Stantec

To:	Jerald Schnabel	From:	Paul Kos
	Continental Materials Corp.		Denver, CO 80222
File:	December 2022 Monitoring Summary	Date:	January 31, 2023

Reference: December 2022 Geotechnical Monitoring Summary Pikeview Quarry

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this December 2022 Geotechnical Monitoring Summary for the Pikeview Quarry. The Pikeview Quarry is situated along the foothills of the Rocky Mountains, northwest of Colorado Springs, Colorado. Continental Materials Corp. (CMC) 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 December 2022. Continuous monitoring by the robotic survey system began in 2010 and has continued through the month December 2022. Visual inspections of the slopes were performed by CMC employees and Stantec engineers.

1.1 PURPOSE

The purpose of this report is to summarize the December 2022 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 (CMC 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 December 2022. 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 December 21, 2022. 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 December.
- 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. (Photo 2)
- No cracking was observed on the native granite slopes above the extents of the disturbed area. (Photo 7)
- Operators continue to place compacted material in the buttress zone. Material is excavated from the North and South 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 (Photo 5)
- Compaction testing continues at the rate of at least one test per 5000 cubic yards of fill placed in the buttress area. (Photo 4)
- Offsite topsoil was stockpiled at the base of the buttress area with the additional topsoil and growth medium.
- 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. (Photo 6)
- 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 cracking but they are not fresh or active. No new or open cracks were found immediately inside or next to the slide area. (Photo 7)
- The culvert remains cleared but mostly blocked inside. CMC has partially cleared the debris, but access limitations and supports within the culvert inhibit clearing all the debris. CMC has procured a pump and will begin pumping operations if any water collects behind the culvert. CMC 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 December. 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 alarms if there is a movement recorded that is greater than 0.35 feet or if a prism cannot be located. Following each alarm, CMC clears the area of concern until the data can be reviewed and the slope can be inspected. CMC made sure that there were no workers in the area before inspecting the slope. During December 2022, multiple alarms were received from multiple prisms; in each case, the subsequent readings returned to normal, and the alarms are assumed to be data errors related to weather conditions, sun glare, or power outages. Power outages and poor weather conditions resulted in data errors recorded at each prism on December 22; in each case the data suddenly increased and then decreased. There was no work being performed during this time, and the readings have returned to normal. The alarms are listed in Table 2.

Table 2 Alarm Summary

Date(s)	Alarm	Cause/Actions taken	Issue Resolved
2-Dec	NP2 not found	Single event in night. Believed to be animal related. Herd in area of prism.	2-Dec
3-Dec	NP2 not found	Single event in night. Believed to be animal related. Herd in area of prism.	3-Dec
5-Dec	P1 not found	Single event in night. Believed to be animal related. Ram observed near prism.	5-Dec
7-Dec	P1 not found	Single event in night. Believed to be animal related. Ram observed near prism.	7-Dec
13-Dec	Points not found	Snow and fog. No work being performed at time of alert.	13-Dec
14-Dec	Communication errors	Power outage related to weather.	14-Dec
15-Dec	Points not found	Snow and fog. No work being performed at time of alert.	16-Dec
16-Dec	Communication errors	Power outage related to weather.	16-Dec
16-Dec	NP2 regression limit received	Weather related data error.	16-Dec
16-Dec	Communication errors	Batteries removed for system maintenance. No work during alerts.	19-Dec
21-Dec	NP2 regression limits received	Weather related data errors. No work during alerts.	21-Dec

12/21 to 12/22	Points not found	Snow and fog. No work being performed at time of alert.	22-Dec
22-Dec	NP66 regression limits received	Weather related data errors. No work during alerts.	30-Dec
22-Dec	P69A regression limits received	Weather related data errors. No work during alerts.	30-Dec
22-Dec	P25 regression limits received	Weather related data errors. No work during alerts.	30-Dec
22-Dec	P32 regression limits received	Weather related data errors. No work during alerts.	30-Dec
22-Dec	NP2 regression limit received	Weather related data errors. No work during alerts.	30-Dec
22-Dec	P33 regression limit received	Weather related data errors. No work during alerts.	30-Dec
22-Dec	P1 regression limit received	Weather related data errors. No work during alerts.	30-Dec
12/22 to 12/23	Communication errors	Power outage related to weather.	30-Dec
23-Dec	Points not found	Snow and fog. No work being performed at time of alert.	30-Dec
23-Dec	NP2 regression limit received	Weather related data errors. No work during alerts.	30-Dec
24-Dec	NP2 regression limits received	Weather related data errors. No work during alerts.	30-Dec
24-Dec	P32 regression limit received	Weather related data errors. No work during alerts.	30-Dec
12/28 to 12/29	Points not found	Snow and fog. No work being performed at time of alert.	30-Dec
12/29 to 1/3	Communication errors	Power outage related to weather. No work being performed at time of alerts.	3-Jan

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 12 of 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 also recorded slope creep movements at slow velocity. This settlement is likely related to the landslide material consolidating under its own weight. 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	-0.050	-0.112	0.0063	0.1737	Slope creep movements.
BR2	-0.013	-0.126	0.0198	0.1859	Slope creep movements.
CP6	0.001	-0.015	0.0037	0.0372	
CP7	0.106	-0.012	0.0489	0.1182	
NP2	0.024	0.018	0.0361	0.0716	
NP3	0.022	0.001	0.0010	0.0222	
NP66	-0.009	-0.101	0.0313	0.1094	Slope creep movements.
P1	-0.025	-0.023	0.0075	0.0380	
P2	-0.021	-0.016	0.0057	0.0314	
P5	-0.031	-0.014	0.0099	0.0341	
P25	-0.025	0.013	0.0049	0.0351	
P32	-0.035	0.011	0.0072	0.0444	
P33	-0.007	-0.013	-0.0708	0.1249	
P69A	0.024	-0.043	0.0144	0.2099	
P70	-0.037	0.005	0.0206	0.0414	

4.0 DRONE SURVEY

The site was flown for aerial imagery using an unmanned aircraft system (UAS or 'drone') on December 28, 2022. 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 December topography was also compared to the November 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 December 2022. Fill was excavated from the Shop and North Borrow Areas and placed in the buttress and buffer zones. Importing fill also continued. All fill is moisture conditioned as necessary and then compacted. Compaction testing began March 2022 and occurs at the rate of at least one test per 5,000 yd^3 placed. During December, approximately 135,000 yd^3 was placed and compacted. This includes approximately 7,600 yd^3 of imported fill. This volume placed in the buttress zone required at least 27 compaction tests. There were 53 compaction tests taken in December. As of December 31, 2022, a total 1,907,000 yd^3 had been placed and compacted. This required at least 382 compaction tests, and 673 tests have been taken. All tests in December met or exceeded the minimum compaction requirement of 90% of the optimal density as measured by a Standard Proctor Test. A density test on December 5, 2023 was rejected and has not been included in the log. The density gauge plate was found to have frost on it resulting in erroneous results. After the frost was removed, the density gauge provided correct results. The compaction testing results are summarized in Appendix D, and the testing locations are shown on Figure 6.

6.0 RECLAMATION PROGRESS

CMC 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 will 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 fill material continued
- Geotechnical monitoring continued

Work planned for next month includes:

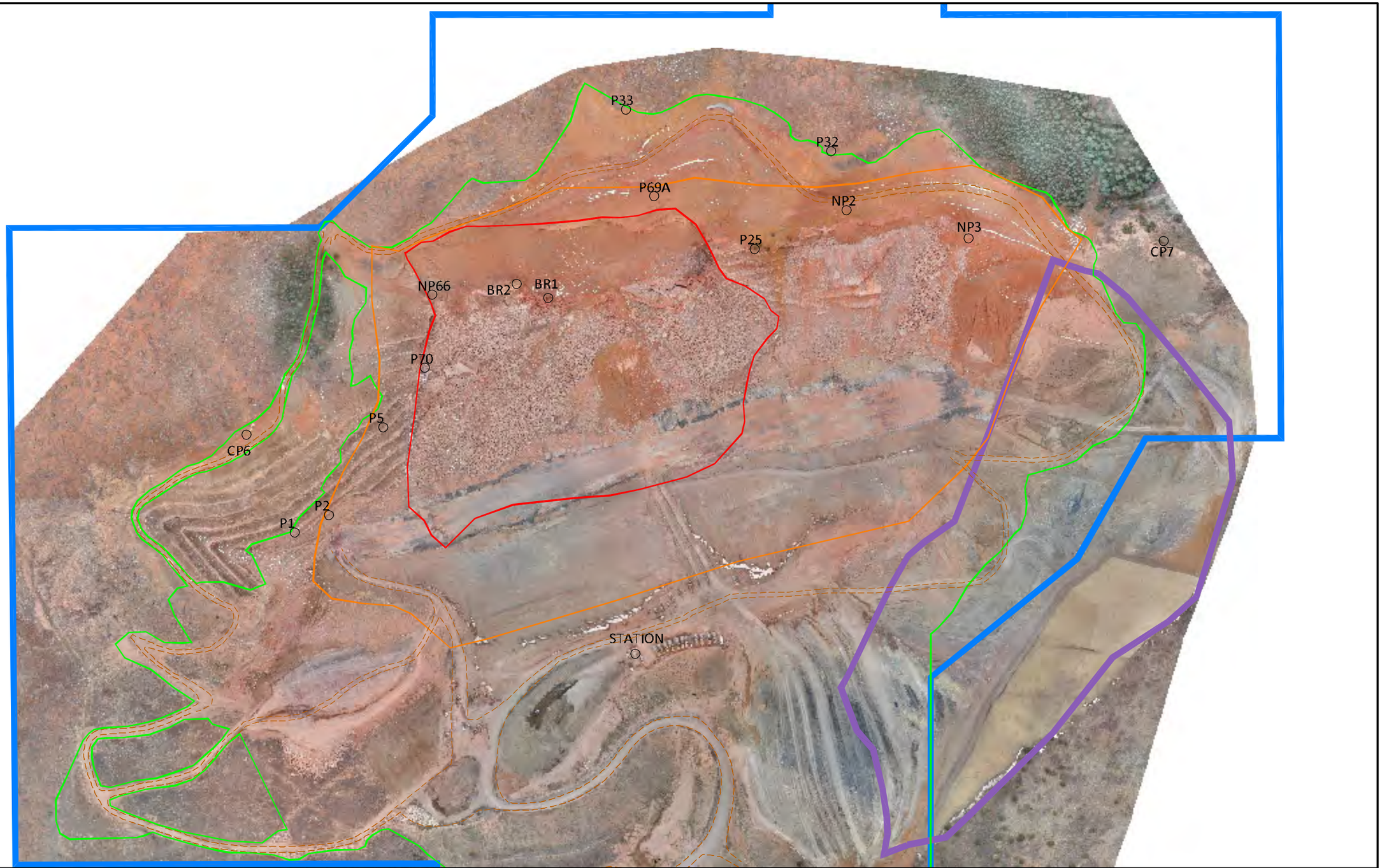
- Continue reclamation grading
- Continue importing fill material
- Continue geotechnical monitoring
- Continue removing and replacing prisms on an as-needed basis
- Continue working with USFS and the City of Colorado Springs to obtain approval to excavate the remaining material from USFS land.
- Submit change of Service Operator from Continental Materials Corp. to Riverbend Industries. This change is a “rebranding” of the same company, and the project ownership and key staff have not changed.

7.0 CONCLUSIONS

The data collected in December 2022 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 December 2022 indicate evidence of any large-scale movements that increase risk to workers or to the public. The landslide area continues to show slope creep movements with slow velocities. 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 alarms 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
CONTINENTAL MATERIALS CORP.
PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
SITE MAP

Revision
#

Date
2023.01.31

Drawn By
PK

Figure No.
1

Appendix A

Visual Inspections

6. Buffer zone on the south-end of the pit floor

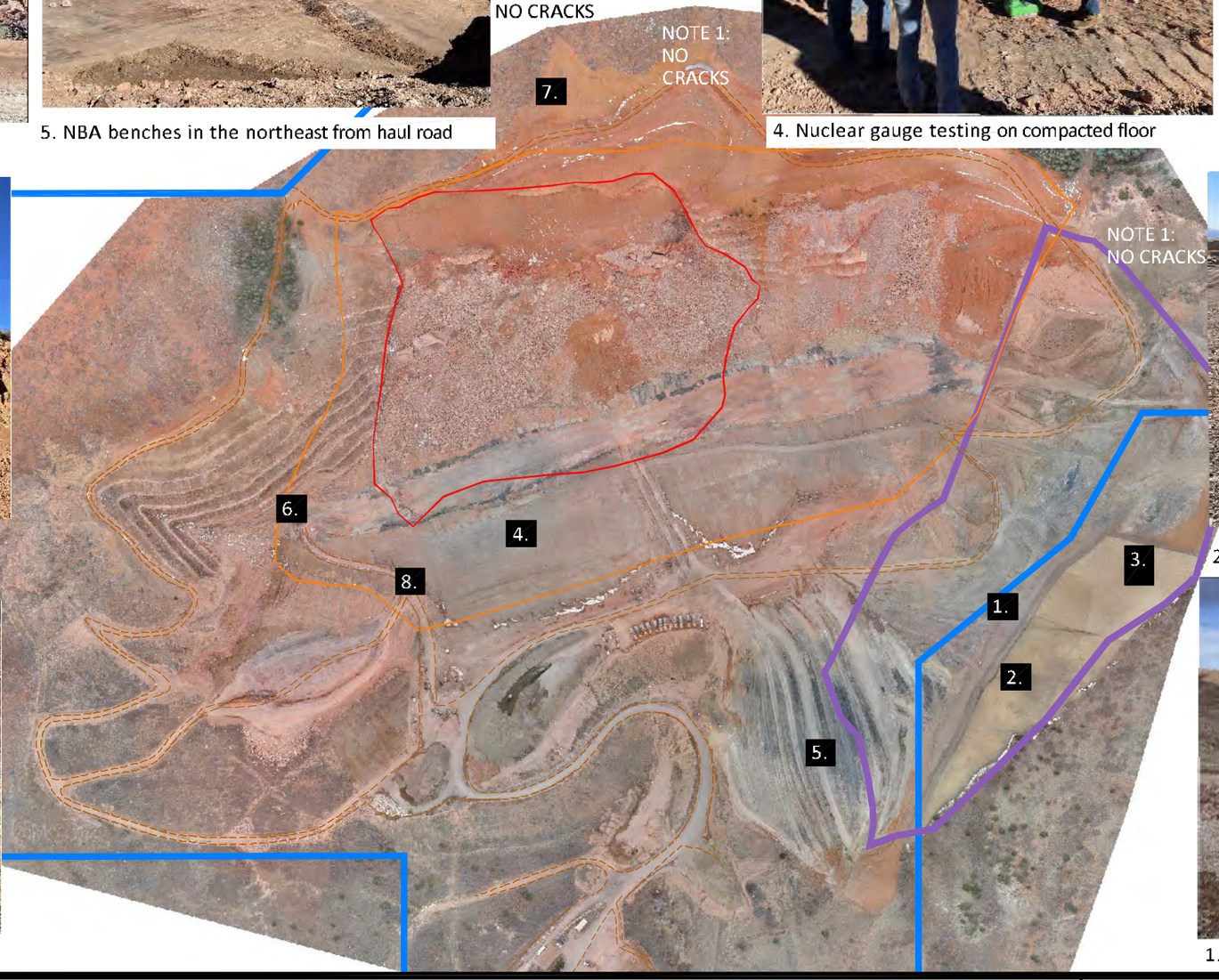
5. NBA benches in the northeast from haul road

4. Nuclear gauge testing on compacted floor

3. Erosion control installed on north borrow slope

7. View of middle peak above the slide

8. View to the south of pit floor



2. Slope at final grade in pit floor

1. Benches in the north borrow area

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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 DECEMBER 14, 2022.

