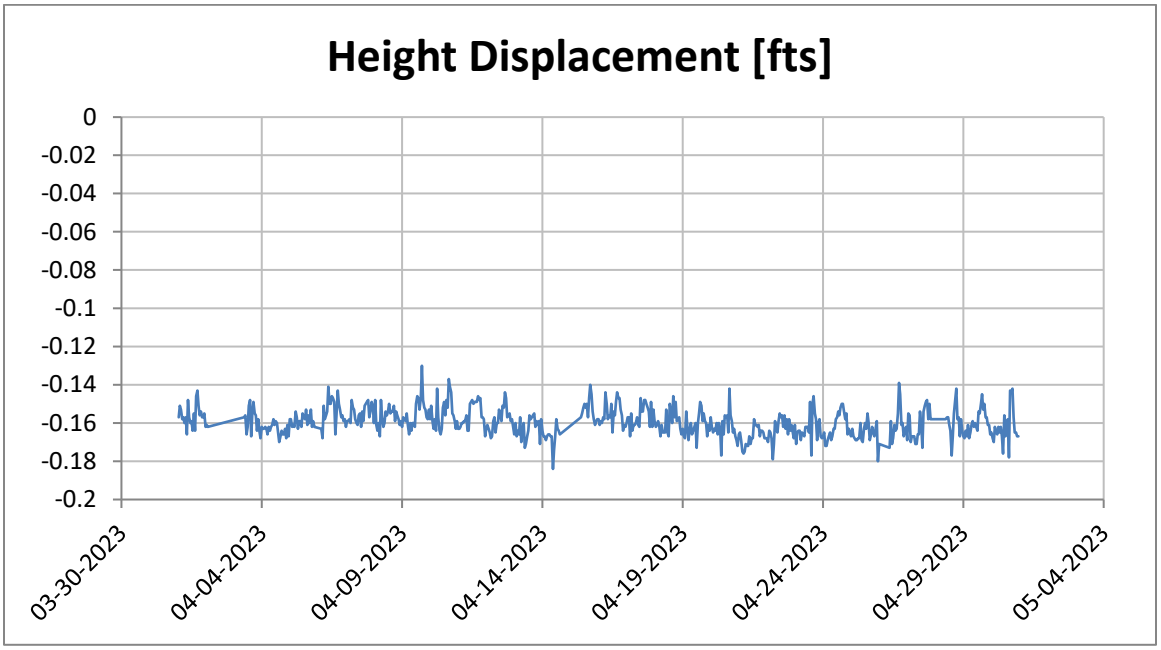
Prism BR2





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4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Prism previously recorded slope creep movements with slow velocity.

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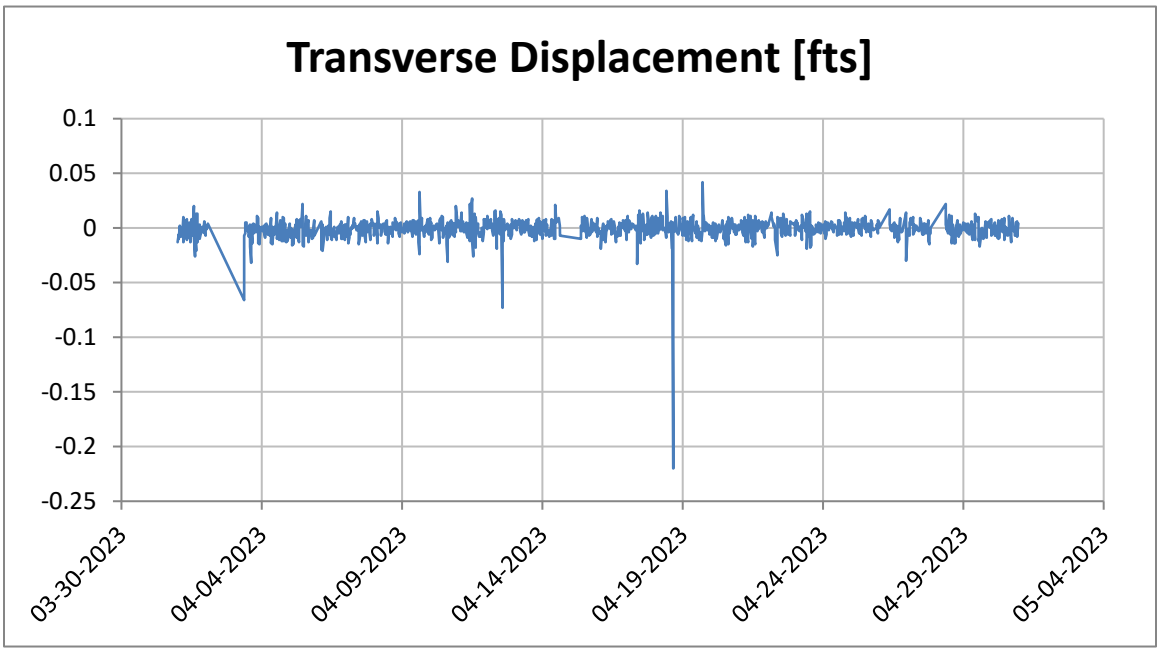
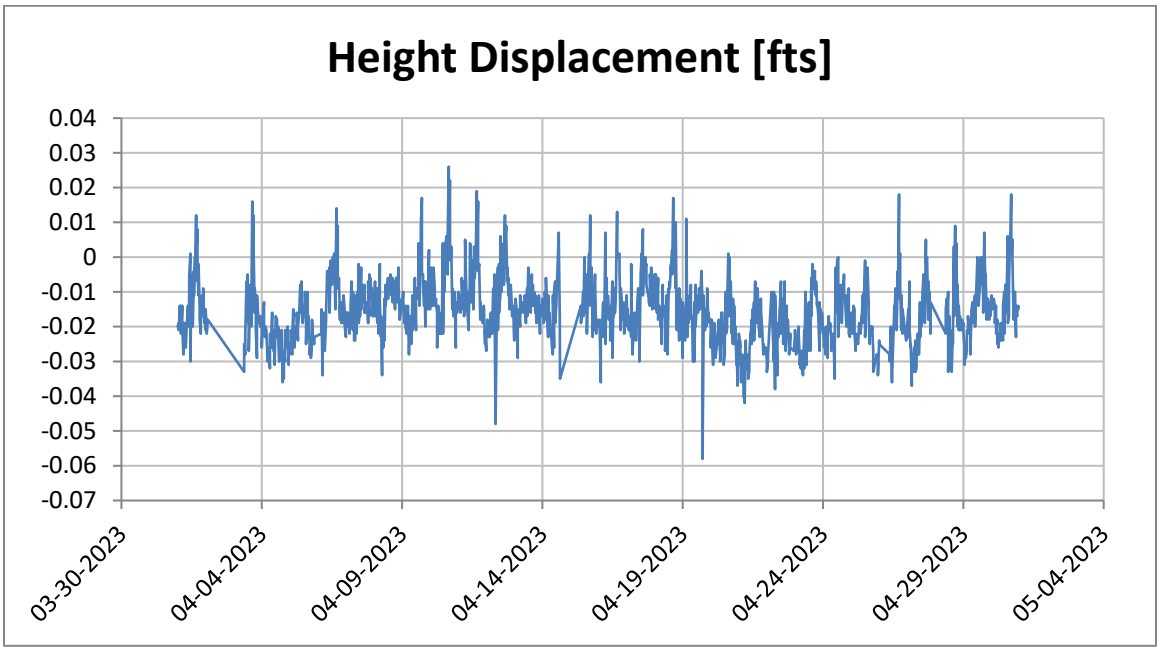
Stantec

