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To:	Jerald Schnabel	From:	Paul Kos
	Castle Aggregate		Denver, CO 80202
File:	September 2024 Monitoring Summary	Date:	October 31, 2024

Reference: September 2024 Geotechnical Monitoring Summary Pikeview Quarry

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this September 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 the geotechnical performance of the 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 September 2024. Continuous monitoring by the robotic survey system began in 2010 and continued through the month of September 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 September 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 activities.

1.2 MONITORING SUMMARY

Major components of the instrumentation monitoring program are listed in Table 1 and shown on Figures 1 (aerial imagery) and 2 (topography).

Table 1 Monitoring Frequency

Monitoring Type	Frequency
Visual inspection	Daily (Castle Aggregate) and Monthly (Stantec)
Robotic theodolite/prism	Continuous
Drone inspection	Monthly

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).

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 when appropriate, inspecting those areas before work begins in that area. The daily inspection also includes visual observations of the quarry slopes for any changes. 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 September 30, 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 3 in Appendix A.

Visual inspections of the Pikeview Quarry did not reveal any evidence of large-scale instability outside of the landslide areas previously identified. No cracking, 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 33 prisms active in September; two prisms were control points located outside the slope movement area, 5 prisms were located on the slopes surrounding the slope movement area, and 26 prisms were located in the buttress fill area. The prism locations are shown on Figures 1 and 2.

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 crews also use a spotter to monitor 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. Rain and fog caused regression limit alerts and data errors on September 17. Castle Aggregate or Stantec will notify CDRMS of any movement alerts that are not related to weather. The alerts from September are listed in Table 2.

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Table 2 Prism Alert Summary

Date(s)	Alert	Cause/Actions taken	Resolved
2-Sep	P33 not found	Single event. No work being performed at time of alert.	2-Sep
3-Sep to 4-Sep	P70R not found	Equipment operations in area blocking prism. Operators watching out for each other.	4-Sep
4-Sep	P5 not found	Single event. No work being performed at time of alert.	4-Sep
5-Sep	Points not found	Rain and fog. No work being performed at time of alerts.	5-Sep
6-Sep	P25 not found	Single event. Mulching operations in area blocked prism. Operators watching out for each other.	6-Sep
9-Sep	B7700-1 not found	Equipment operations in area moved prism out of alignment. Operators watching out for each other.	9-Sep
17-Sep	Points not found	Rain and fog. No work being performed at time of alerts.	17-Sep
17-Sep	P5 regression limits	Rain and fog. No work being performed at time of alerts.	17-Sep
17-Sep	P25 regression limits	Rain and fog. No work being performed at time of alerts.	17-Sep
17-Sep	P70R regression limits	Rain and fog. No work being performed at time of alerts.	17-Sep
20-Sep	Points not found	Rain and fog. No work being performed at time of alerts.	20-Sep
21-Sep	Points not found	Rain and fog. No work being performed at time of alerts.	21-Sep
22-Sep	Points not found	Rain and fog. No work being performed at time of alerts.	22-Sep
23-Sep	Points not found	Rain and fog. No work being performed at time of alerts.	23-Sep

The prism monitoring results for transverse and height displacements, monthly change, and cumulative change are summarized in Table 3. 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 or when each prism was installed. 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.

The data show stable conditions with no or very small settlement movements at each of the 33 prisms. Prisms on the buttress slope continued to record slow and decreasing gradual movement as the fill consolidates along the benches. The fill is likely consolidating under its own weight. A small amount of settlement is common for newly placed compacted fill, particularly following rain events, and this is being recorded by the prisms. Plots of the transverse and height displacements for each prism are included in Appendix B.

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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
B7200-1	-0.054	0.008	0.000	0.063	
B7200-2	0.010	-0.028	0.001	0.071	
B7200-3	0.237	-0.092	0.026	0.307	
B7300-0	-0.974	-0.242	0.021	1.190	
B7300-1	-0.205	-0.208	0.006	0.432	
B7300-2	0.011	-0.300	0.025	0.376	
B7300-3	0.235	-0.203	0.026	0.373	
B7300-4	0.242	-0.184	0.038	0.332	
B7400-1	-0.400	-0.903	0.014	1.460	
B7400-2	-0.041	-0.601	0.012	1.173	
B7400-3	0.140	-0.453	0.026	0.585	
B7400-4	0.526	-0.392	0.012	0.760	
B7400-5	0.809	-0.217	0.045	0.864	
B7500-1	-0.033	-0.181	0.030	0.225	
B7500-2	-0.017	-0.162	0.035	0.191	
B7500-3	0.061	-0.144	0.031	0.182	
B7500-4	0.076	-0.095	0.016	0.203	
B7500-5	0.032	-0.085	0.023	0.092	
B7600-5	0.048	-0.042	0.061	0.074	
B7700-1	-0.048	-0.006	0.038	0.054	Prism impacted by workers.
B7700-2	-0.019	0.010	0.024	0.033	
B7700-3L	0.001	0.019	0.012	0.023	
B7700-3U	-0.008	0.012	0.006	0.017	
BR4	0.002	0.002	-0.004	0.003	
CP6	0.004	-0.018	0.015	0.045	
CP7	0.103	0.008	0.043	0.107	
NP4	0.039	-0.080	-0.003	0.168	
P2	-0.007	-0.014	0.009	0.018	
P25	0.009	0.020	-0.009	0.022	
P32r	-0.030	0.011	-0.023	0.033	
P33	0.082	-0.003	-0.015	0.109	
P5	0.000	-0.014	0.001	0.014	
P70R	-1.130	-0.514	-0.027	2.064	

4.0 DRONE SURVEY

The site was flown for aerial imagery and LiDAR using an unmanned aircraft system (UAS or 'drone') on September 30, 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 September topography was also compared to the August topography to identify changes in the site topography. Comparison of the two surveys showed no slope movements or other changes in topography other than related to recent earthworks and revegetation activities. No slope movements were recorded in the area where cracking was observed. The current imagery and topography are included in Figures 1 and 2, and the comparison surface is included as Figure 4 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 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 – RFP Evaluation and 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 – Reclamation Grading	Completed February 2022 to July 2024
Phase 4 – Contractor Demobilize from Site	Completed Summer 2024
Phase 4 – Reclamation Planting	November 2024 (est.)
Phase 4 – Channel Armoring	October 2024 (est.)
Phase 5 – Final Revegetation	2024 until acceptance

Progress of activities this month:

- Continued placing filter gravel and riprap.
- Processing of filter gravel and riprap continued.
- Geotechnical monitoring continued.
- Continued placing topsoil.
- Continued seeding, matting, and mulching operations.
- Completed tree and shrub planting.

Work planned for next month includes:

- Resume placing topsoil after riprap placement is completed.
- Resume seeding, matting, and mulching operations after riprap placement is completed.
- Conclude processing filter gravel and riprap.
- Conclude placement filter gravel and riprap armoring.
- Continue geotechnical monitoring.

6.0 CONCLUSIONS

The data collected in September 2024 demonstrate compliance with the reclamation grading plan. The buttress fill was placed and compacted as intended and specified.

None of the data collected in September 2024 indicate evidence of any large-scale movements that increase risk to workers or to the public.

- All monitoring should continue at current frequencies.
- All alerts shall continue to be taken seriously even if data errors are suspected.
- CDRMS will be notified of any movement alerts not associated with weather.

