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To:	Jerald Schnabel	From:	Paul Kos
	Castle Aggregate		Denver, CO 80202
File:	March 2024 Monitoring Summary	Date:	April 30, 2024

Reference: March 2024 Geotechnical Monitoring Summary Pikeview Quarry

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this March 2024 Geotechnical Monitoring Summary for the Pikeview Quarry. The Pikeview Quarry is situated along the foothills of the Rocky Mountains, northwest of Colorado Springs, Colorado. Castle Aggregate 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 March 2024. Continuous monitoring by the robotic survey system began in 2010 and has continued through the month of March 2024. Visual inspections of the slopes were performed by Castle Aggregate employees and Stantec engineers.

1.1 PURPOSE

The purpose of this report is to summarize the March 2024 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 (Castle Aggregate 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 engineers to document visual observations of slope conditions, including signs 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 March 2024. The notes from the daily inspections are summarized in Table A-1 in Appendix A.

Stantec conducted visual inspections of the Pikeview Quarry slopes on March 12, 2024. 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. Slopes that have been seeded are observed from adjacent areas to avoid disturbing the seed and mulch covering. 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 March 2024. Site maintenance, topsoil placement and riprap production also continued throughout the month.
- Operators placed compacted material in the buttress zone. Material was excavated from the Lower, Shop, and South Borrow Areas. The material was hauled up ramps to the buttress floor and placed in lifts and compacted.
- No cracking was observed on the native granite slopes above the extents of the disturbed area.
- No new cracking was observed on the slope south of the southern scarp.
- Seepage was noted from the graded granite slopes. This seepage was observed in previous years and is expected to occur each spring.
- 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.
- Rock was being screened, sorted, and stockpiled as riprap for use as erosion protection in the channels.
- Topsoil was placed on areas at final grade.
- Crews are preparing to blast the South Peak. Blasting is scheduled for early April.
- 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 total station is used to continuously survey the prisms onsite to document slope movements. The robotic total station records the location of each prism every hour. There were 24 prisms active in March; two prisms were control points located outside the slope movement area, six prisms are located on the slopes surrounding the slope movement area, three prisms were located on the slopes within the landslide area, and thirteen prisms were located on the buttress fill. As the slope is backfilled and graded, the existing prisms will be removed, and additional prisms will be installed. No prisms were installed or removed in March. 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, Castle Aggregate clears the area of concern until the data can be reviewed and the slope can be inspected. Castle Aggregate made sure that there were no workers in the area before inspecting the slope. The construction contractor also has a spotter monitoring the slope during construction, and they can radio the operators if there are any signs of movement or a falling rock. All alerts for potential movement have been attributed to weather, animal activity, equipment operations blocking the prism, or sun glare, and no alerts have been associated with slope movements. The alerts are listed in Table 2.

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Table 2 Alert Summary

Date(s)	Alert	Cause/Actions taken	Resolved
3-Mar	Points not found	Snow and fog. No work being performed at time of alerts.	3-Mar
5-Mar	B7200-3 and B7300-4 not found	Single event. Equipment operations in area.	5-Mar
6-Mar	CP7 not found	Single event. No work being performed at time of alert.	6-Mar
7-Mar	Points not found	Snow and fog. No work being performed at time of alerts.	7-Mar
8-Mar	Points not found	Snow and fog. Limited work being performed at time of alerts.	8-Mar
9-Mar	Points not found	Snow and fog. Limited work being performed at time of alerts.	9-Mar
11-Mar	B7200-1 and B7200-3 not found	Equipment operations in area.	11-Mar
11-Mar	B7200-3 not found	Equipment operations in area.	11-Mar
12-Mar	B7200-3 not found	Equipment operations in area.	12-Mar
13-Mar	Points not found	Snow and fog. No work being performed at time of alerts.	13-Mar
14-Mar	Points not found	Snow and fog. No work being performed at time of alerts.	14-Mar
15-Mar	Points not found	Snow and fog. No work being performed at time of alerts.	15-Mar
15-Mar to 20-Mar	No readings	Power outage. No readings or alerts. No work performed during much of this time period. Spotters with radio communication were used when there were operations.	20-Mar
21-Mar	CP4 not found	Possibly animal related. No work during alerts.	21-Mar
21-Mar to 22-Mar	B7200-3 not found	Equipment blocking prism. No work during alerts.	22-Mar
24-Mar to 25-Mar	Points not found	Snow and fog. No work being performed at time of alerts.	25-Mar
26-Mar	Points not found	Fog. No work being performed at time of alerts.	26-Mar
30-Mar	Points not found	Fog. No work being performed at time of alerts.	30-Mar

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 total station to the prism; positive displacements indicate less distance between the robotic total station and prism (movement towards the robotic total station). The height displacement measures the change in the vertical distance from the robotic total station to the prism; positive displacements indicate upward movement. The monthly delta is the most recent reading cumulative delta displacement (horizontal, lateral, and vertical) subtracted from the first reading of the 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 robotic total 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 robotic total station; these equates to an accuracy of +/-0.016 ft.

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Table 3 Prism Summary

Prism ID	Cumulative Transverse Displacement (ft)	Cumulative Height Displacement (ft)	Monthly Delta (ft)	Cumulative Delta (ft)	Notes / Recommendations
BR1	-0.011	-0.437	0.0077	0.8210	
BR3	-0.045	-0.114	0.0128	0.1235	
CP6	-0.007	-0.014	0.0170	0.0411	
CP7	0.079	-0.009	-0.0220	0.0853	
NP4	0.031	-0.067	0.0080	0.1300	
P2	-0.014	-0.021	-0.0016	0.0275	
P5	-0.010	-0.018	0.0010	0.0208	
P25	-0.005	0.013	-0.0166	0.0152	
P33	0.084	-0.011	-0.0045	0.1068	
P32R	-0.018	0.009	-0.0266	0.0240	
P70	0.031	-0.042	-0.0002	0.0744	
B7200-1	-0.042	0.011	0.0077	0.0487	
B7200-2	0.005	-0.016	0.0027	0.0537	
B7200-3	0.189	-0.085	0.0170	0.2490	
B7300-0	-0.121	-0.122	0.0454	0.1841	
B7300-1	-0.163	-0.155	0.0352	0.3370	
B7300-2	0.016	-0.192	0.0237	0.2405	
B7300-3	0.196	-0.144	0.0510	0.2922	
B7300-4	0.185	-0.115	0.0607	0.2365	
B7400-1	-0.112	-0.514	0.2561	0.6374	Settlement movement
B7400-2	-0.032	-0.362	0.1804	0.4259	Settlement movement
B7400-3	0.098	-0.299	0.1835	0.3921	Settlement movement
B7400-4	0.495	-0.270	0.3307	0.6658	Settlement movement
B7400-5	0.108	-0.076	0.0767	0.1519	Settlement movement

The data show stable conditions with no or very small settlement movements at 19 of 24 prisms. Some of the prisms recorded a small amount of settlement immediately after the heavy snow in mid-March, and this type of settlement in fill is expected due to increased moisture content. Prisms on 7400 bench continued to record slow and decreasing gradual movement as the fill consolidates along the benches. The fill is likely consolidating under its own weight and by the placement of topsoil. A small amount of settlement is common for newly placed compacted fill, and this is being recorded by the prisms, which were installed as the buttress was constructed. The previous prism installations were delayed by the topsoil and revegetation operations, and this initial settlement would not have been recorded. Plots of the transverse and height displacements for each prism are included in Appendix B.

4.0 DRONE SURVEY

The site was flown for aerial imagery using an unmanned aircraft system (UAS or 'drone') on March 28, 2024. 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 March topography was also compared to the February 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 was primarily excavated from the Lower, Shop, and South Borrow Areas and placed in the Buttress 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 occurred from February 2022 through June 2023 and from September 2023 to present. In the month of March 2024, a total of 172,000 yd^3 of material were placed and compacted on the buttress floor. All this material was from the Lower Borrow, Shop, and South Borrow Areas and was hauled to the buttress floor. All fill is moisture conditioned as necessary and then compacted. Compaction testing occurs at the rate of at least one test per 5,000 yd^3 placed. This volume placed in the buttress zone required at least 35 compaction tests. There were 42 compaction tests taken in March. As of March 28, 2024, when the site was surveyed, a total of approximately 3,249,000 yd^3 had been placed and compacted. This required at least 650 compaction tests, and 1,258 tests have been taken.

6.0 RECLAMATION PROGRESS

Castle Aggregate 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 approach is being used to complete the reclamation process (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 August 2023
Phase 3 – Project Kick-off with successful Contractor	Completed August 2023
Phase 4 – Contractor Mobilization to Site	Completed September 2023
Phase 4 – Reclamation Grading	February 2022 to Spring 2024 (est.)
Phase 4 – Contractor Demobilize from Site	Spring 2024 (est.)
Phase 5 – Final Revegetation	2024 until acceptance

Progress of activities this month:

- Earth moving activities and placement of compacted fill in the buttress area continued.
- Processing of riprap continued.
- Geotechnical monitoring continued.
- Continued drilling operations for blasting on the south peak of the Upper Borrow Area.
- Selected a vegetation contractor and began procuring container stock.
- Topsoil placement occurred where fill placement has been completed.

Work planned for next month includes:

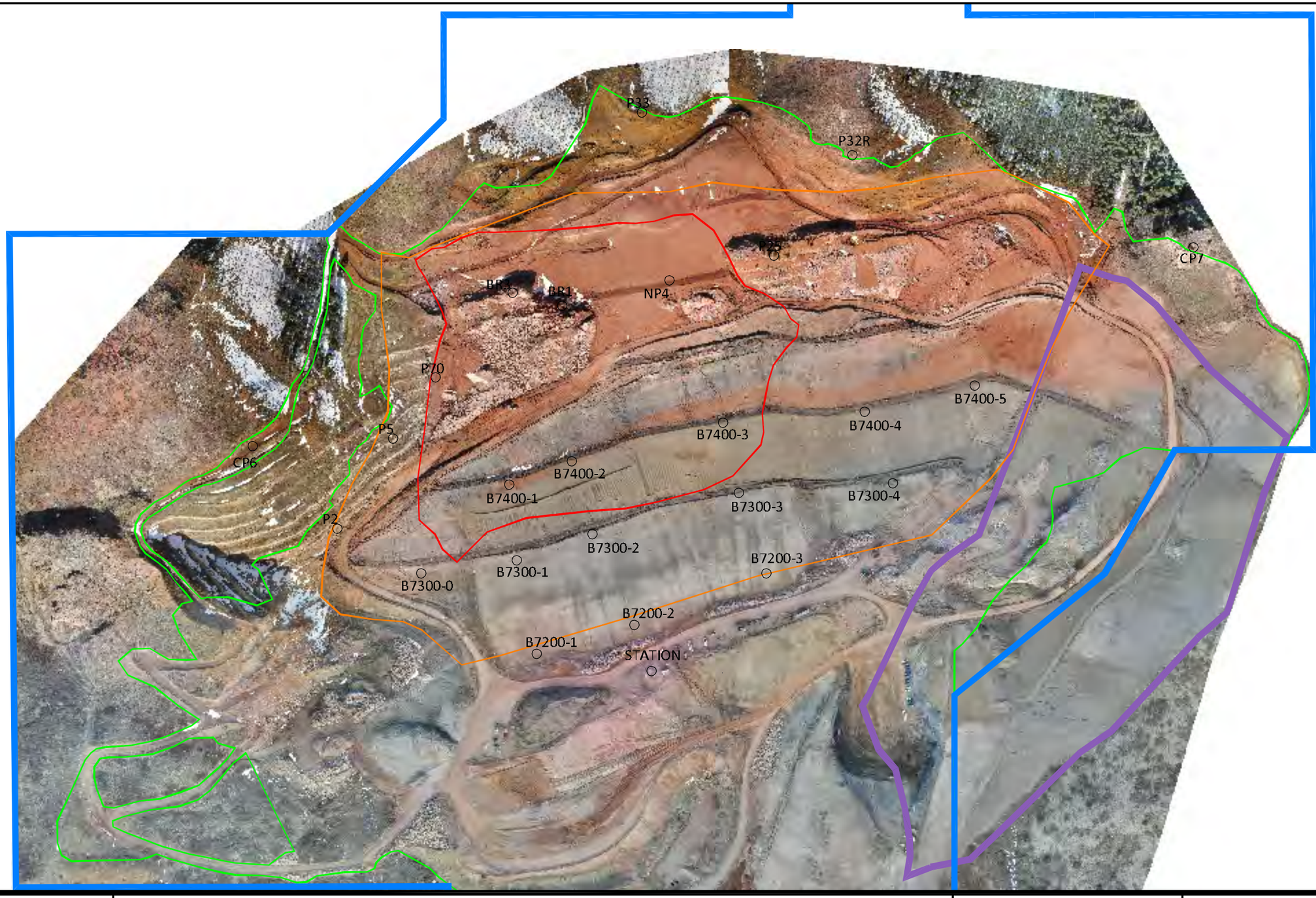
- Submit a Technical Revision for drainage revisions required by leaving granite bedrock.
- Conduct blasting operations on the south peak of the Upper Borrow Area.
- Continue placing compacted fill in the buttress area.
- Continue processing riprap.
- Continue placing topsoil where grading has been completed.
- Continue geotechnical monitoring.
- Continue to remove and replace prisms on an as-needed basis.
- Begin seeding, matting, and mulching operations.

7.0 CONCLUSIONS

The data collected in March 2024 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 March 2024 indicate evidence of any large-scale movements that increase risk to workers or to the public.

- 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.



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LEGEND

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

N

0 300' 600'

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
SITE MAP

Revision
#

Date
2024.04.30

Drawn By
PK

Figure No.
1

Appendix A

Visual Inspections

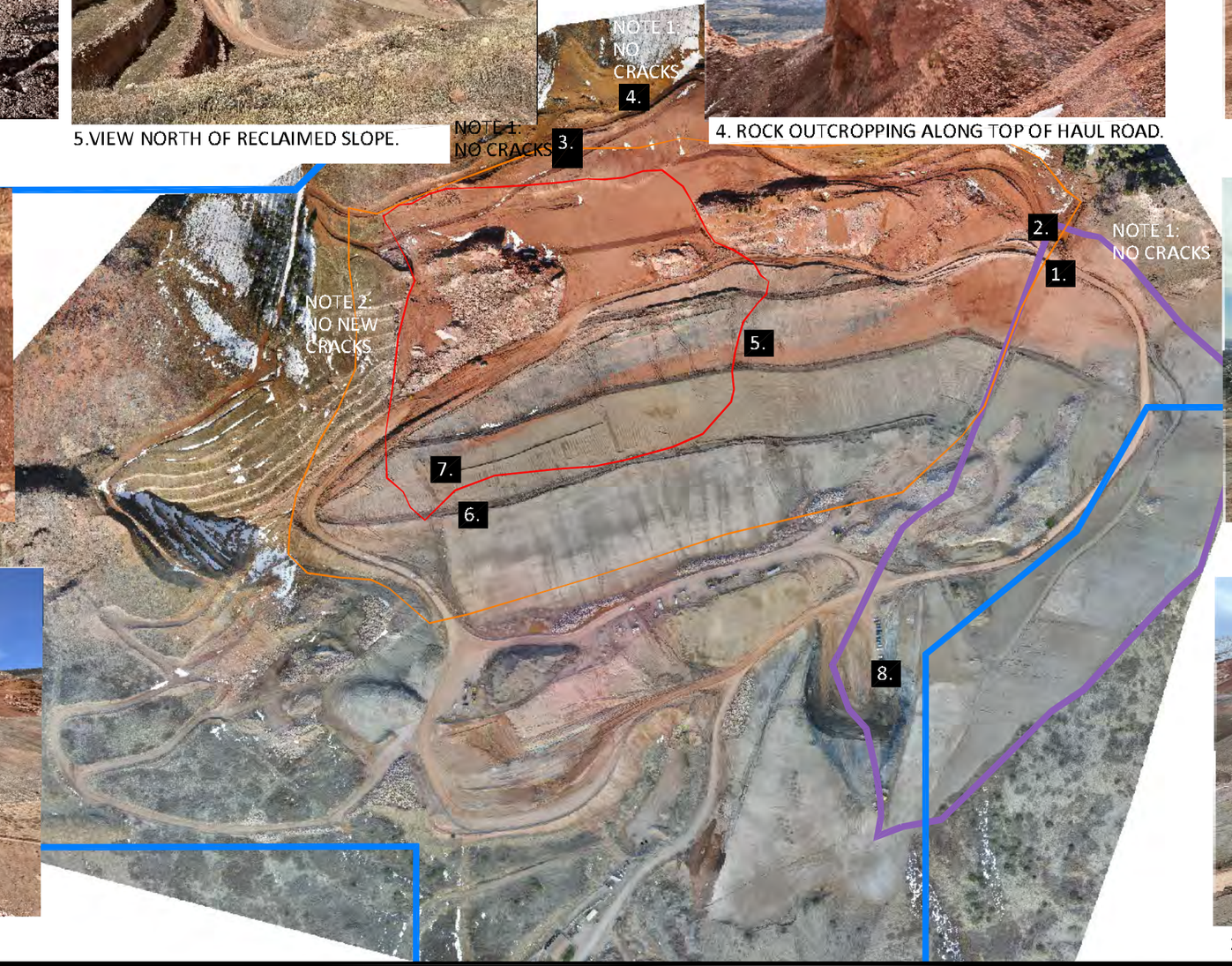
6. ASTEC AND RIPRAP STOCKPILE.

5.VIEW NORTH OF RECLAIMED SLOPE.