Prism CP6



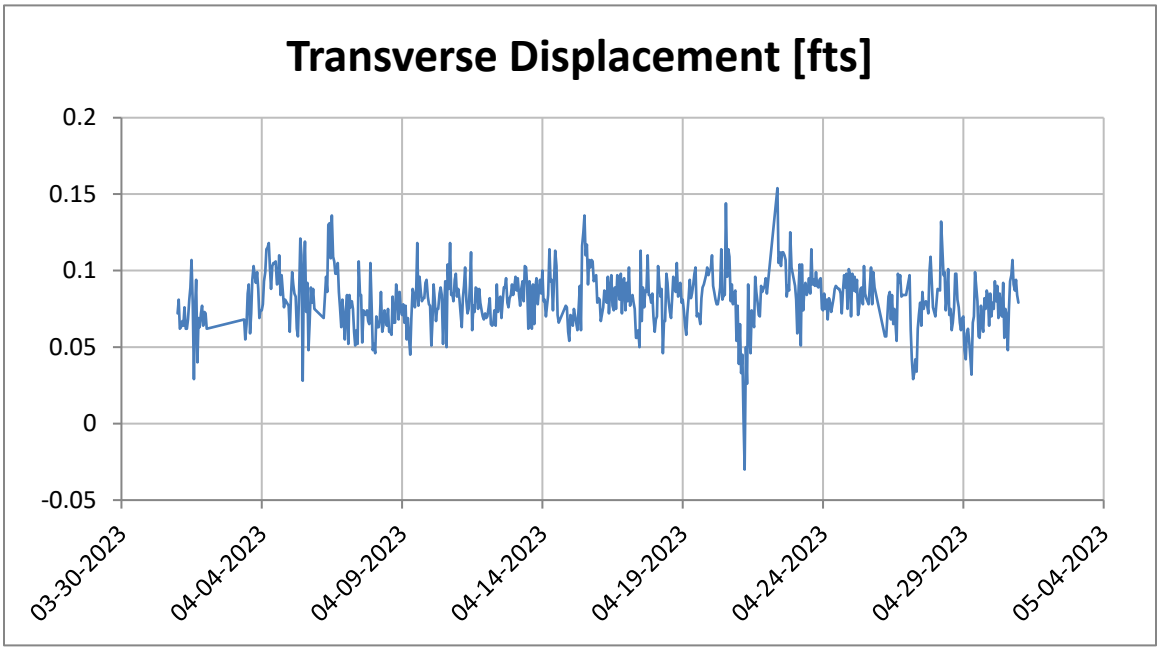


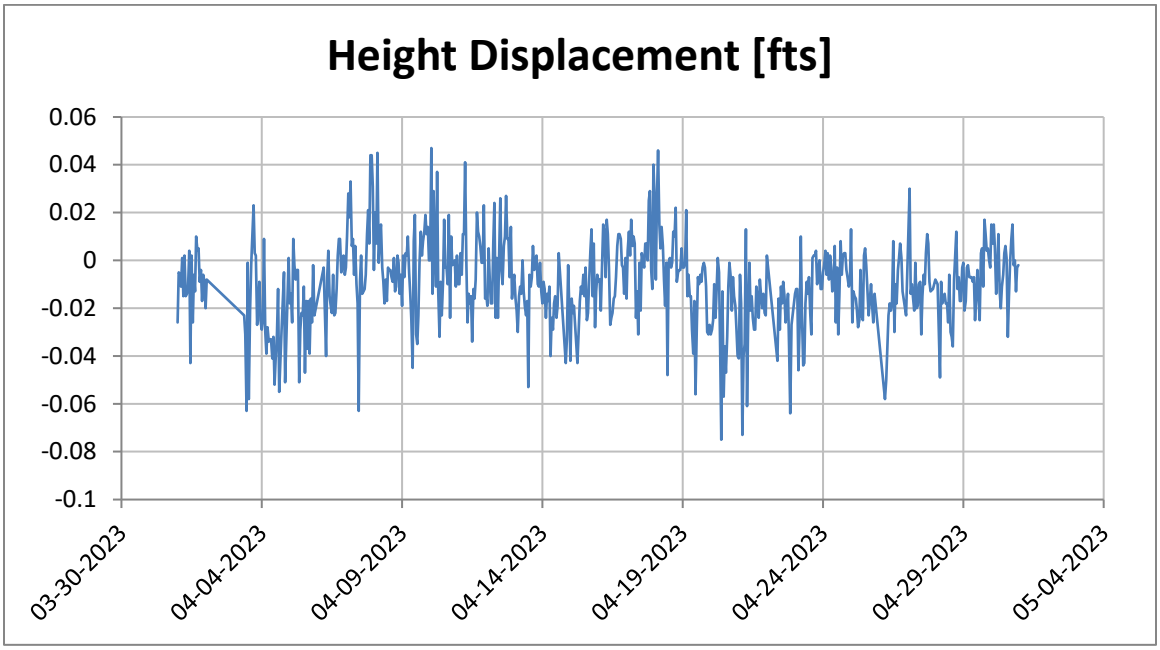
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism CP7



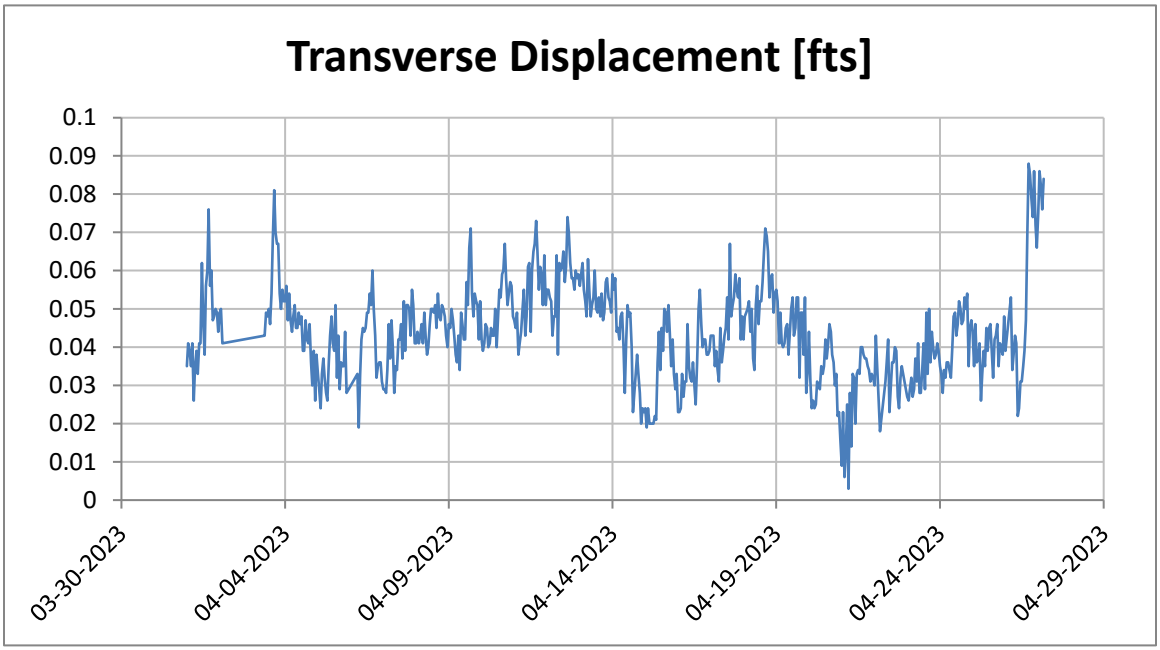


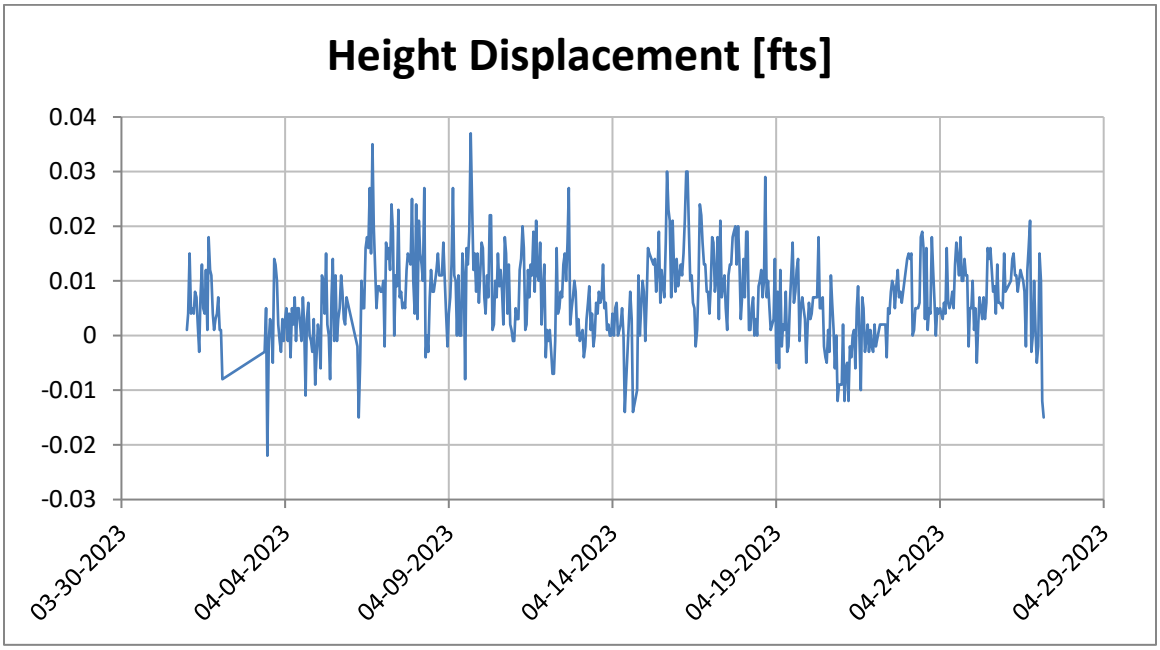
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism NP2