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LEGEND

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

1. AERIAL IMAGERY FROM SEPTEMBER 30, 2024 DRONE SURVEY.

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

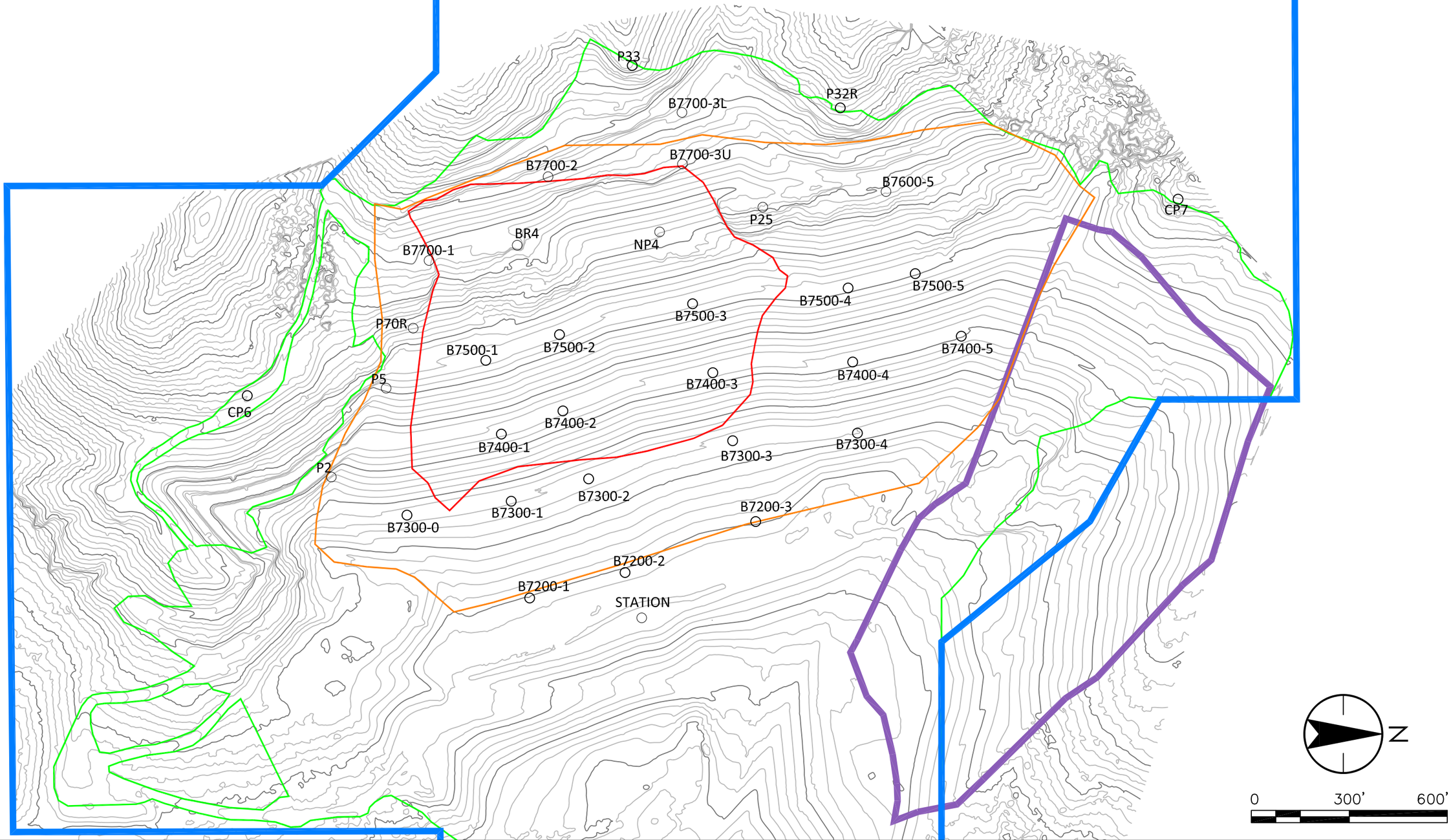
Title
SITE MAP

Revision
#

Date
2024.10.31

Drawn By
PK

Figure No.
1



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LEGEND

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

1. TOPOGRAPHY FROM SEPTEMBER 30, 2024 DRONE SURVEY.
2. CONTOUR INTERVAL IS 10 FEET

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
EXISTING PRISMS WITH CURRENT SURFACE

Revision	Date
#	2024.10.31
Drawn By	Figure No.
PK	2

Appendix A

Visual Inspections

6. RIPRAP CHANNEL.

5. VIEW OF MIDDLE PEAK FROM PIT FLOOR.

4. VIEW OF SITE FROM NORTH.

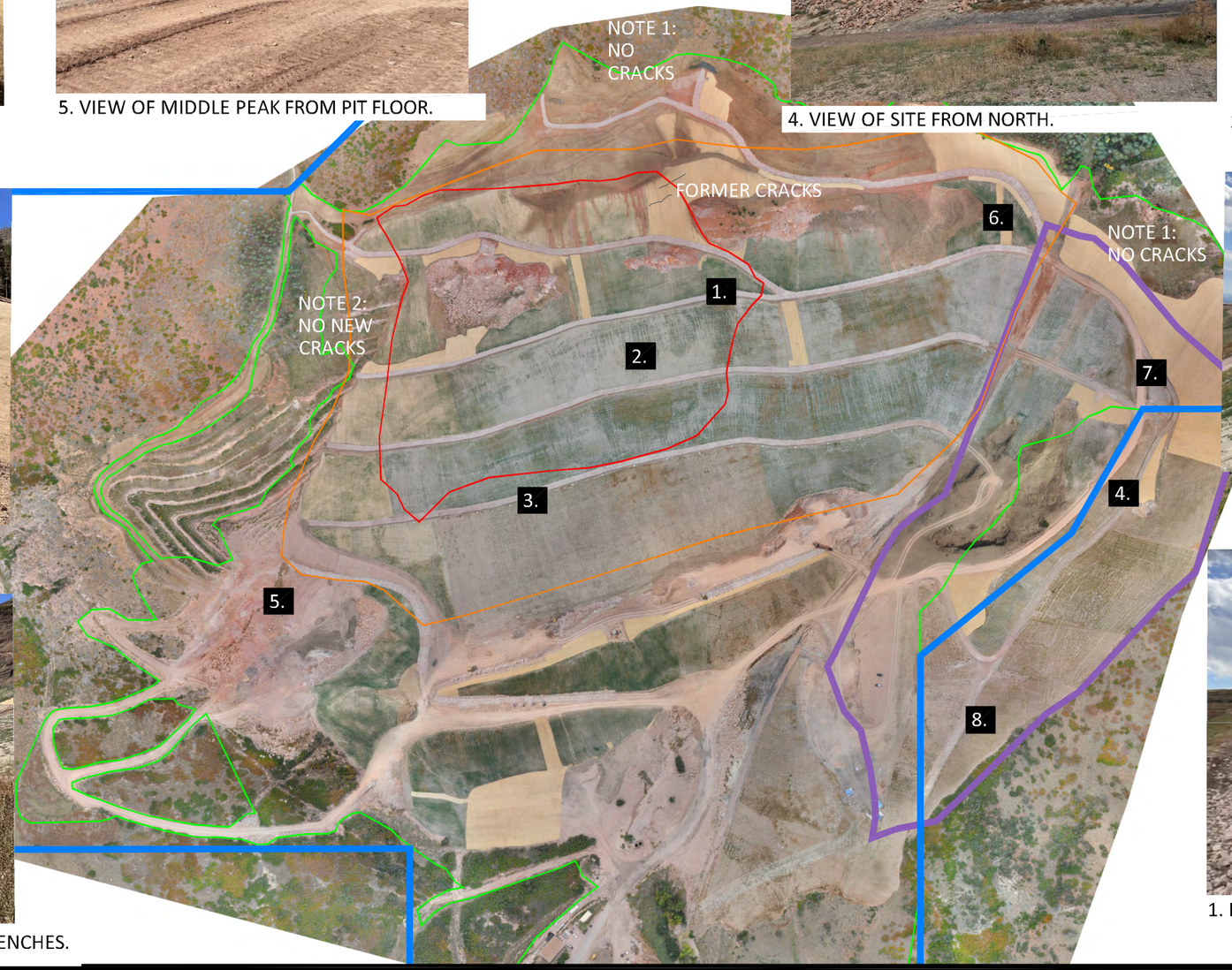
3. IRRIGATION TANKS ABOVE SEEDED SLOPES.