4. ROCK OUTCROPPING ALONG TOP OF HAUL ROAD.

3. HAUL TRUCKS PLACING FILL ON BENCH.

7. SEEPAGE ALONG HAUL ROAD CUT.



2. VIEW SOUTH OF RECLAIMED SLOPE.

8. RECLAMATION BENCHES ON SOUTH END.

1. LOADED HAUL TRUCK CLIMBING HAUL ROAD.

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LEGEND

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

NOTES

1. NO CRACKS OBSERVED IN THIS AREA.
2. NO NEW CRACKS OBSERVED IN THIS AREA.
3. PHOTOS TAKEN ON MARCH 12, 2024.

N

0 400' 800'

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
OBSERVATIONS FROM FEBRUARY INSPECTION

Revision
#

Date
2024.04.30

Drawn By
PK

Figure No.
2

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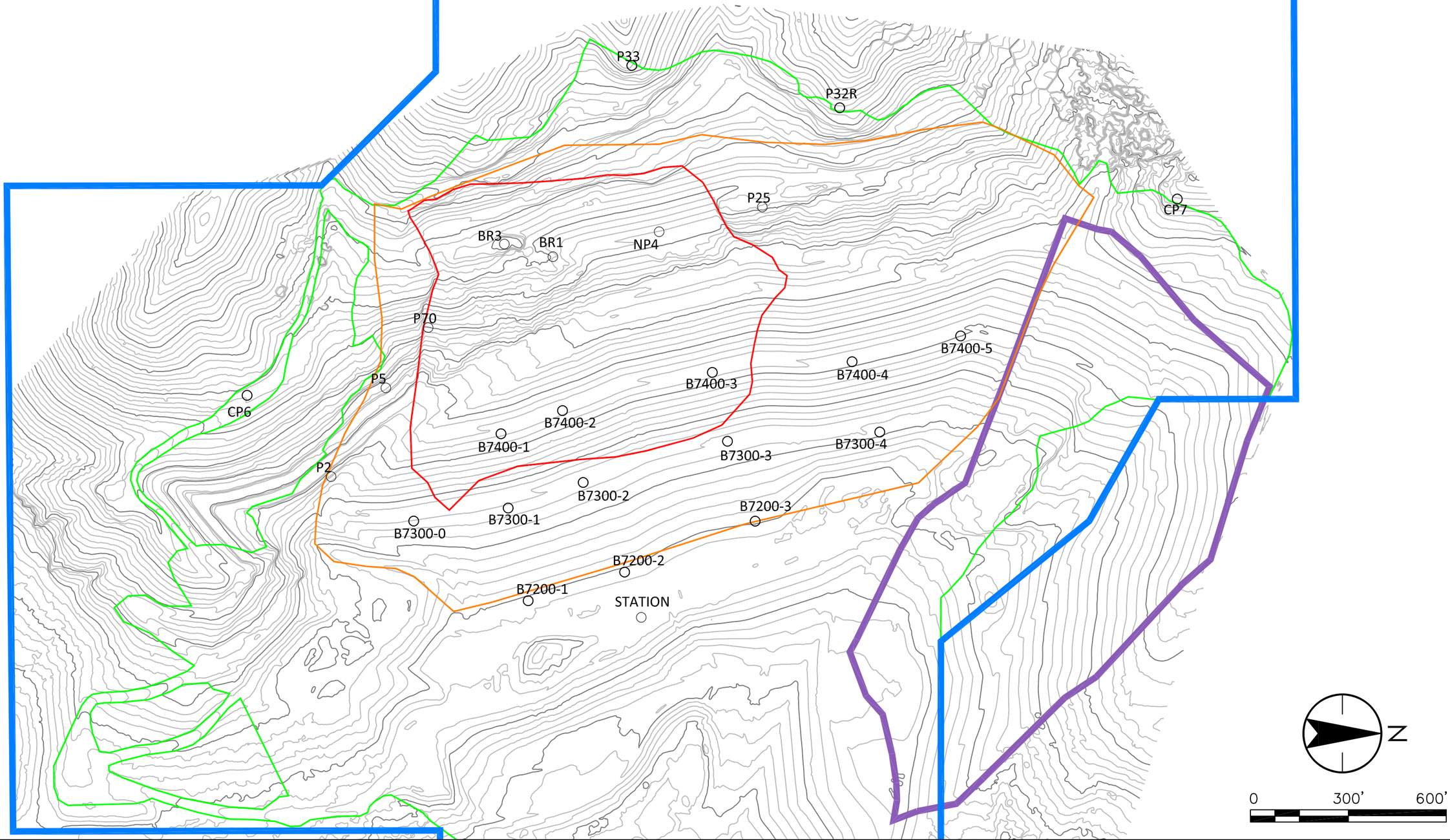
Table A-1 Summary of Daily Inspections

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

Appendix B

Prism Survey



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LEGEND

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

1. PRISMS WILL BE INSTALLED AS EACH BENCH IS FINISHED.
2. ALL PRISMS WILL BE RETAINED AS LONG AS POSSIBLE.
3. TOPOGRAPHY FROM MARCH 28, 2024 DRONE SURVEY.
4. CONTOUR INTERVAL IS 10 FEET

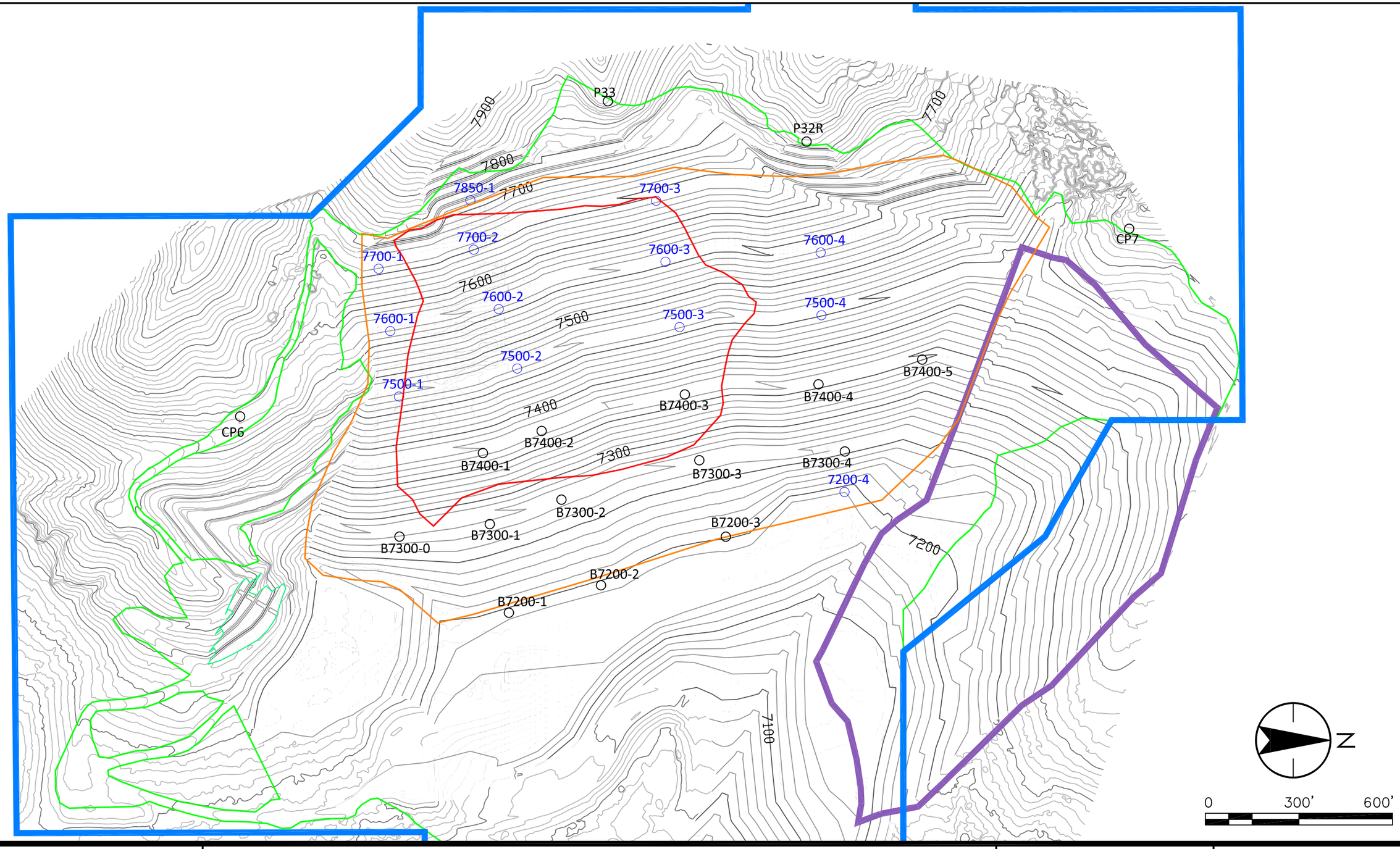
Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
EXISTING PRISMS WITH CURRENT SURFACE

Revision	Date
#	2024.03.31
Drawn By	Figure No.
PK	3



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LEGEND

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

NOTES

1. PRISMS WILL BE INSTALLED AS EACH BENCH IS FINISHED.
2. EXISTING PRISMS WILL BE RETAINED AS LONG AS POSSIBLE.
3. RECLAMATION SURFACE FROM SEPTEMBER 2023 TECHNICAL REVISION.

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
PROPOSED PRISMS WITH RECLAMATION SURFACE

Revision	Date
#	2024.04.30
Drawn By	Figure No.
PK	4

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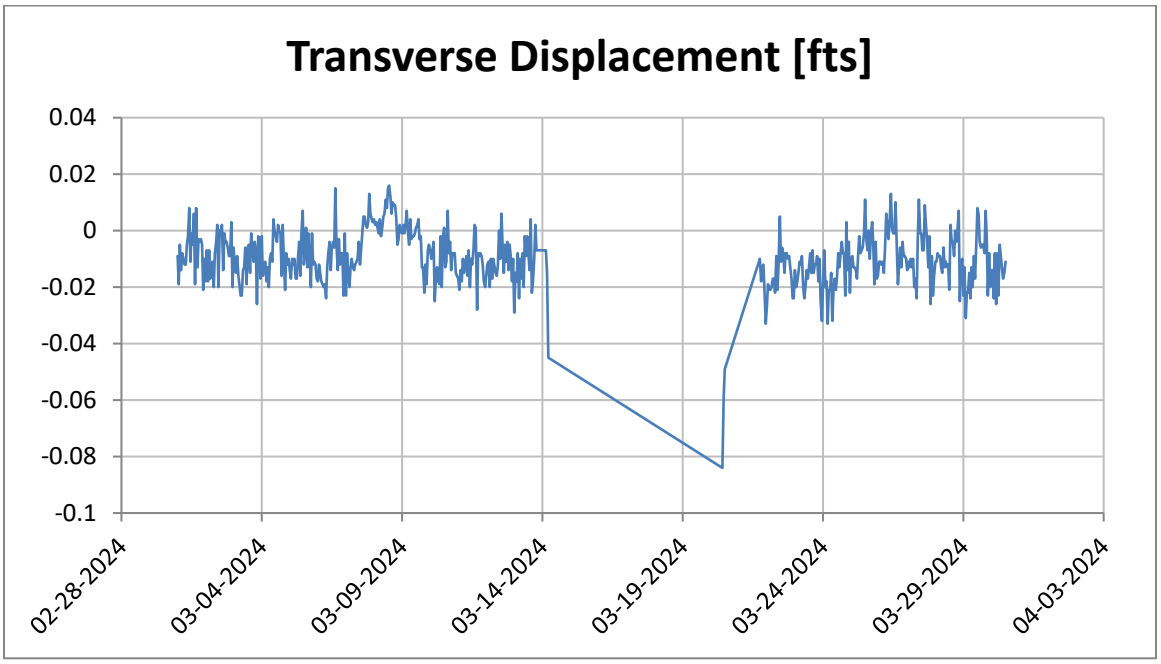
Prism Log

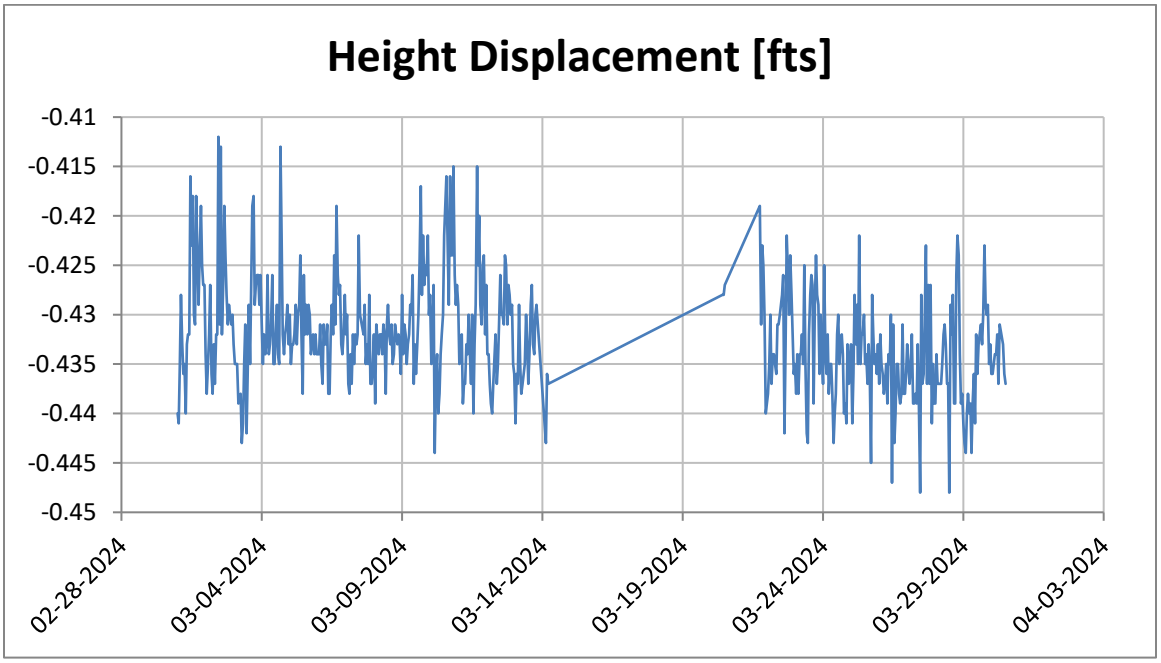
Prism	Date	Action	Comment
CP2	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future.
CP3	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future.
NP1	11-Mar-22	Prism Removed	Reclamation grading to affect prism in near future.
TOE2	11-Mar-22	Prism Removed	Reclamation 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 robotic total 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 robotic total 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 robotic total station relocation.
CP7	20-Jul-22	Prism Added	
CP1	20-Jul-22	Prism Removed	Not in line of sight of robotic total station.
CP4	20-Jul-22	Prism Removed	Not in line of sight of robotic total station.
TOE4	20-Jul-22	Prism Removed	Not in line of sight of robotic total station.
TOE6	20-Jul-22	Prism Removed	Not in line of sight of robotic total station.
TOE5	4-Aug-22	Prism Removed	Out of line of sight of robotic total station.
P63	15-Aug-22	Prism Removed	Out of line of sight of robotic total station.
NP2	28-Apr-23	Prism Removed	Prism location eroded.
P1	12-May-23	Prism Removed	Prism hit by falling rock.
B7200-1	1-Jun-23	Prism Added	New prism added.
B7200-2	1-Jun-23	Prism Added	New prism added.
B7200-3	28-Jun-23	Prism Added	New prism added.
B7300-1	28-Jun-23	Prism Added	New prism added.
B7300-2	28-Jun-23	Prism Added	New prism added.
B7300-3	28-Jun-23	Prism Added	New prism added.
B7300-0	27-Jul-23	Prism Added	New prism added.

Prism	Date	Action	Comment
P32	1-Aug-23	Prism Removed	P32 was damaged by a falling rock. P32R was installed in the same location.
P32R	1-Aug-23	Prism Added	
P69A	28-Sep-23	Prism Removed	Reclamation grading to affect prism in near future.
NP3	30-Sep-23	Prism Removed	Reclamation grading to affect prism in near future.
BR2	20-Oct-23	Prism Removed	Reclamation grading in Upper Borrow Area affected prism.
B7300-4	6-Nov-23	Prism Added	New prism added.
NP4	6-Nov-23	Prism Added	New prism added.
BR3	6-Nov-23	Prism Added	New prism added.
NP66	15-Nov-23	Prism Removed	Reclamation grading to affect prism in near future.
B7400-1	Jan-24	Prism Added	New prism added.
B7400-2	Jan-24	Prism Added	New prism added.
B7400-3	Jan-24	Prism Added	New prism added.
B7400-4	Jan-24	Prism Added	New prism added.
B7400-5	Jan-24	Prism Added	New prism added.

Stantec

Prism BR1



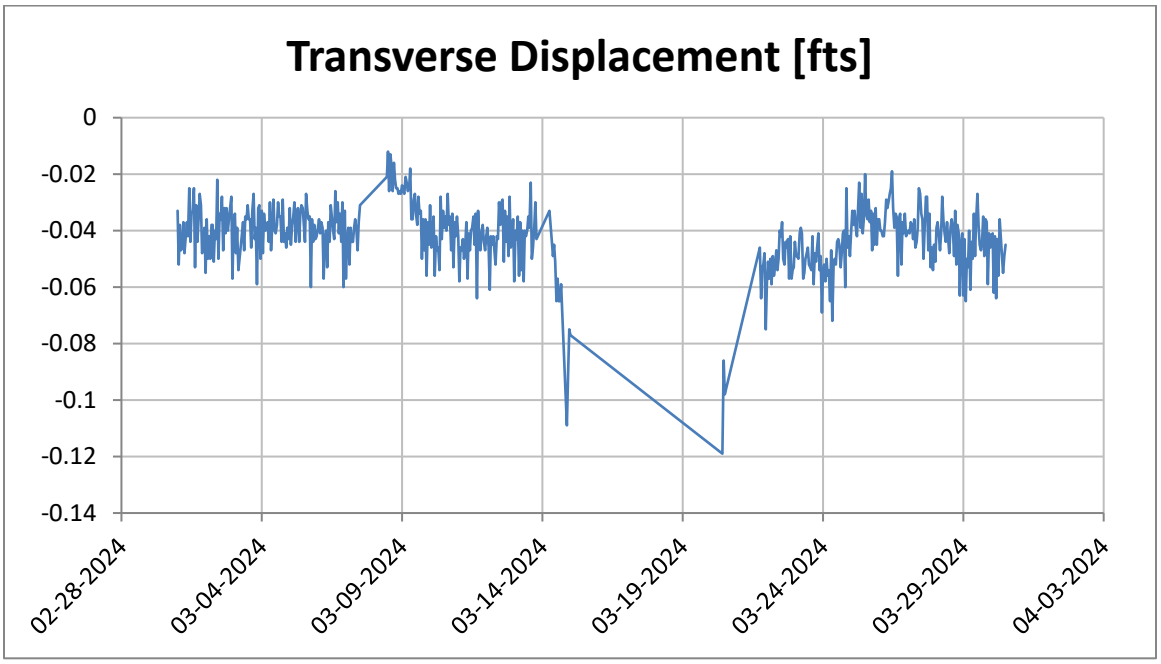


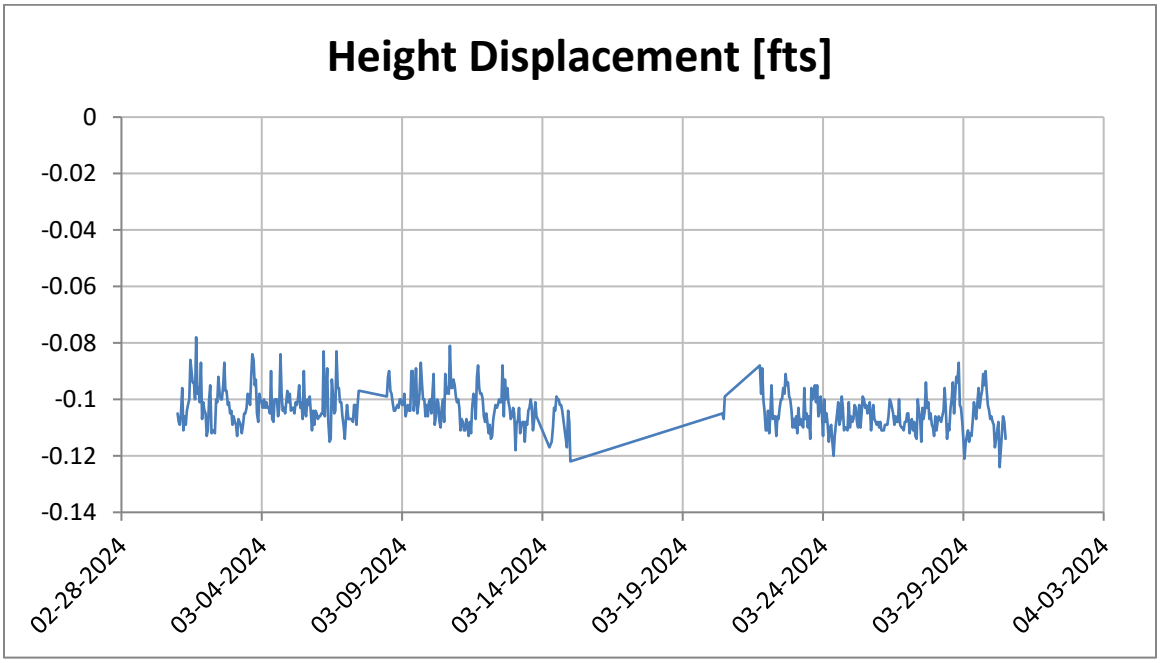
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Prism previously recorded slope creep movements.
6. A power outage prevented readings from March 13 to March 21.