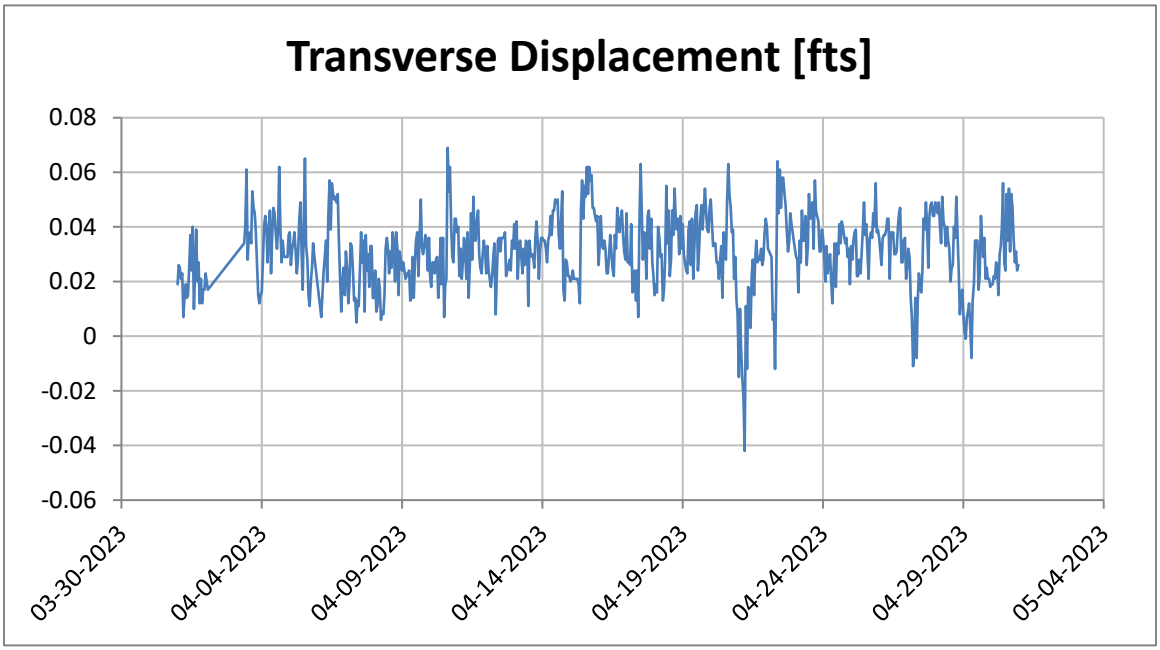


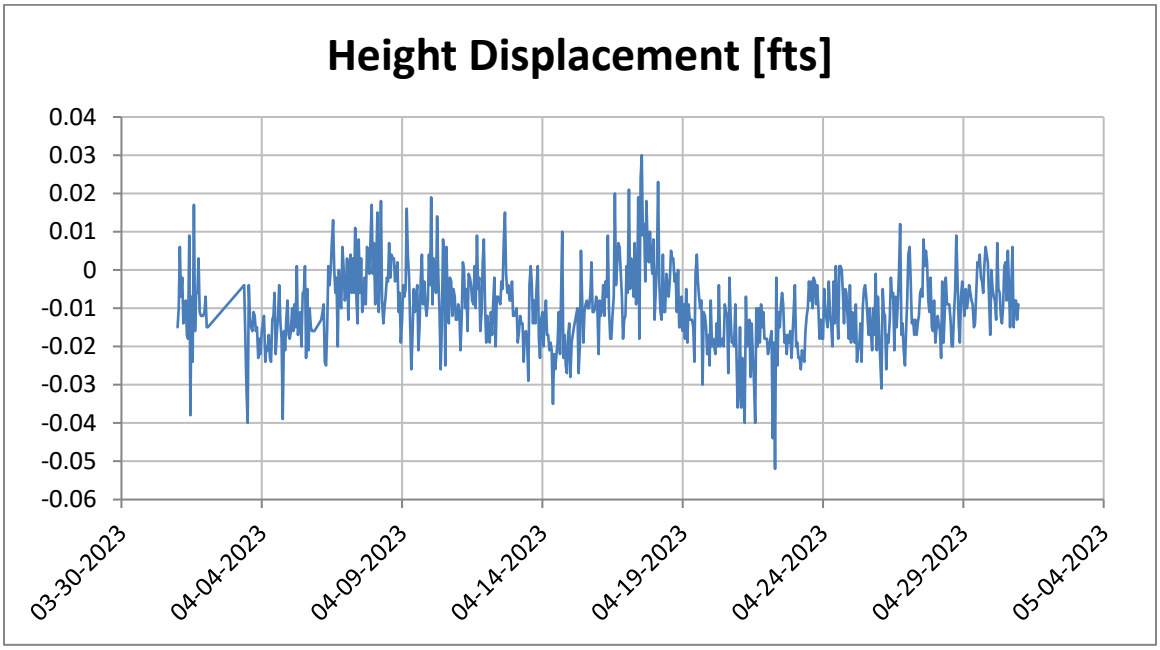
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Regression limit alert received on April 1.

Stantec

Prism NP3



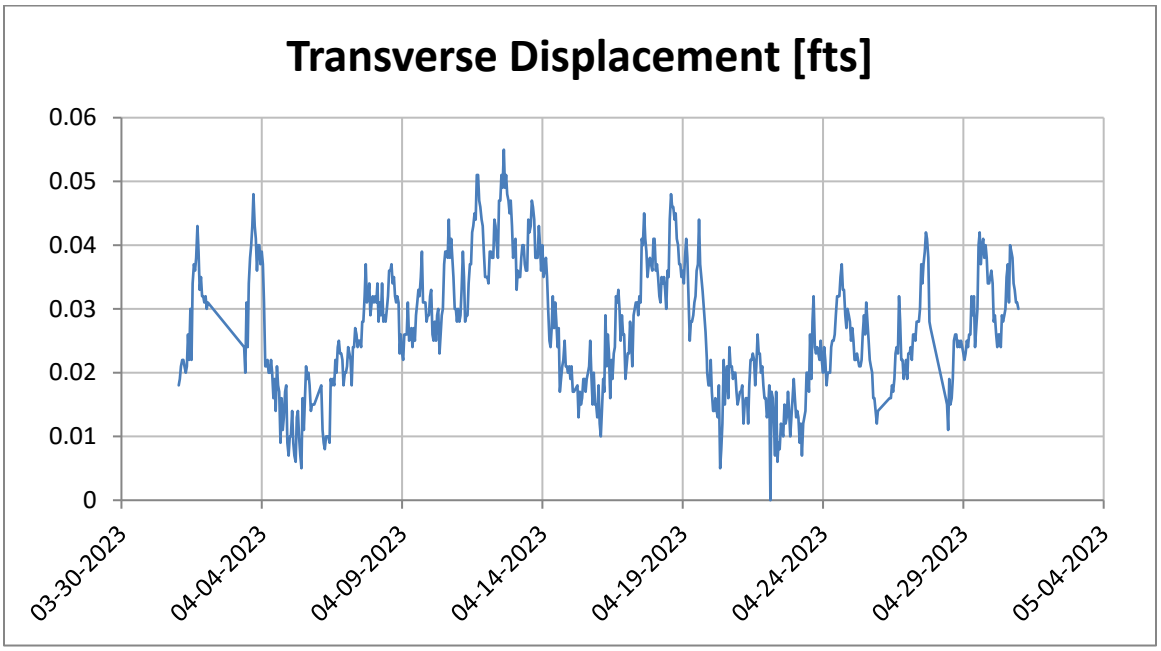


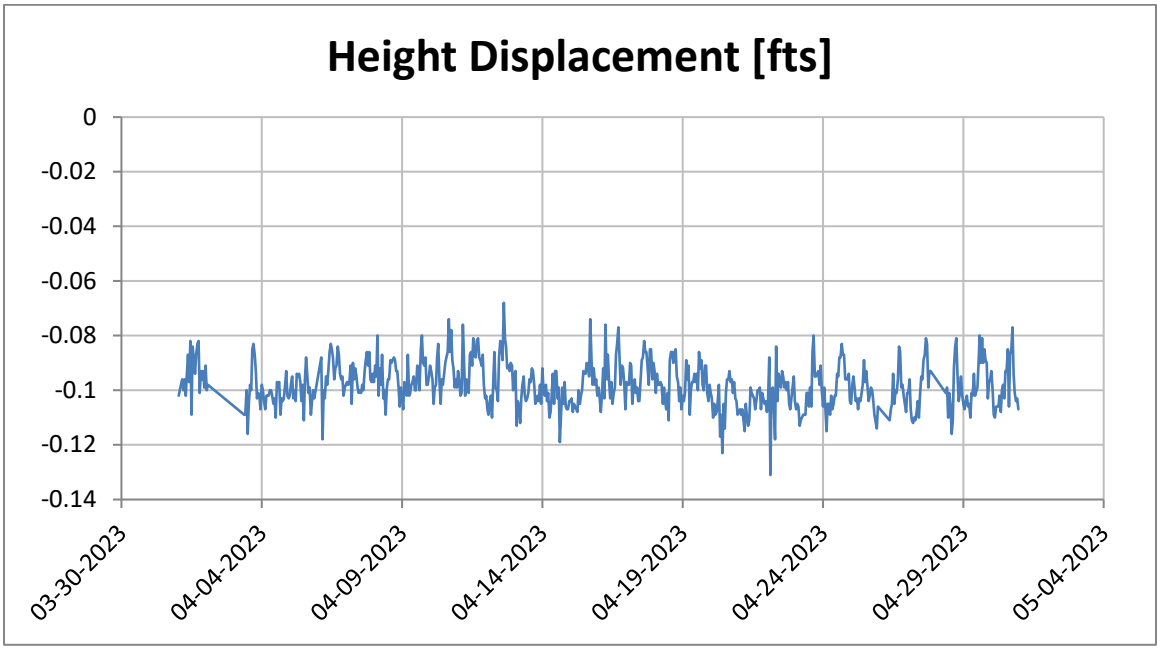
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism NP66