7. RIPRAP CHANNEL.

2. VEGETATION GROWING ON SLOPE.

8. VIEW SOUTH OF RECLAMATION SLOPES AND BENCHES.

1. RIPRAP ON BENCH.



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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 SEPTEMBER 30, 2024.

N

0 400’ 800’

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
OBSERVATIONS FROM AUGUST INSPECTIONS

Revision
#

Date
2024.10.31

Drawn By
PK

Figure No.
3

Stantec

Table A-1 Summary of Daily Inspections

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

Appendix B

Prism Survey

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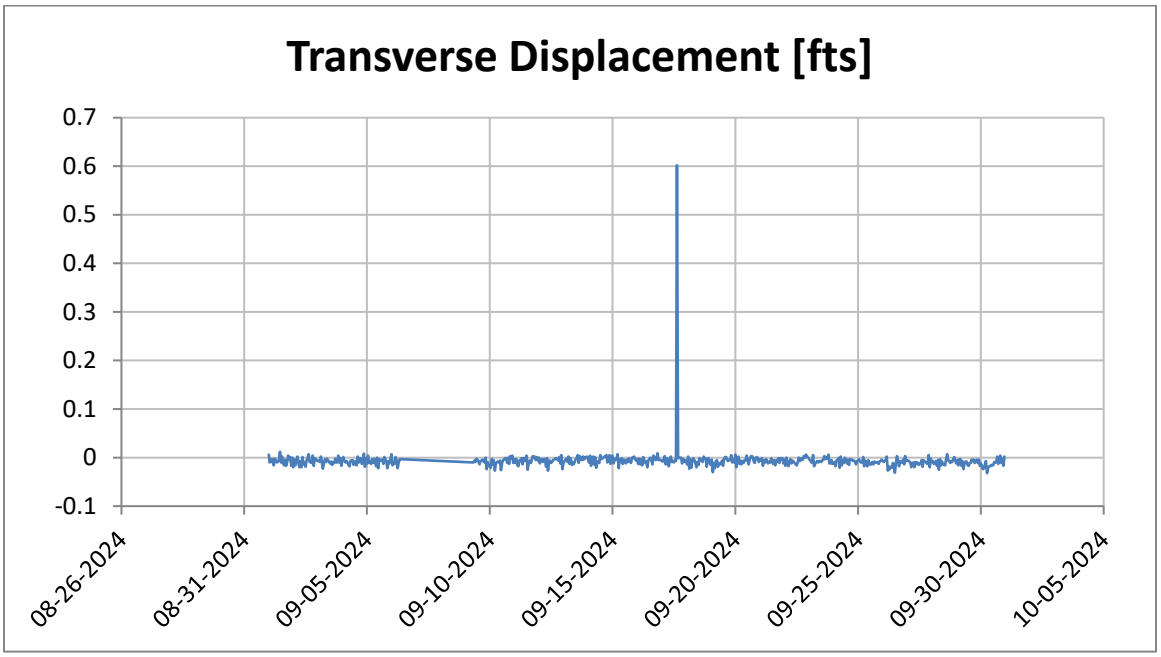
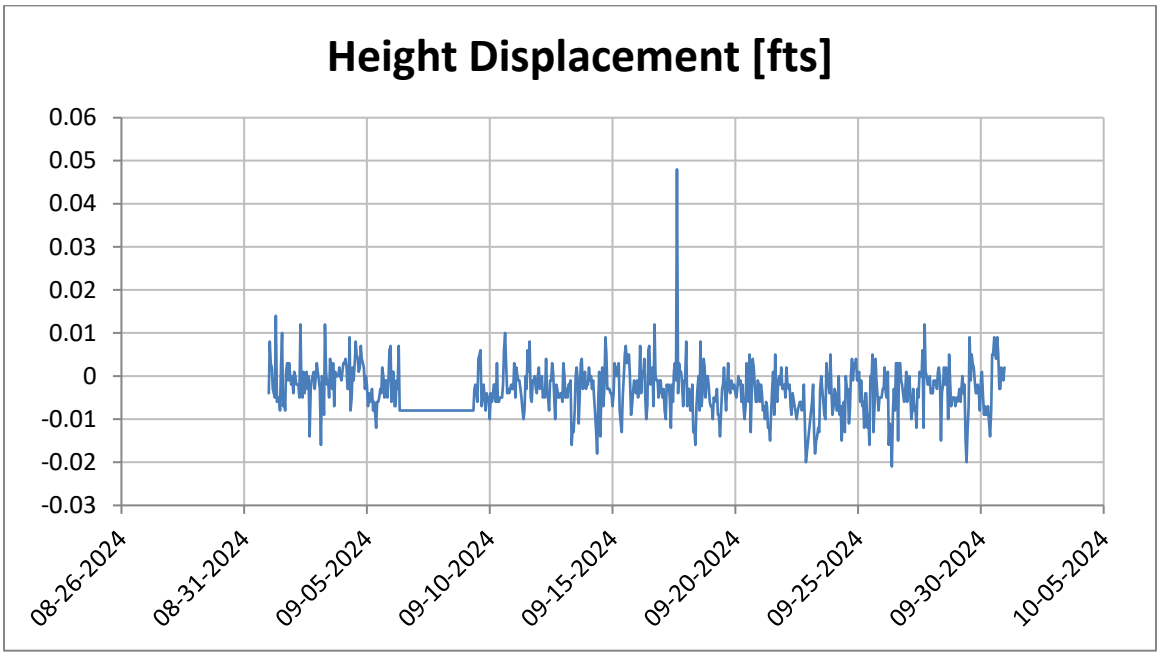
Prism BR4