Stantec

Prism BR3



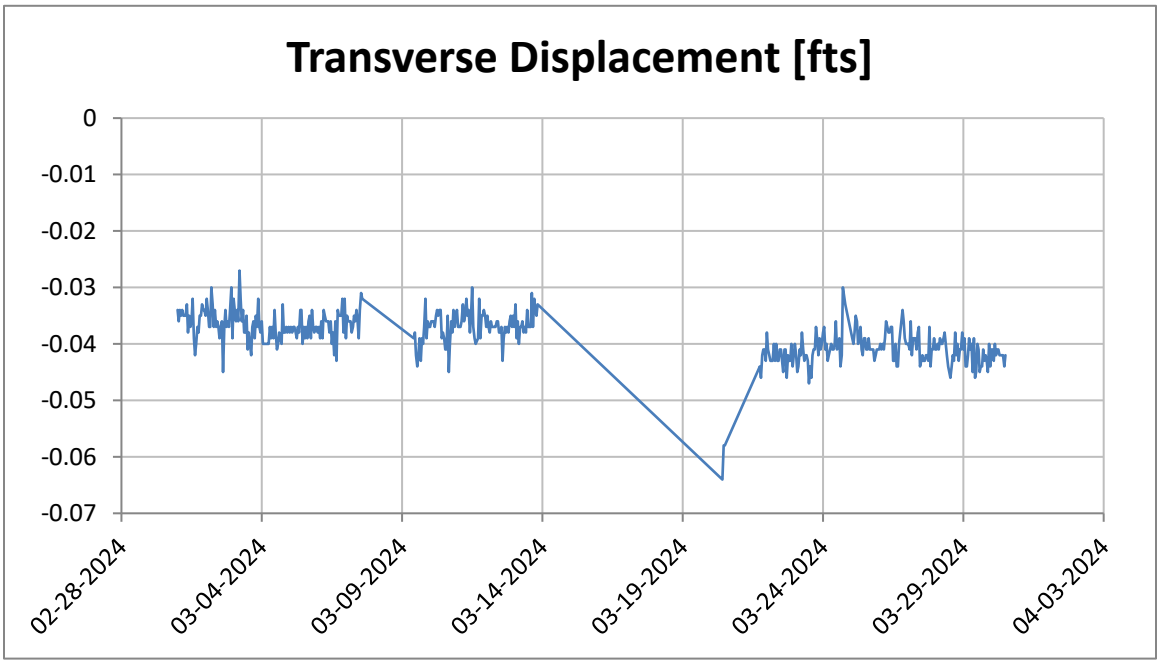


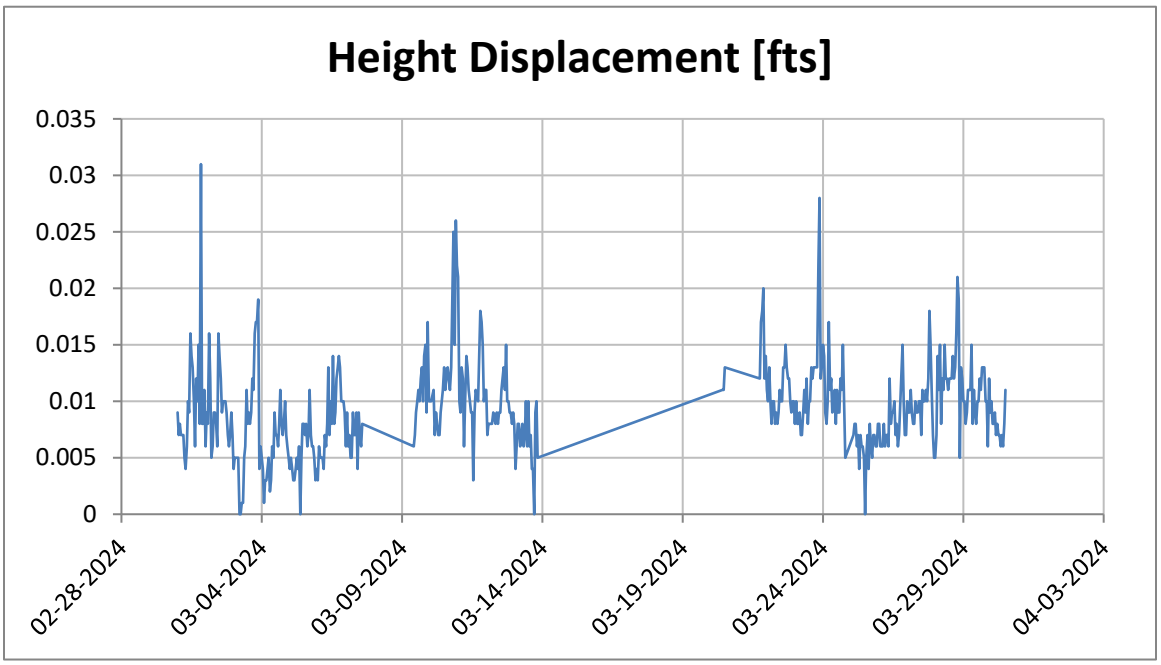
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Prism previously recorded slope creep movements.
6. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7200-1





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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

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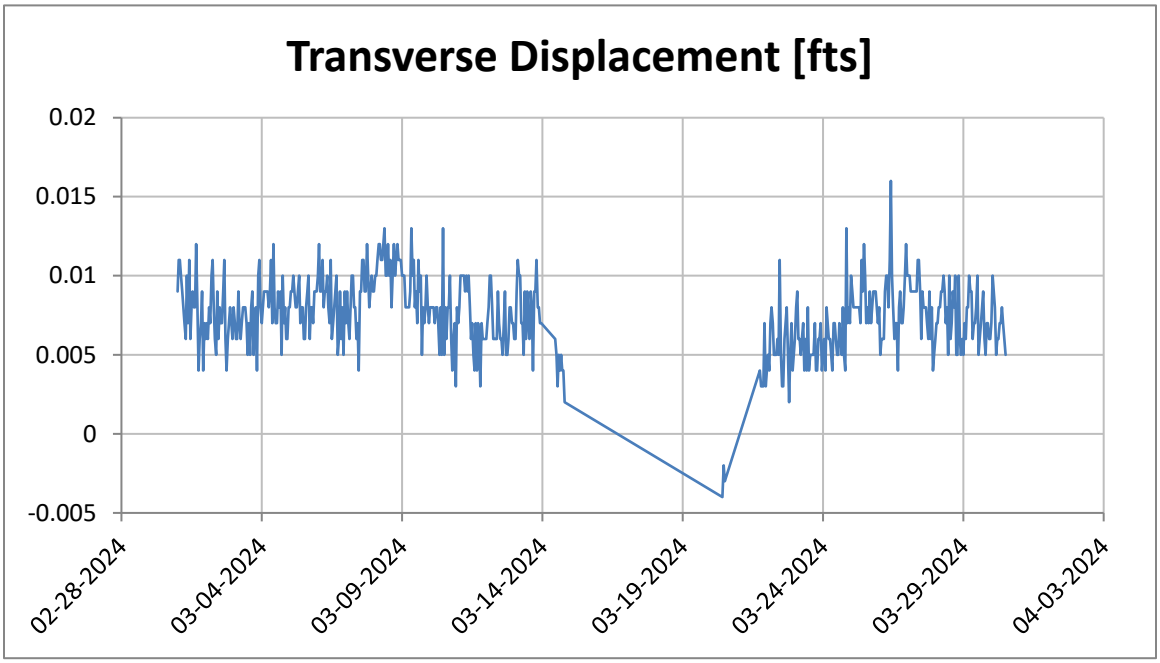
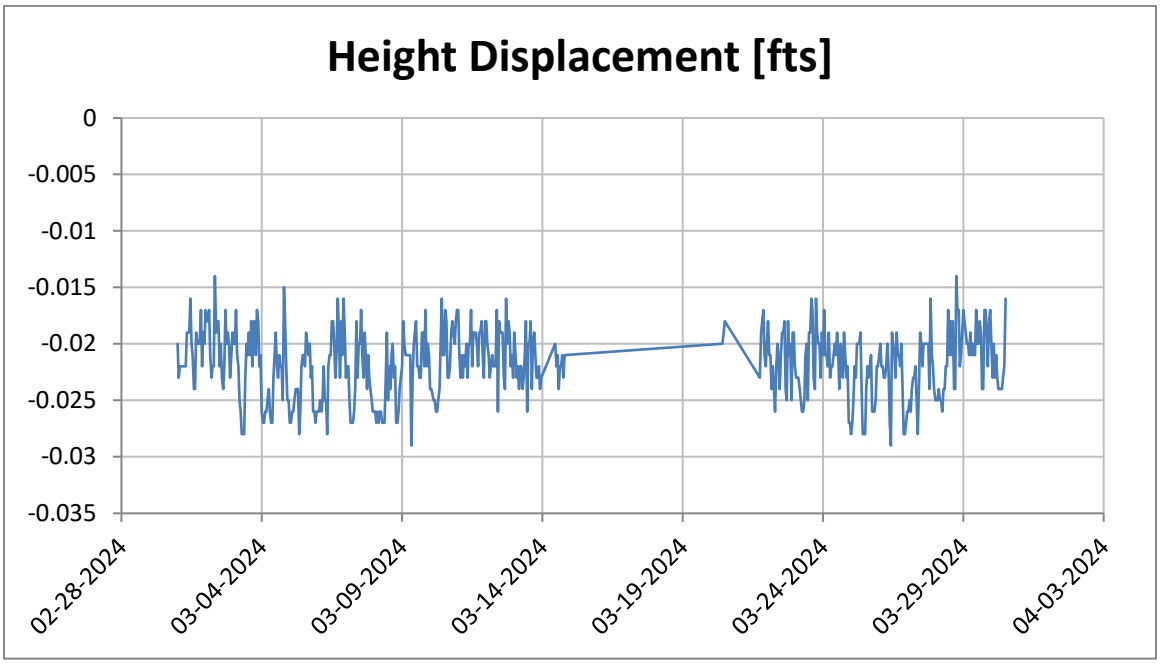
Stantec

Prism B7200-2



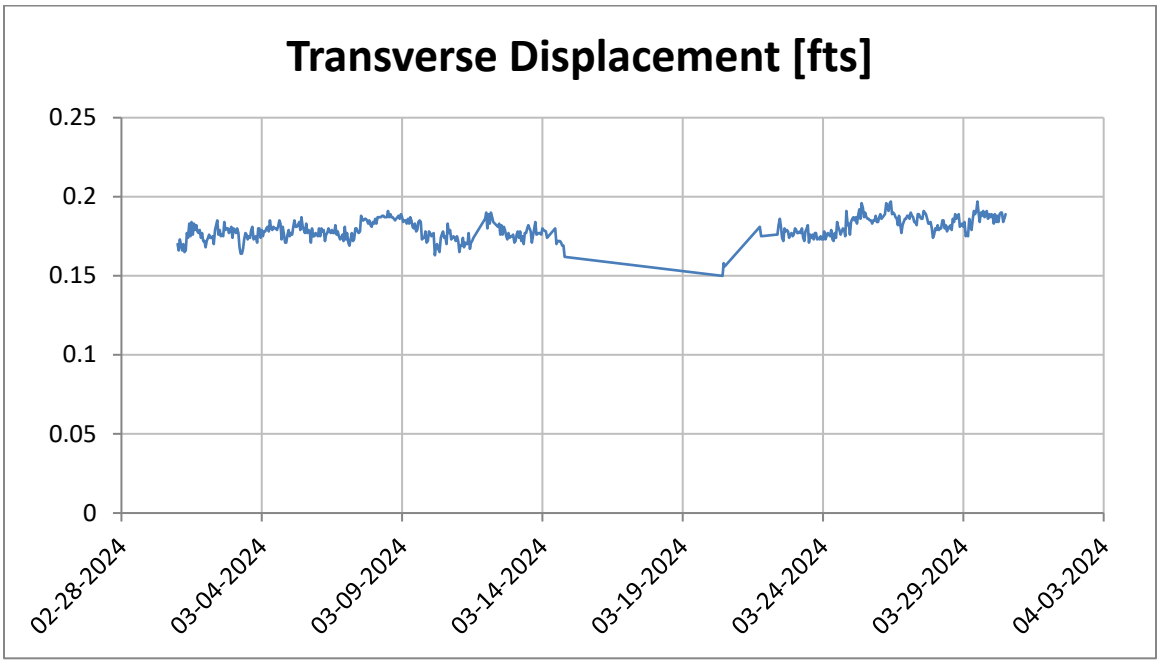


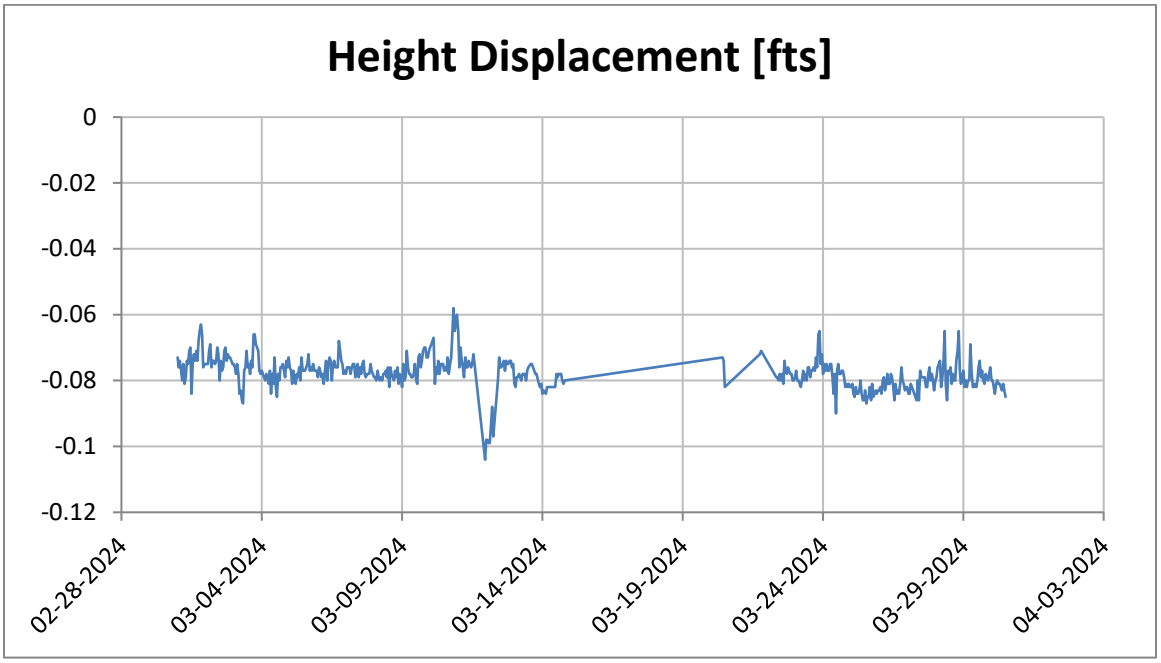
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7200-3



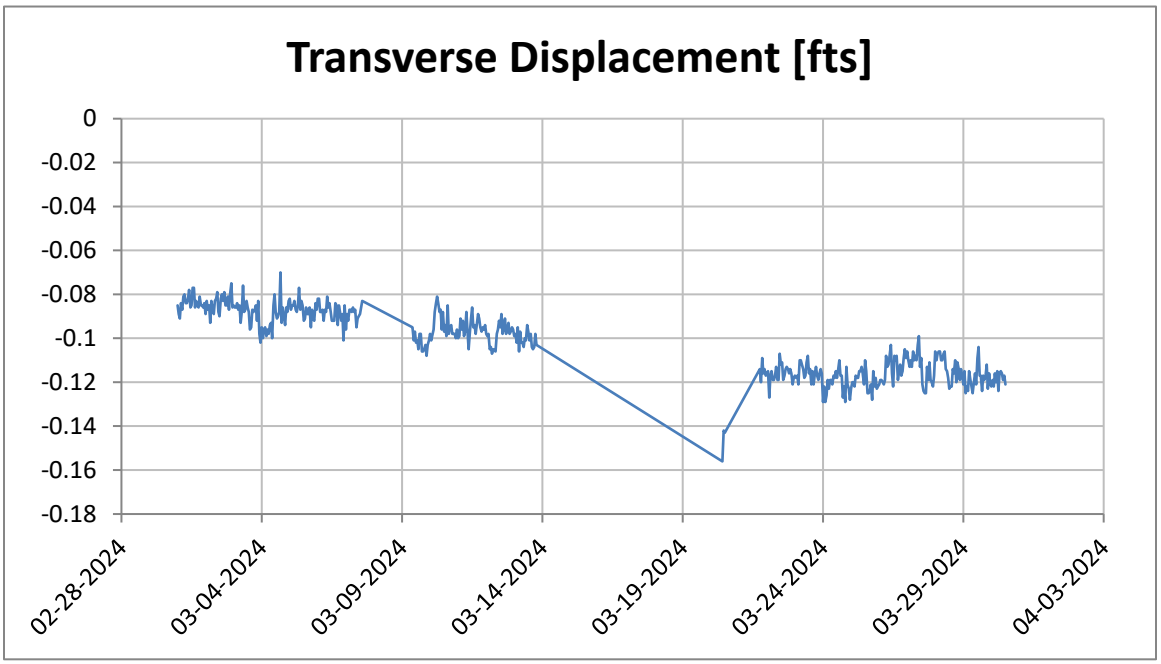


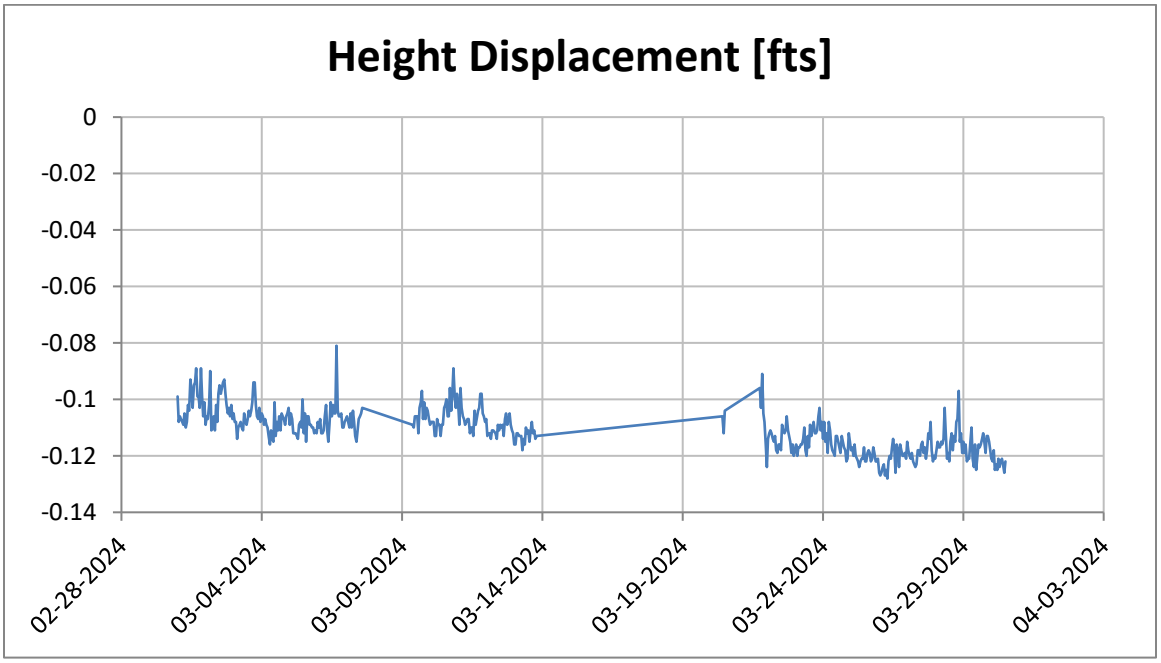
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7300-0