N

0 400' 800'

Client/Project
CONTINENTAL MATERIALS CORP.
PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
OBSERVATIONS FROM DECEMBER INSPECTION

Revision
#

Date
2023.01.31

Drawn By
PK

Figure No.
2

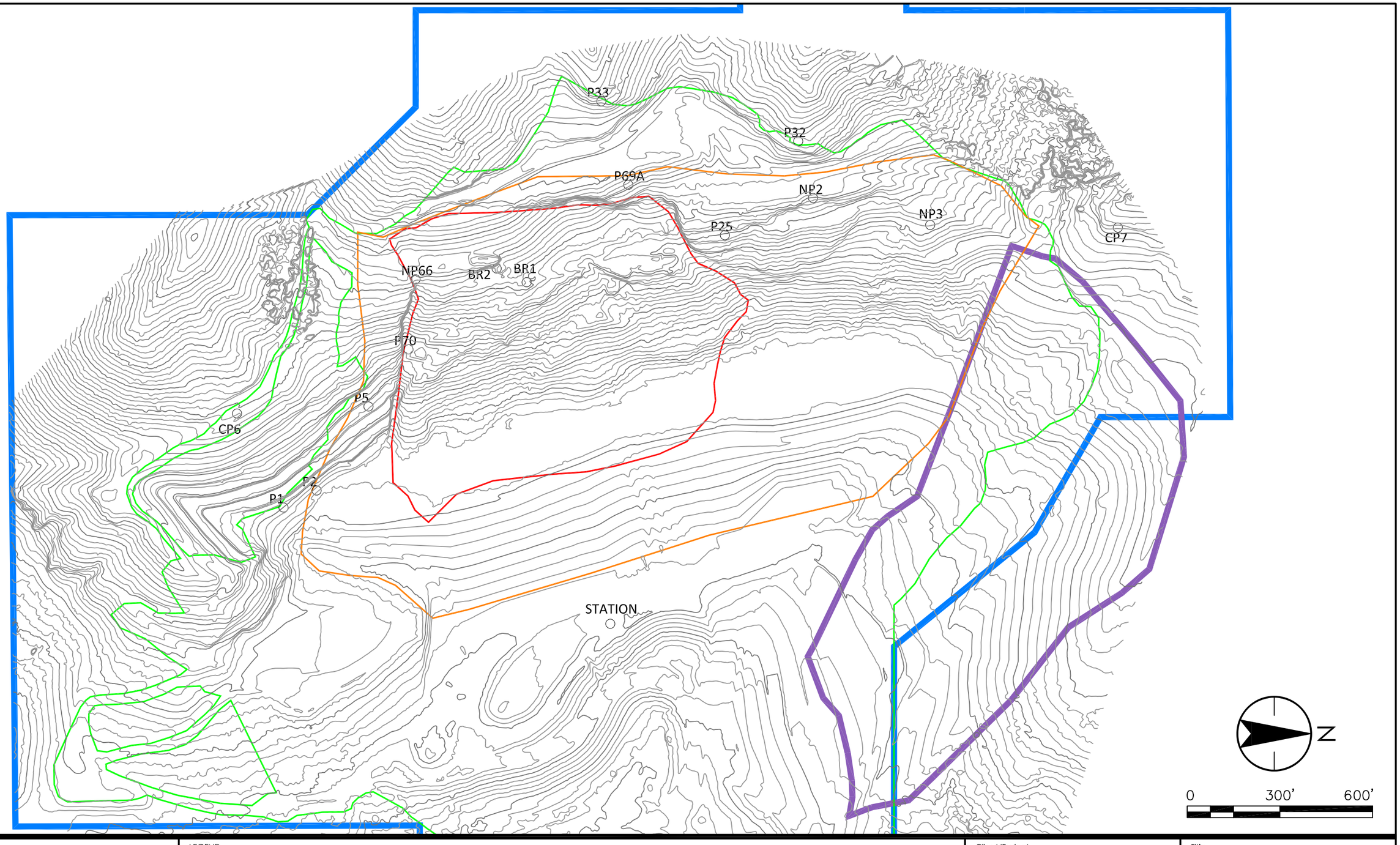
Stantec

Table A-1 Summary of Daily Inspecitons

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

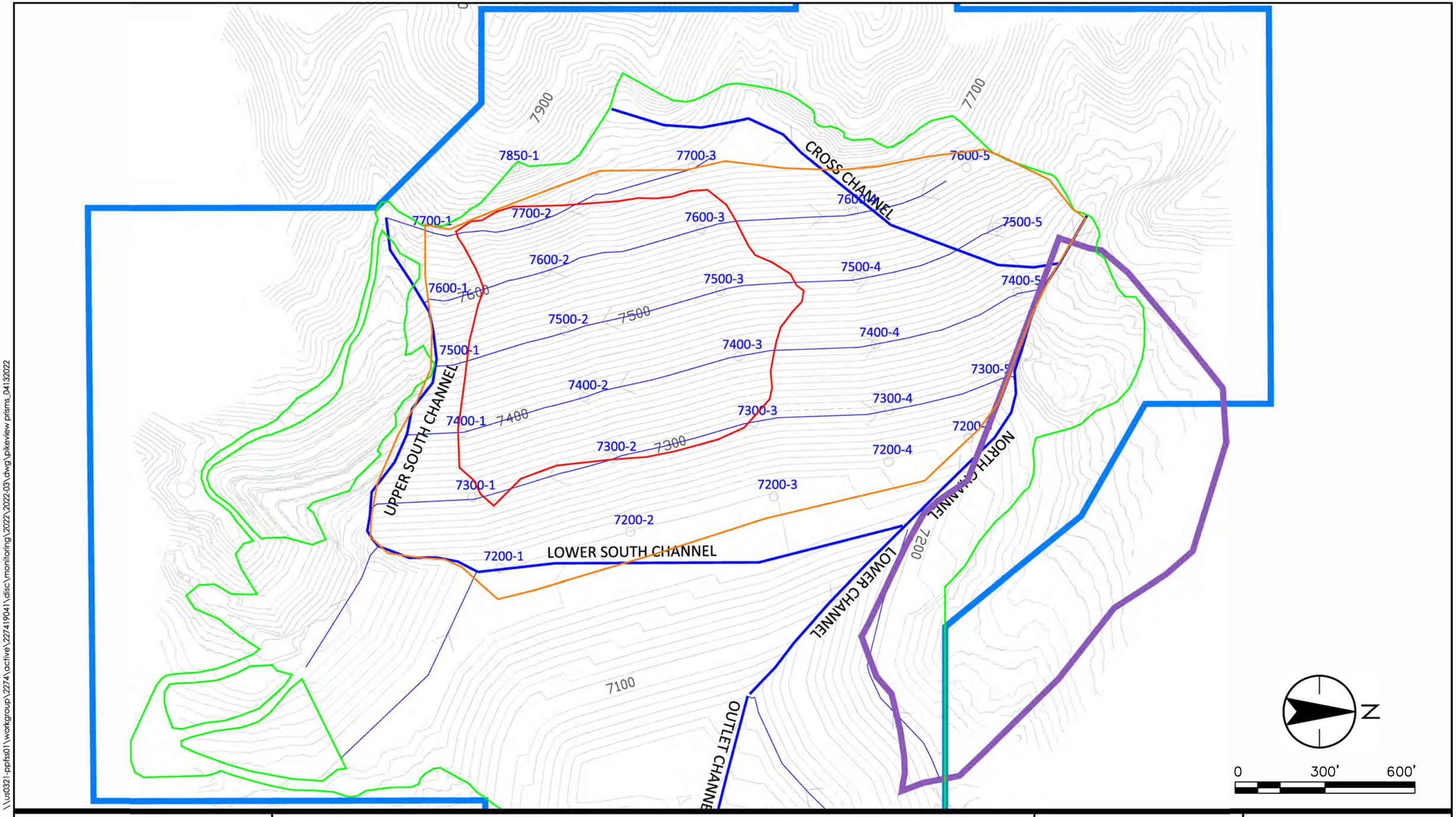
1. PRISMS WILL BE INSTALLED AS EACH BENCH IS FINISHED.
2. ALL PRISMS WILL BE RETAINED AS LONG AS POSSIBLE.
3. TOPOGRAPHY FROM DECEMBER 28, 2022 DRONE SURVEY.
4. CONTOUR INTERVAL IS 10 FEET

Client/Project
CONTINENTAL MATERIALS CORP.
PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
EXISTING PRISMS WITH CURRENT SURFACE

Revision	Date
#	2023.01.31
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
- 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
CONTINENTAL MATERIALS CORP.
PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
PROPOSED PRISMS WITH RECLAMATION SURFACE

Revision	Date
#	2023.01.31
Drawn By	Figure No.
PK	4

Stantec

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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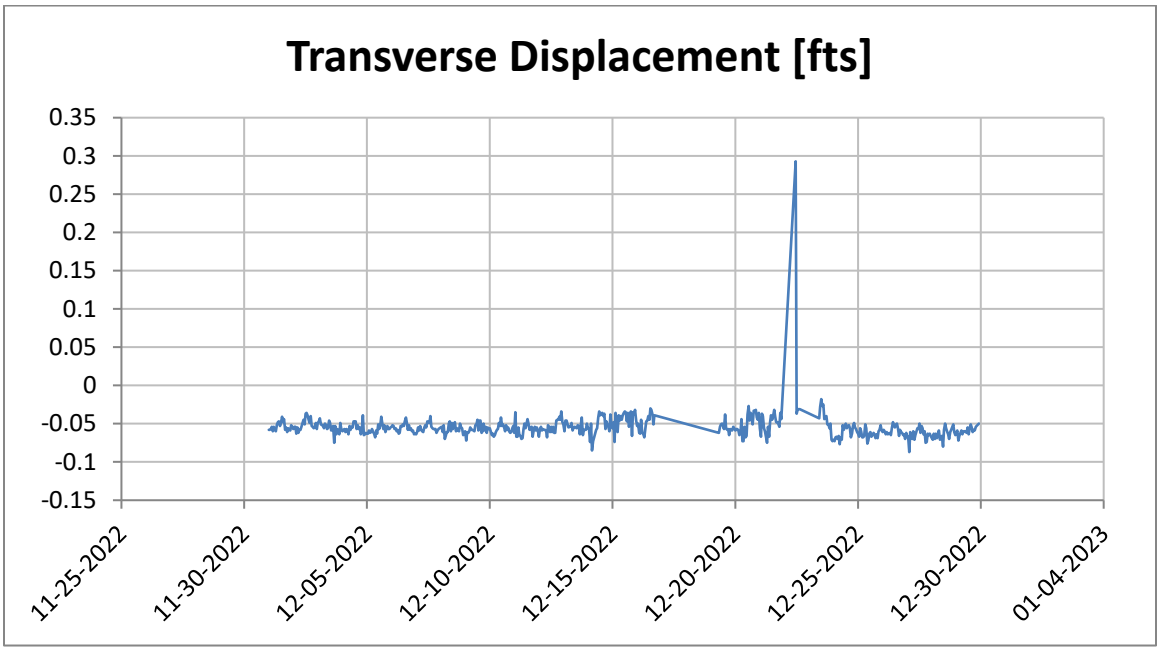
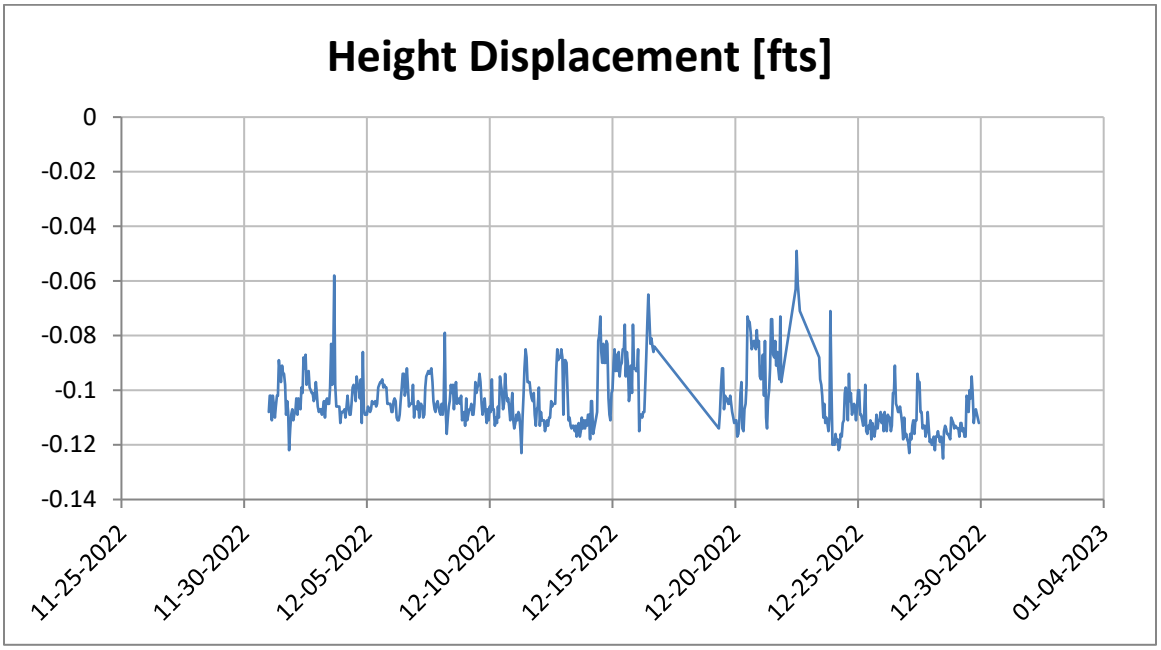
Prism BR1





Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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 records slope creep movements with slow velocity.
6. Data errors were recorded at each prism on December 22 due to poor weather and communication issues.