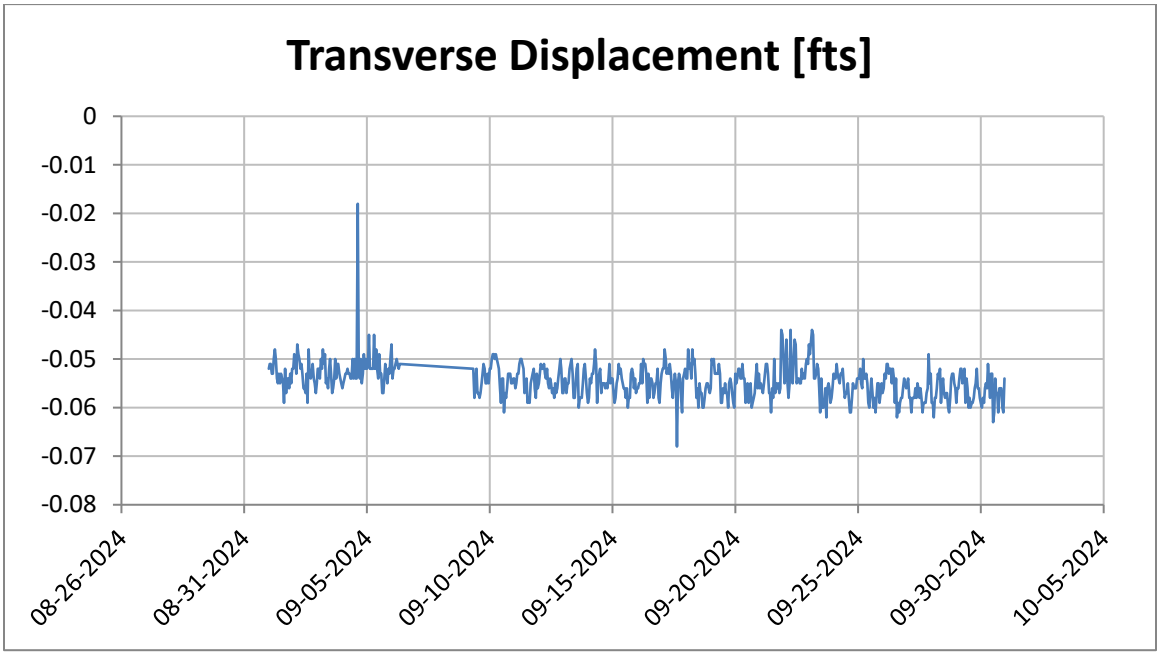


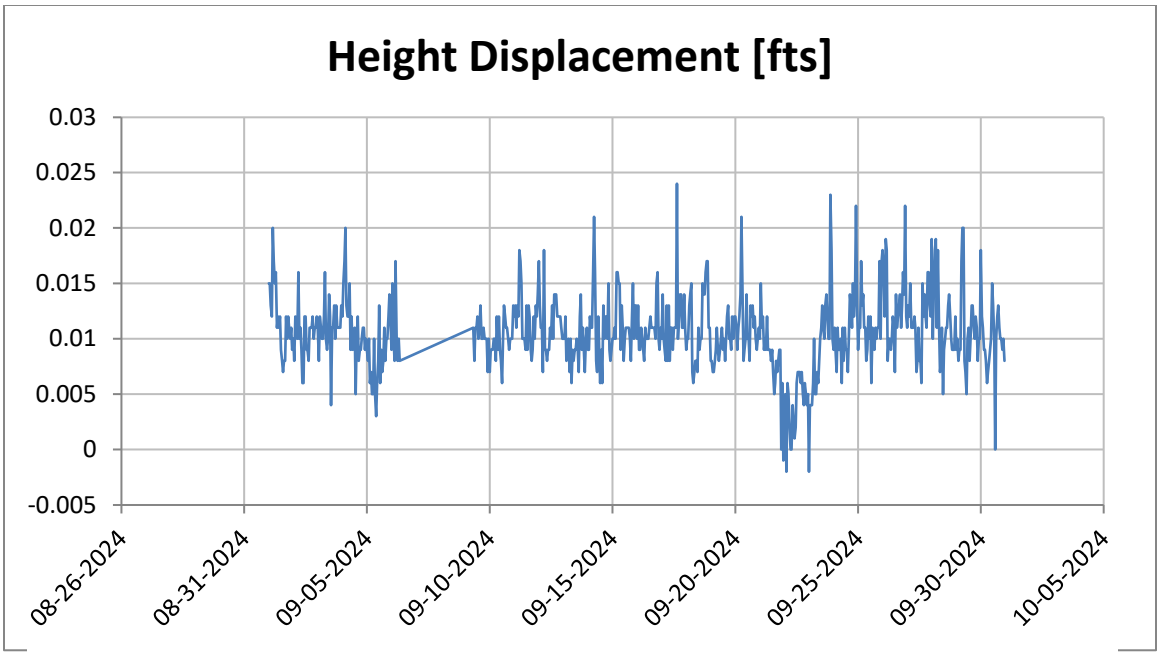
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism B7200-1





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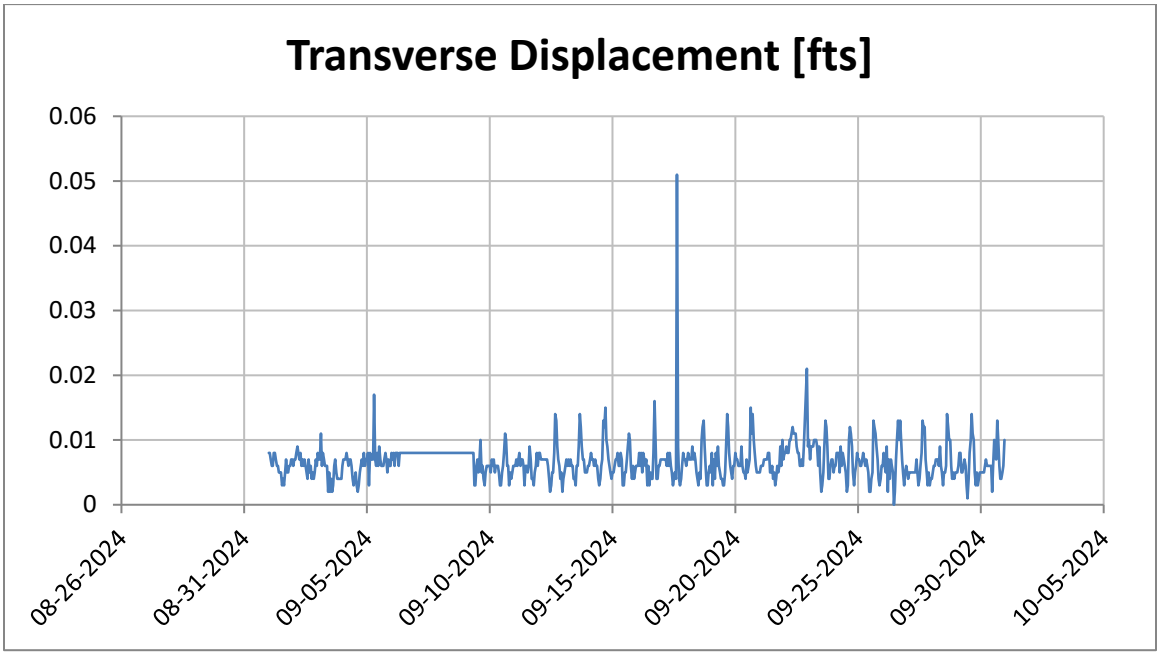
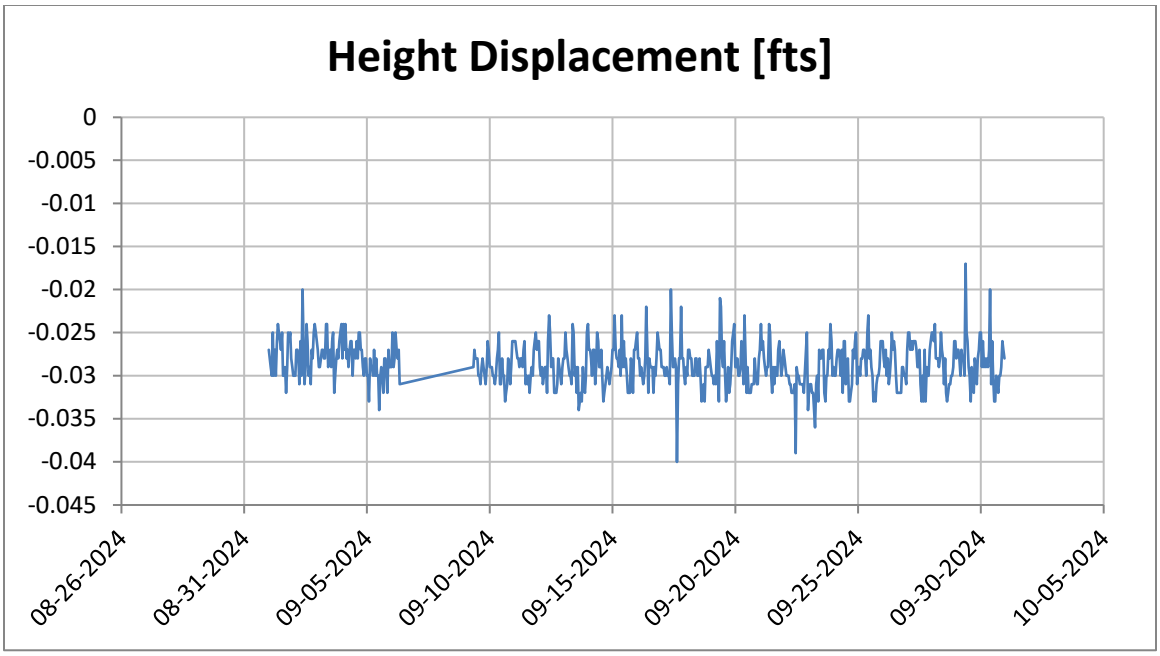
Stantec