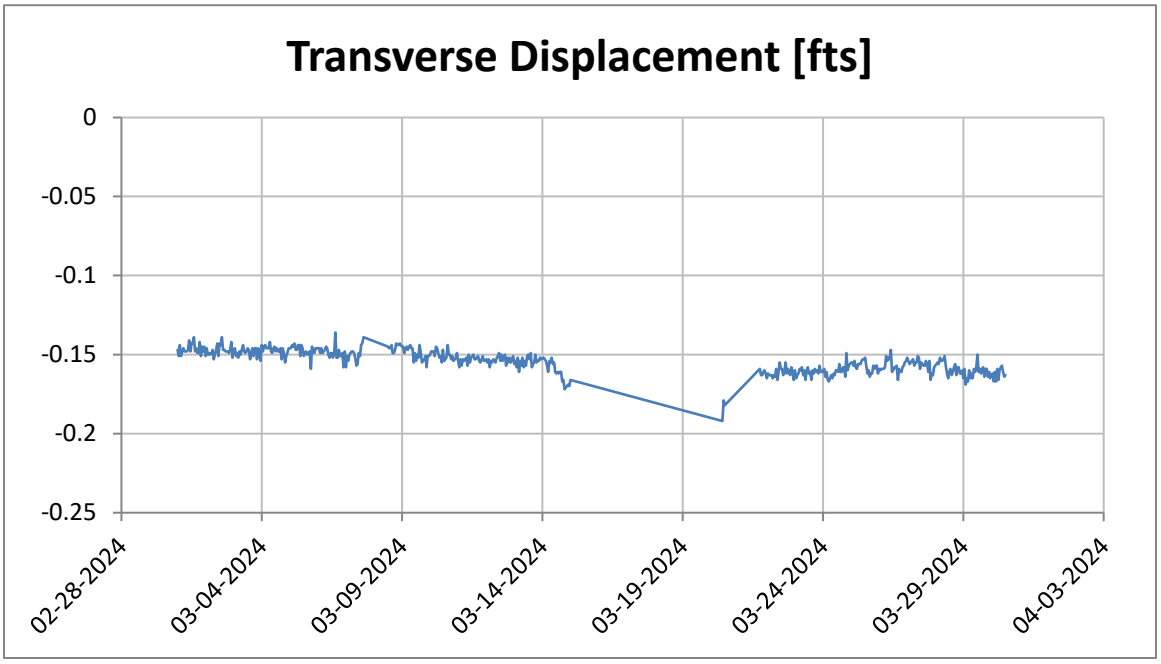


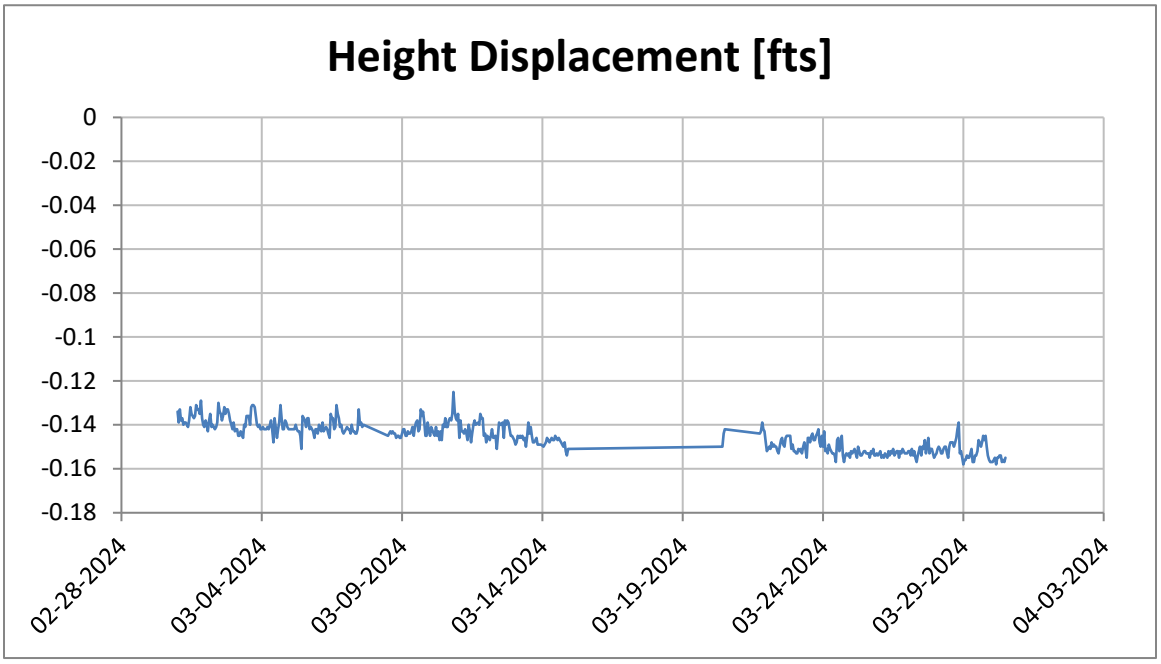
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7300-1



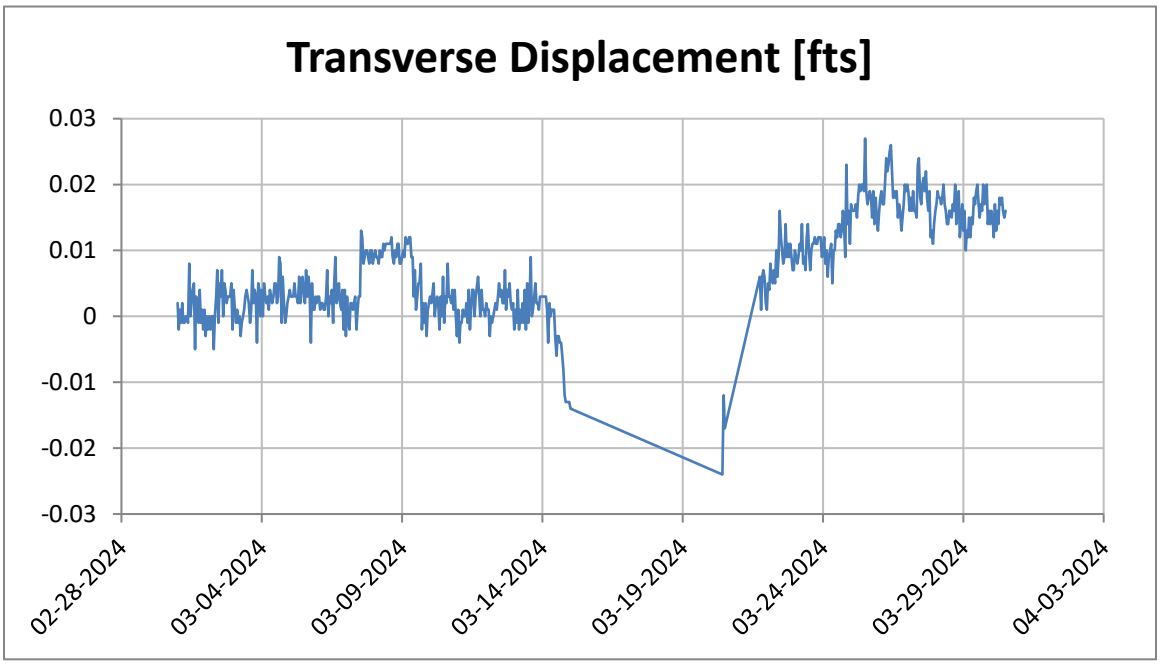


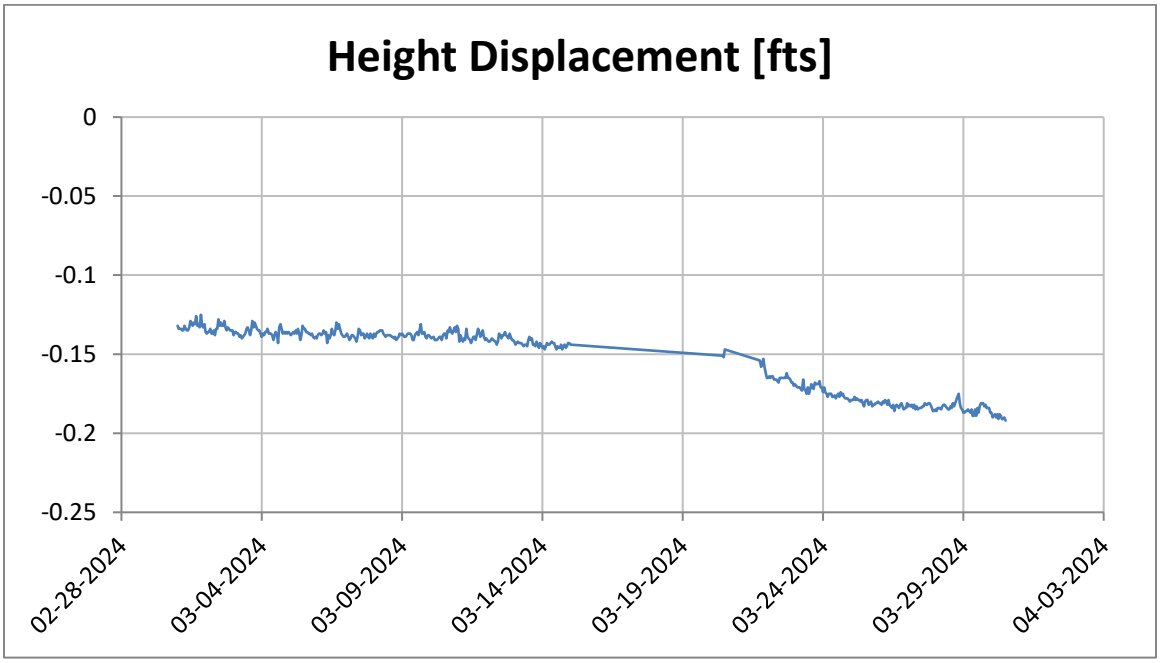
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7300-2



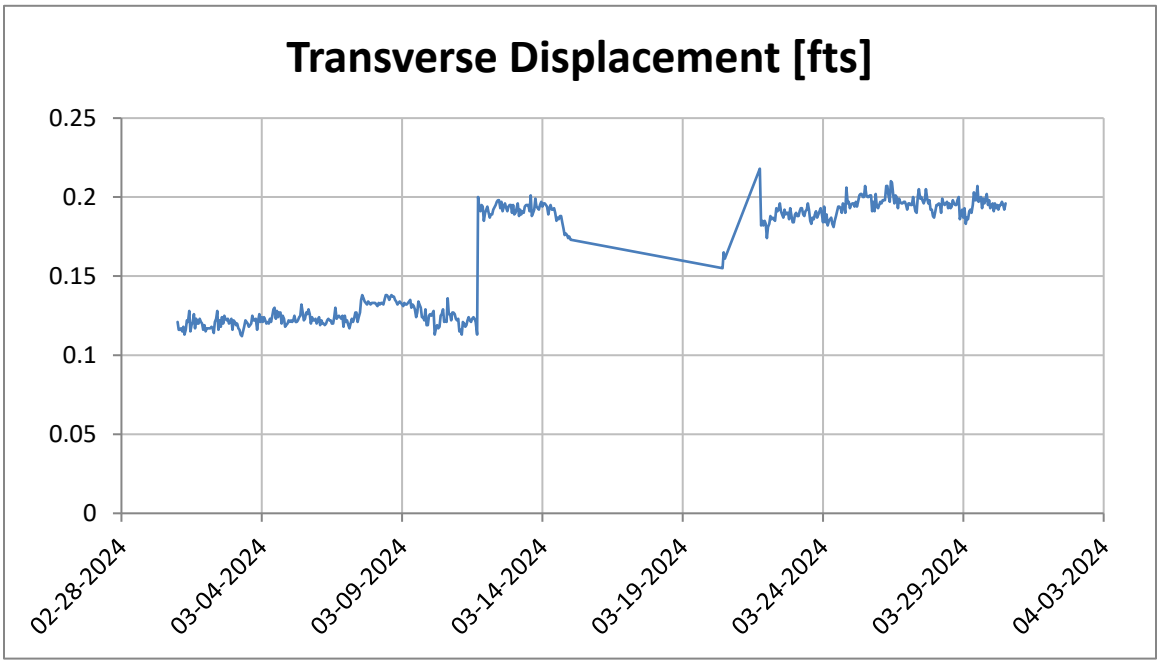


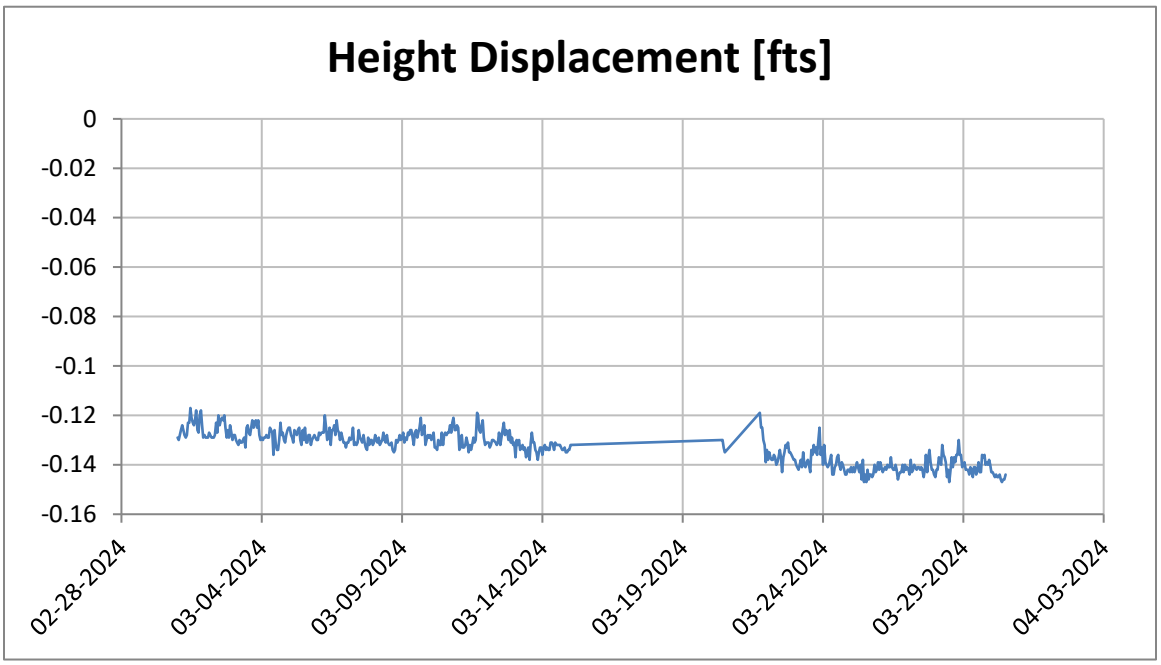
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7300-3



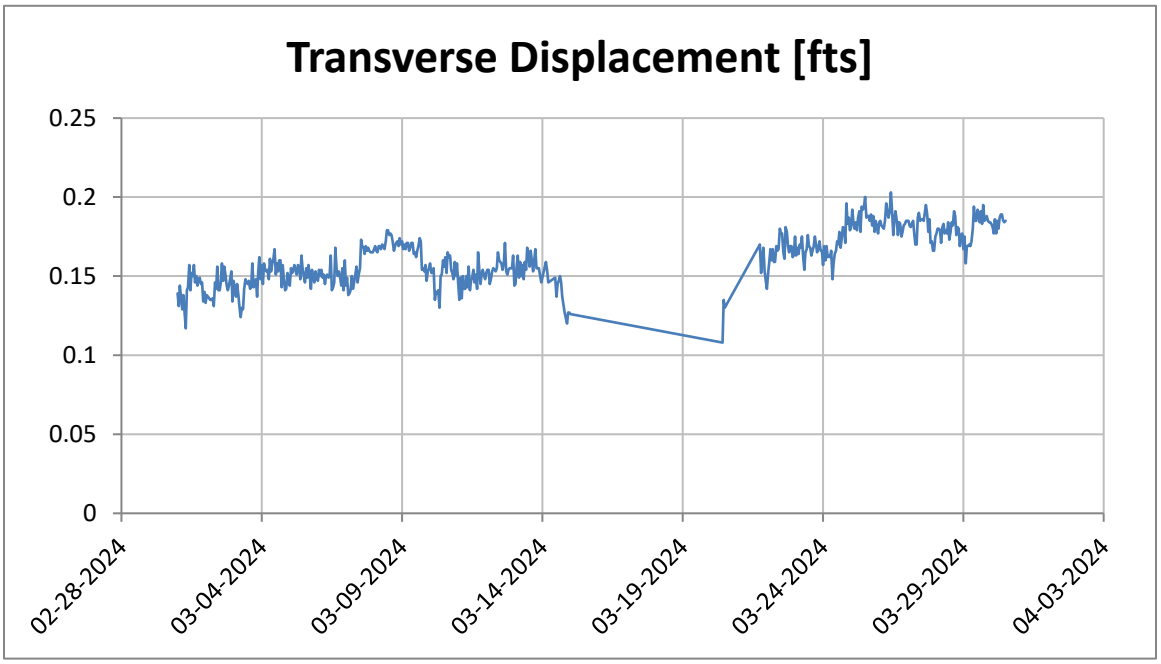


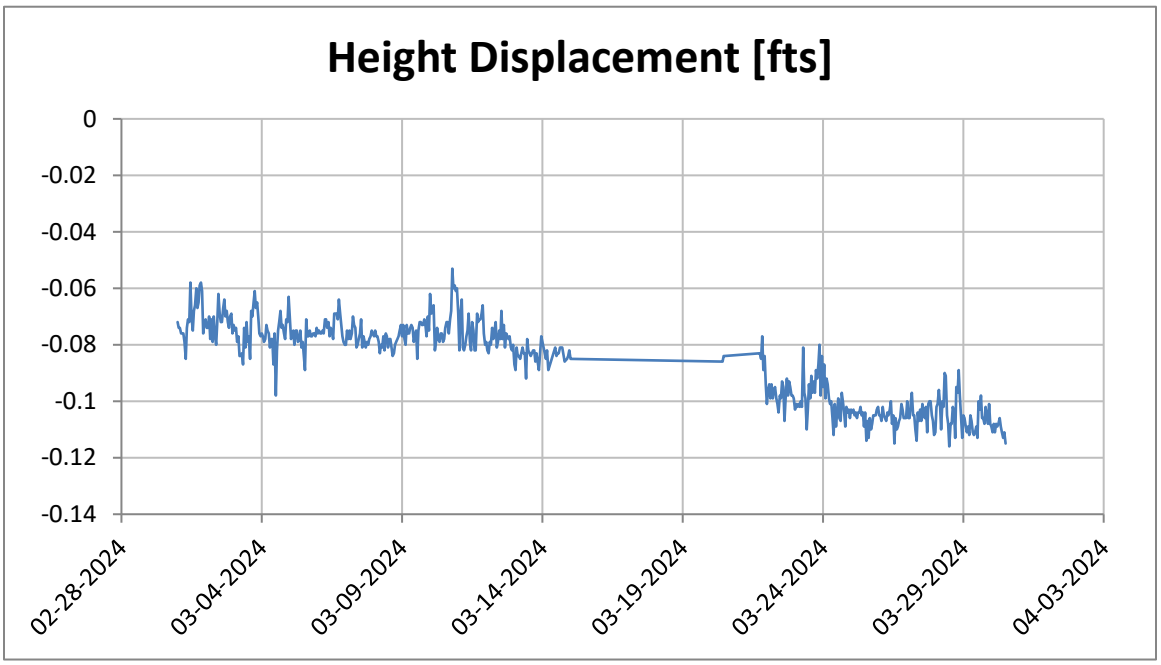
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7300-4