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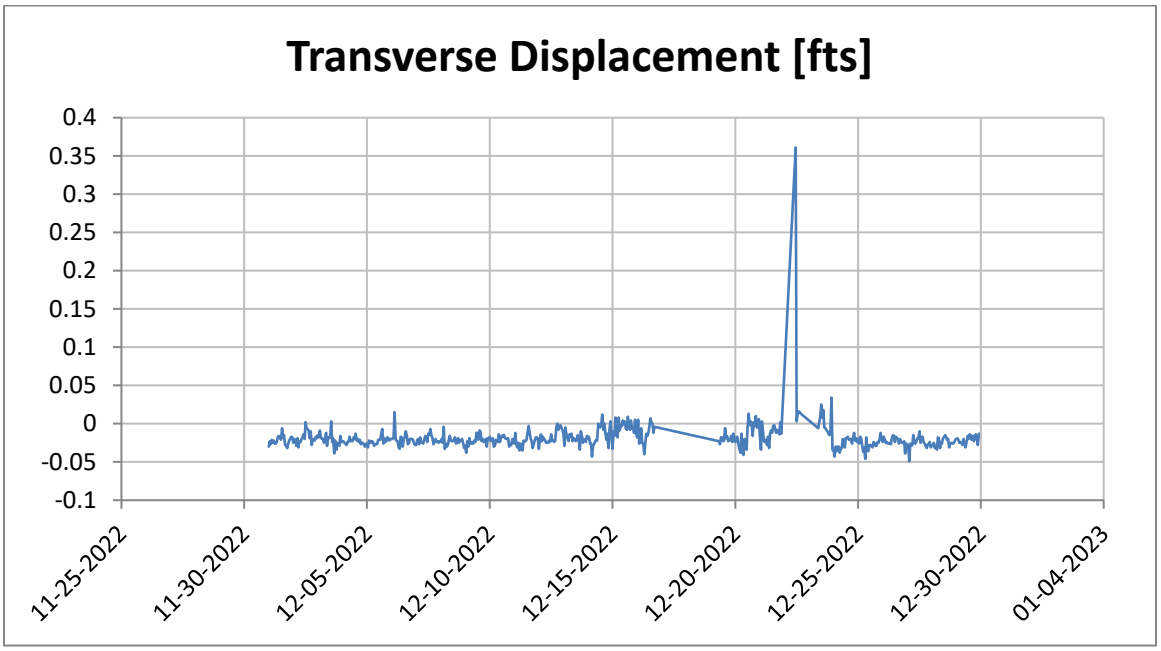
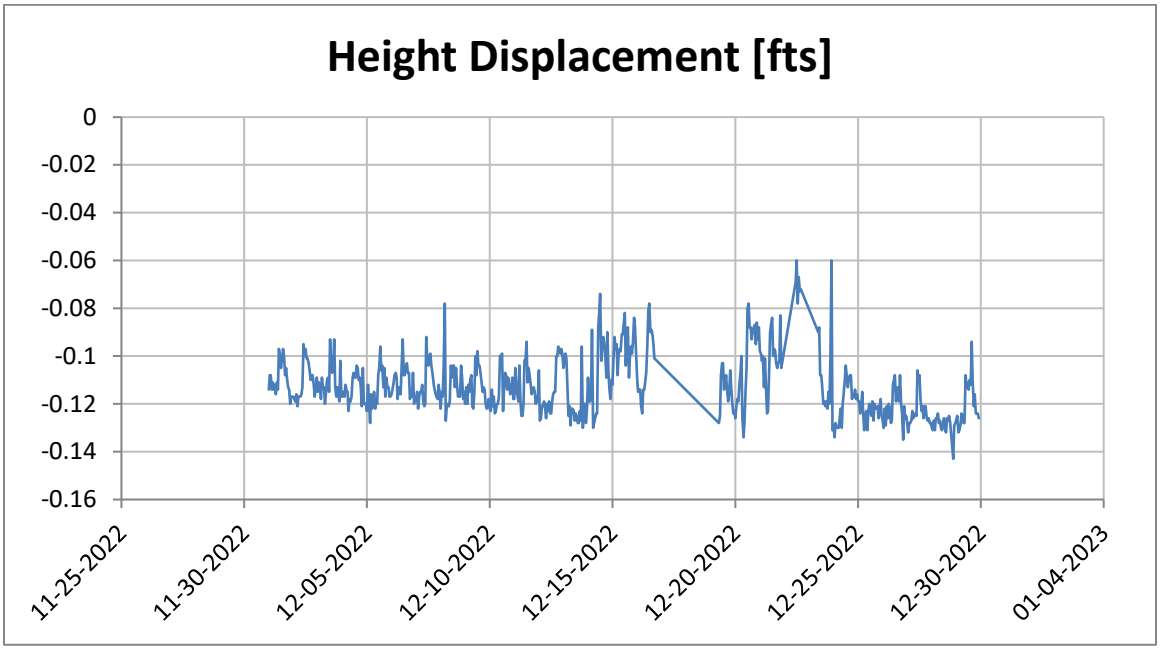
Prism BR2



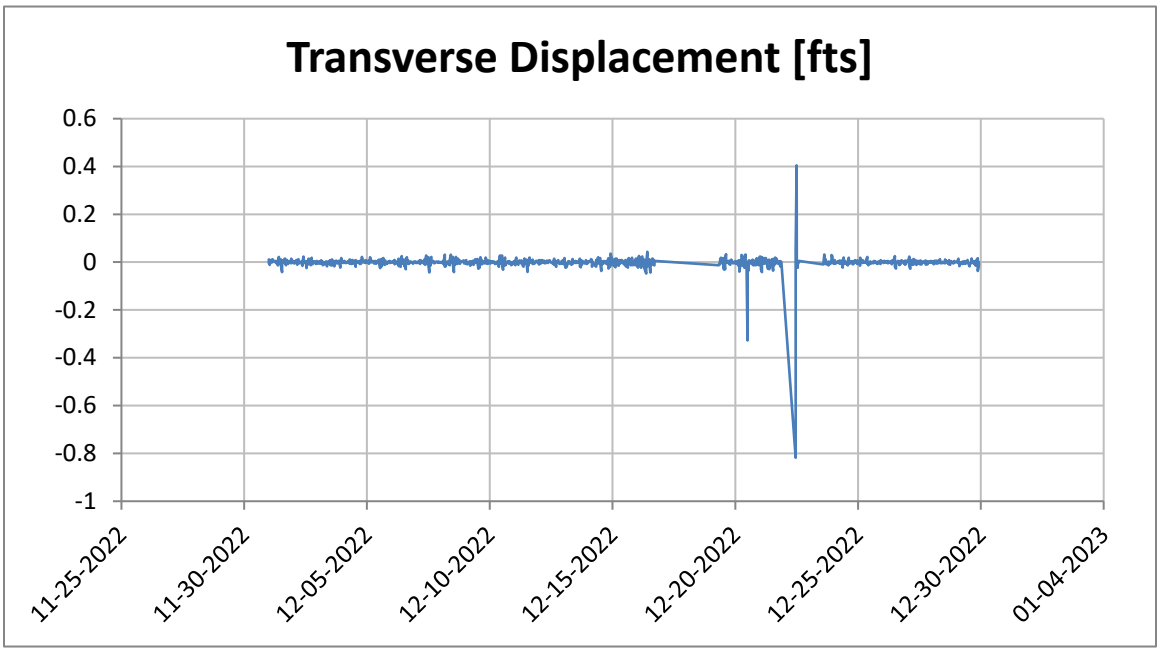


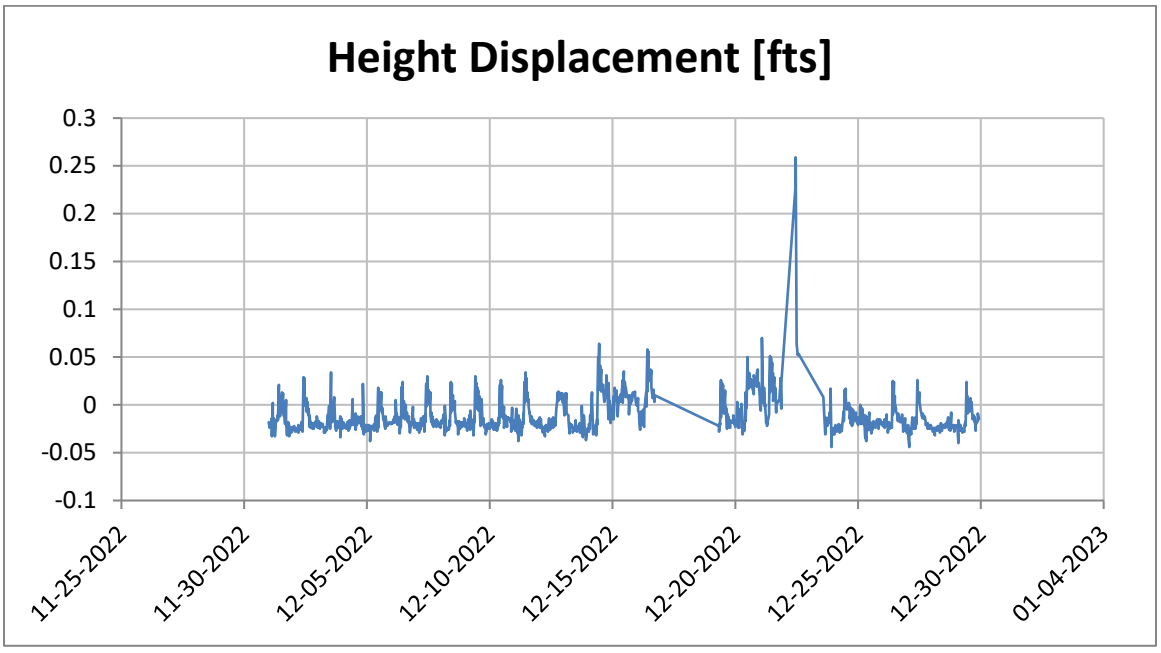
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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 records slope creep movements with slow velocity.

Stantec

Prism CP6



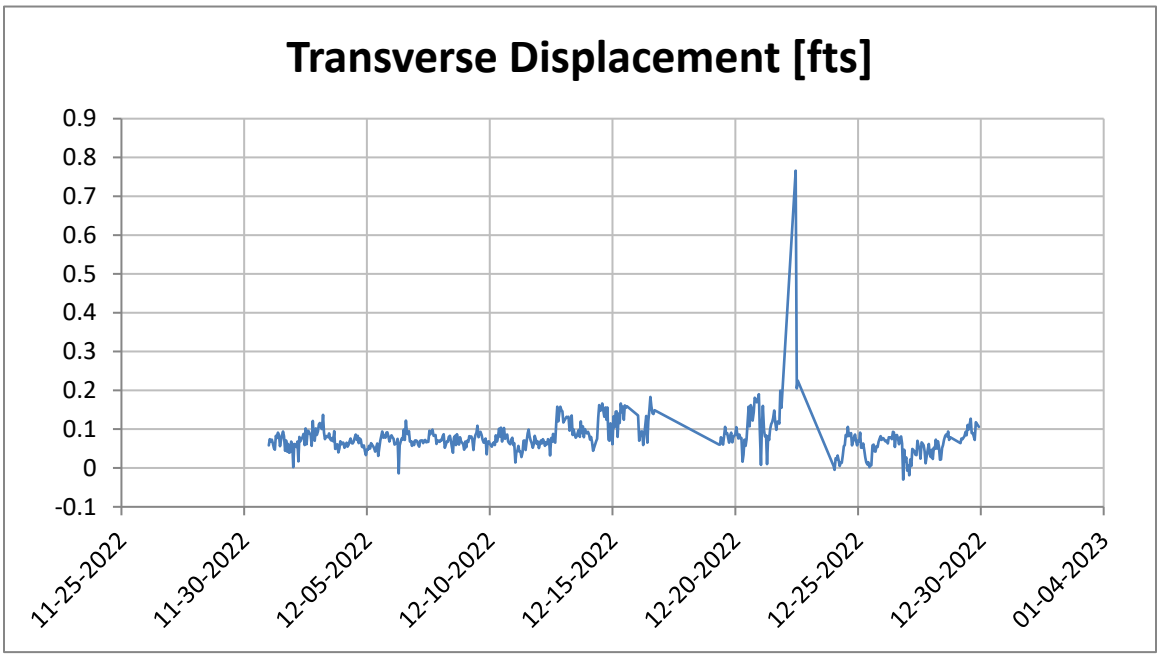


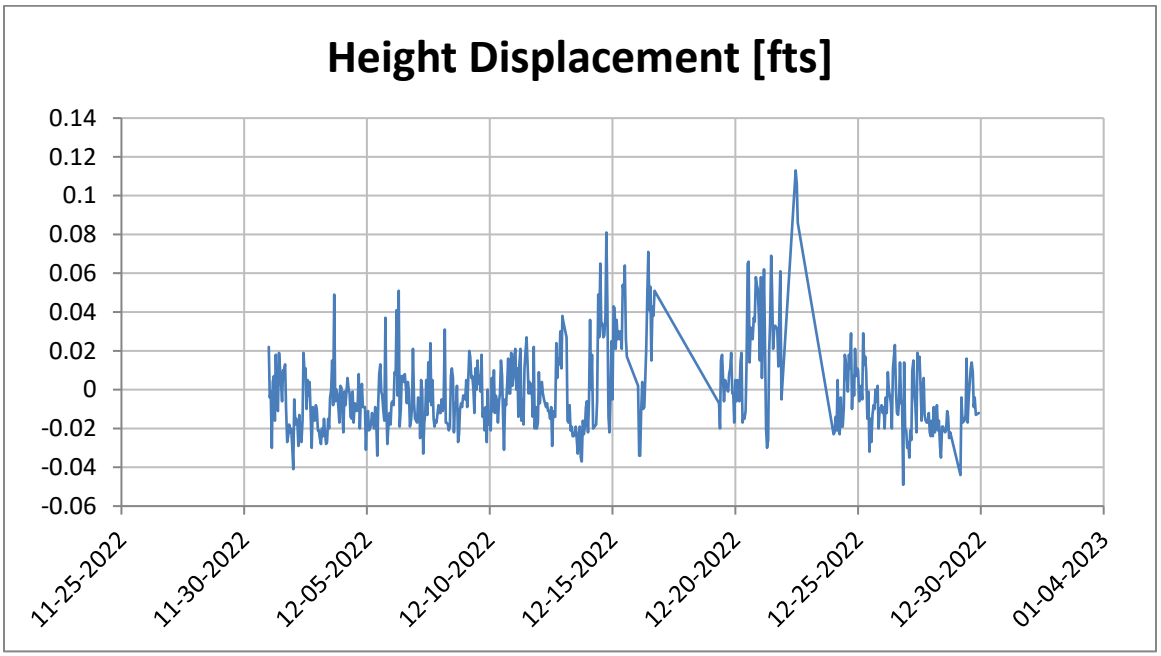
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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