Prism B7200-2





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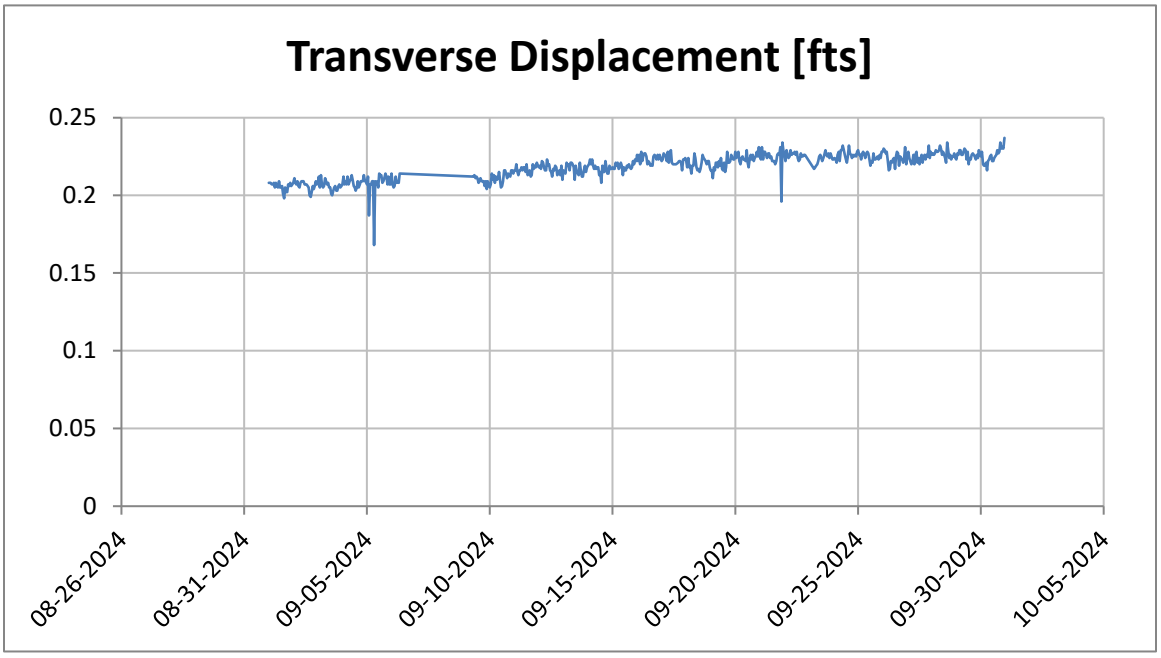
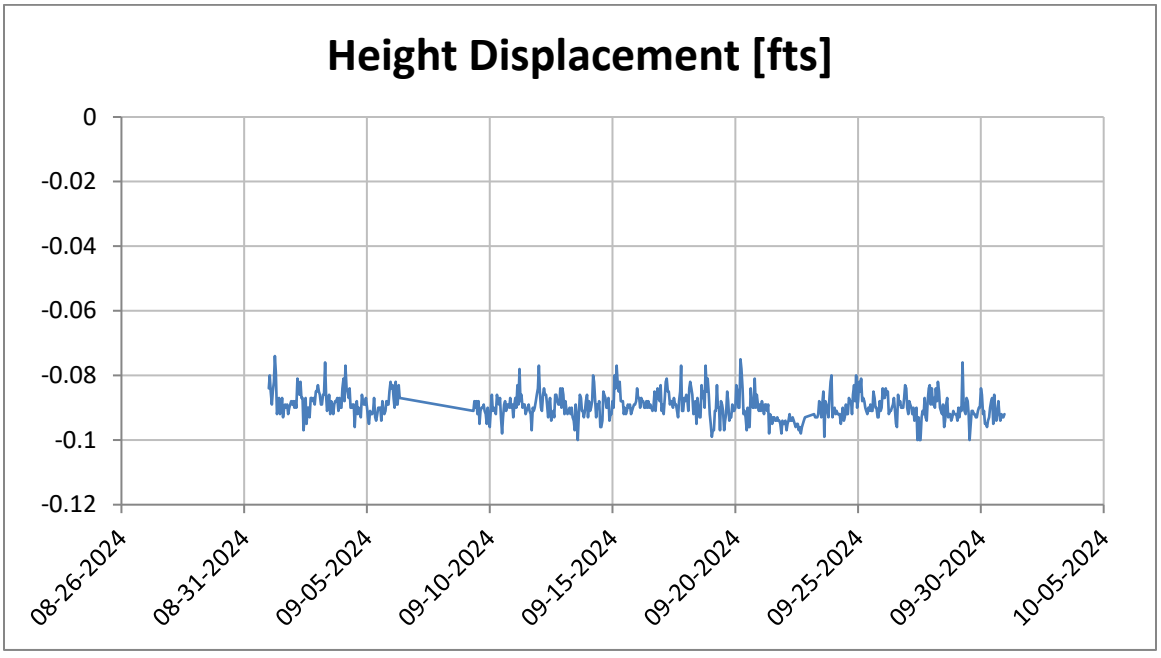
Prism B7200-3