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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

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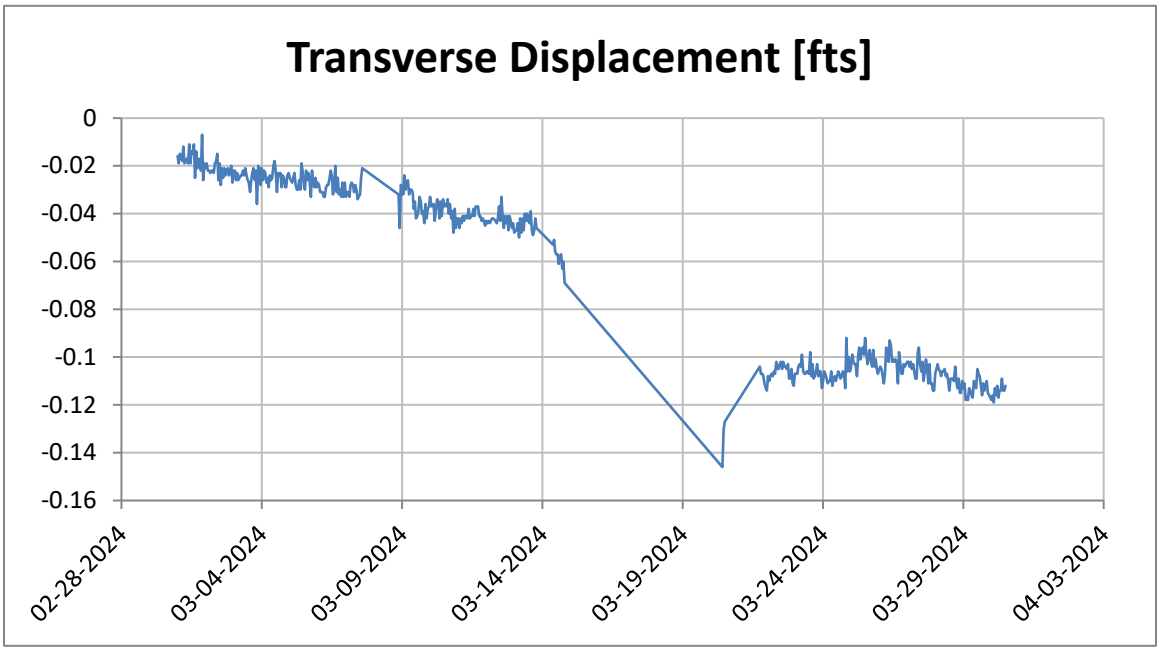
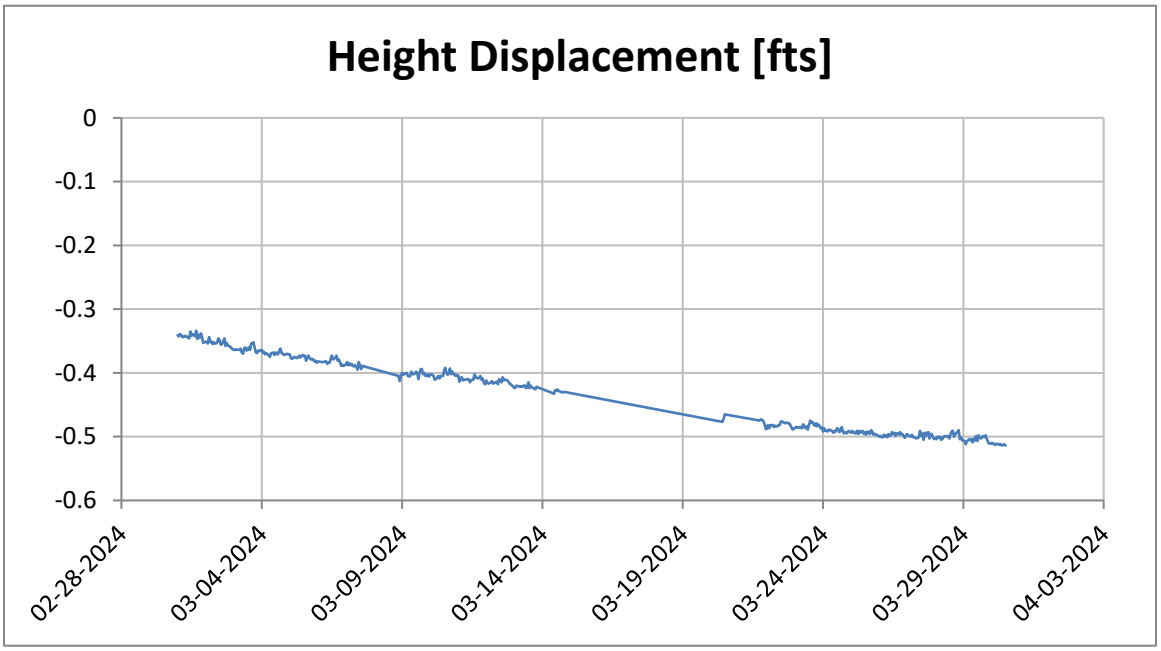
Stantec

Prism B7400-1



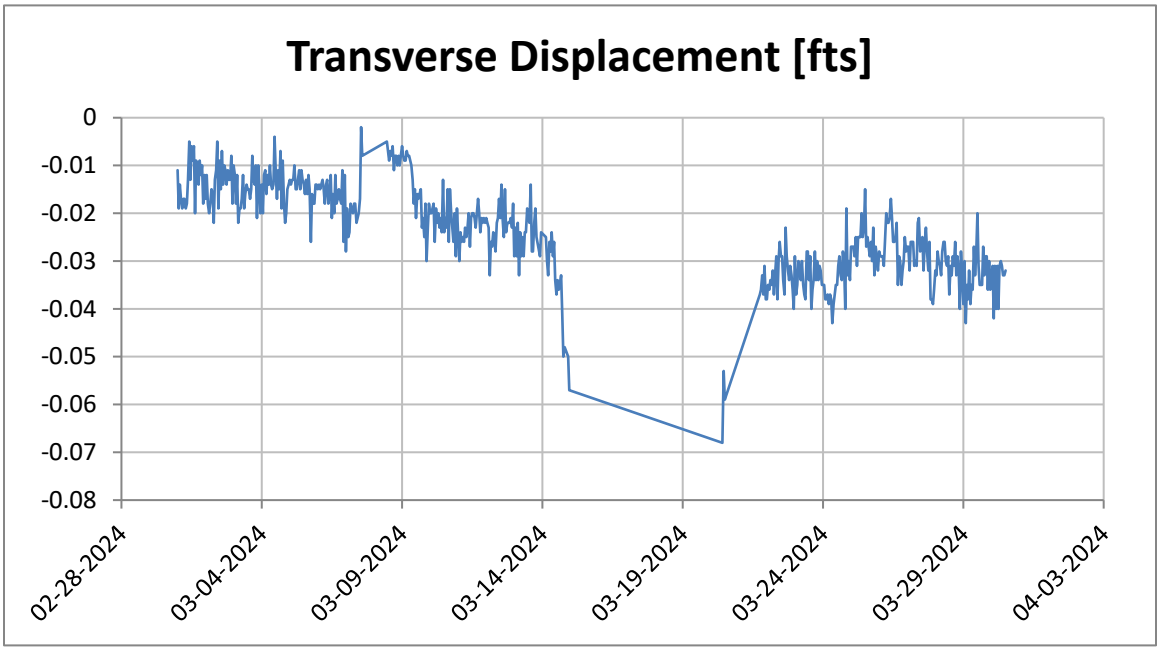


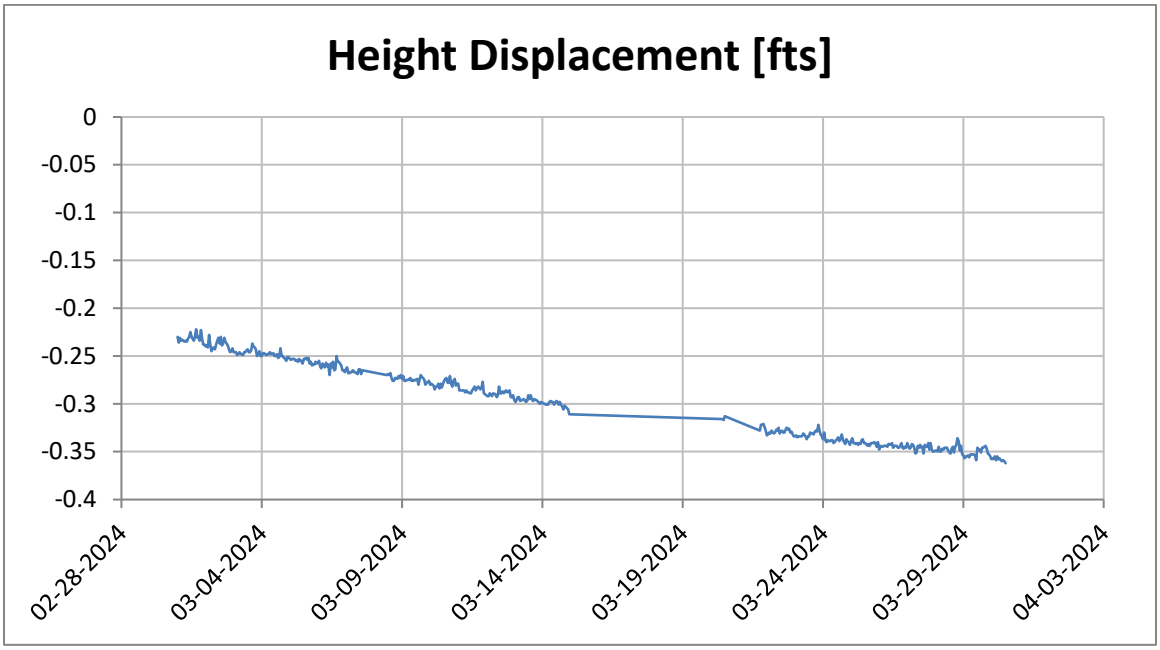
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Movement believed to be settlement of the compacted fill.
6. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7400-2



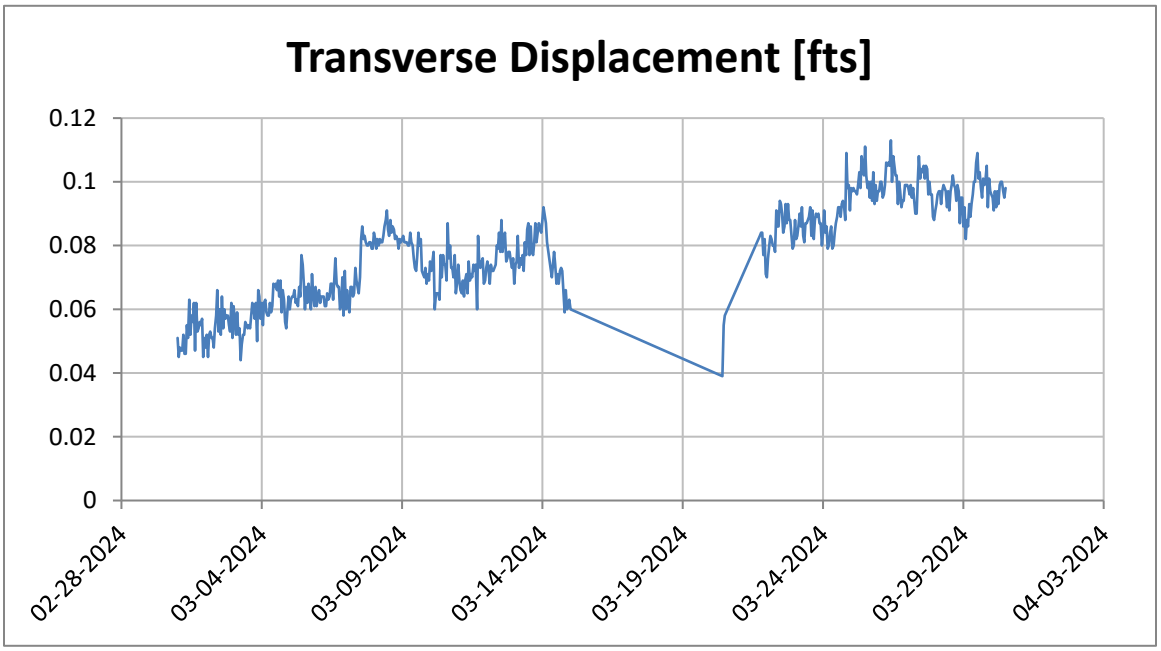


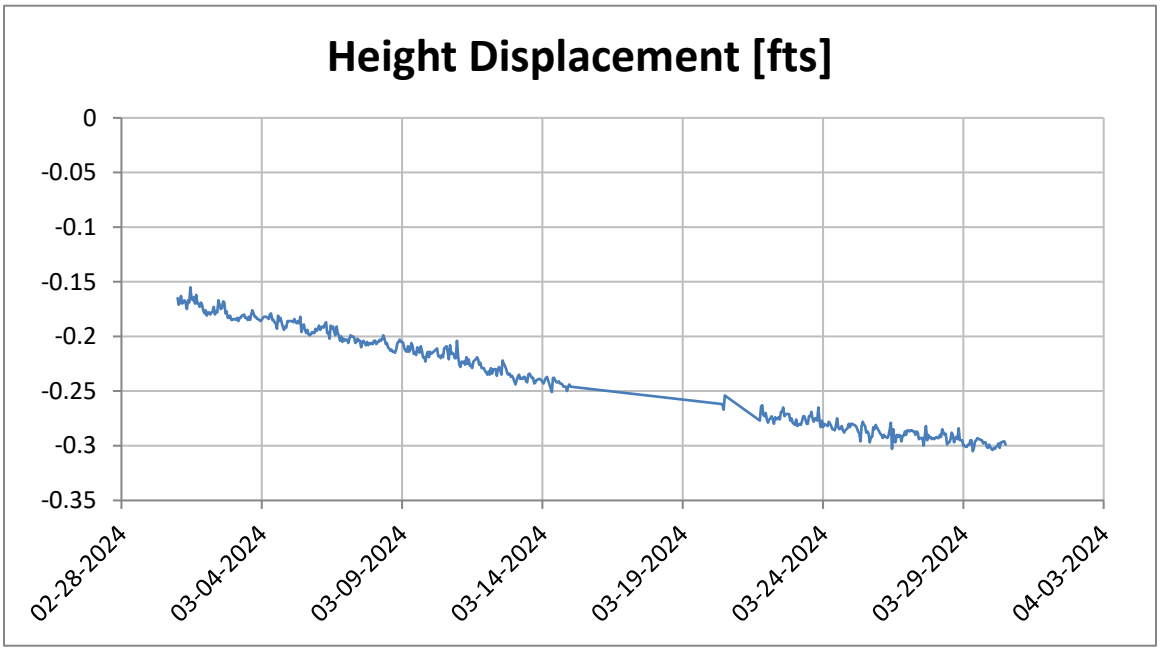
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Movement believed to be settlement of the compacted fill.
6. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7400-3



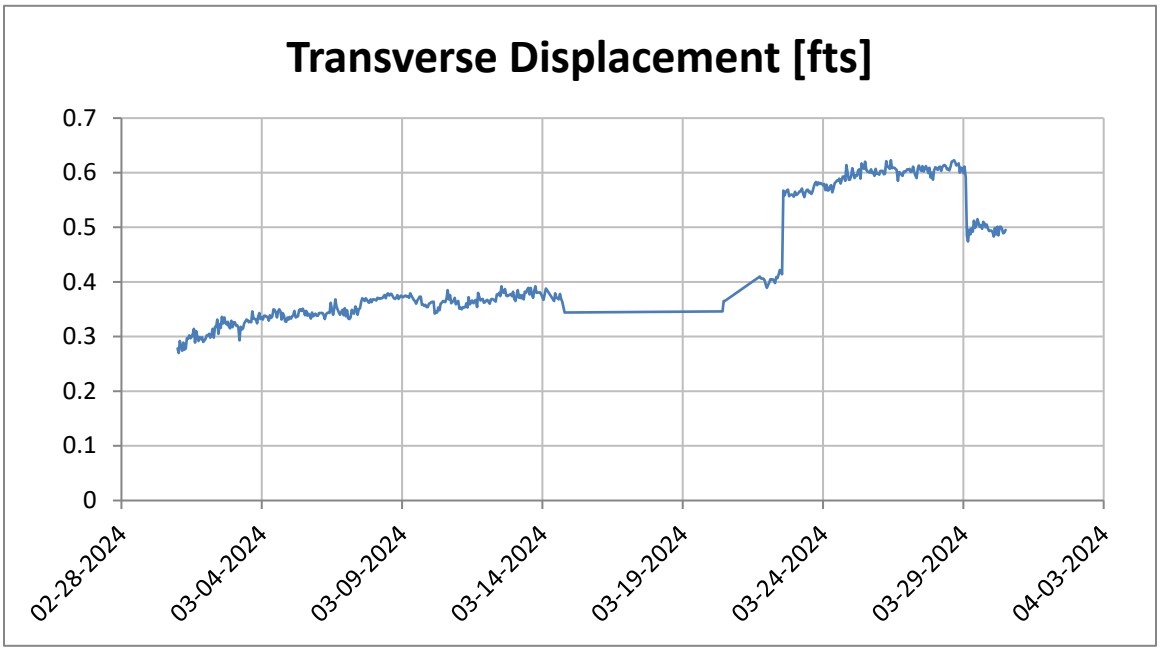


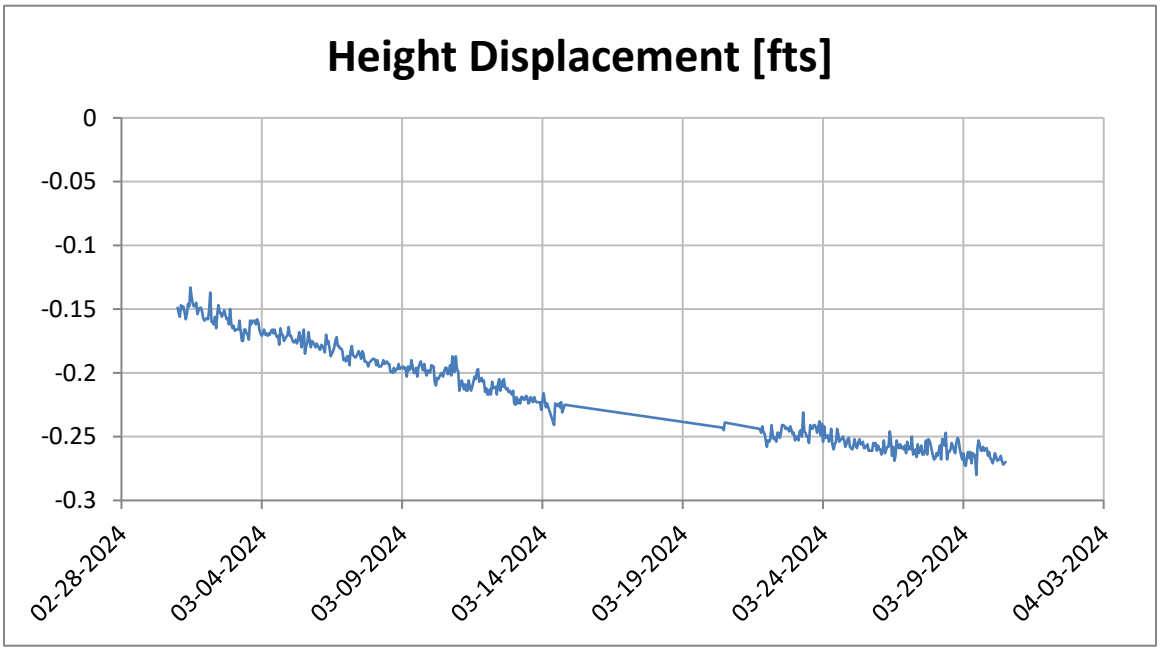
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Movement believed to be settlement of the compacted fill.
6. A power outage prevented readings from March 13 to March 21.