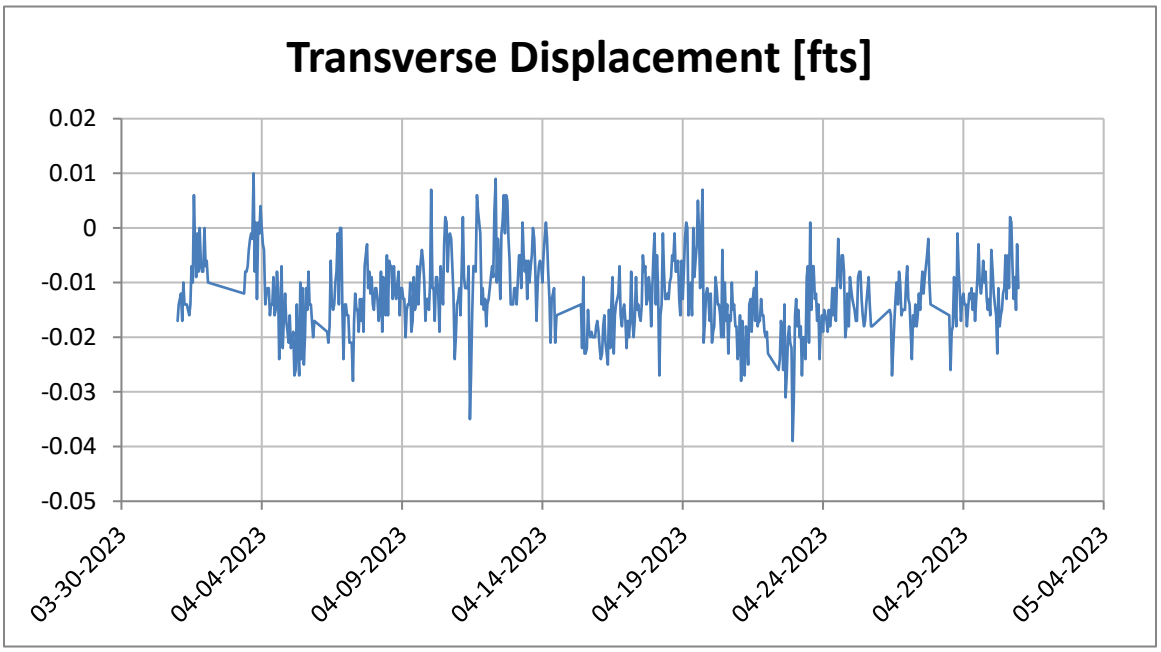


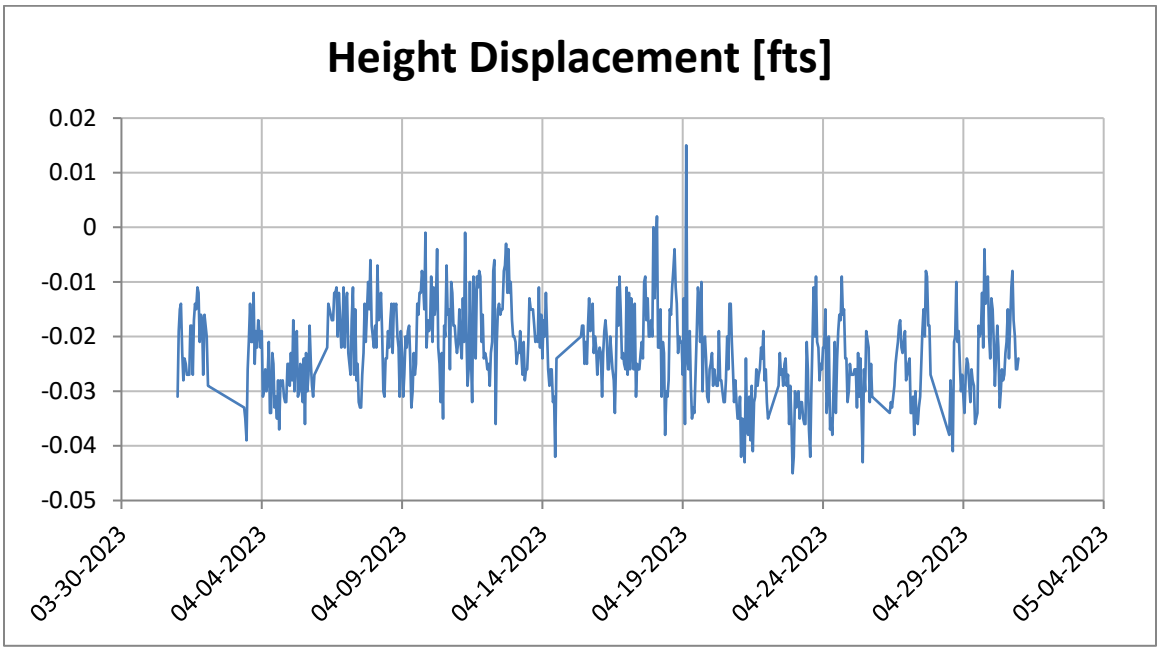
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Prism previously recorded slope creep movements with slow velocity.

Stantec

Prism P1



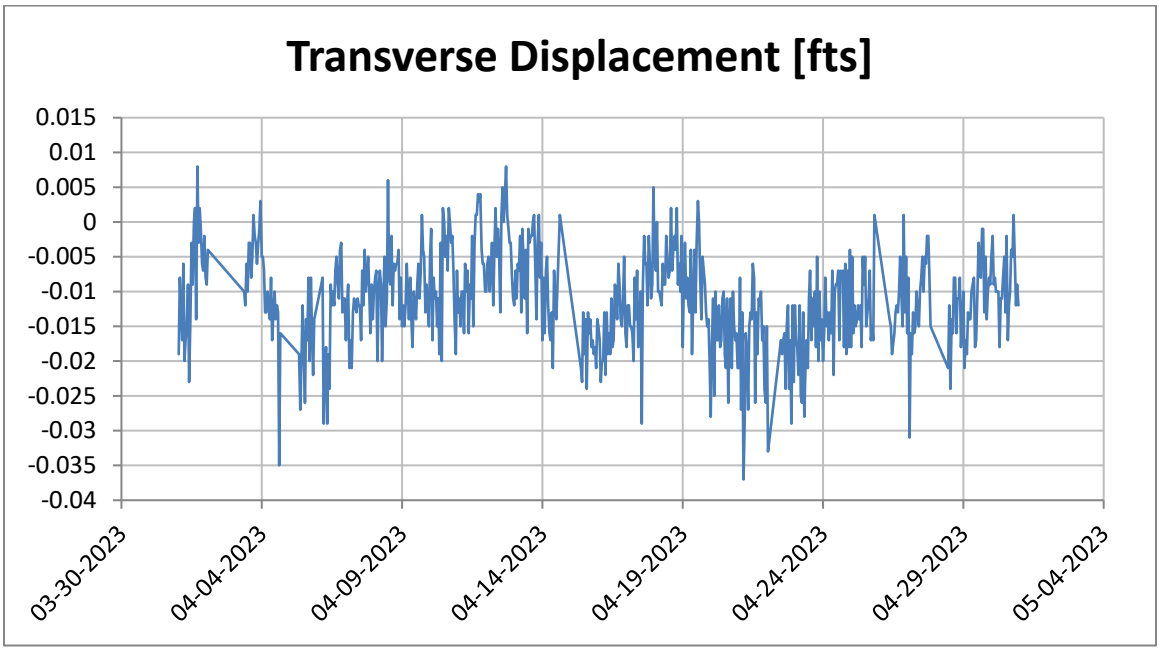


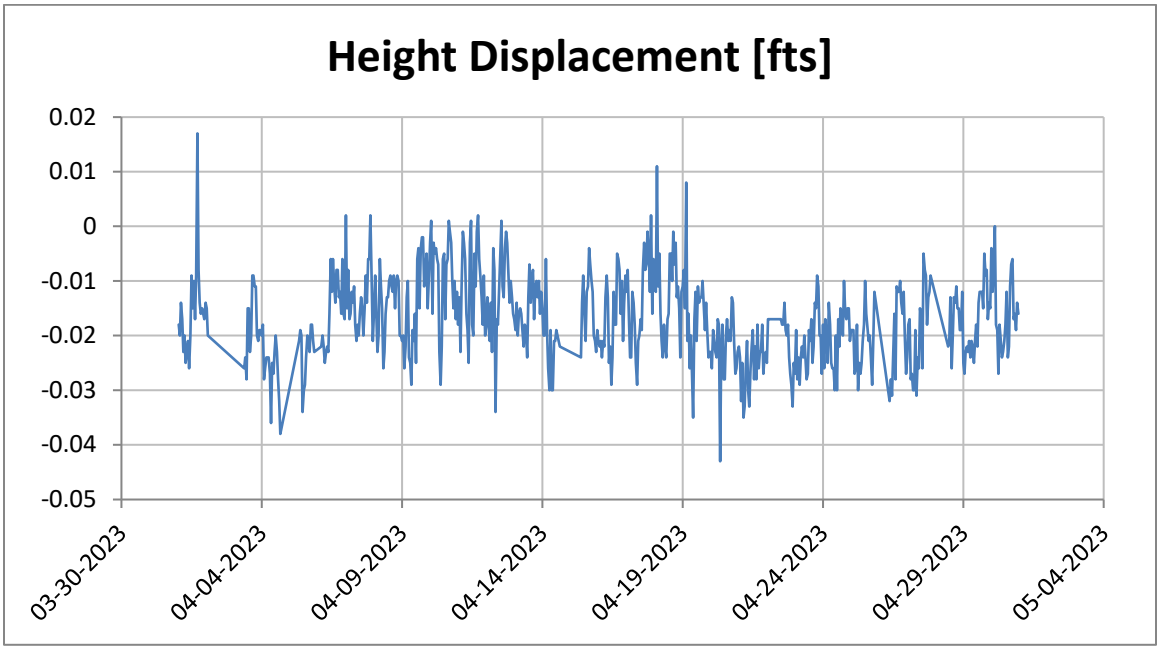
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism P2