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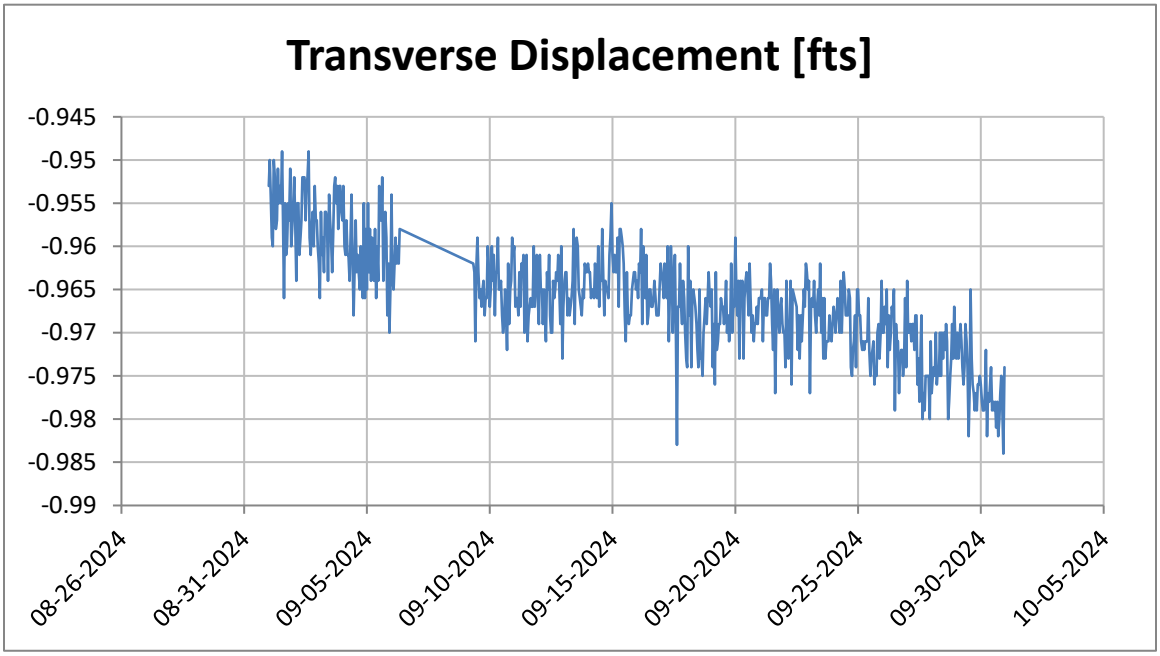
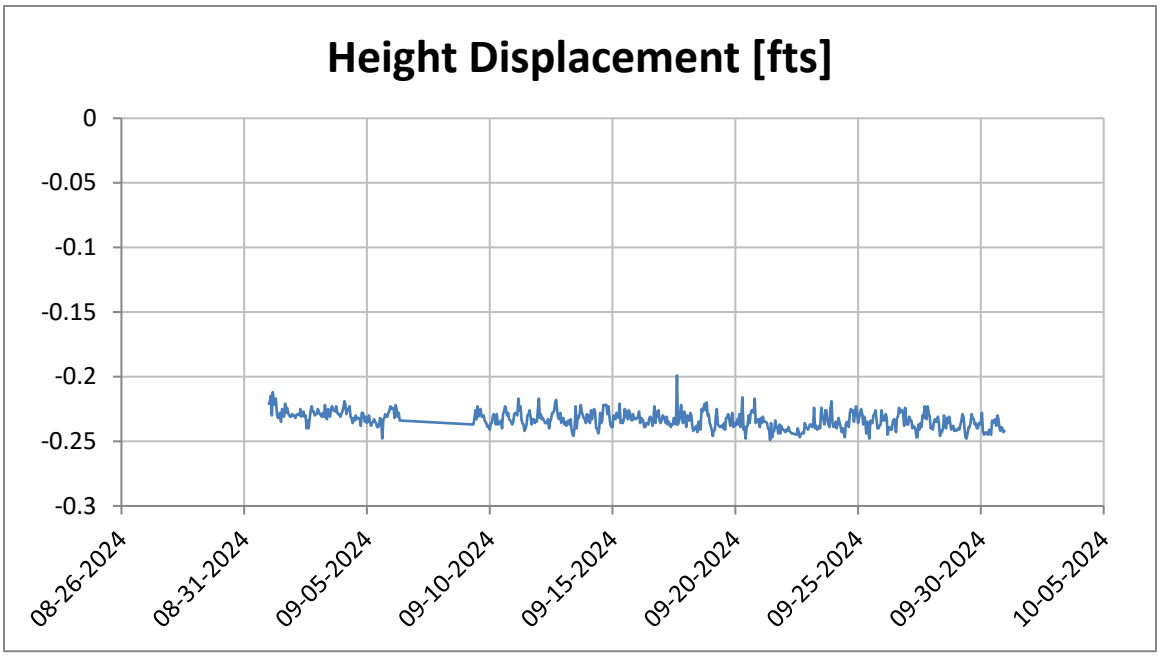
Prism B7300-0





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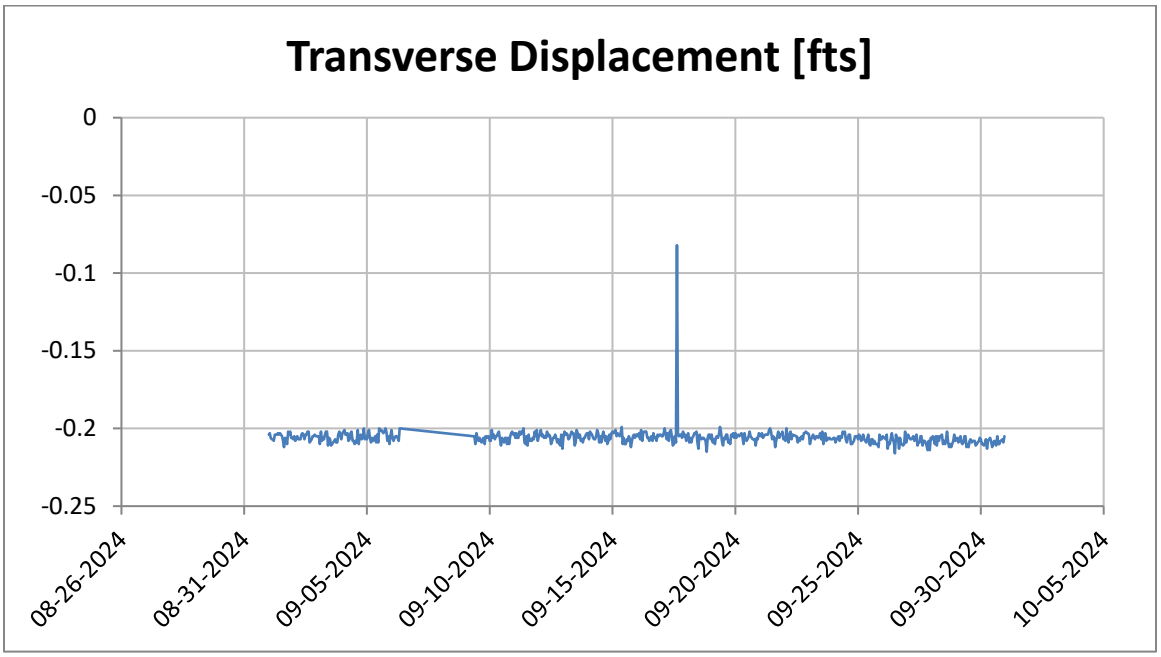
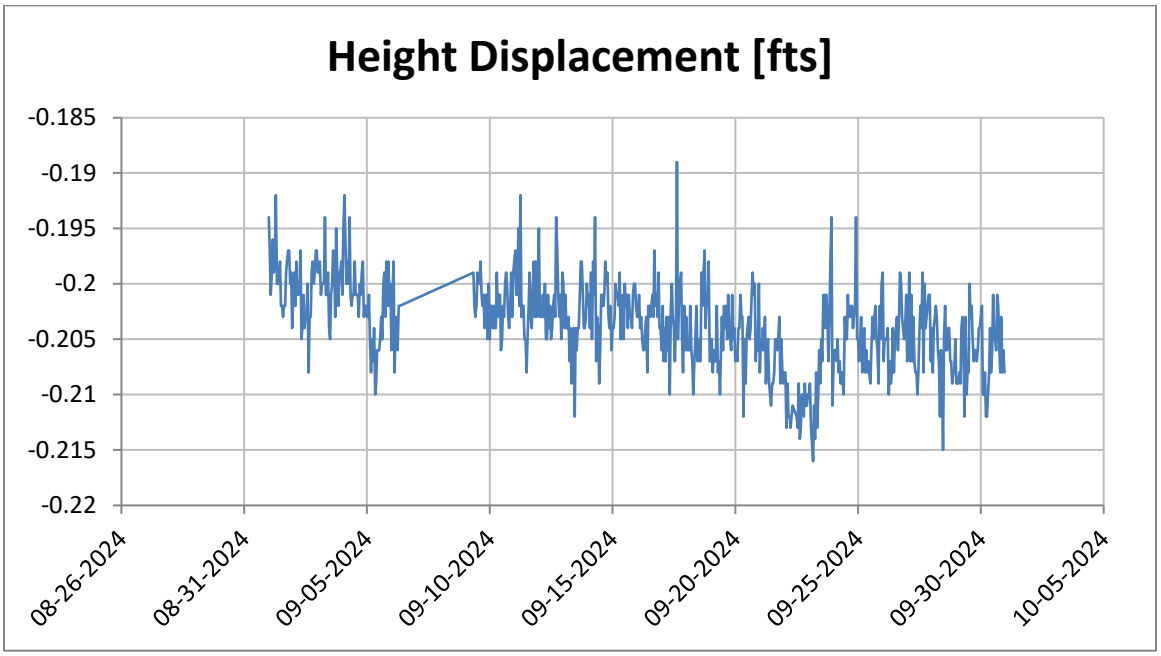
Prism B7300-1