Stantec

Prism B7400-4





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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Movement believed to be settlement of the compacted fill.
6. A power outage prevented readings from March 13 to March 21.

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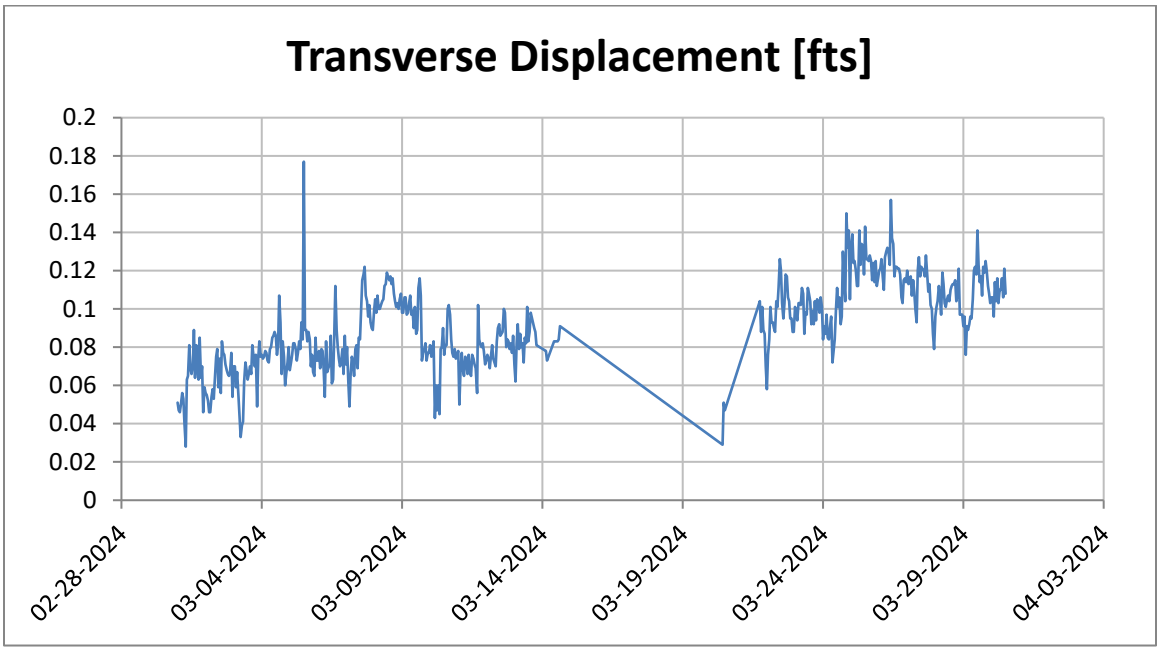
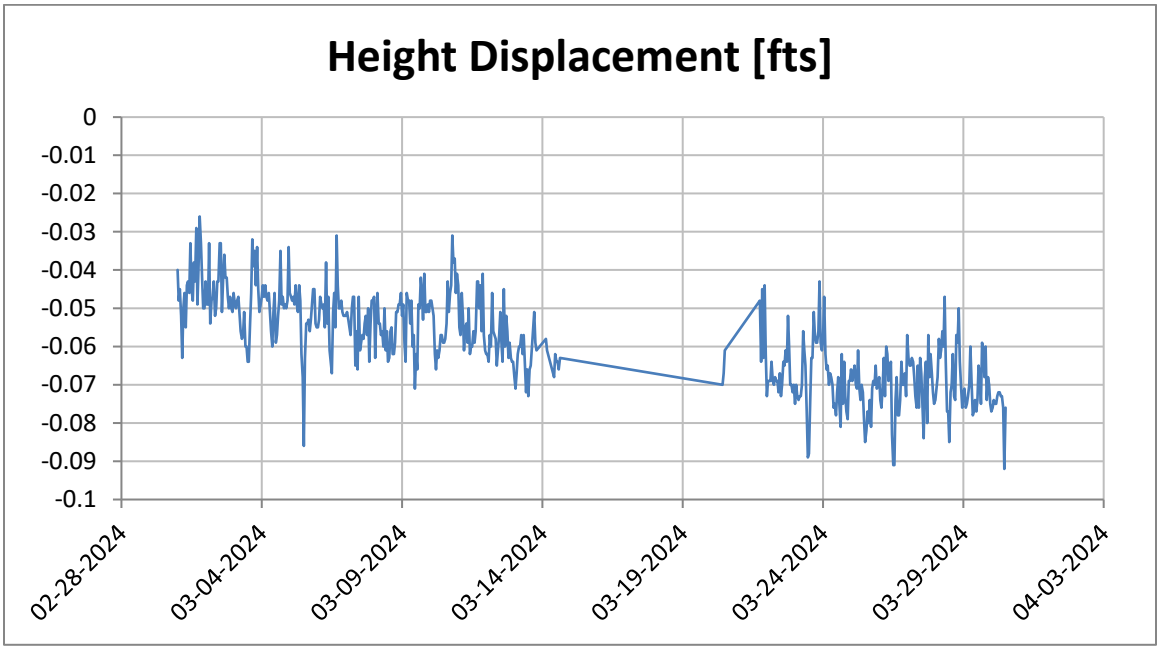
Stantec

Prism B7400-5



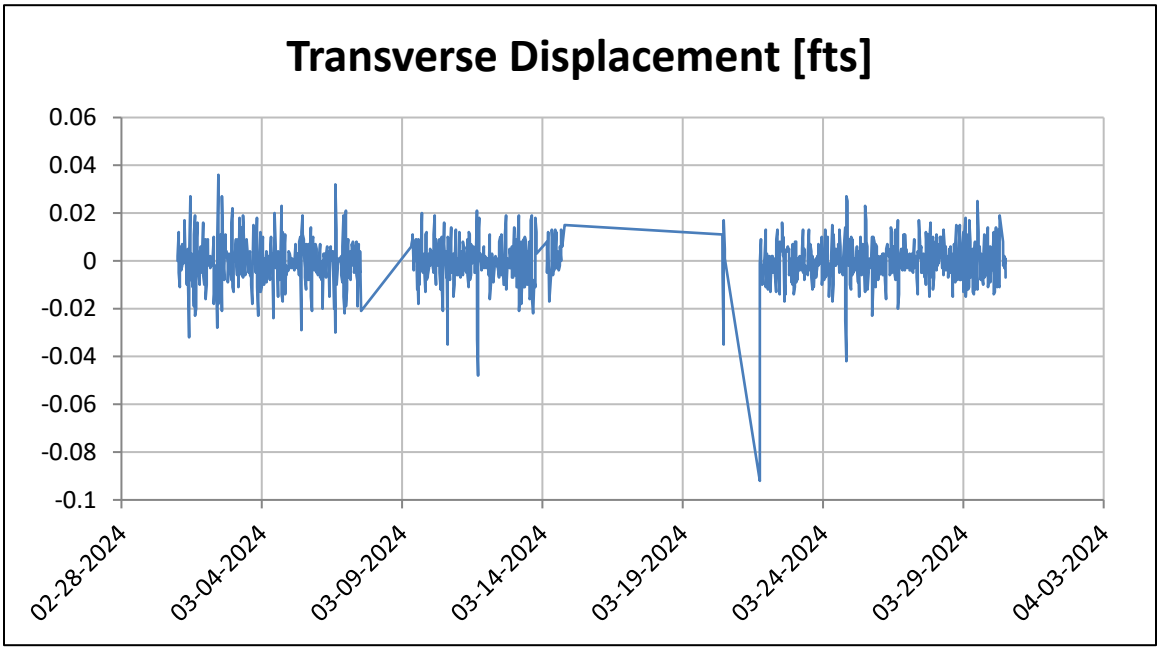


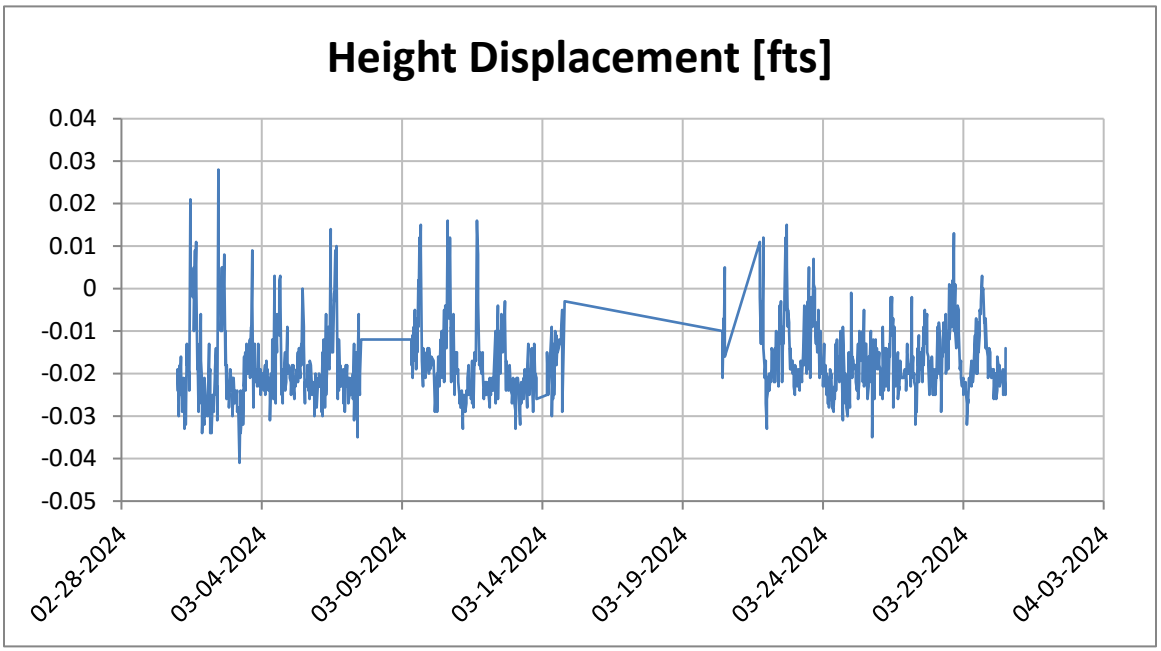
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. Settle of compacted fill recorded in early March.
6. A power outage prevented readings from March 13 to March 21.

Stantec

Prism CP6



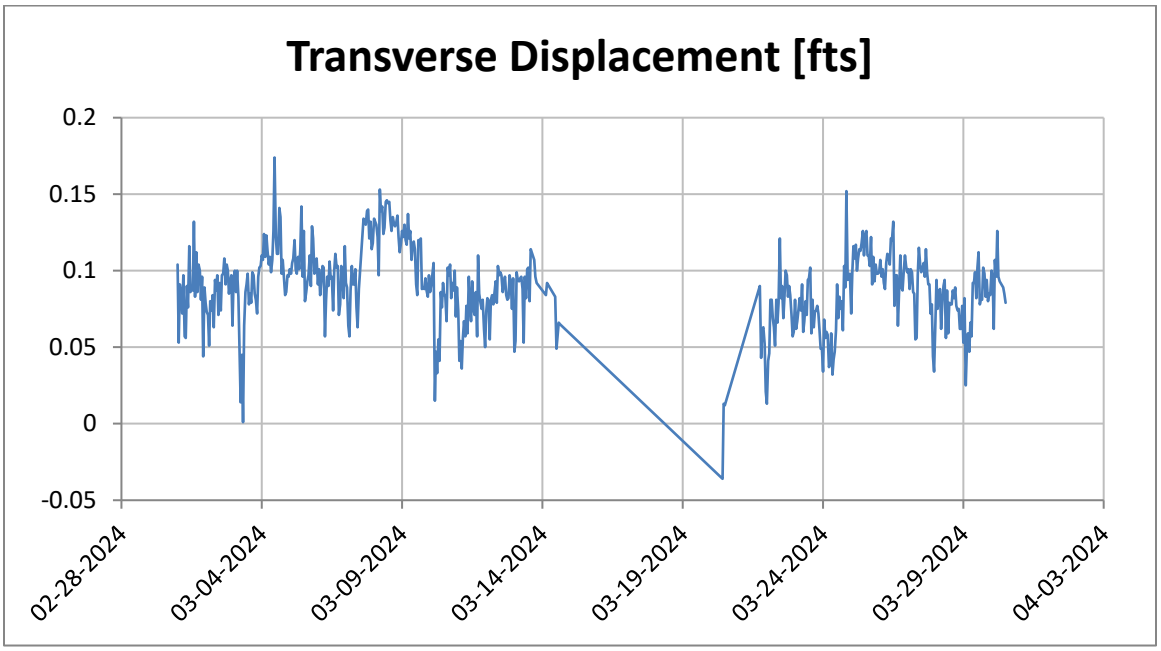


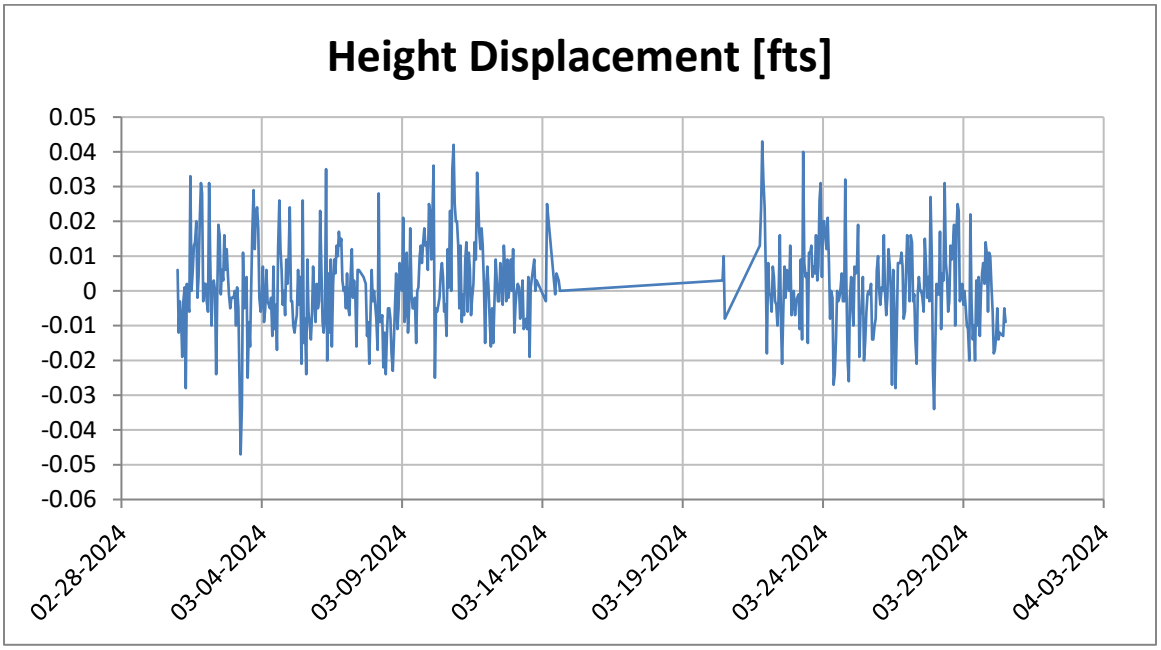
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism CP7



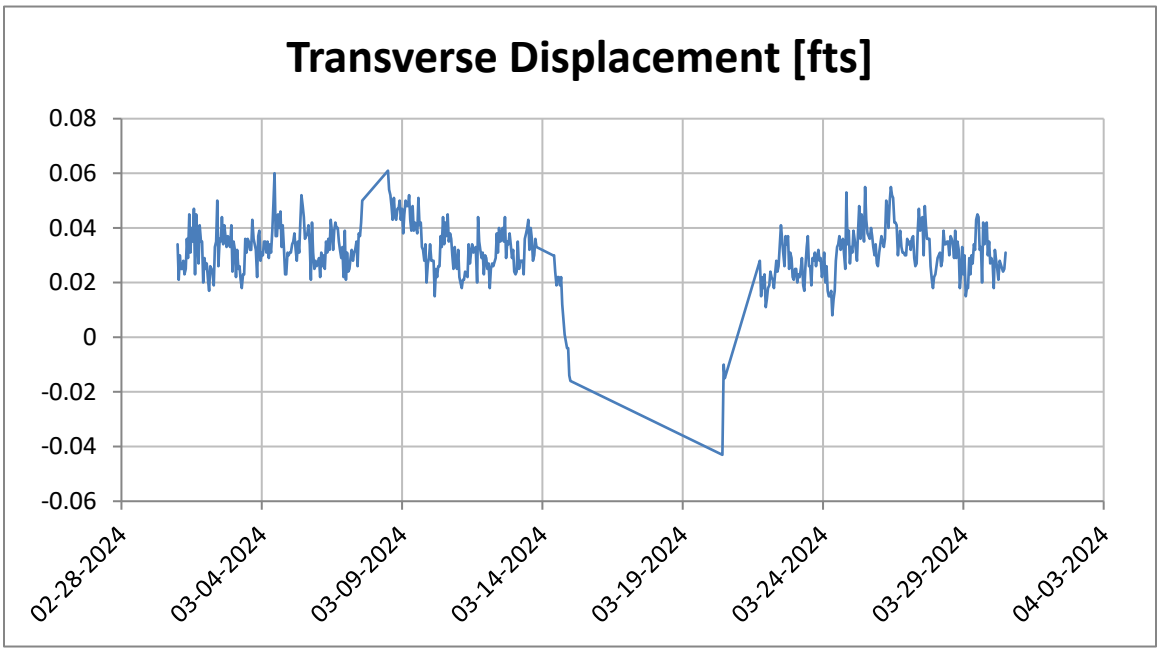


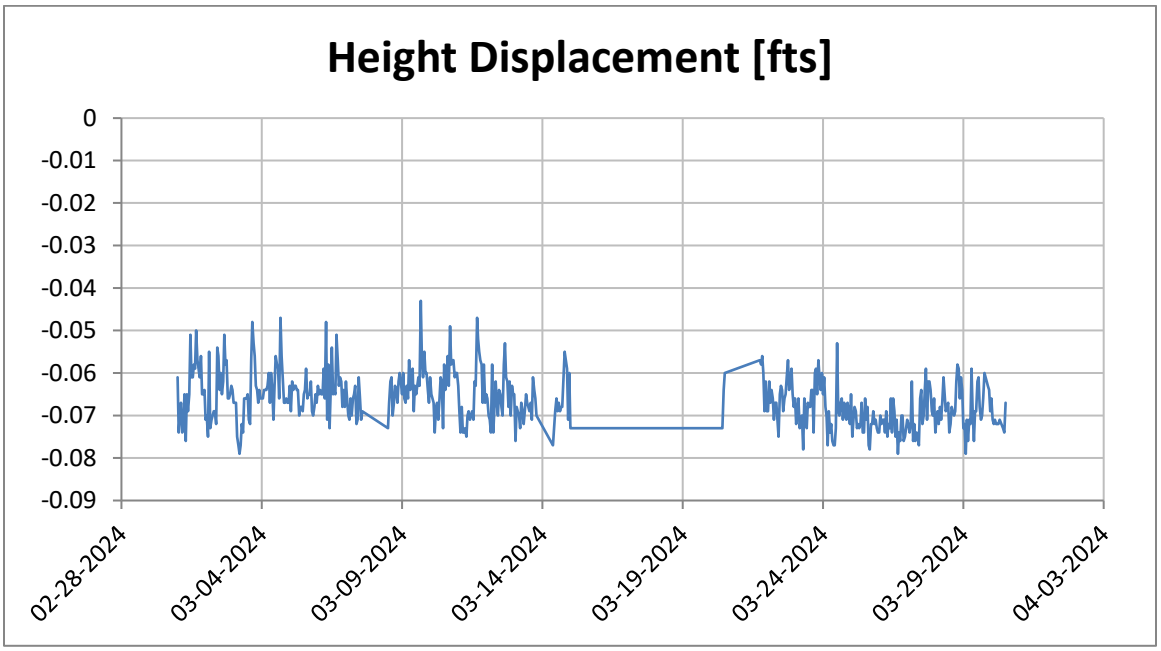
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism NP4