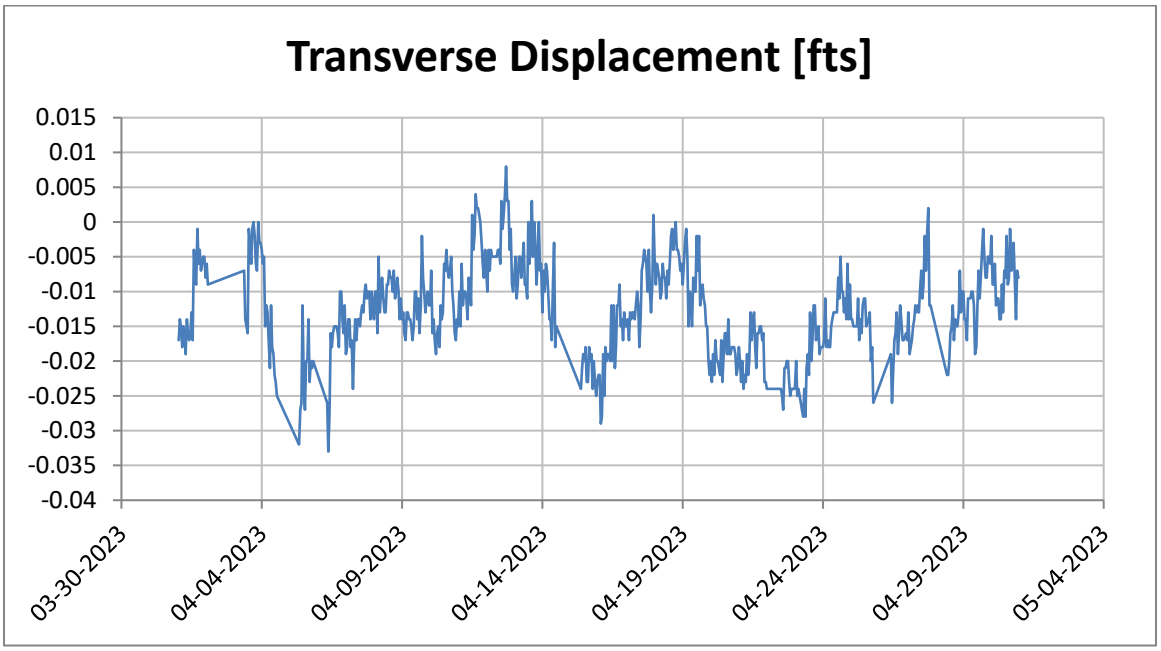


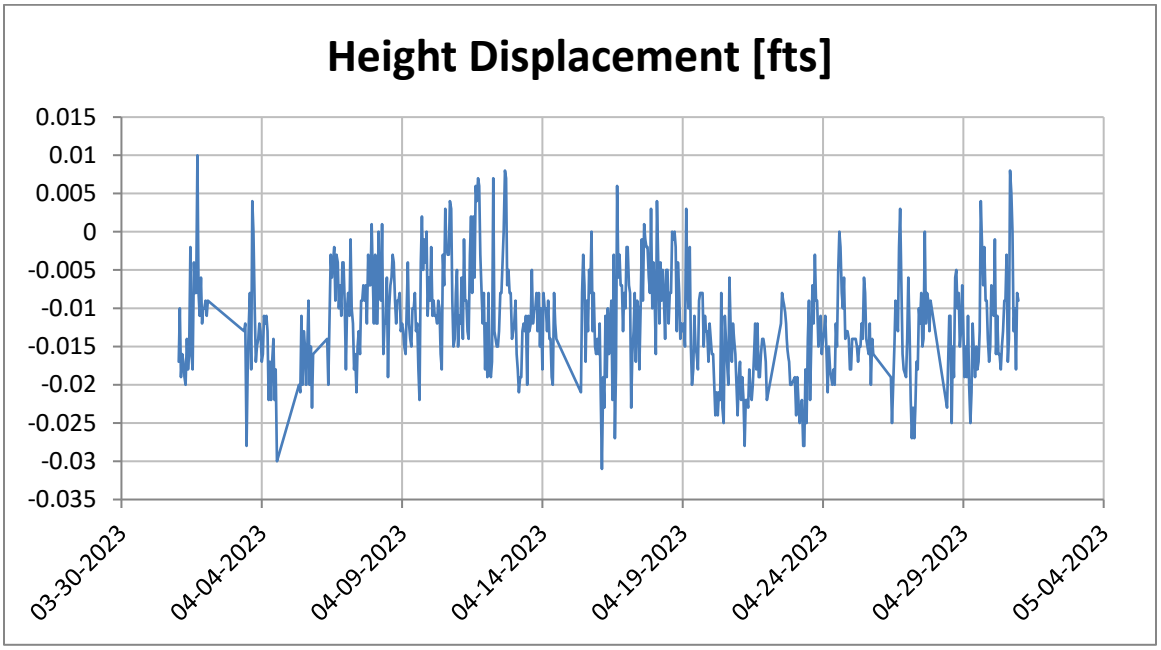
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism P5





Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

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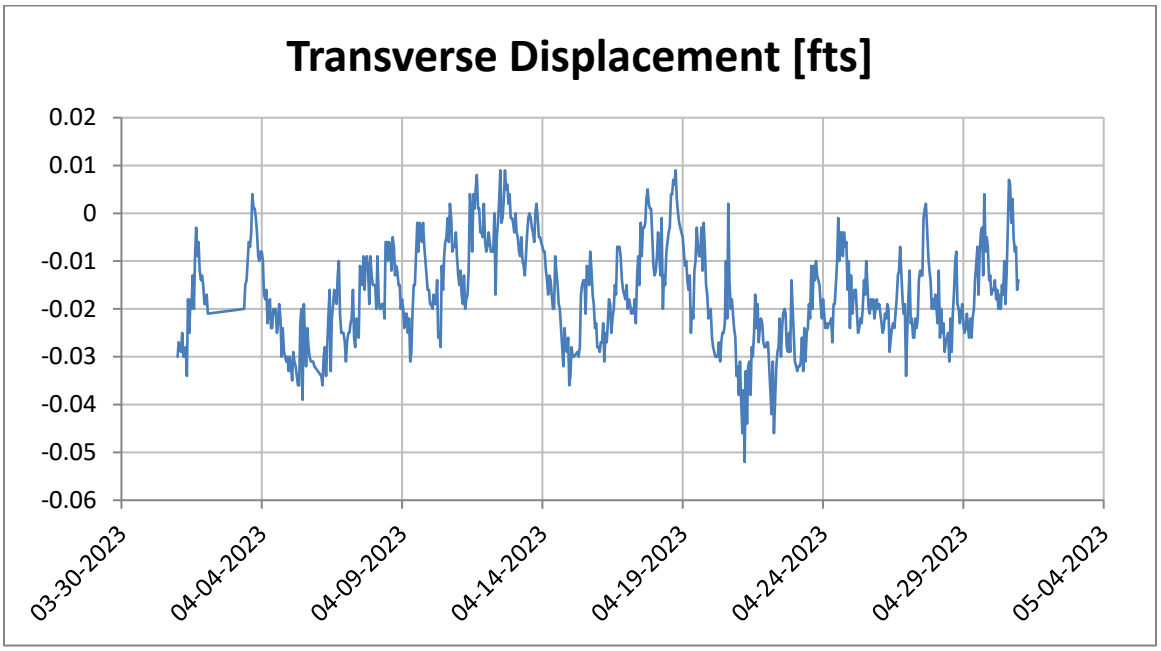
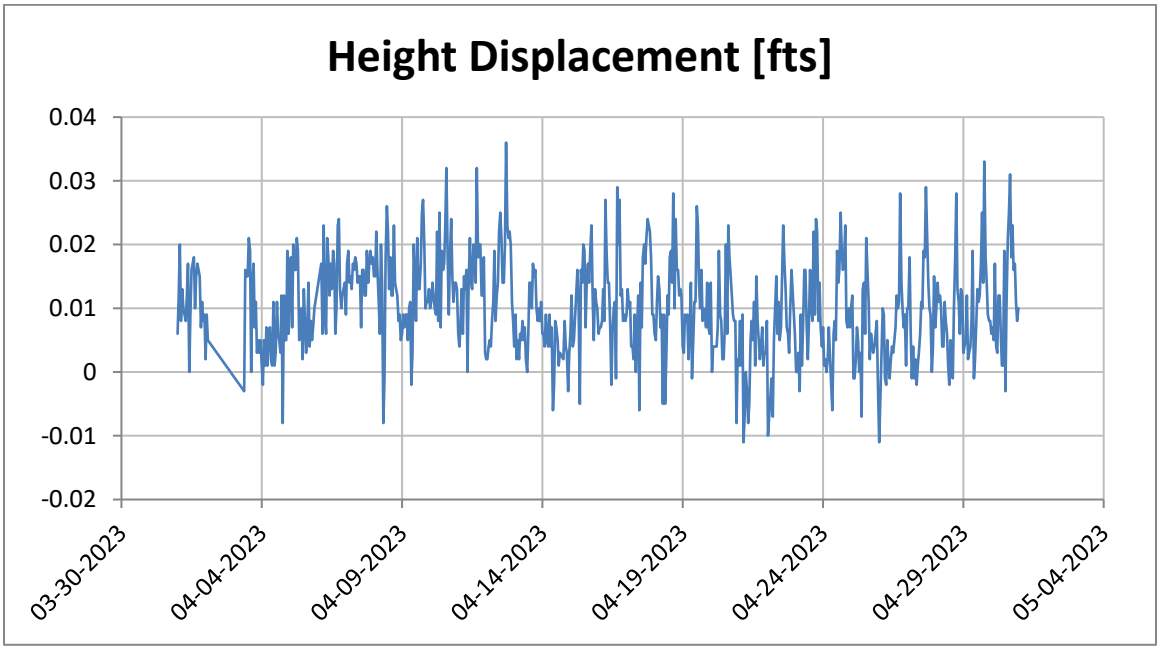
Prism P25





Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

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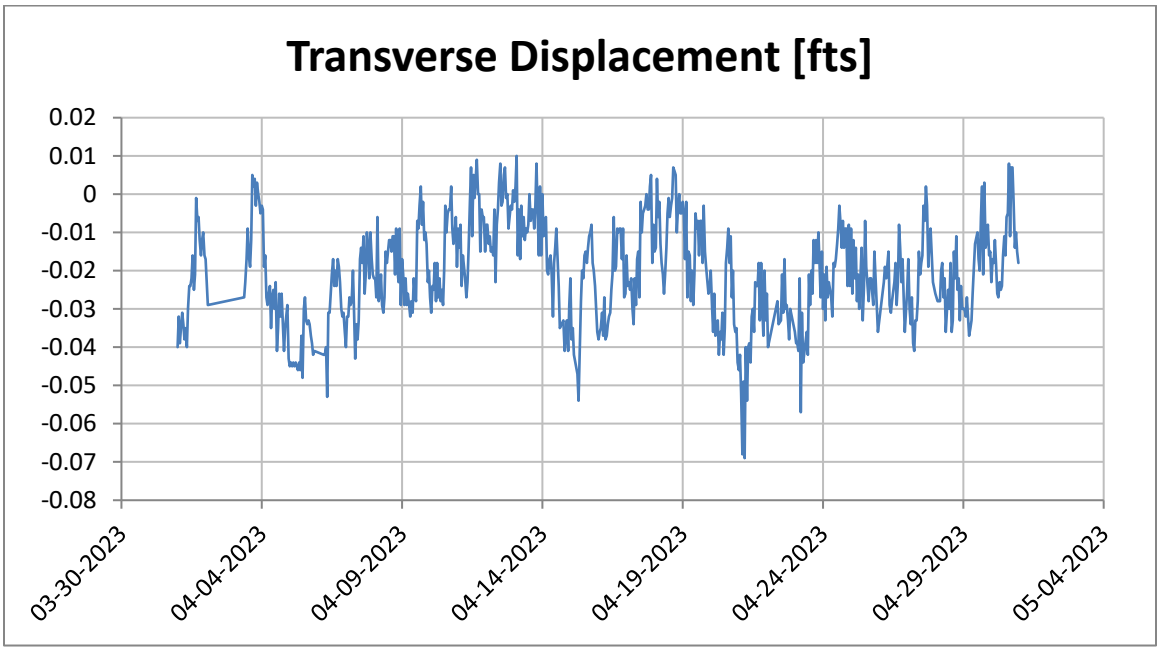
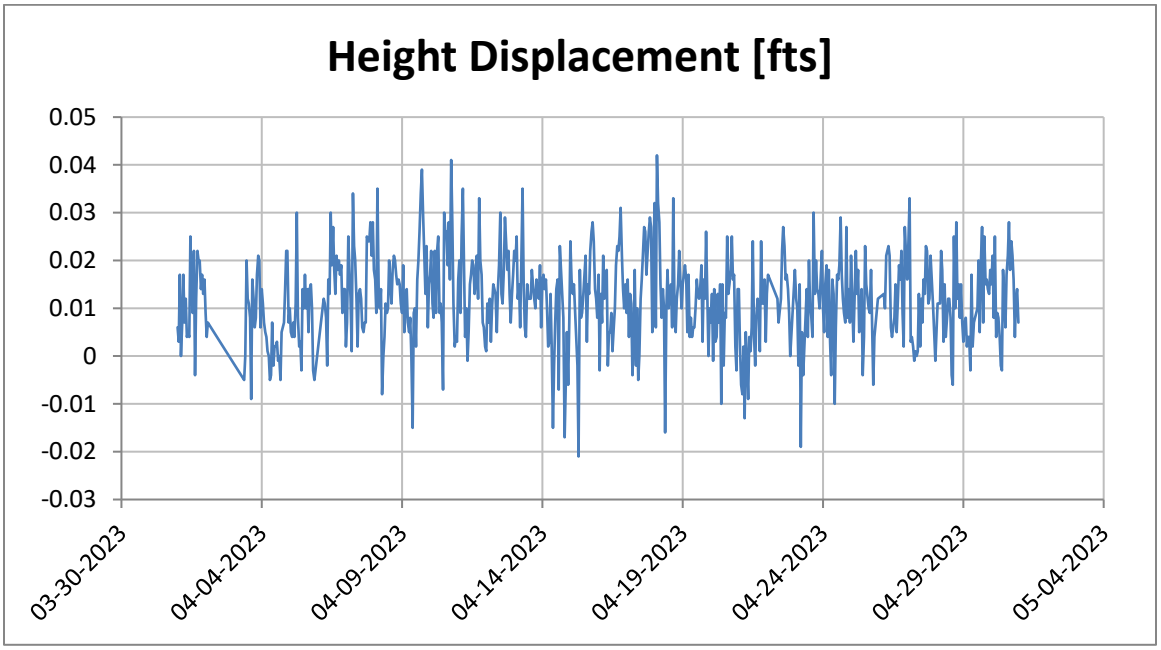
Prism P32



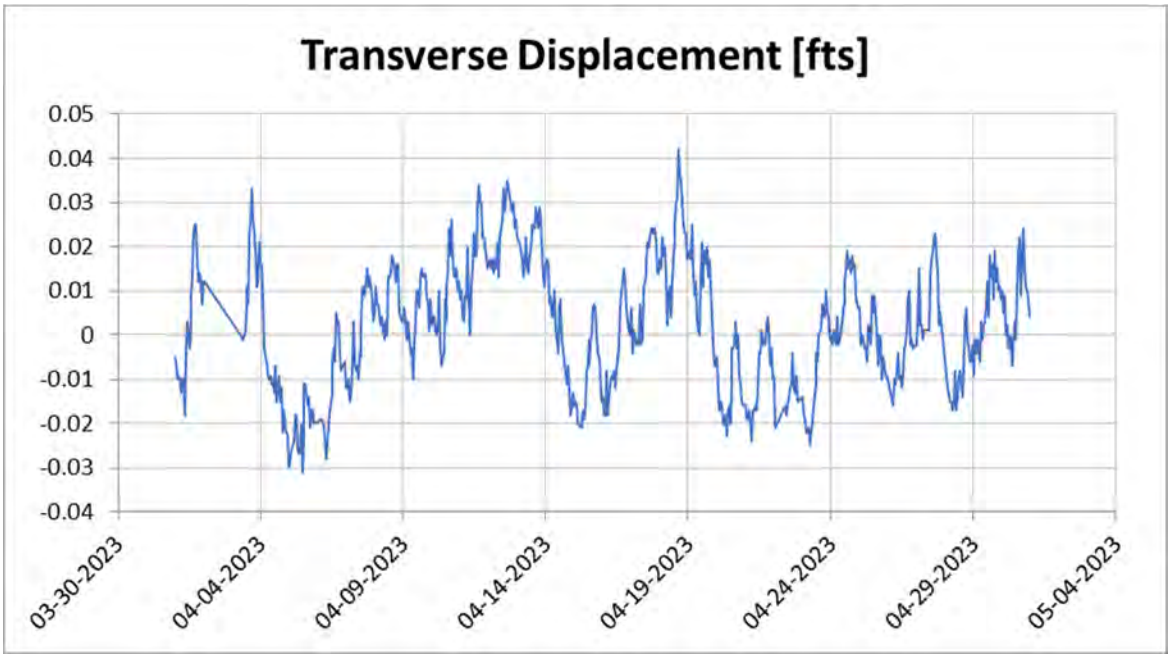


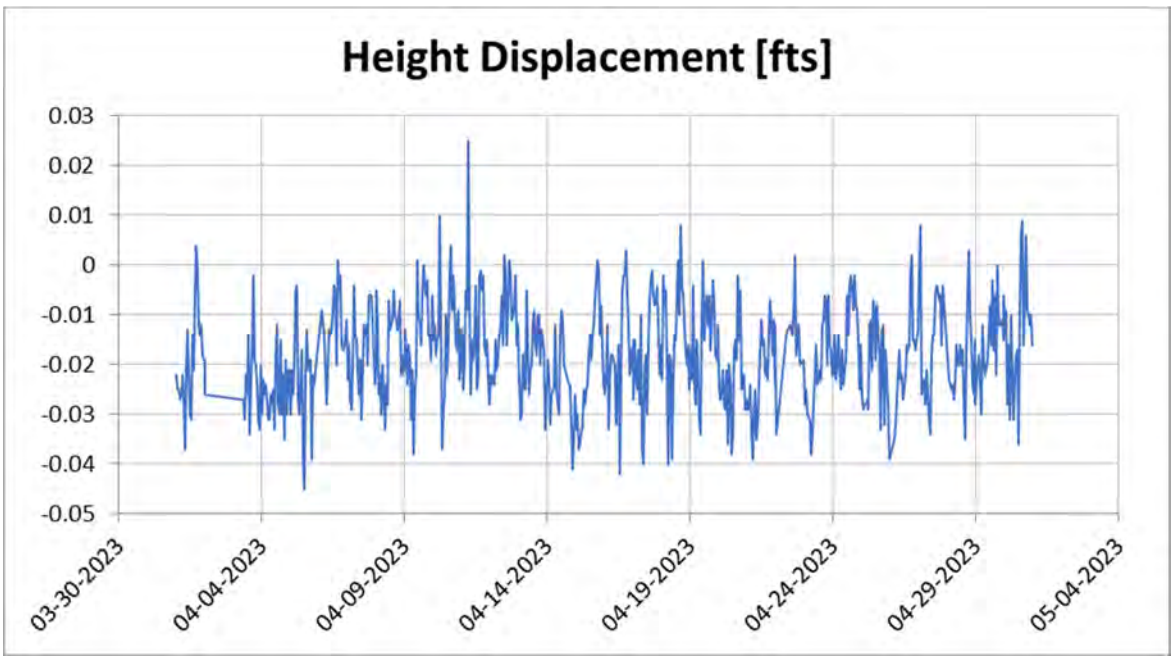
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism P33