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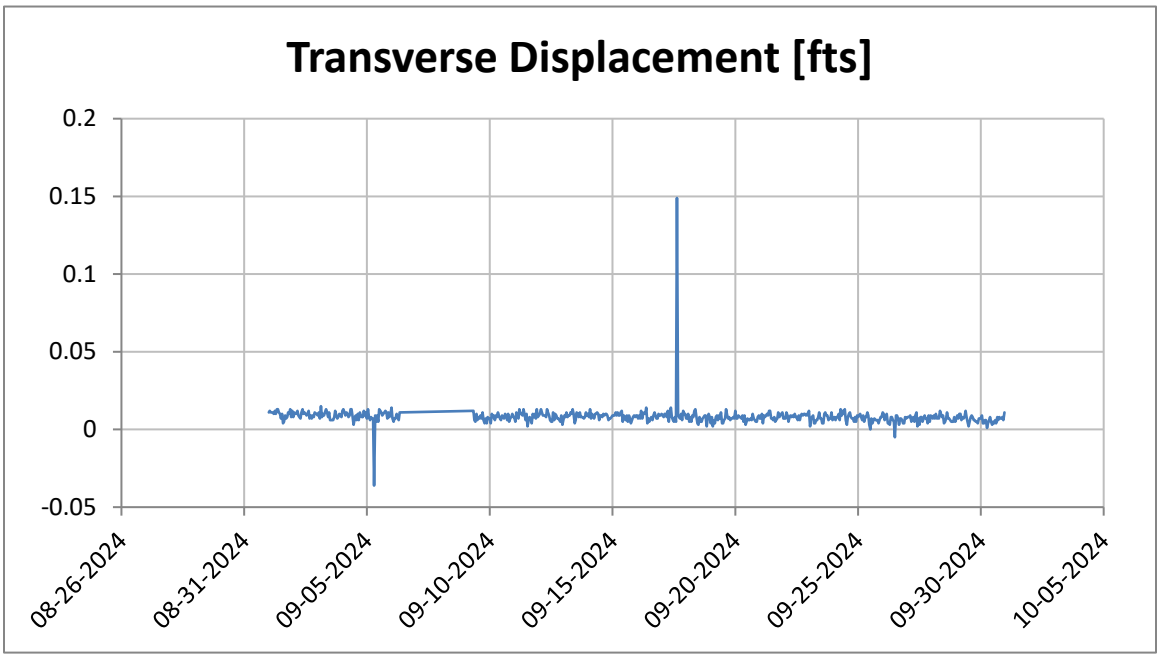
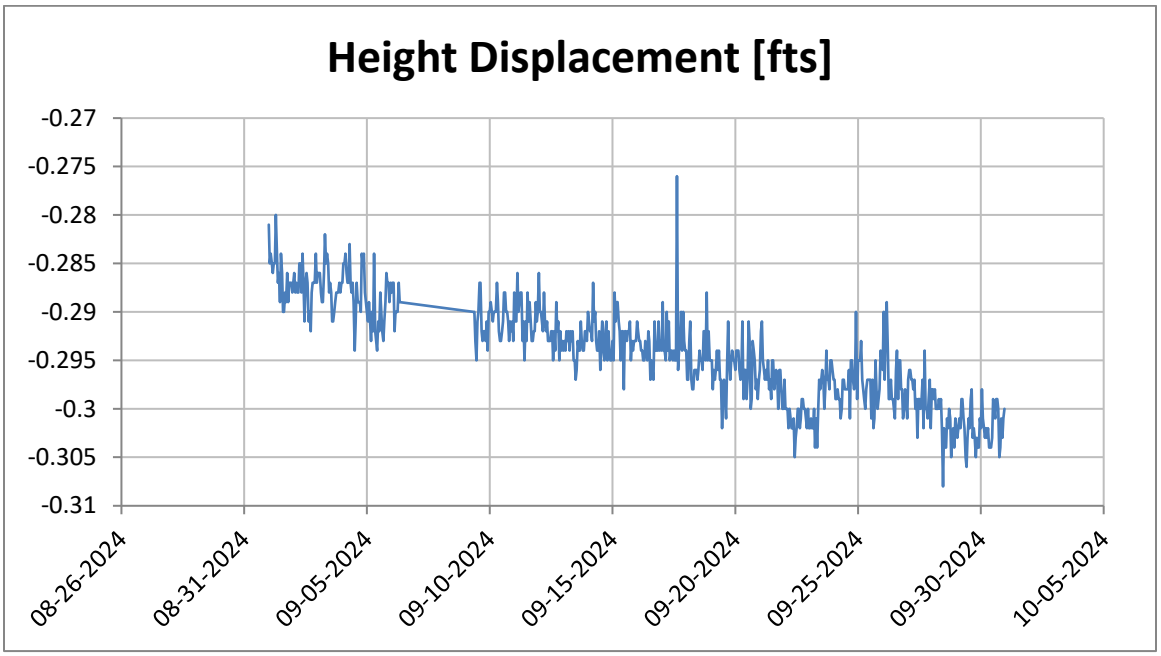
Prism B7300-2