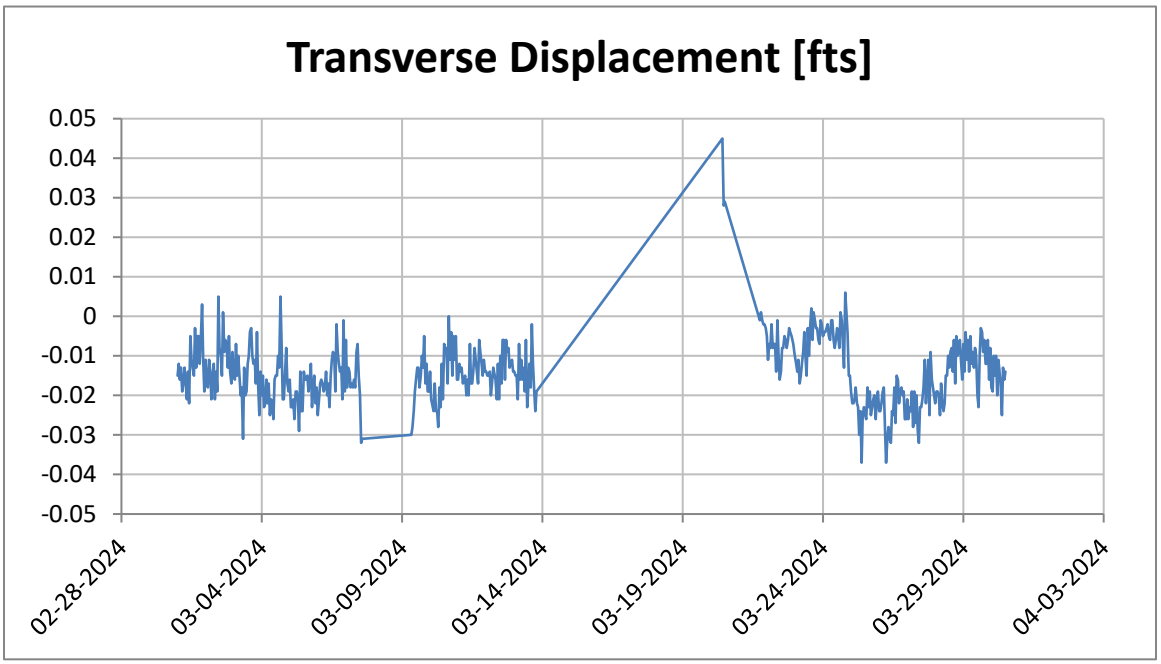


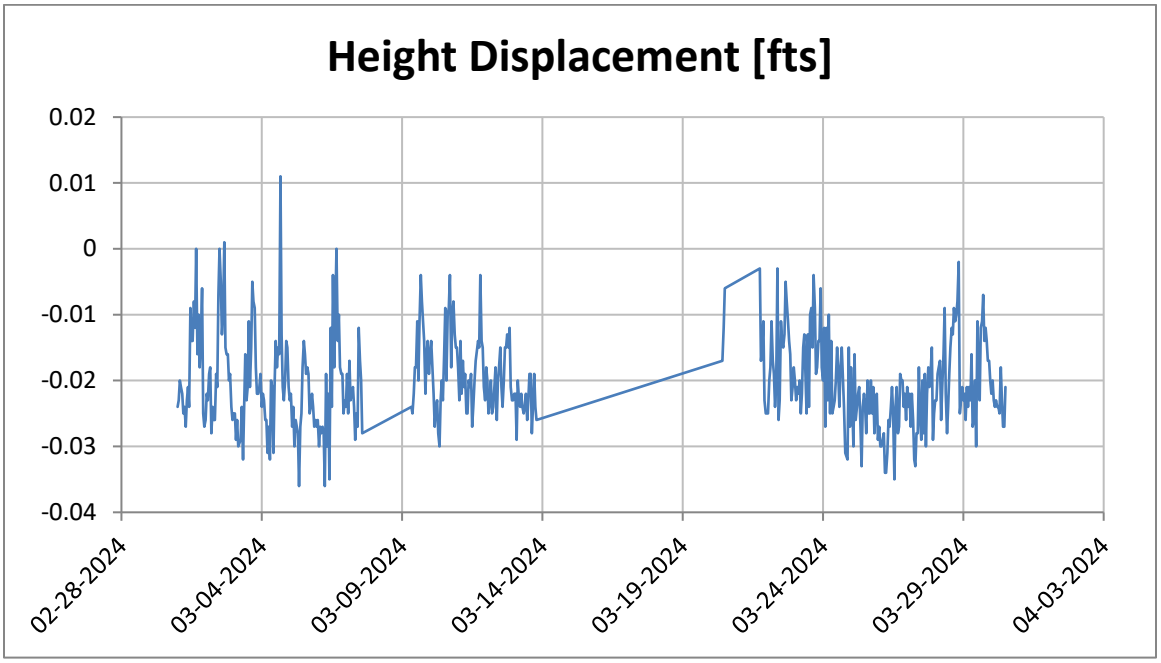
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism P2



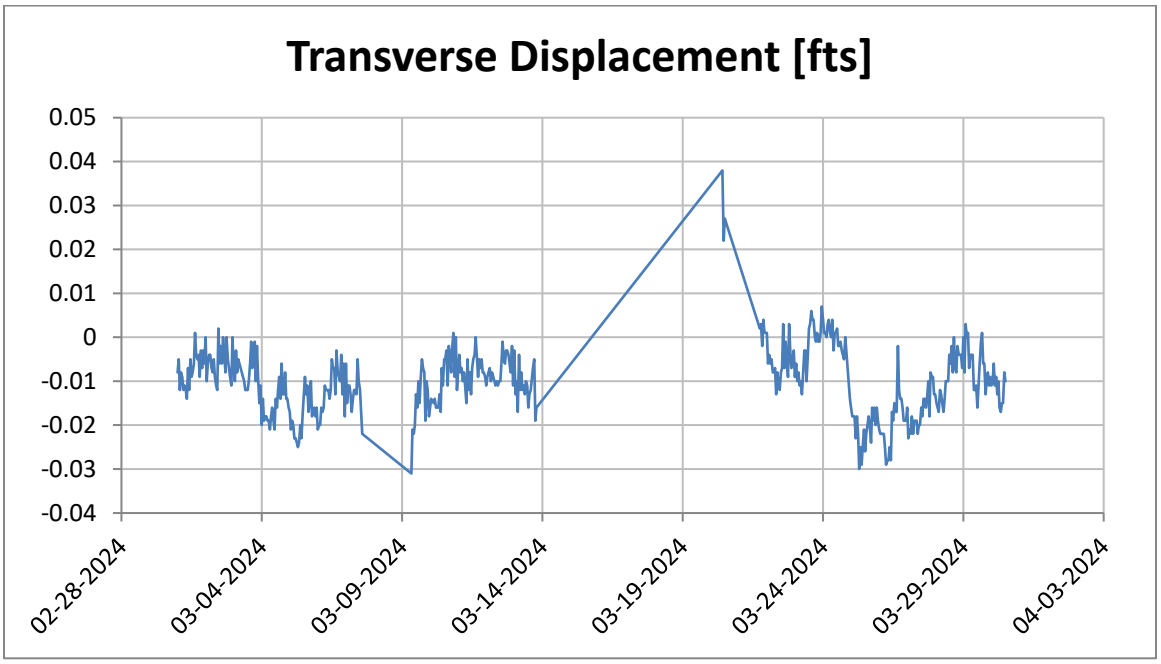


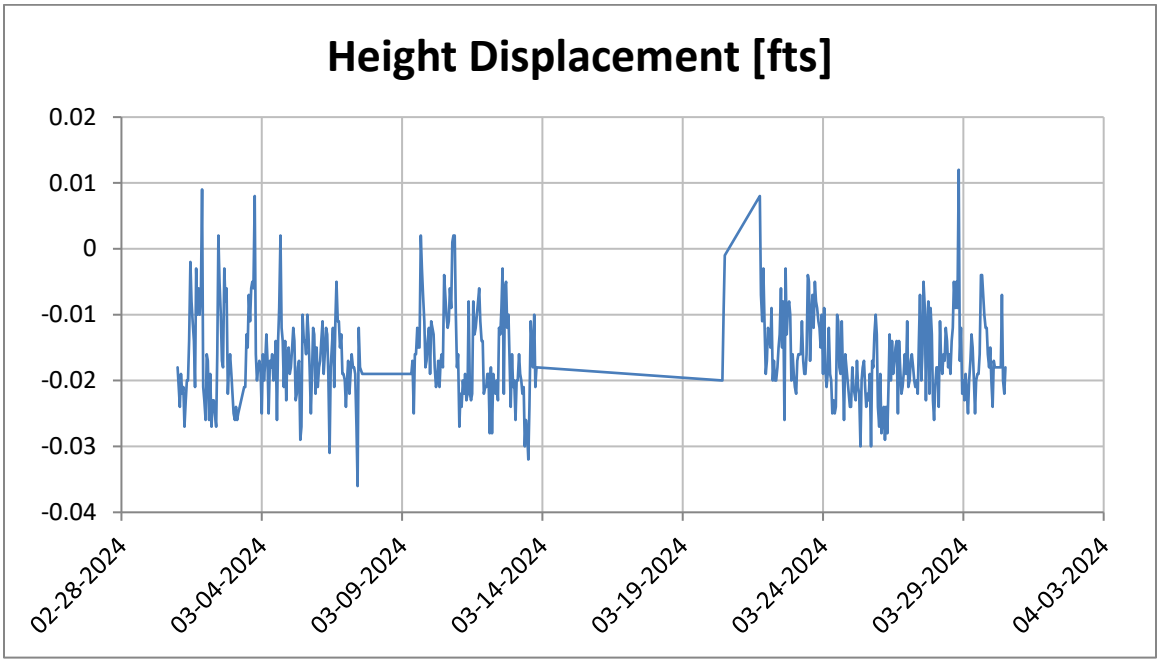
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism P5



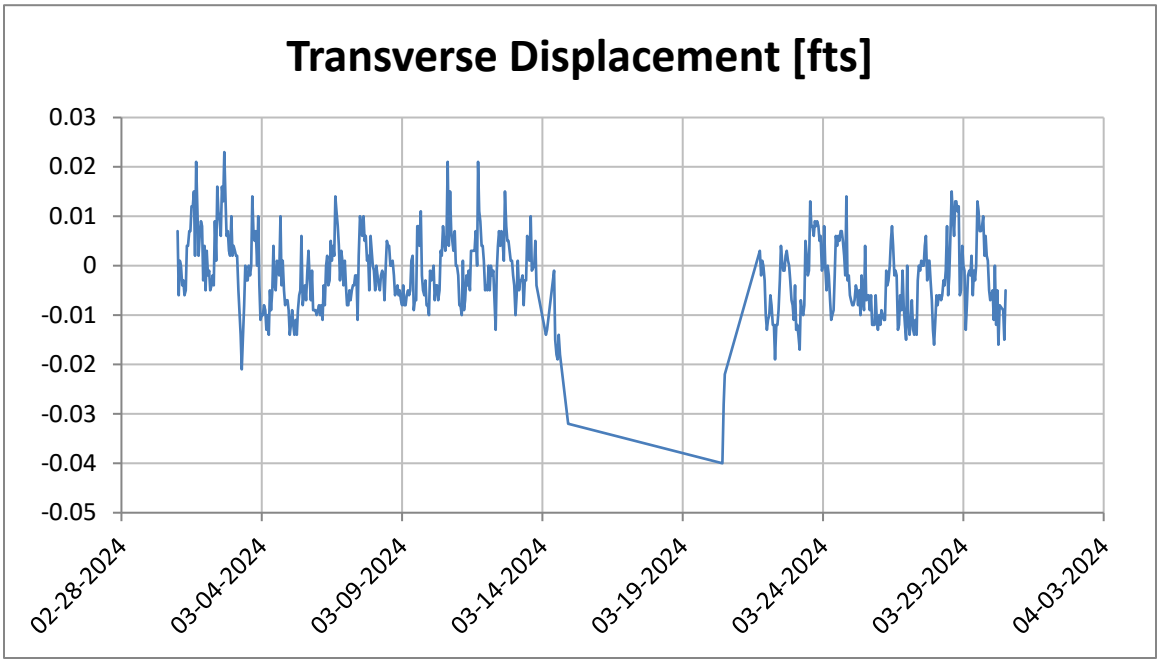


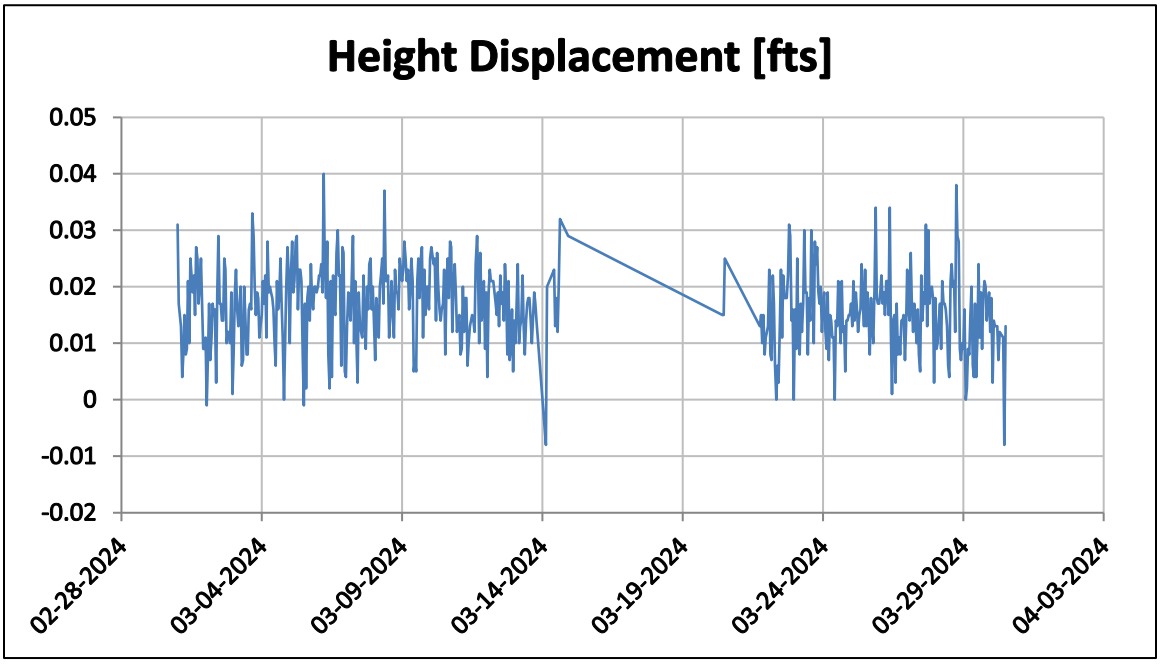
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism P25



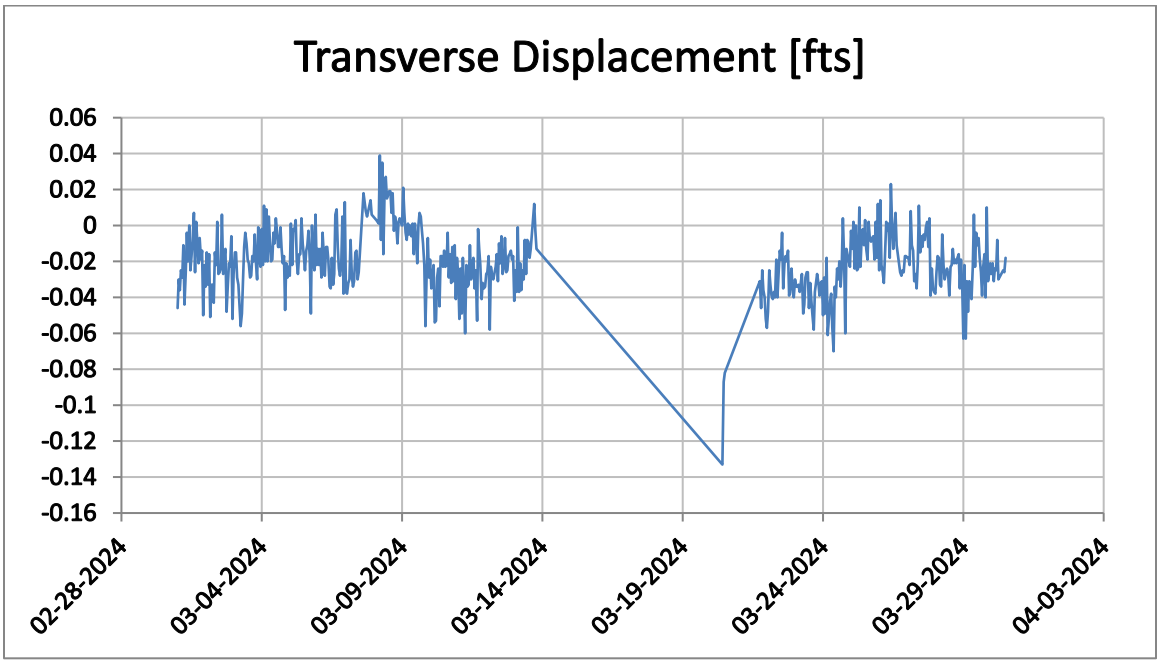


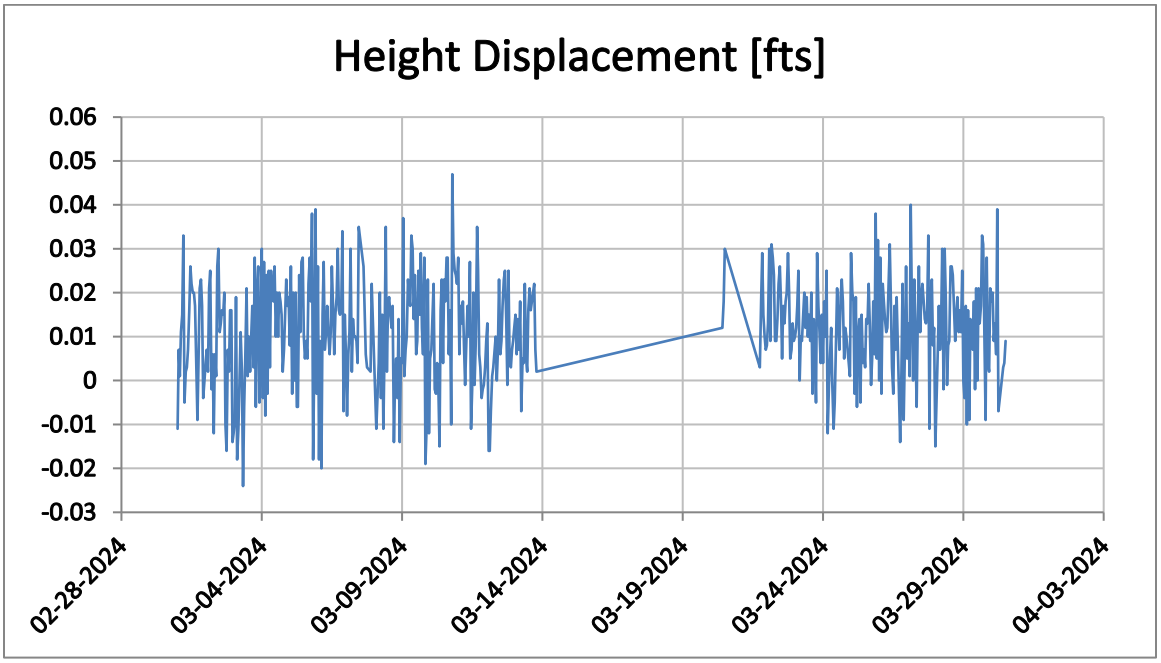
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism P32R