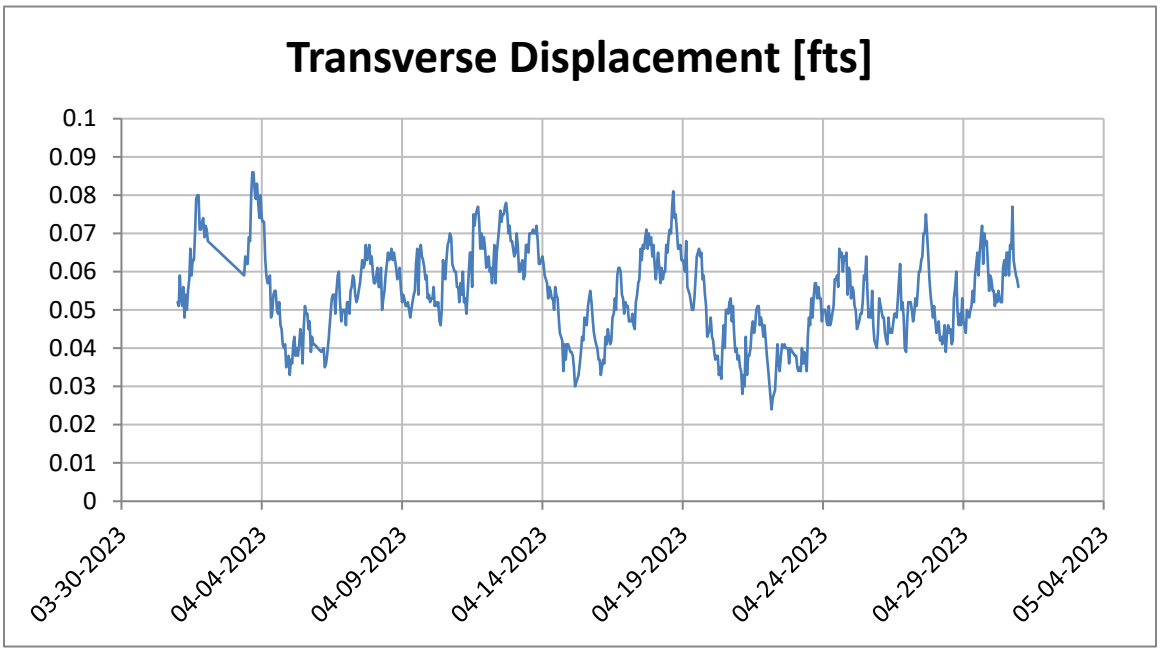


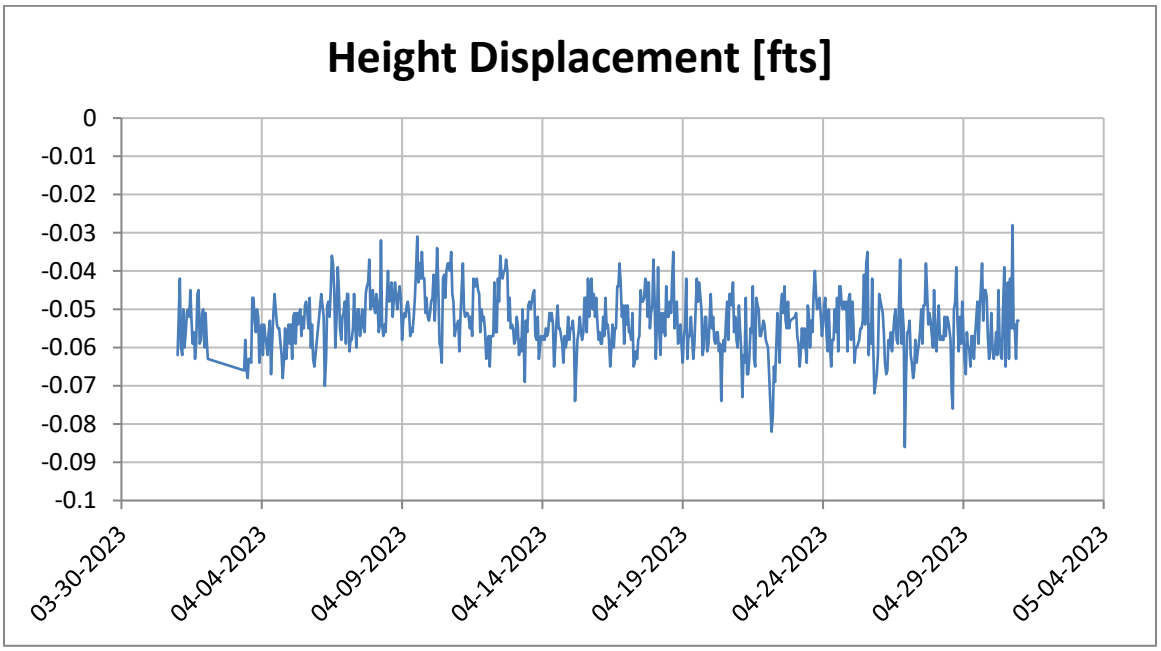
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism P69A



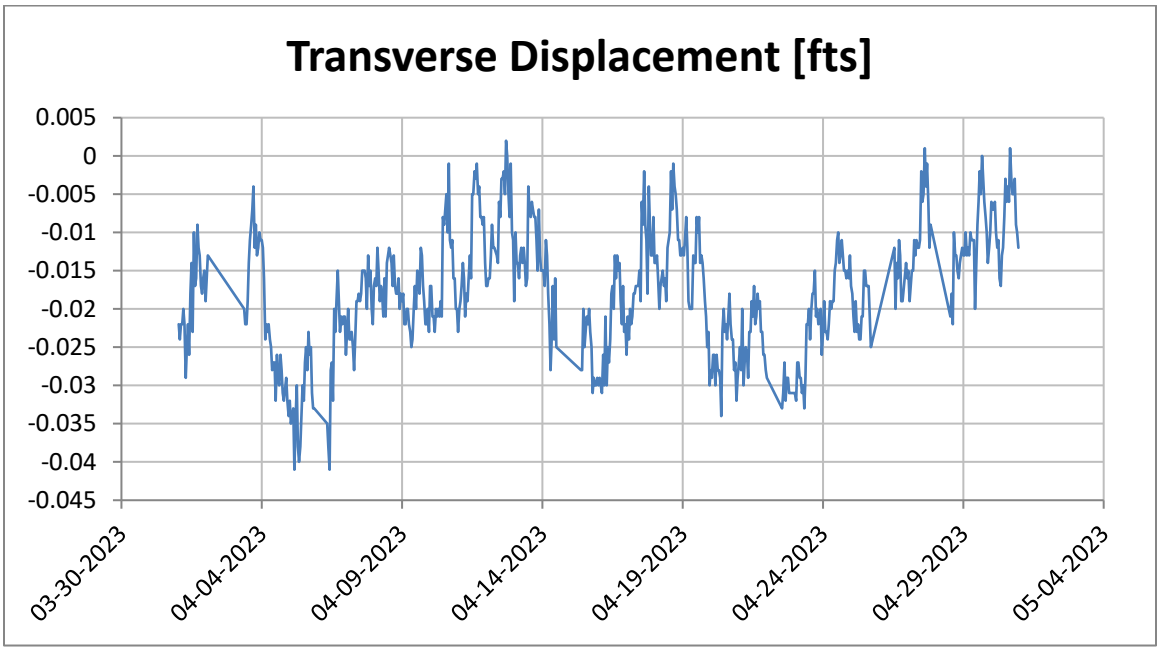


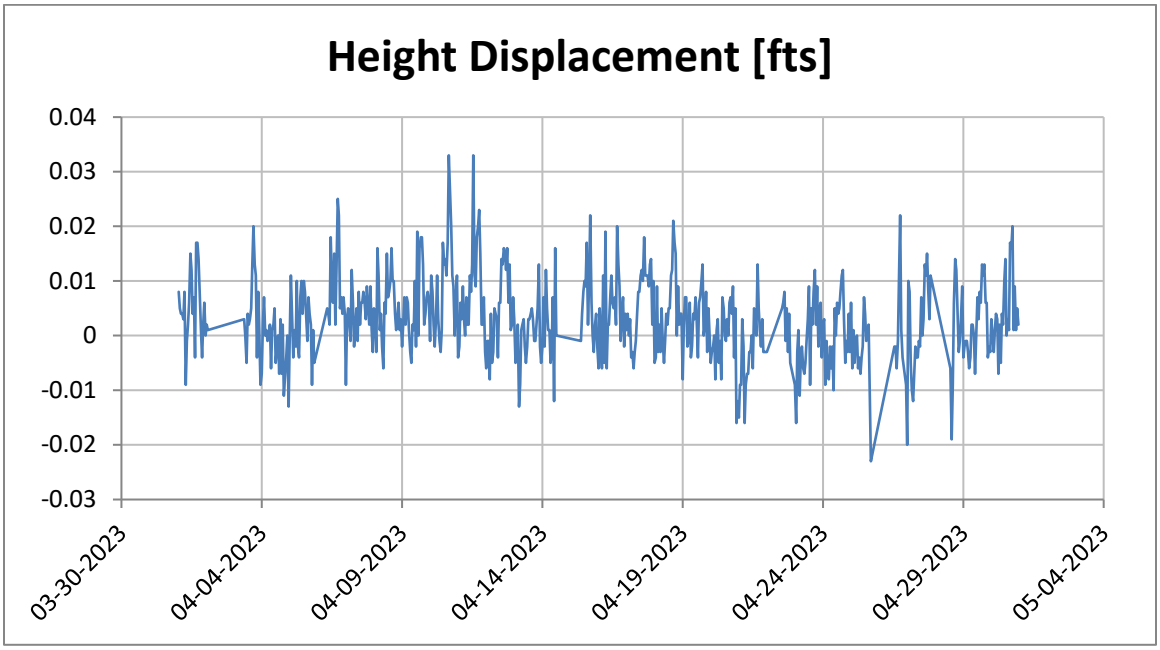
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism P70