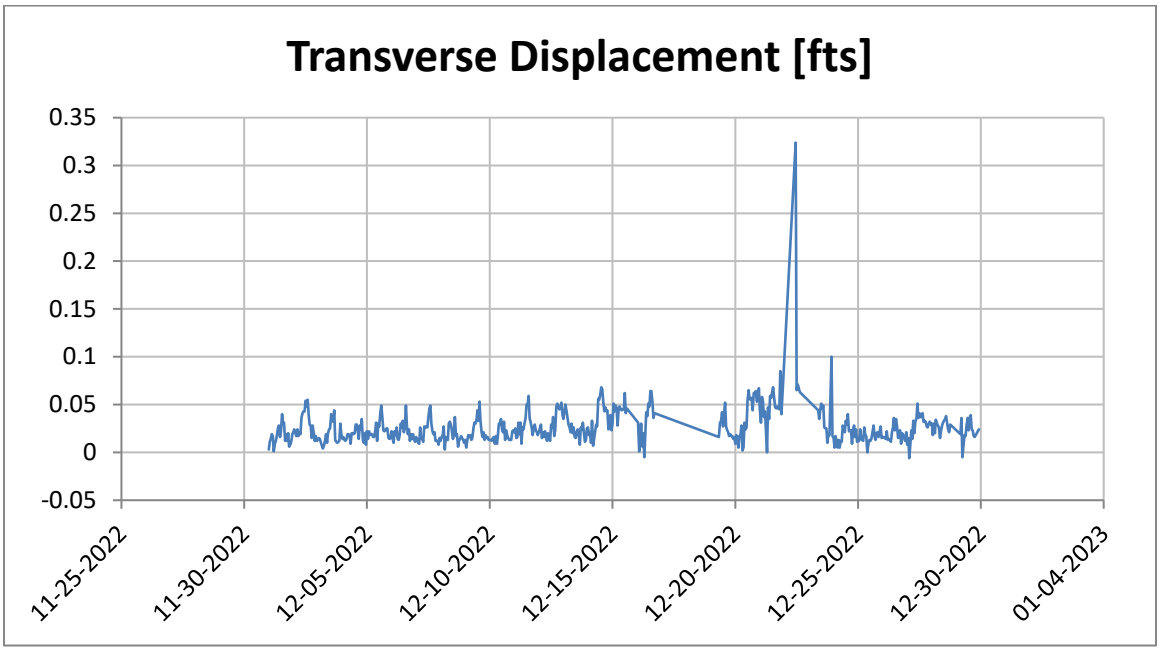


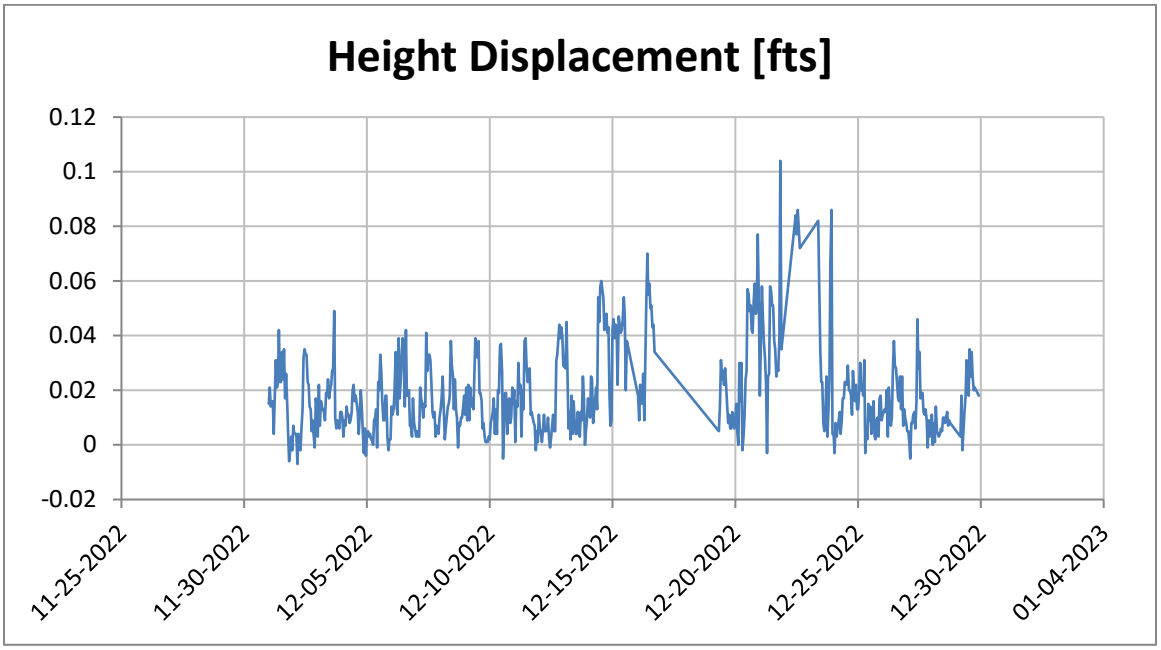
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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



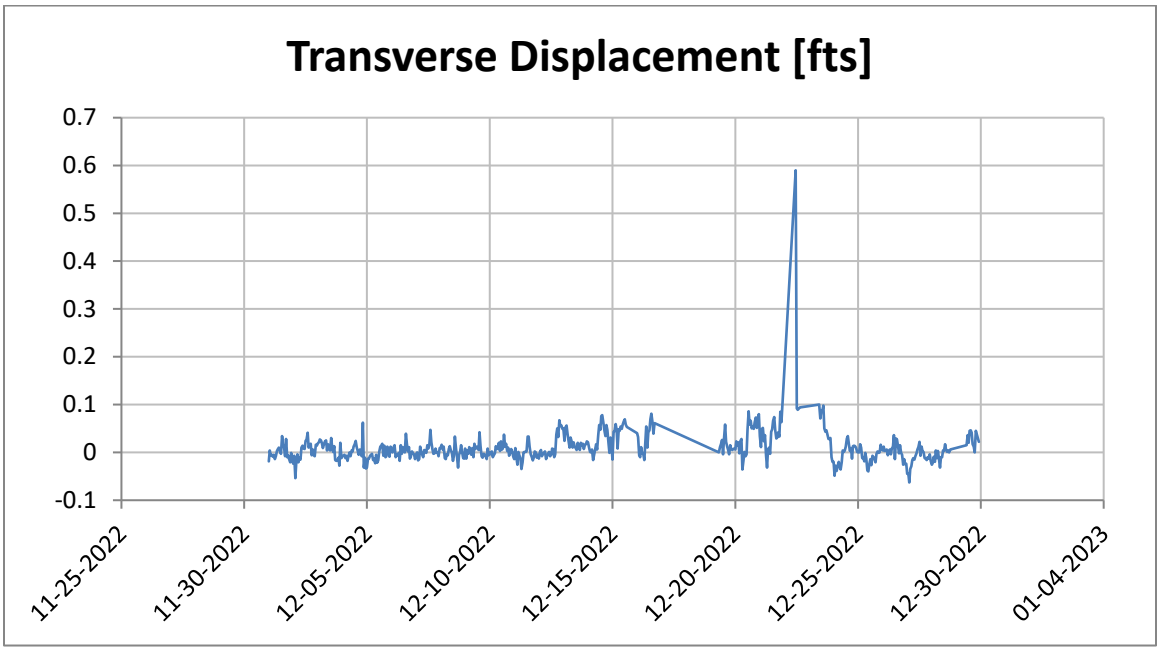


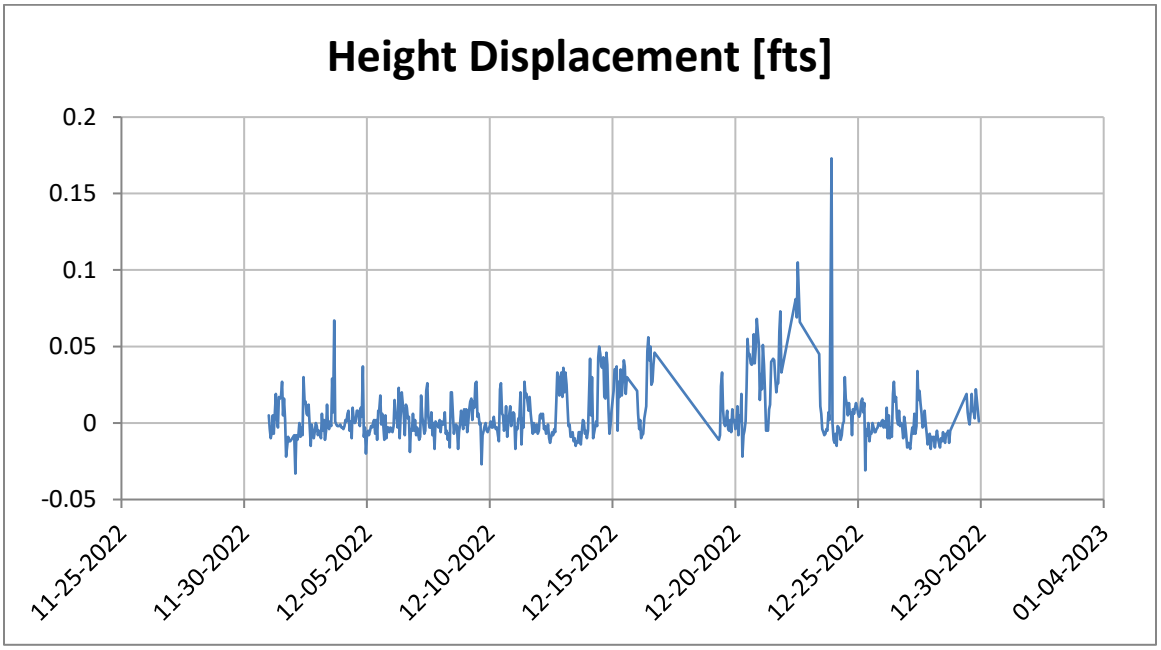
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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. Exceedance alerts were received on 12/16, 12/21, 12/22, 12/23, and 12/24.