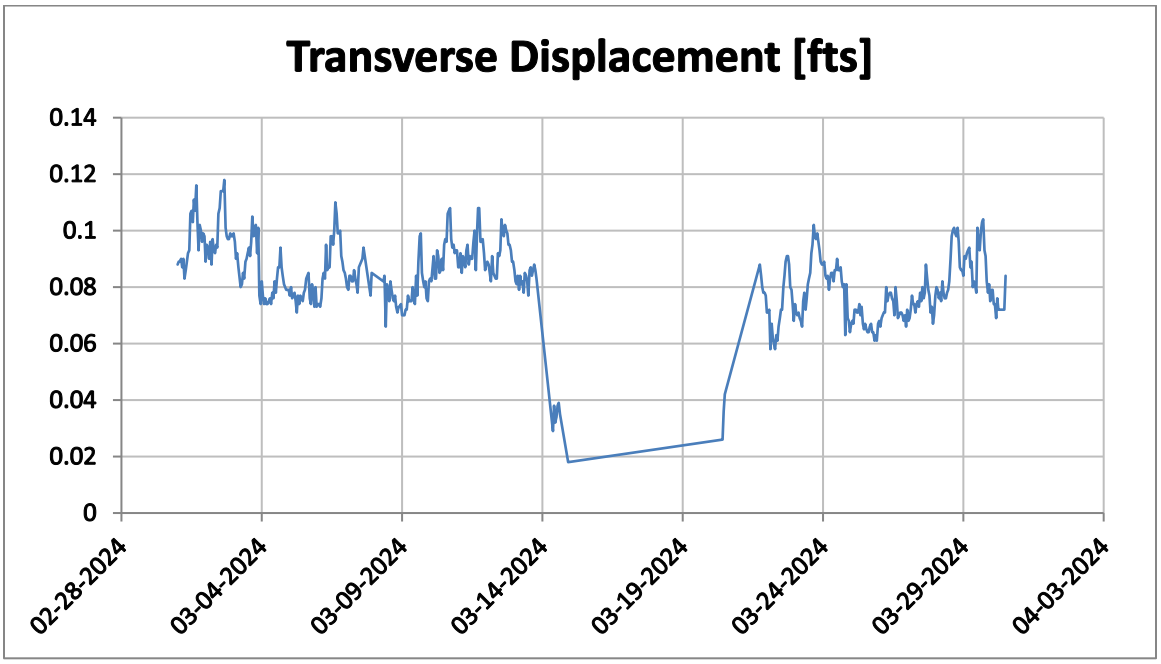


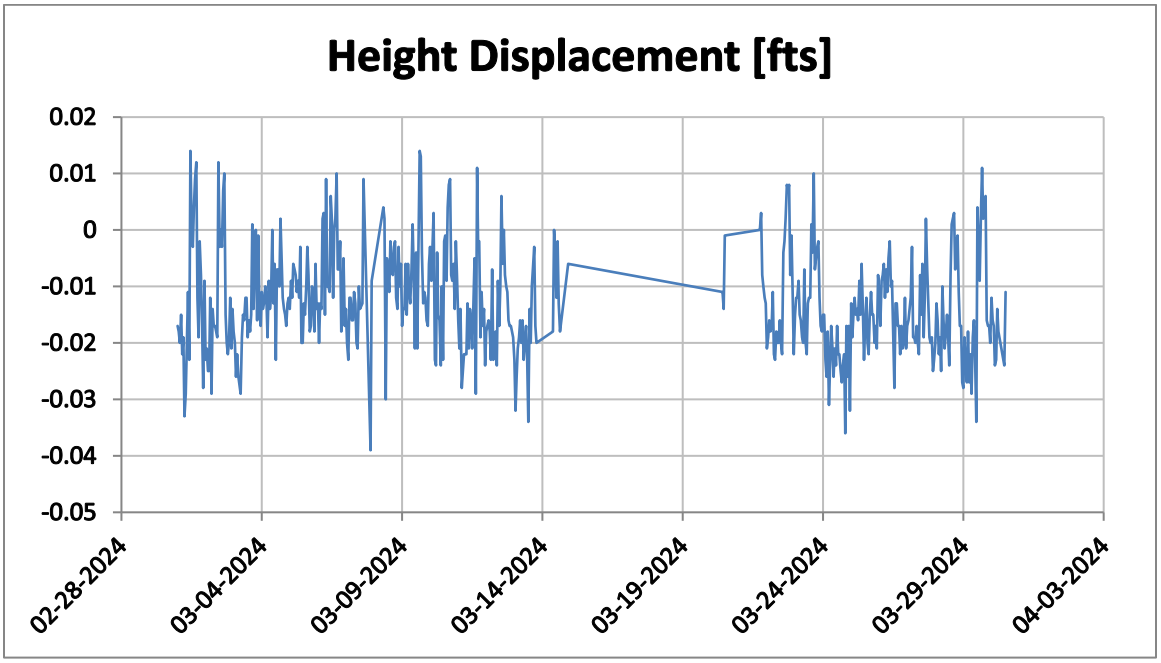
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism P33



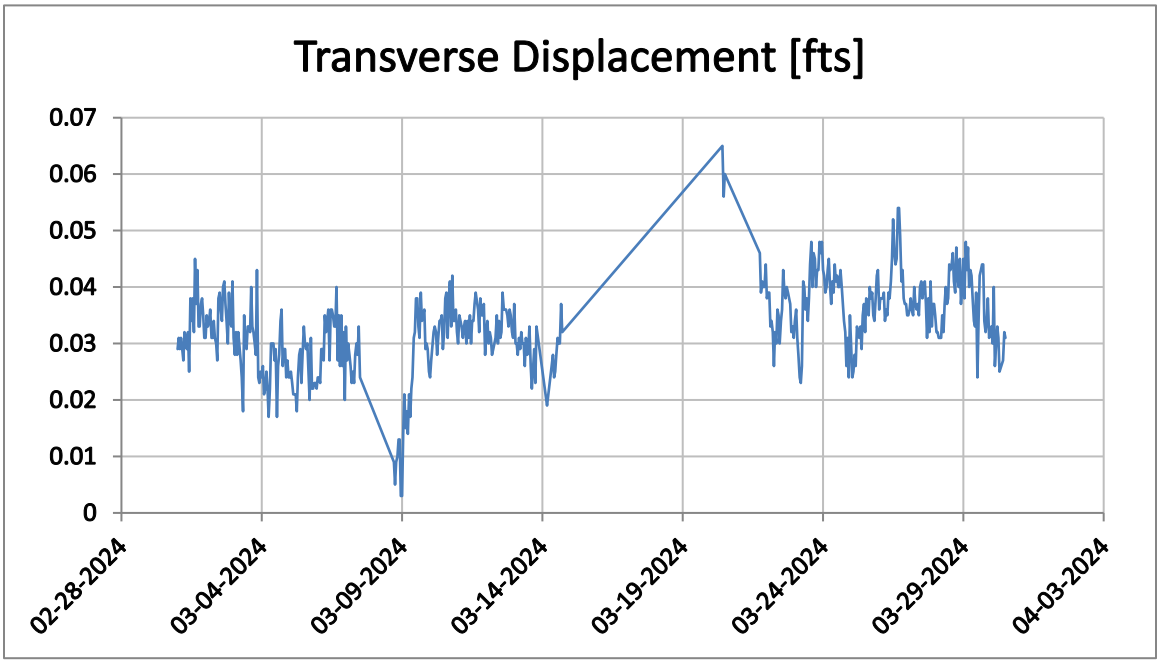


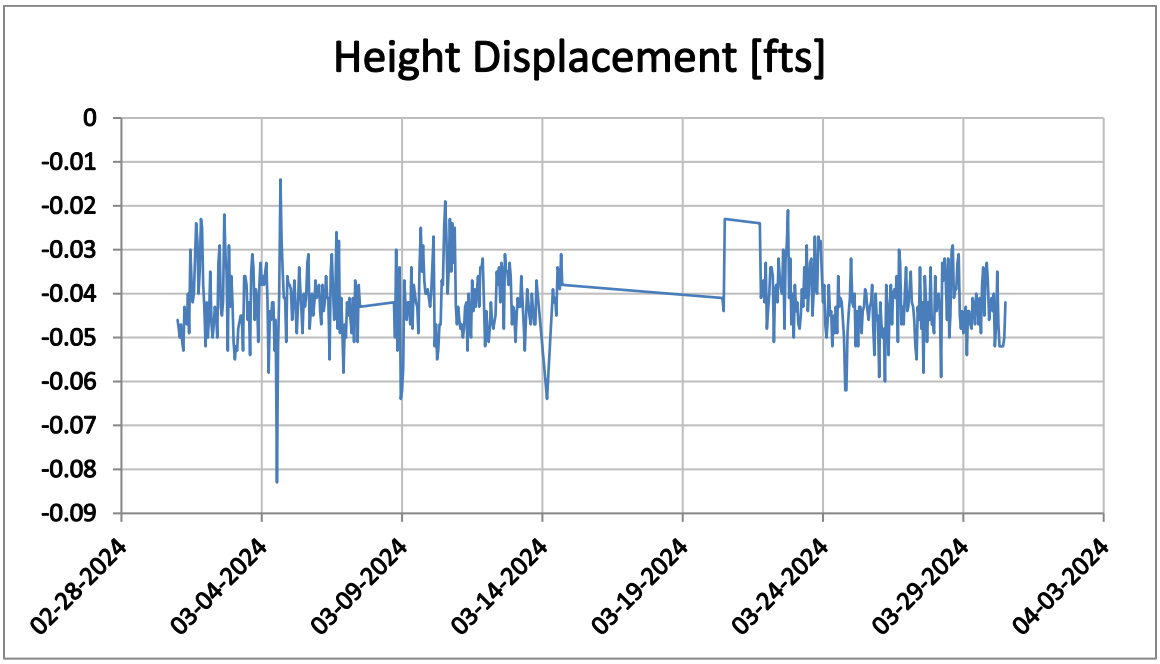
Notes:

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 total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Stantec

Prism P70





Notes:

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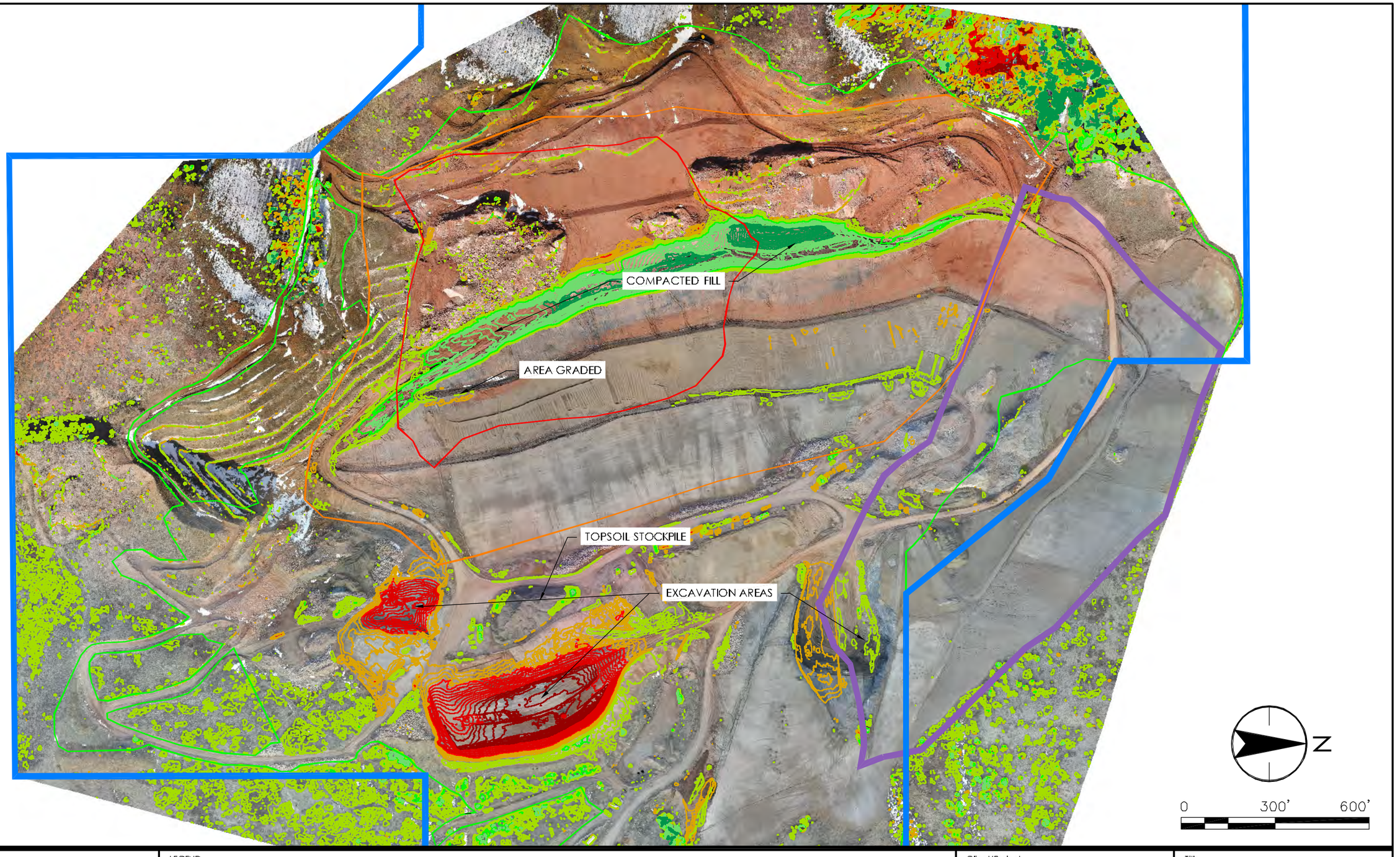
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.
5. A power outage prevented readings from March 13 to March 21.

Appendix C

Drone Survey



u:\2057288200\6e_design\monitoring\2024-03\dwg\pitreview pitms_2024.dwg

2024.04.12 5:45:47 PM

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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 02/28/2024 TO 03/28/2024

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
COMPARISON OF RECENT AND PREVIOUS SURVEYS

Revision	Date
#	2024.03.31
Drawn By	Figure No.
PK	5

Appendix D

Compaction Testing Results

LEGEND

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

1. THERE WAS NO TEST 1012.

N

0 150' 300'

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Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
COMPACTION TEST LOCATIONS

Revision
#

Date
2024.03.31

Drawn By
PK

Figure No.
6

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Compaction Testing Log

Test No.	Date	Elevation (ft)	Northing (ft)	Easting (ft)	Wet Density (pcf)	Moisture Content (%)	Dry Density (pcf)	Compaction (%)
1013	4-Mar-24	7442	1402309	3172803	127.2	5	121.2	99
1014	4-Mar-24	7444	1402221	3172728	135.6	6.4	127.5	104
1015	4-Mar-24	7441	1402129	3172812	130.2	4.1	125.1	102
1016	4-Mar-24	7431	1401577	3172923	131.7	5	125.4	102
1017	4-Mar-24	7428	1401499	3172945	127.1	8	117.7	96
1018	4-Mar-24	7426	1401481	3172973	131.8	8.3	121.7	99
1019	5-Mar-24	7443	1401990	3172833	138	9.2	127	103
1020	5-Mar-24	7443	1402043	3172820	133	17	113	93
1021	5-Mar-24	7444	1402002	3172782	144	9.2	132	108
1022	5-Mar-24	7444	1401944	3172794	143	8.8	132	108
1023	6-Mar-24	7449	1402242	3172728	143	6	135.1	110
1024	6-Mar-24	7449	1402147	3172731	136	8	126.1	103
1025	6-Mar-24	7427	1401432	3173004	139	7.4	129.9	106
1026	6-Mar-24	7421	1401359	3173037	126	11.3	113.3	92
1027	11-Mar-24	7455	1402197	317278	137.3	8.3	126.8	103
1028	11-Mar-24	7455	1402227	3172773	140.3	11.6	125.7	102
1029	11-Mar-24	7454	1402139	3172782	139.8	7.5	130	106
1030	11-Mar-24	7440	1401594	3172938	139.8	4.6	133.6	109
1031	11-Mar-24	7438	1401537	3172972	132.5	10.2	120.2	98
1032	11-Mar-24	7435	1401478	3173002	133.3	3.9	128.3	104
1033	12-Mar-24	7453	1401946	3172821	144.1	10.2	130.8	107
1034	12-Mar-24	7438	1401500	3172970	143.2	9.1	131.3	107
1035	12-Mar-24	7434	1401441	3172986	129.6	7.7	120.3	98
1036	13-Mar-24	7465	1402145	3172701	130.5	7.7	121.2	99
1037	13-Mar-24	7464	1402084	3172722	130.9	7.4	121.9	99
1038	22-Mar-24	7477	1402135	3172688	136.9	6.1	129	105
1039	22-Mar-24	7459	1401659	3172884	138.1	7.2	128.8	105
1040	22-Mar-24	7477	1402140	3172720	134.5	7.4	125.2	102
1041	22-Mar-24	7463	1401766	3172851	128.6	6.6	120.6	98
1042	22-Mar-24	7462	1401725	3172863	134.1	5.1	127.6	104
1043	25-Mar-24	7481	1401804	3172769	140.6	6.4	132.2	108
1044	25-Mar-24	7480	1401757	3172779	140.6	5.2	133.6	109
1045	26-Mar-24	7493	1402103	3172697	141.2	8.5	130.1	106
1046	26-Mar-24	7493	1402120	3172694	139.7	8.9	128.3	104
1047	26-Mar-24	7482	1401883	3172757	144.2	8	133.5	109
1048	26-Mar-24	7481	1401829	3172760	140.9	5.1	134.1	109
1049	26-Mar-24	7438	1401361	3173012	132.5	8.7	121.9	99

Test No.	Date	Elevation (ft)	Northing (ft)	Easting (ft)	Wet Density (pcf)	Moisture Content (%)	Dry Density (pcf)	Compaction (%)
1050	27-Mar-24	7437	1401400	3172971	138.9	5.3	131.9	107
1051	27-Mar-24	7439	1401437	3172992	147.2	7.4	137	112
1052	27-Mar-24	7433	1401355	3172992	135.8	6.5	127.5	104
1053	27-Mar-24	7428	1402641	3172737	132	4.6	126.2	103
1054	27-Mar-24	7440	1402690	3172716	133.5	4.6	127.6	104

Notes:

- A total 3,249,000 yd3 had been placed and compacted. This requires at least 650 compaction tests, and 1,258 tests have been taken.

- There was no test #1012.