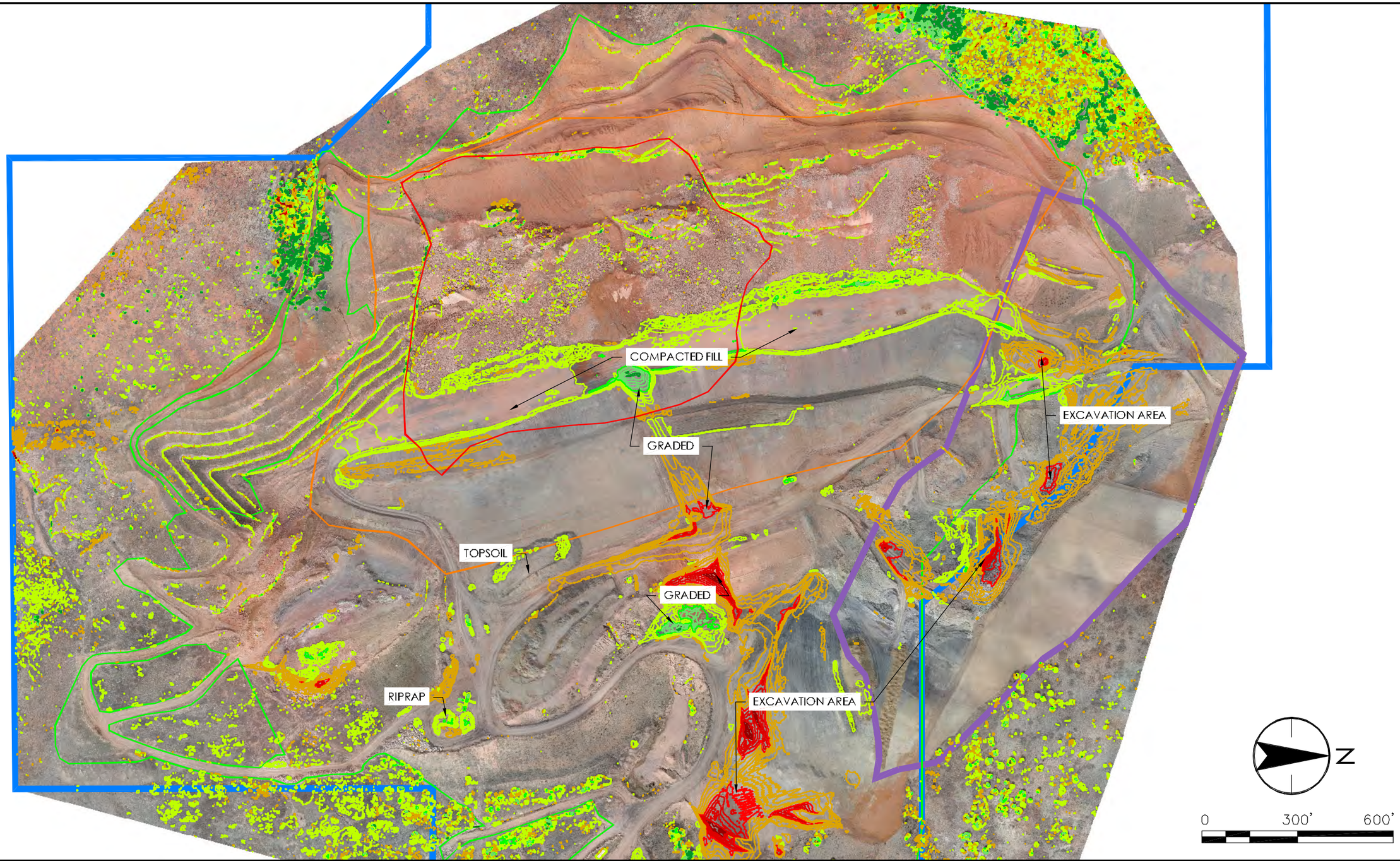


Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Appendix C

Drone Survey



Stantec

Stantec Consulting Services Inc.
2000 South Colorado Boulevard Suite 2-300
Denver CO 80222-7933
Tel (303) 758-4058
www.stantec.com

LEGEND

- Permit/Affected Lands Boundary
- City Grading Permit Boundary
- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent
- Comparison Contour. Increase in elevation. (CI=2')
- Comparison Contour. Decrease in elevation. (CI=2')

1. COMPARISON OF DRONE FLIGHTS FROM 04/03/2023 to 04/25/2023.

Client/Project
RIVERBEND INDUSTRIES INC.

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
EXISTING PRISMS WITH CURRENT SURFACE

Revision	Date
#	2023.05.31
Drawn By	Figure No.
PK	5

u:\2057288200\06_design\monitoring\2023-04\dwg\pitreview prisms_05292023
2023.05.12 9:49:10 AM

Appendix D

Compaction Testing Results

u:\2057288200\06_design\monitoring\2023-04\dwg\pikeview pitms_05292023

2023.05.12 9:53:43 AM

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2000 South Colorado Boulevard Suite 2-300
Denver CO 80222-7933
Tel (303) 758-4058
www.stantec.com

LEGEND

- Permit/Affected Lands Boundary
- City Grading Permit Boundary
- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent
- Compaction Test Location

N

0 150' 300'

Client/Project
RIVERBEND INDUSTRIES INC.

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
COMPACTION TEST LOCATIONS

Revision
#

Date
2023.05.31

Drawn By
PK

Figure No.
6

Stantec

Compaction Testing Log

BCC Test	Test No.	Date	Elevation (ft)	Northing (ft)	Easting (ft)	Wet Density (pcf)	Moisture Content (%)	Dry Density (pcf)	Compaction (%)
Test VVV9	**#583**	**3-Apr**	7324	1401036	3173296	139.2	7.7	132	100
Test VVV10	**#584**	**3-Apr**	7322	1400999	3173339	135	8.7	126.3	100
Test WWW1	**#585**	**3-Apr**	7328	1402616	3172960	136.4	7.9	128.6	100
Test WWW2	**#586**	**3-Apr**	7329	1402425	3172923	120.2	8.9	111.3	90
Test WWW3	**#587**	**3-Apr**	7326	1402231	3173021	131.3	5.1	126.2	100
Test WWW4	**#588**	**3-Apr**	7328	1402014	3173027	140.7	7.5	133.3	100
Test WWW5	**#589**	**4-Apr**	7327	1401761	3173076	121.1	8.6	112.4	91
Test WWW6	**#590**	**4-Apr**	7327	1401598	3173167	128.7	10.2	118.5	97
Test WWW7	**#591**	**4-Apr**	7328	1401412	3173208	134.8	8.6	126.1	100
Test WWW8	**#592**	**4-Apr**	7327	1401178	3173281	138	8.2	129.8	100
Test WWW9	**#593**	**5-Apr**	7325	1401022	3173285	127.1	8.6	118.5	97
Test WWW10	**#594**	**5-Apr**	7323	1400970	3173331	130.8	16.4	114.3	93
Test XXX1	**#595**	**5-Apr**	7329	1402619	3172961	124.7	12.3	112.4	91
Test XXX2	**#596**	**5-Apr**	7330	1402426	3172924	135.2	13.1	122.1	99
Test XXX3	**#597**	**5-Apr**	7328	1402229	3173020	137.2	9.8	127.4	100
Test XXX4	**#598**	**10-Apr**	7328	1402090	3173037	134	9.8	124.2	100
Test XXX5	**#599**	**10-Apr**	7329	1401821	3173050	130.9	12.8	118.1	97
Test XXX6	**#600**	**10-Apr**	7330	1401512	3173172	127.3	10.7	116.5	95
Test XXX7	**#601**	**10-Apr**	7331	1401429	3173174	134.4	7.9	126.5	100
Test XXX8	**#602**	**11-Apr**	7331	1401398	3173198	125.5	12.7	112.8	91
Test XXX9	**#603**	**11-Apr**	7328	1401227	3173284	128.3	8.4	119.8	98
Test XXX10	**#604**	**11-Apr**	7327	1401018	3173314	141.3	7.2	134.1	100
Test YYY1	**#605**	**11-Apr**	7333	1402698	3172904	129.5	13	116.5	95
Test YYY2	**#606**	**11-Apr**	7331	1402582	3172969	128.6	14.8	113.8	92
Test YYY3	**#607**	**12-Apr**	7330	1402359	3172978	121.7	9.2	112.5	91
Test YYY4	**#608**	**12-Apr**	7329	1402194	3173034	121.5	6	115.5	93
Test YYY5	**#609**	**12-Apr**	7330	1401969	3173019	124.7	13.1	111.5	91
Test YYY6	**#610**	**12-Apr**	7330	1401775	3173078	126	8.4	117.6	96
Test YYY7	**#611**	**12-Apr**	7329	1401506	3173236	122.2	10.4	111.8	91
Test YYY8	**#612**	**13-Apr**	7331	1401203	3173240	118.7	7.8	110.9	90
Test YYY9	**#613**	**13-Apr**	7329	1401050	3173300	122	9.3	112.7	91
Test ZZZ1	**#614**	**13-Apr**	7334	1402603	3172938	132.6	12.8	119.7	98
Test ZZZ2	**#615**	**13-Apr**	7334	1402554	3172915	122.5	9.9	112.5	91
Test YYY10	**#616**	**14-Apr**	7328	1401045	3173333	129.5	10	119.5	98
Test ZZZ3	**#617**	**14-Apr**	7331	1402239	3172986	137.2	10.2	127	100
Test ZZZ4	**#618**	**14-Apr**	7330	1402096	3173060	122.8	10.8	111.9	91
Test ZZZ5	**#619**	**17-Apr**	7332	1401609	3173135	128.7	15.4	113.2	92

BCC Test	Test No.	Date	Elevation (ft)	Northing (ft)	Easting (ft)	Wet Density (pcf)	Moisture Content (%)	Dry Density (pcf)	Compaction (%)
Test ZZZ6	**#620**	**17-Apr**	7330	1401605	3173191	125.9	15.4	110.5	90
Test ZZZ7	**#621**	**18-Apr**	7333	1401432	3173216	138.7	8.5	130.2	100
Test ZZZ8	**#622**	**18-Apr**	7333	1401314	3173203	135.5	6.2	129.2	100
Test ZZZ9	**#623**	**18-Apr**	7331	1401206	3173287	143.2	6.8	136.3	100
Test ZZZ10	**#624**	**18-Apr**	7332	1401061	3173253	130.3	9.7	120.5	100
Test AAAA1	**#625**	**19-Apr**	7335	1402724	3172915	137.3	11.2	126.5	100
Test AAAA2	**#626**	**19-Apr**	7333	1402656	3172985	131.9	10.5	121.4	99
Test AAAA3	**#627**	**19-Apr**	7334	1402365	3172939	135	7	128	100
Test AAAA4	**#628**	**20-Apr**	7332	1401878	3173088	127.7	10.5	117.2	97
Test AAAA5	**#629**	**20-Apr**	7334	1401696	3173107	127	10.5	116.5	96
Test AAAA6	**#630**	**20-Apr**	7334	1401581	3173107	127.9	7.5	120.6	99
Test AAAA7	**#631**	**21-Apr**	7335	1401420	3173215	138.3	10.5	127.7	100
Test AAAA8	**#632**	**21-Apr**	7335	1401298	3173188	148.9	8.3	140.5	100
Test AAAA9	**#633**	**21-Apr**	7334	1401215	3173247	138.4	8	130.4	100
Test AAAA10	**#634**	**21-Apr**	7331	1401132	3173320	128.3	7.4	120.9	98
Test BBBB1	**#635**	**25-Apr**	7337	1402669	3172908	139.5	7.7	131.8	100
Test BBBB2	**#636**	**25-Apr**	7334	1402489	3173003	145.5	10.2	135.3	100
Test BBBB3	**#637**	**25-Apr**	7335	1402227	3172942	134.7	7.3	127.5	100
Test BBBB4	**#638**	**25-Apr**	7334	1402049	3173032	136.3	7.1	129.2	100
Test BBBB5	**#639**	**25-Apr**	7333	1401884	3173101	137.8	7.1	130.7	100
Test BBBB6	**#640**	**25-Apr**	7337	1401639	3173070	126.6	8.5	118.1	97

Notes:

1. As of April 30, 2022, a total 2,409,000 yd3 had been placed and compacted. This requires at least 482 compaction tests, and 859 tests have been taken.