Stantec

Prism NP3



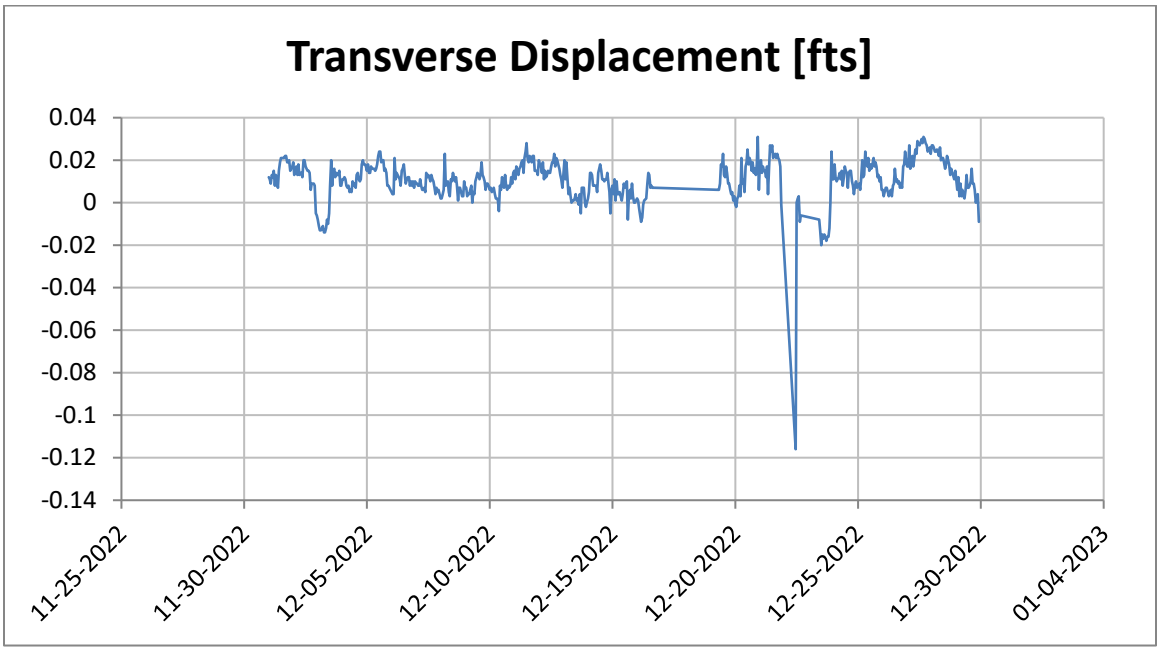


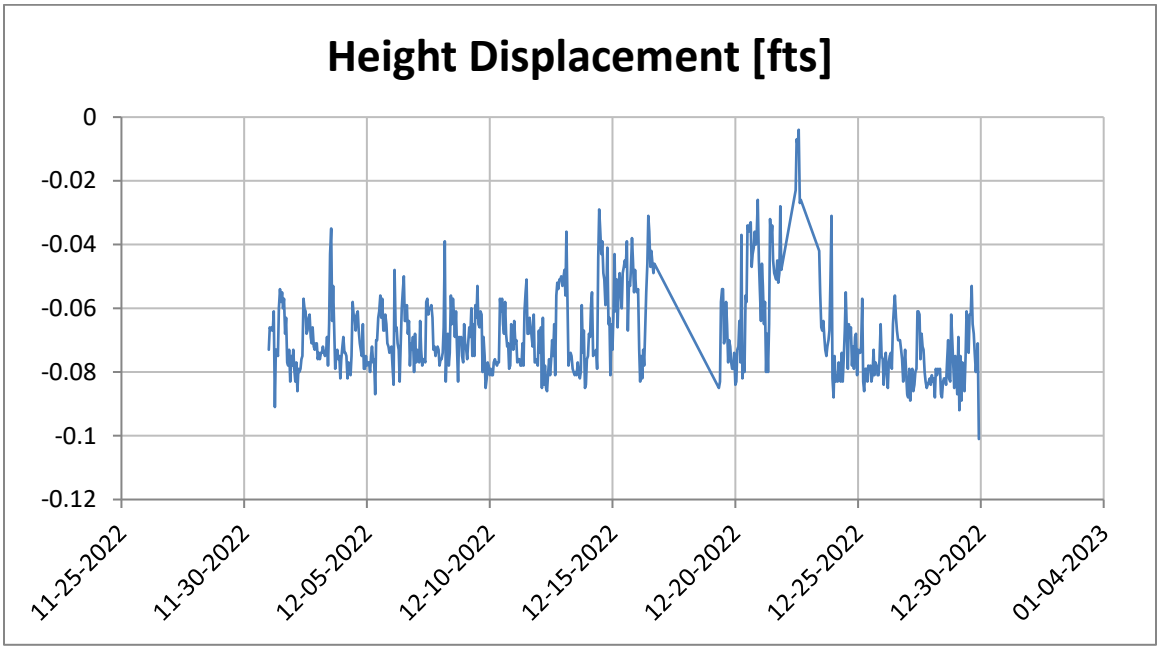
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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



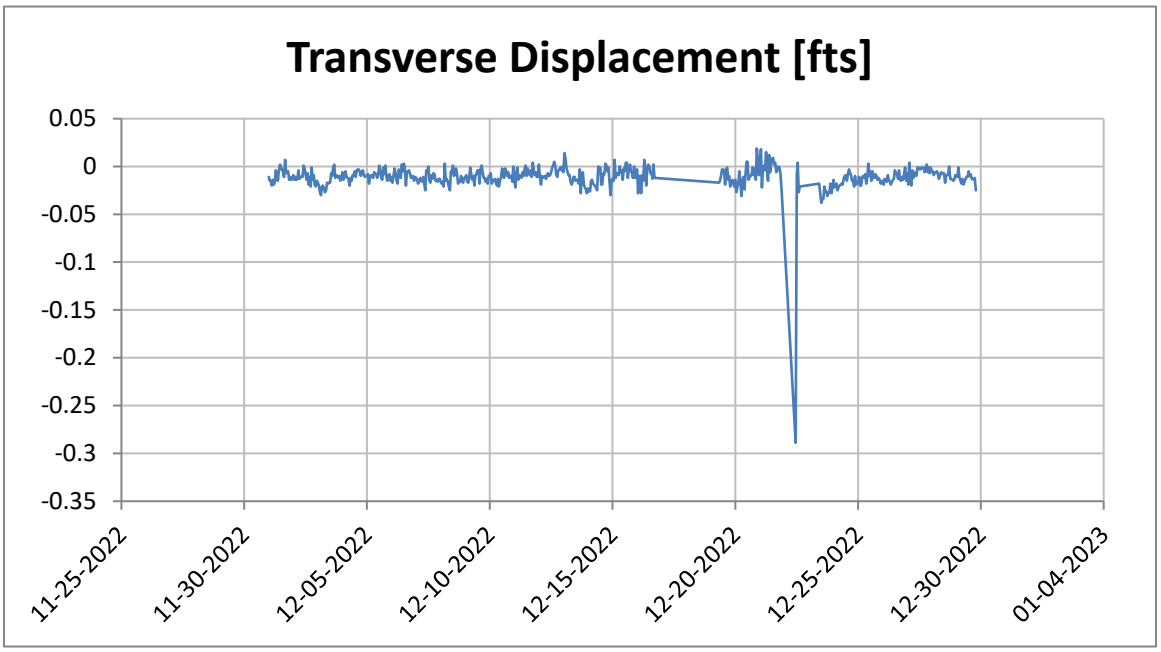


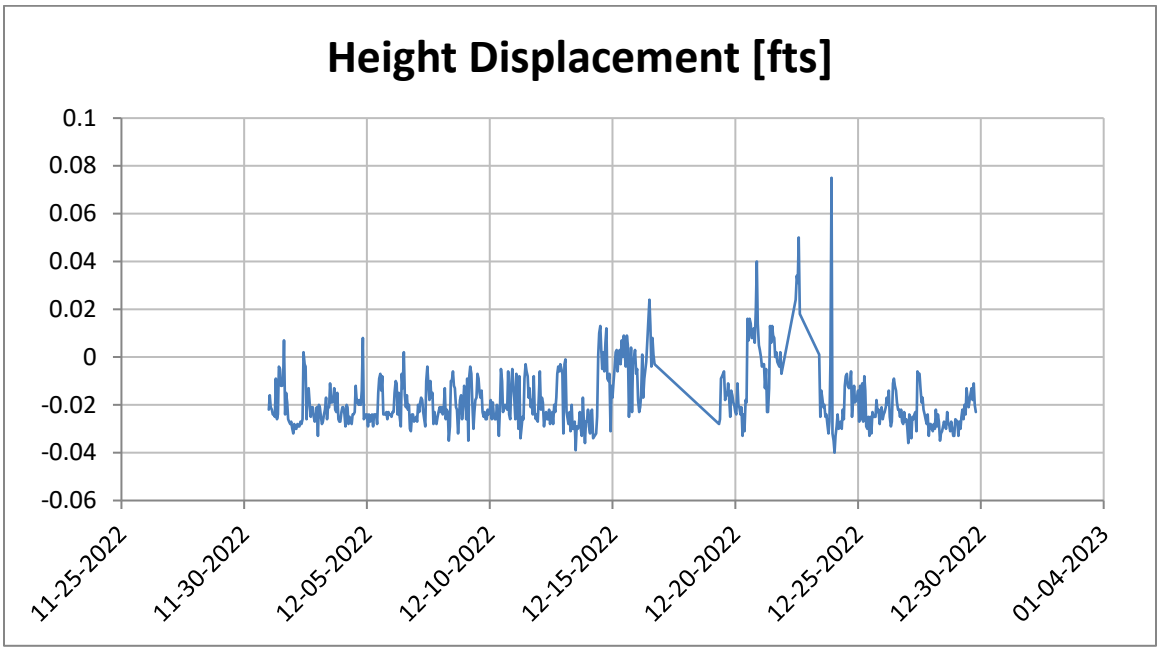
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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 records slope creep movements with slow velocity.
6. Exceedance alerts were received on 12/22.

Stantec

Prism P1



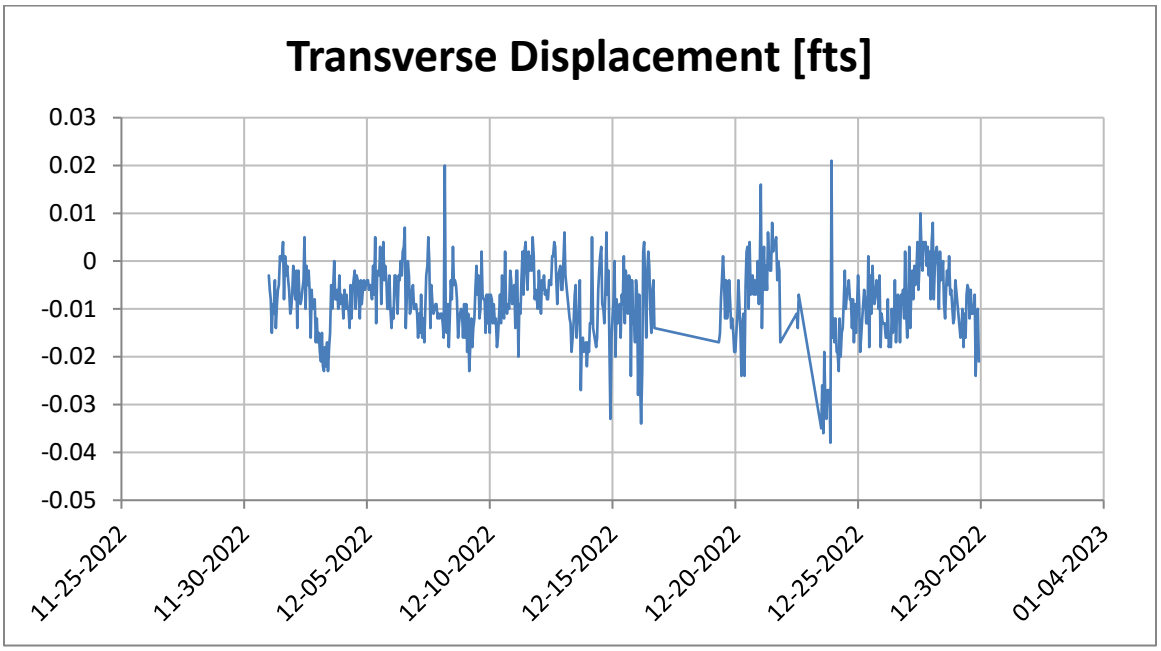


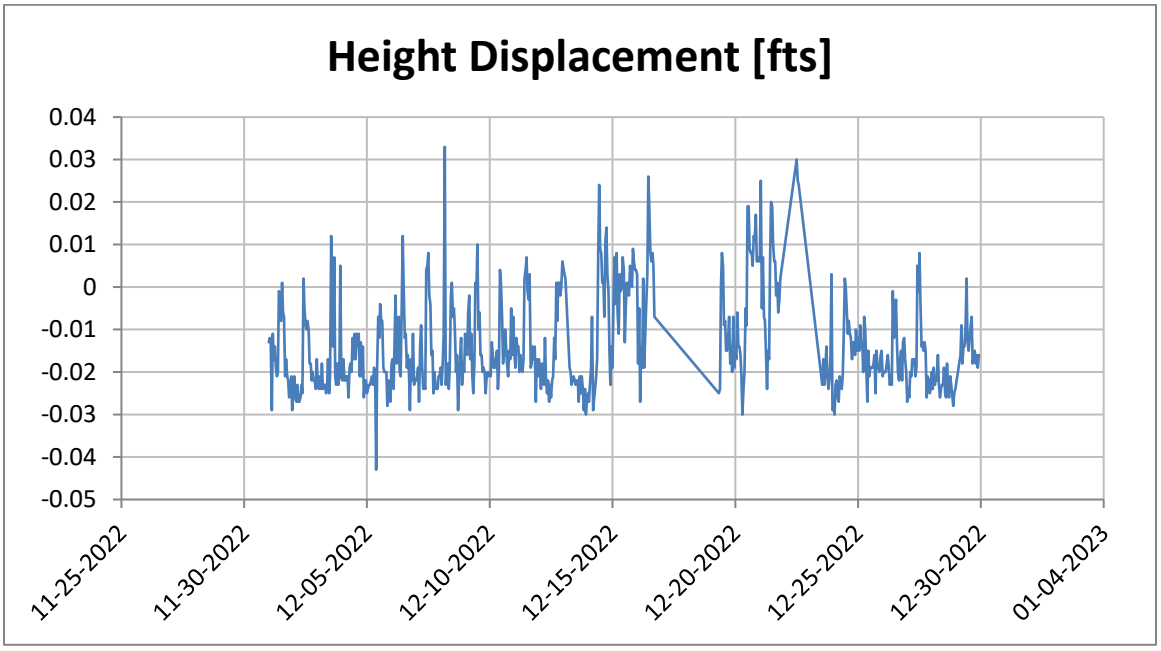
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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. Exceedance alerts were received on 12/22.

Stantec

Prism P2



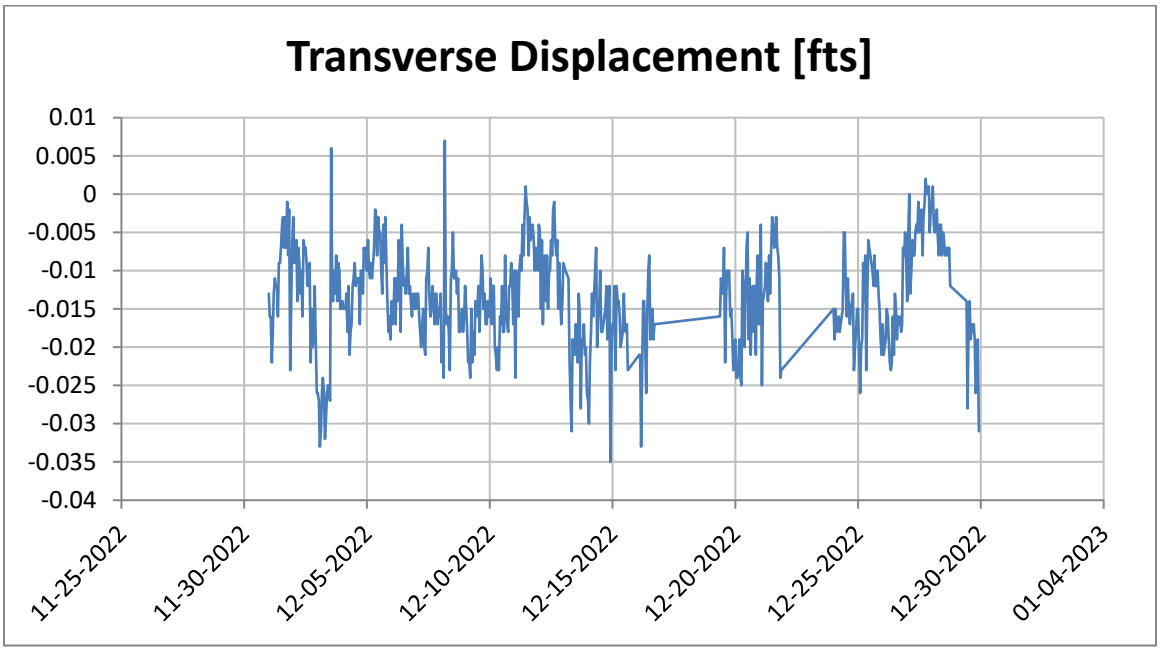


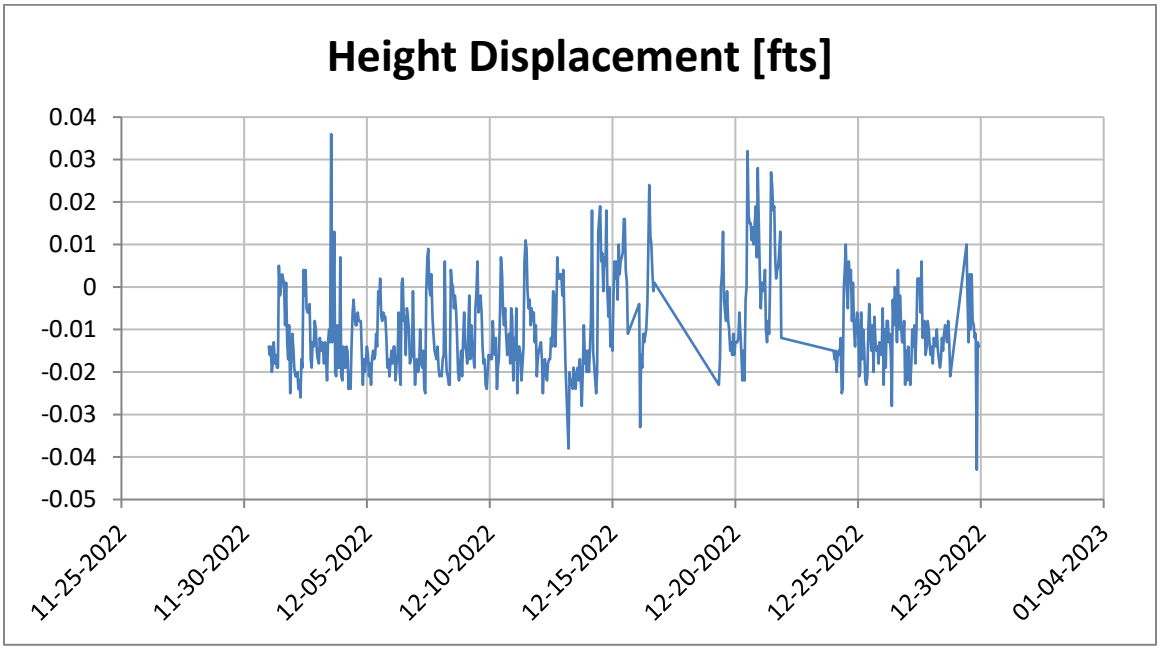
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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



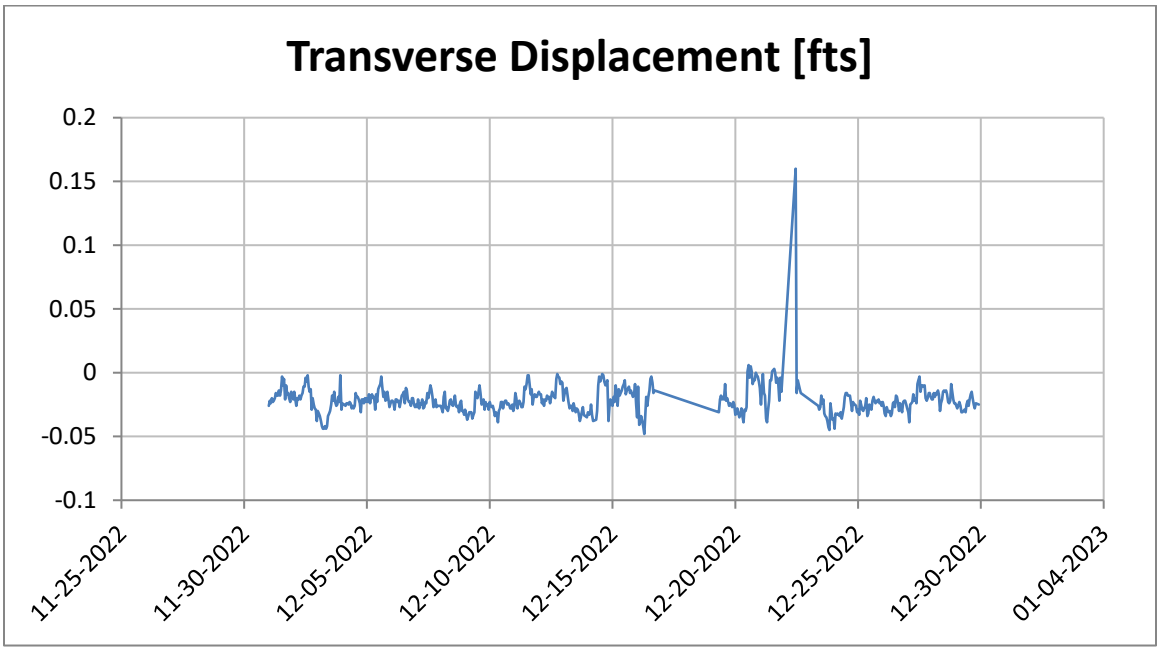


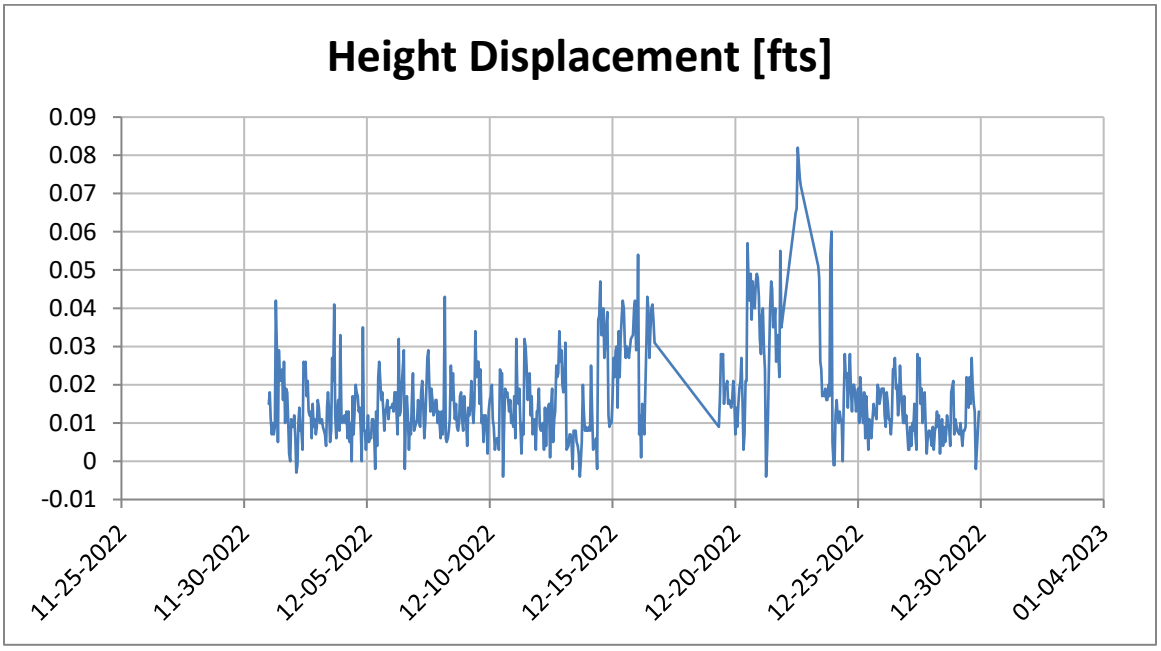
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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 P25



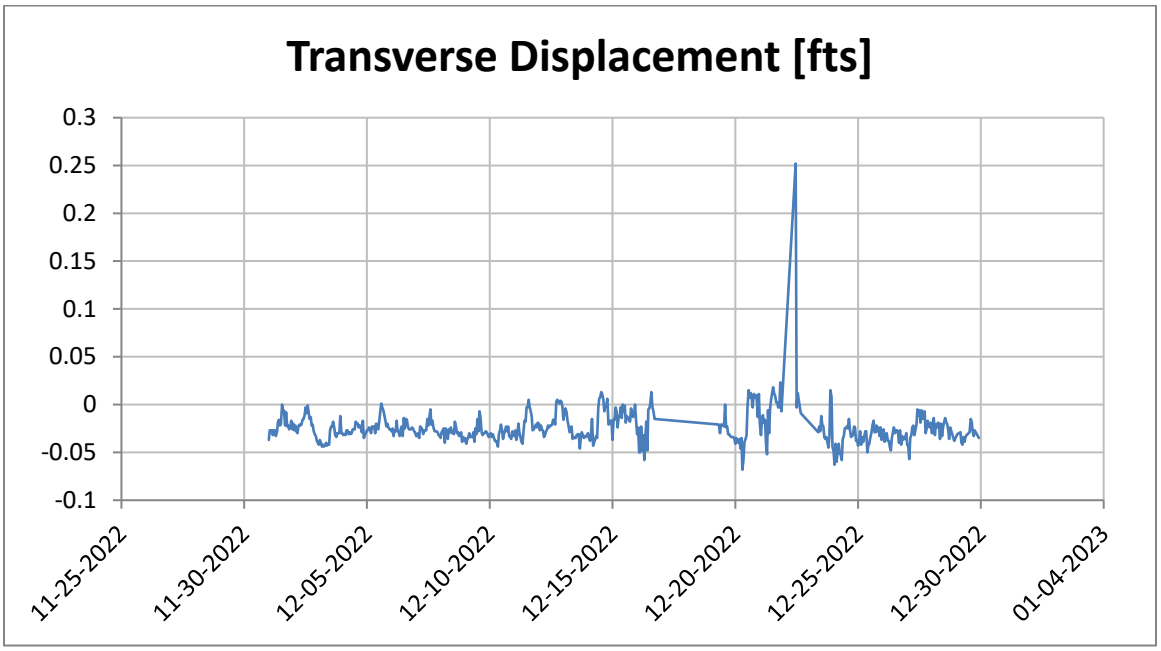


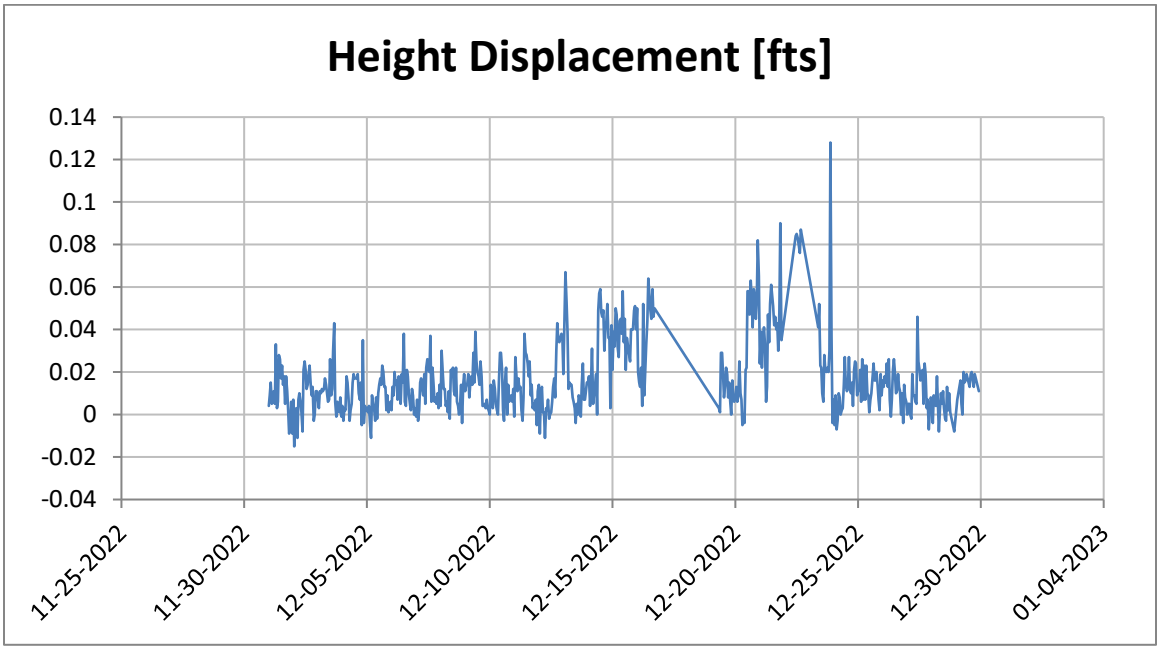
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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. Exceedance alerts were received on 12/22.

Stantec

Prism P32



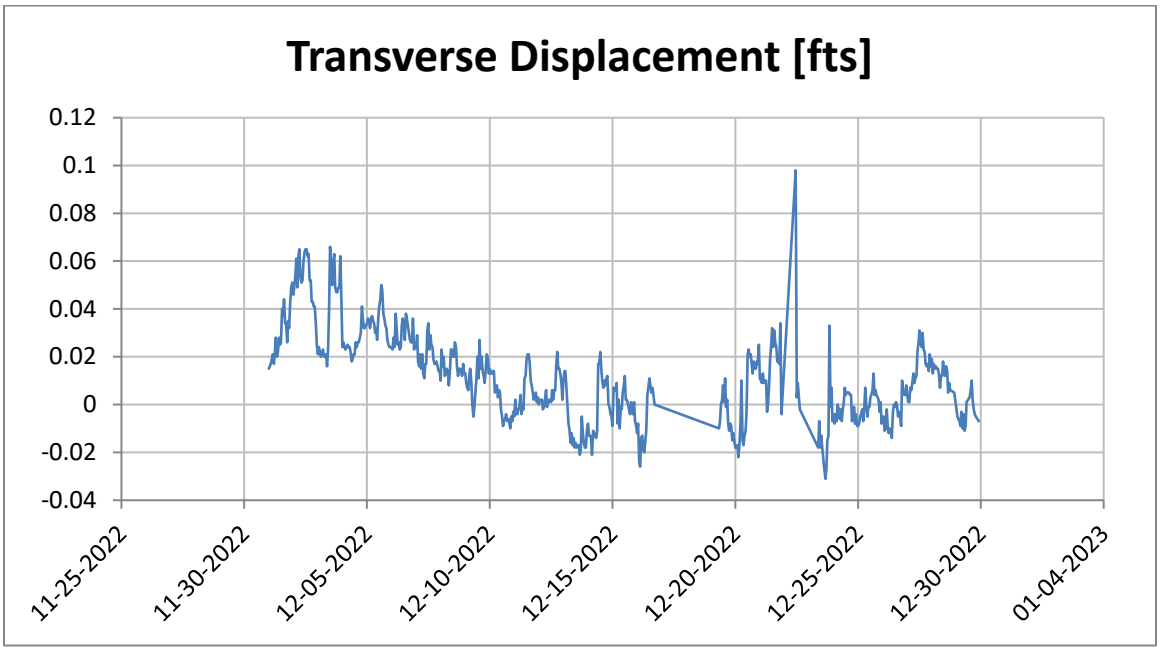


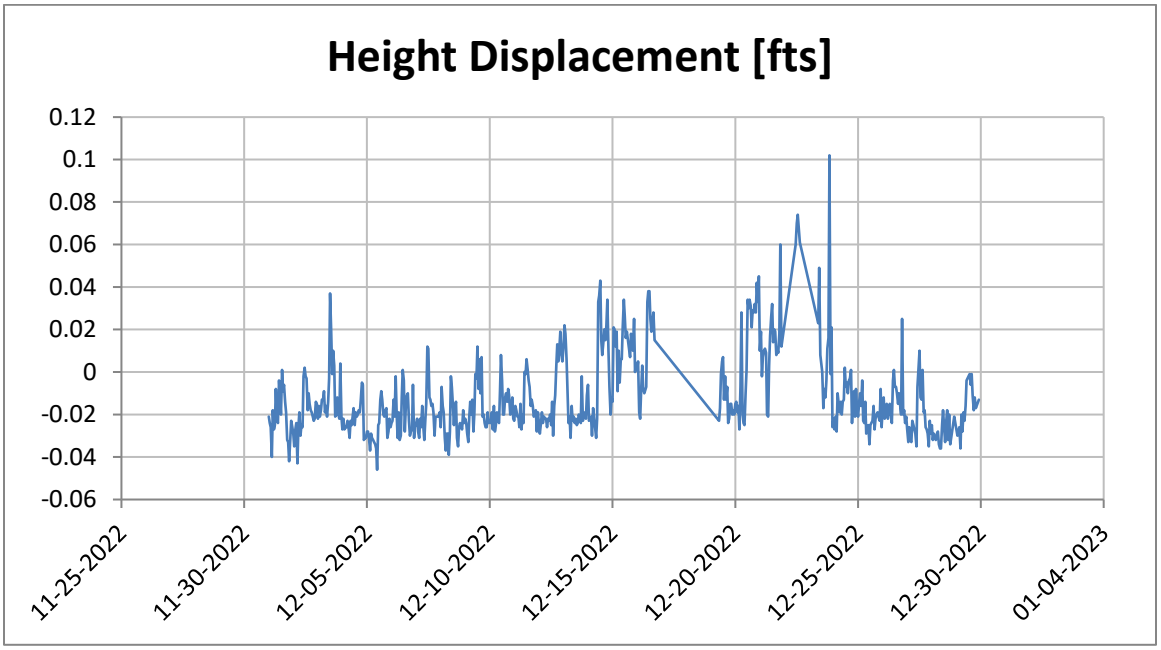
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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. Exceedance alerts were received on 12/22 and 12/24.

Stantec

Prism P33



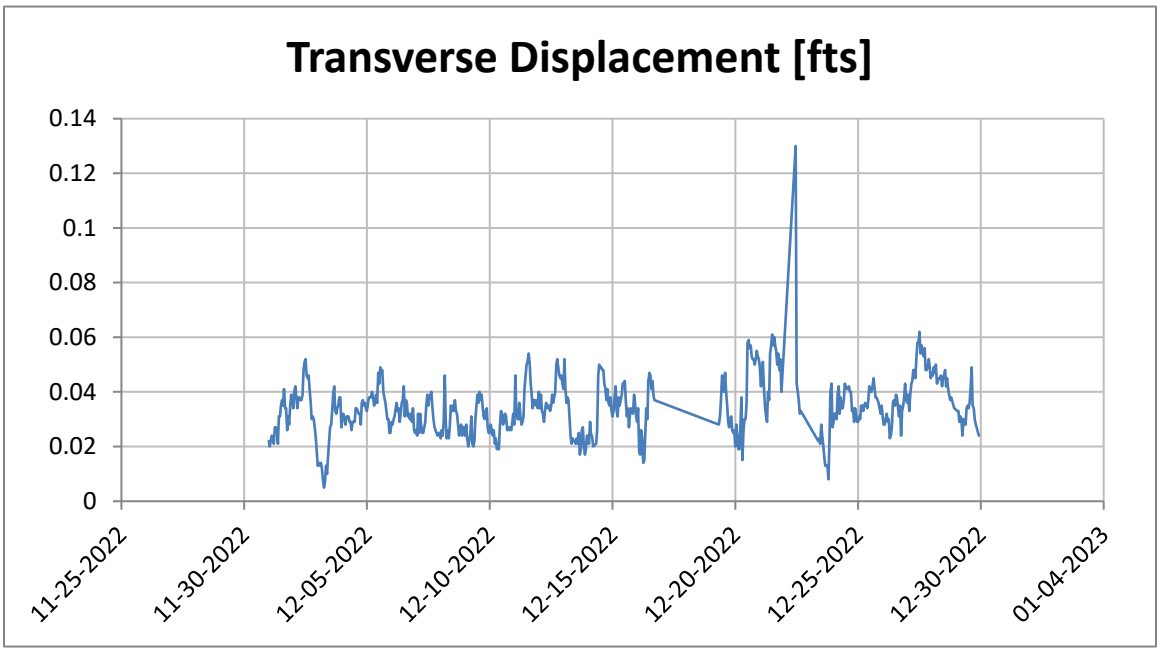


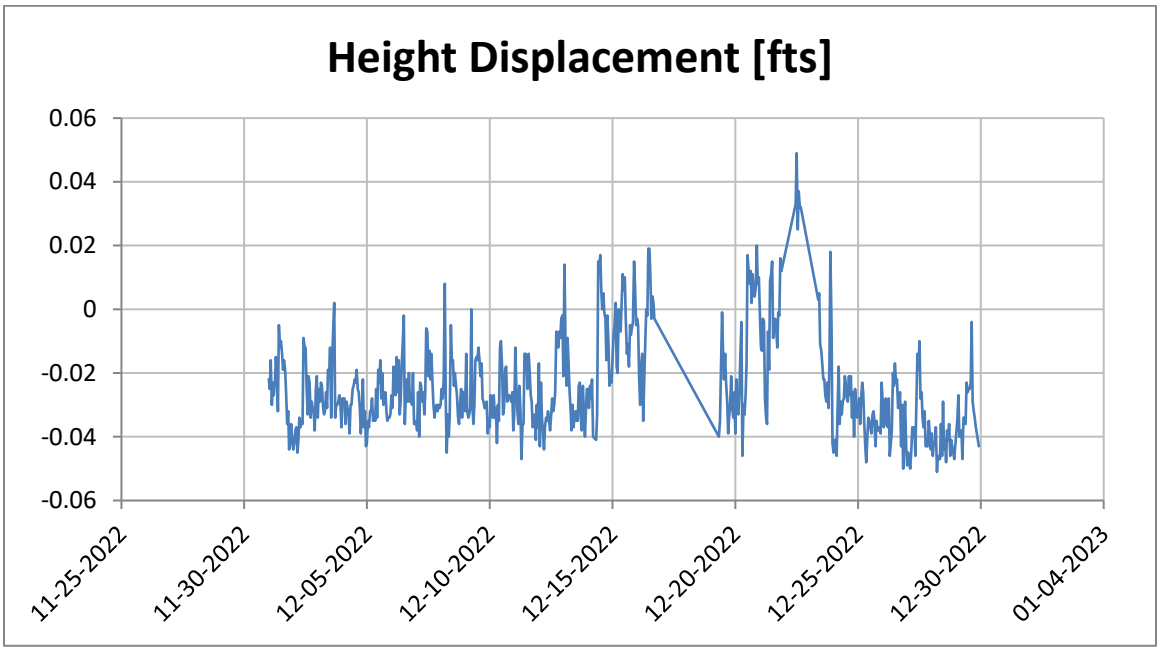
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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. Exceedance alerts were received on 12/22.

Stantec

Prism P69A



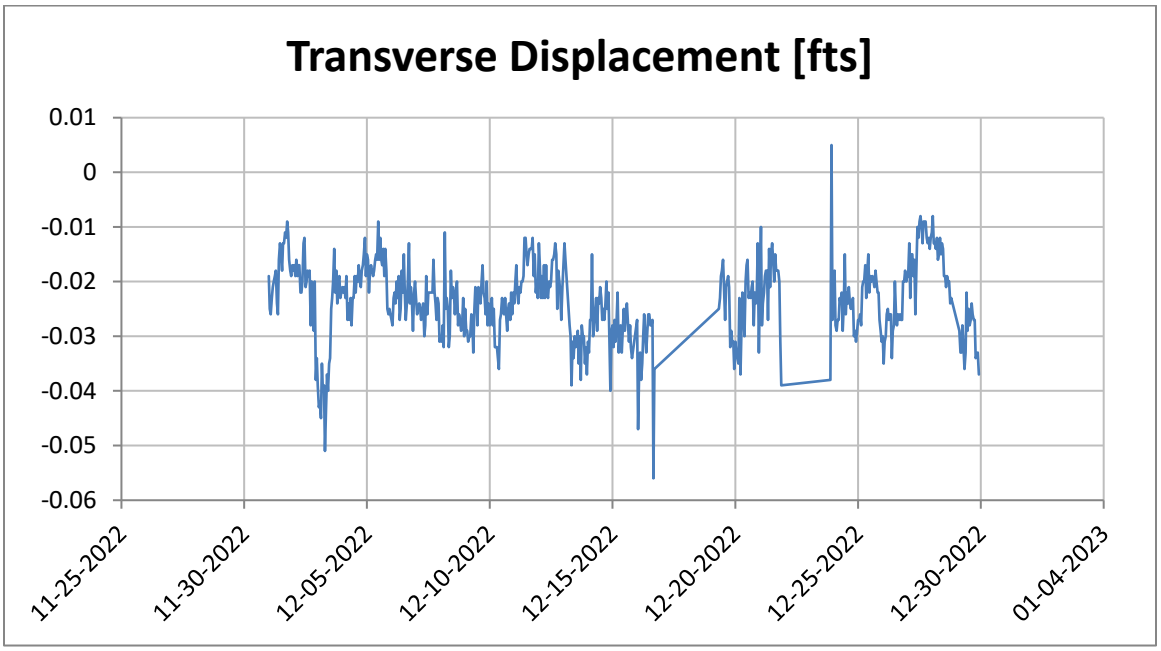


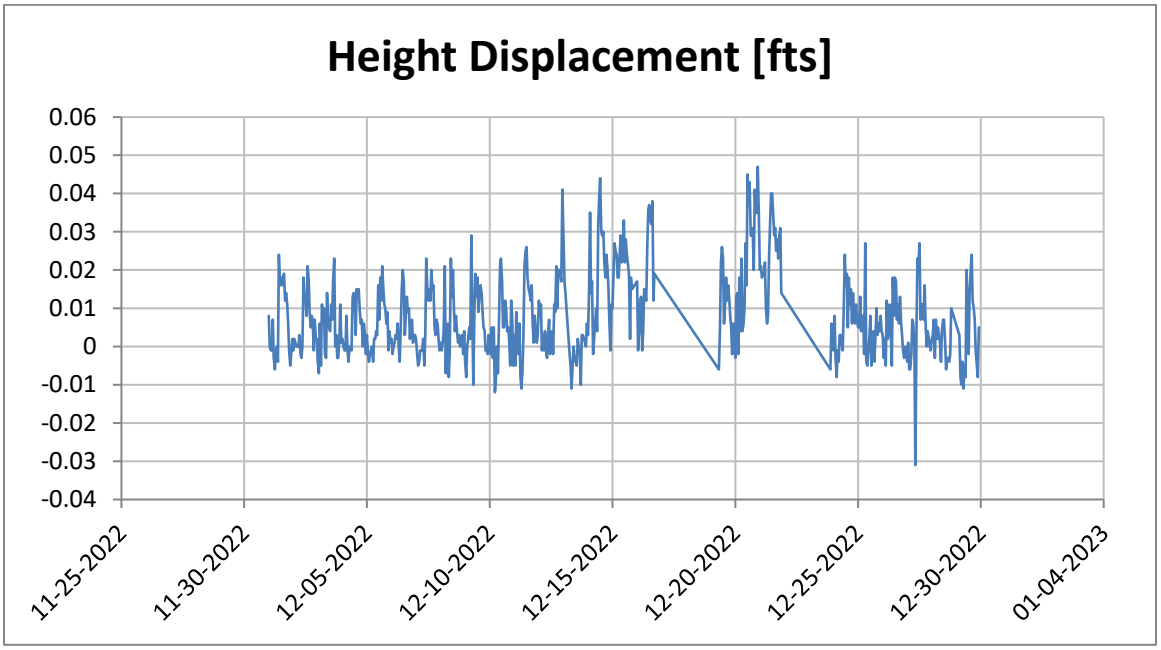
Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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. Exceedance alerts were received on 12/22.

Stantec

Prism P70



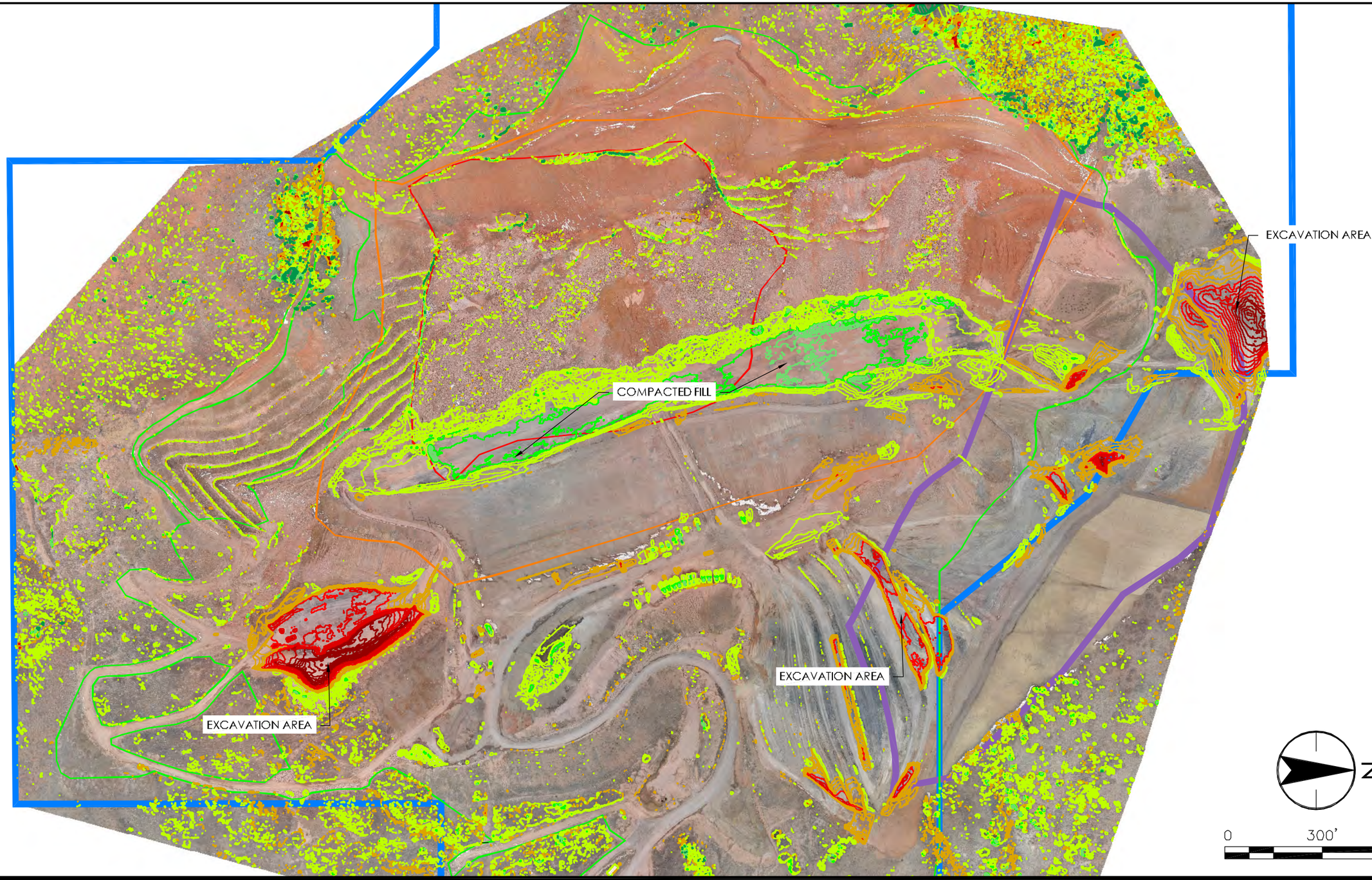


Notes:

1. Survey accuracy is +/-0.016 feet.
2. Alarm 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



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Stantec Consulting Services Inc.
2000 South Colorado Boulevard Suite 2-300
Denver CO 80222-7933
Tel (303) 758-4358
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 11/28/2022 to 12/28/2022.

Client/Project
CONTINENTAL MATERIALS CORP.
PIKEVIEW QUARRY SLOPE MONITORING

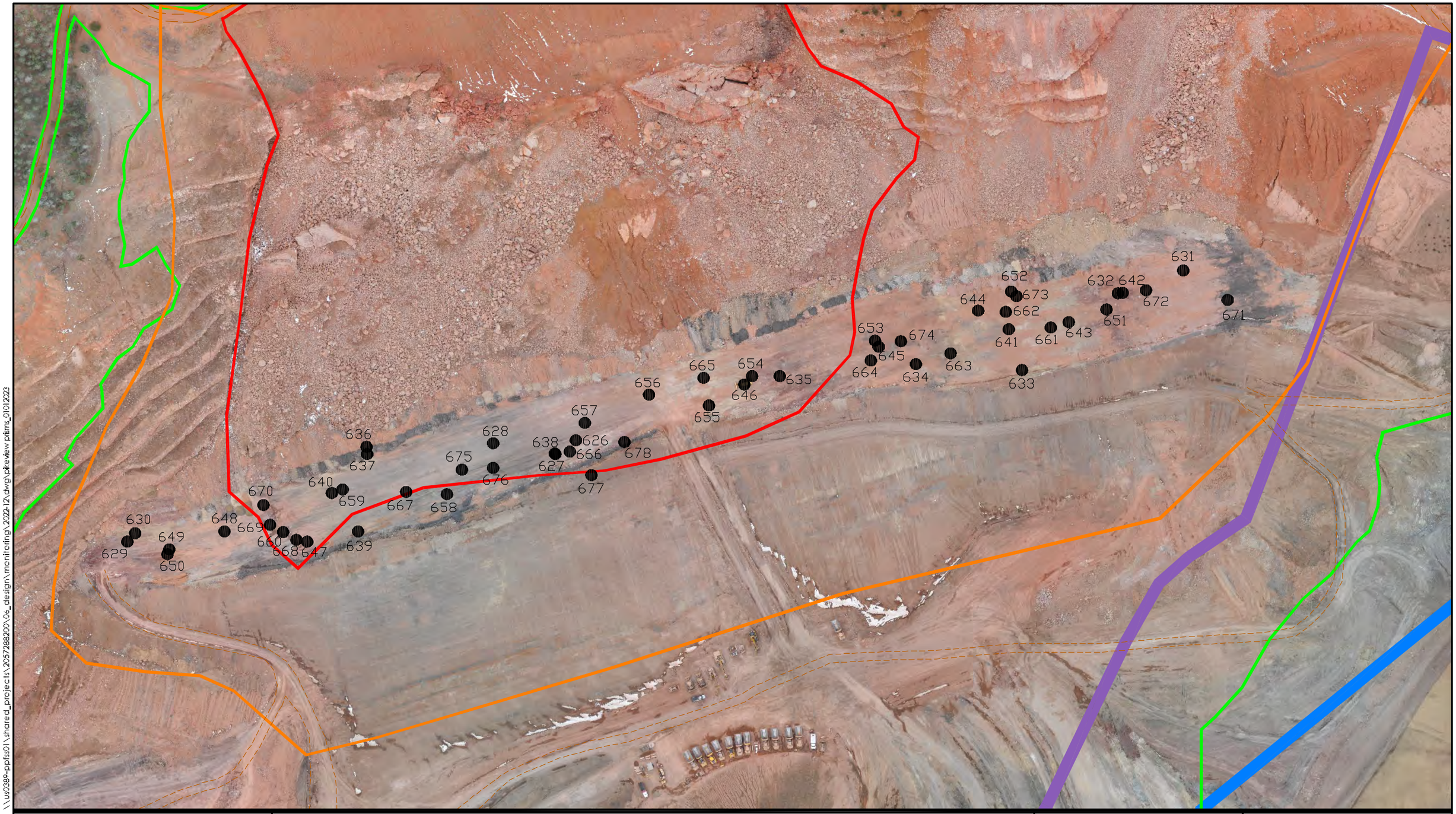
Project No.
2057288200

Title
EXISTING PRISMS WITH CURRENT SURFACE

Revision	Date
#	2023.01.31
Drawn By	Figure No.
PK	5

Appendix D

Compaction Testing Results



\\us0389-ppfss01\shared_projects\2057288200\06_design\monitoring\2022-12\dwg\plt\eview prisms_01012023

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2000 South Colorado Boulevard Suite 2-300
Denver CO 80222-7933
Tel: (303) 758-4058
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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
CONTINENTAL MATERIALS CORP.
PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
COMPACTION TEST LOCATIONS

Revision
#

Date
2023.01.31

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 ZZ6	#626	1-Dec	7285	1401610	3173257	137.5	3.7	132.5	100
Test ZZ7	#627	1-Dec	7285	1401576	3173280	132.6	4.6	126.8	100
Test ZZ8	#628	1-Dec	7287	1401472	3173262	129.8	4.8	123.9	100
Test ZZ9	#629	2-Dec	7284	1400862	3173426	120.8	6.8	114	94
Test ZZ10	#630	2-Dec	72841	1400875	3173412	117.3	5.8	111.5	90
Test AAA1	#631	5-Dec	7290	1402623	3172974	136.8	5.3	131.5	100
Test AAA2	#632	5-Dec	7288	1402514	3173012	137	4.9	132.1	100
Test AAA3	#633	5-Dec	7283	1402354	3173140	134	4.8	129.2	100
Test AAA4	#634	5-Dec	7284	1402177	3173130	132.6	5.7	126.9	100
Test AAA5	#635	5-Dec	7288	1401950	3173150	120.2	3.6	116.6	94
Test AAA6	#636	6-Dec	7286	1401261	3173268	123.1	11.2	111.9	90
Test AAA7	#637	6-Dec	7285	1401262	3173280	126.9	6.4	120.5	96
Test AAA8	#638	6-Dec	7288	1401575	3173279	121.3	3.7	117.6	94
Test AAA9	#639	8-Dec	7284	1401247	3173409	132.8	5.9	125.4	100
Test AAA10	#640	8-Dec	7287	1401203	3173345	131.8	5.6	124.8	100
Test BBB1	#641	8-Dec	7290	1402332	3173072	118.5	5.4	112.4	91
Test BBB2	#642	8-Dec	7290	1402522	3173011	129	5.3	122.6	99
Test BBB3	#643	9-Dec	7288	1402432	3173060	123.1	12.1	111	95
Test BBB4	#644	9-Dec	7289	1402281	3173041	119.5	7.5	112	93
Test BBB5	#645	9-Dec	7287	1402115	3173101	128.6	17.5	111.1	99
Test BBB6	#646	9-Dec	7289	1401891	3173164	128.8	11.2	117.7	99
Test BBB7	#647	12-Dec	7285	1401162	3173426	120.4	7.8	112.5	90
Test BBB8	#648	12-Dec	7287	1401024	3173409	134.4	9	125.4	100
Test BBB9	#649	12-Dec	7285	1400932	3173439	116.5	5.1	111.4	90
Test BBB10	#650	13-Dec	7285	1400929	3173447	115.7	4	114.7	91
Test CCC1	#651	13-Dec	7291	1402495	3173039	140.7	10	130.7	100
Test CCC2	#652	13-Dec	7292	1402336	3173009	127.6	13.7	114	92
Test CCC3	#653	13-Dec	7290	1402109	3173091	132.8	12.3	120.4	95
Test CCC4	#654	14-Dec	7290	1401904	3173150	122	7.1	114.9	94
Test CCC5	#655	14-Dec	7291	1401832	3173199	123.3	8.3	115	95
Test CCC6	#656	14-Dec	7292	1401732	3173181	119.5	5.7	113.8	93
Test CCC7	#657	14-Dec	7292	1401625	3173228	121.4	8.6	112.8	94
Test CCC8	#658	15-Dec	7288	1401395	3173347	135.4	9.4	126	100
Test CCC9	#659	15-Dec	7290	1401221	3173339	121.3	5.9	115.4	93
Test CCC10	#660	15-Dec	7288	1401122	3173410	120.2	8.9	111.4	91
Test DDD1	#661	16-Dec	7292	1402402	3173069	118.5	7.4	111.1	92

BCC Test	Test No.	Date	Elevation (ft)	Northing (ft)	Easting (ft)	Wet Density (pcf)	Moisture Content (%)	Dry Density (pcf)	Compaction (%)
Test DDD2	#662	16-Dec	7292	1402327	3173043	120.4	8.9	111.6	94
Test DDD3	#663	16-Dec	7291	1402235	3173112	123.9	12.9	110.9	96
Test DDD4	#664	16-Dec	7291	1402102	3173124	128.8	12.4	116.4	98
Test DDD5	#665	16-Dec	7292	1401823	3173153	130.6	11.2	119.4	100
Test DDD6	#666	16-Dec	7291	1401600	3173276	127.9	13.3	114.3	99
Test DDD7	#667	16-Dec	7289	1401327	3173343	121.7	7.3	114.4	93
Test DDD8	#668	19-Dec	7289	1401144	3173423	124.6	8.5	116.1	94
Test DDD9	#669	19-Dec	7289	1401100	3173398	128.7	5.2	123.1	99
Test DDD10	#670	19-Dec	7290	1401089	3173365	127.7	10.2	117.4	96
Test EEE1	#671	20-Dec	7295	14020697	3173023	124.2	9.6	114.5	95
Test EEE2	#672	20-Dec	7295	1402561	3173007	139.8	7.8	130.1	100
Test EEE3	#673	20-Dec	7296	1402345	3173017	131.2	7.7	123.5	100
Test EEE4	#674	20-Dec	7295	1402152	3173092	127.4	8.2	119.2	97
Test EEE5	#675	21-Dec	7295	1401420	3173306	130	5.2	124.8	100
Test EEE6	#676	21-Dec	7295	1401472	3173303	130.6	8.3	122.3	100
Test EEE7	#677	21-Dec	7295	1401636	3173315	124	8.1	116.2	96
Test EEE8	#678	21-Dec	7297	1401691	3173260	132.2	10.8	121.4	100

Notes:

1. As of December 31, 2022, a total 1,907,000 yd3 had been placed and compacted. This requires at least 382 compaction tests, and 673 tests have been taken.

2. A test on December 5, 2023 was rejected and has not been included in the log. The density gauge plate was found to have frost on it resulting in erroneous results. After the frost was removed, the density gauge provided correct results.