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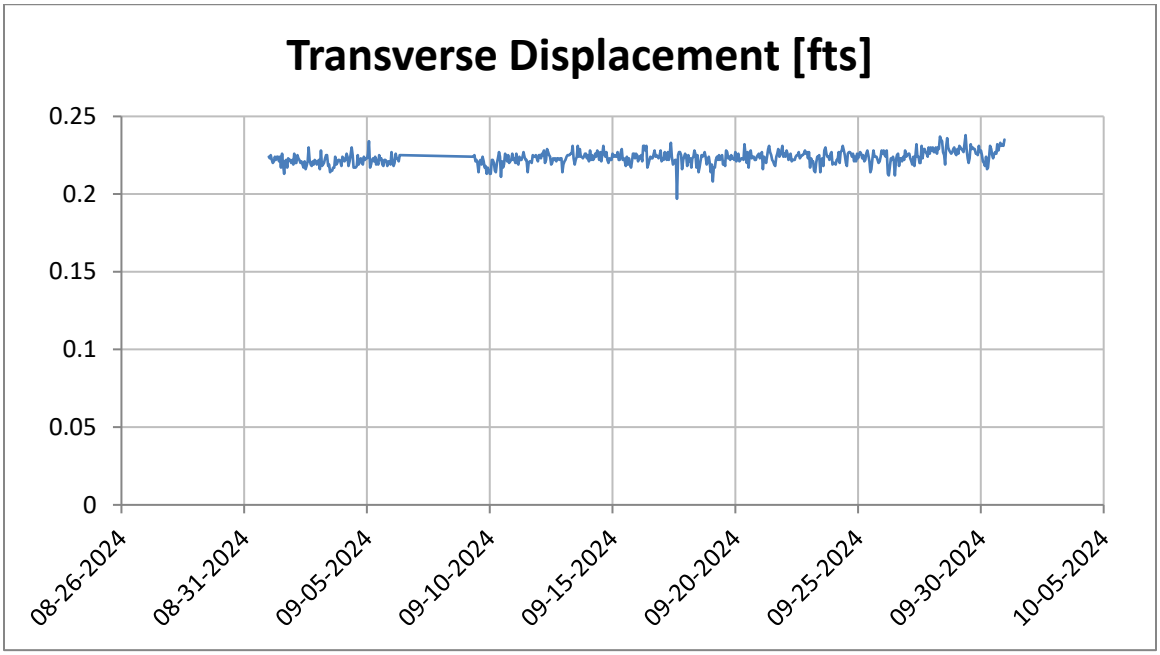
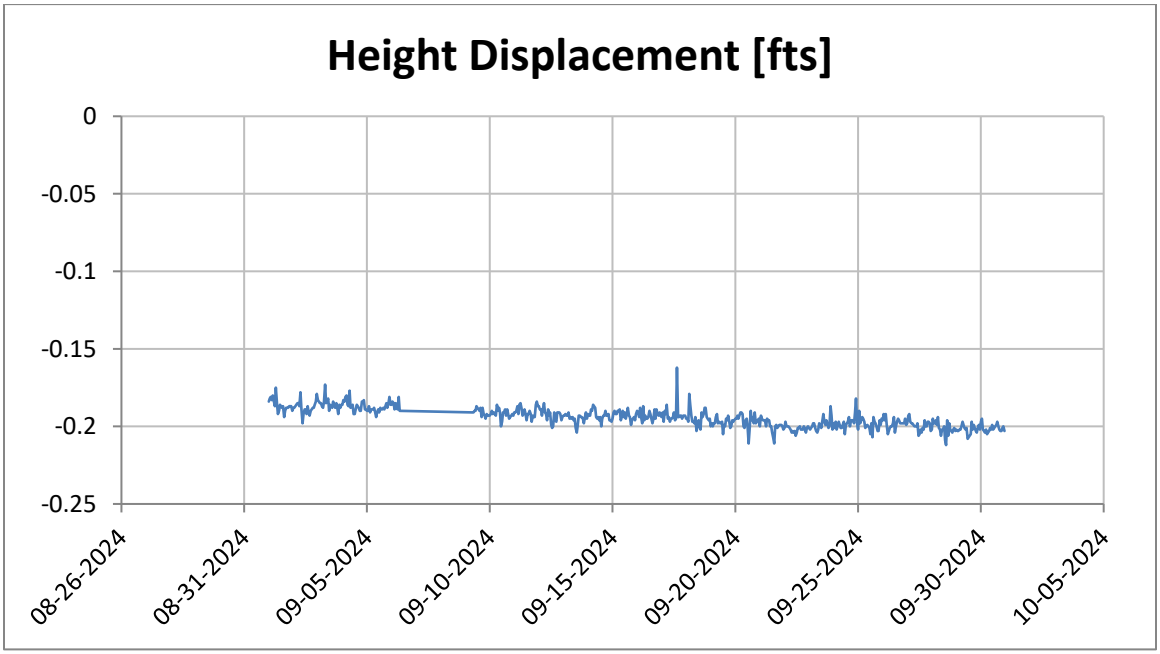
Prism B7300-3





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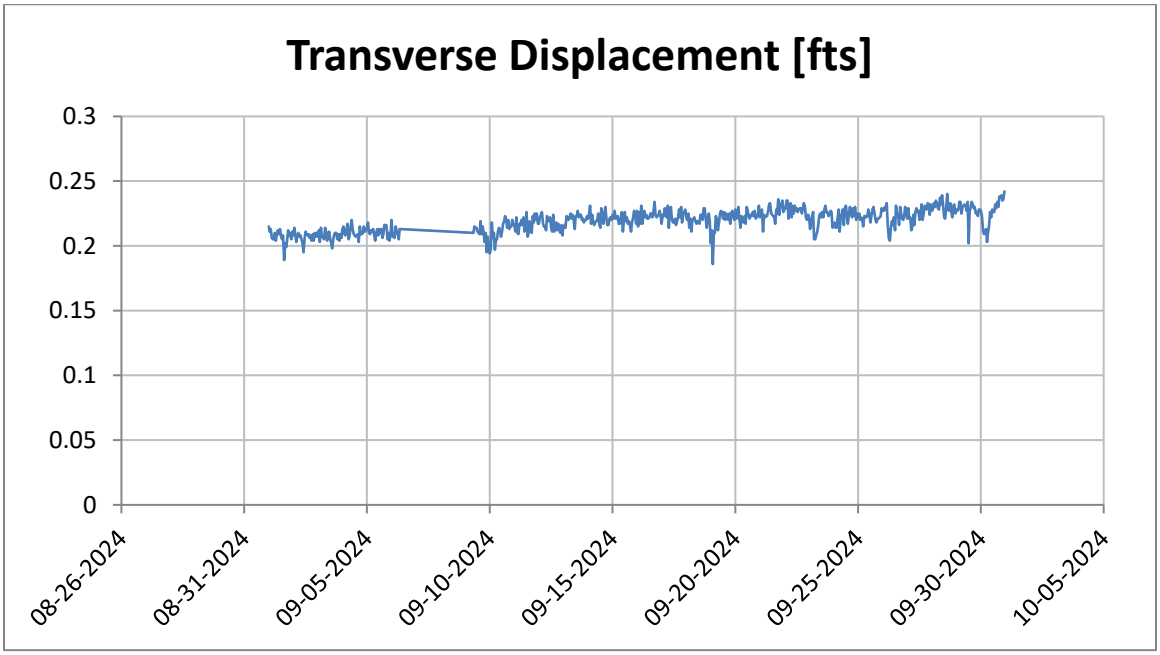
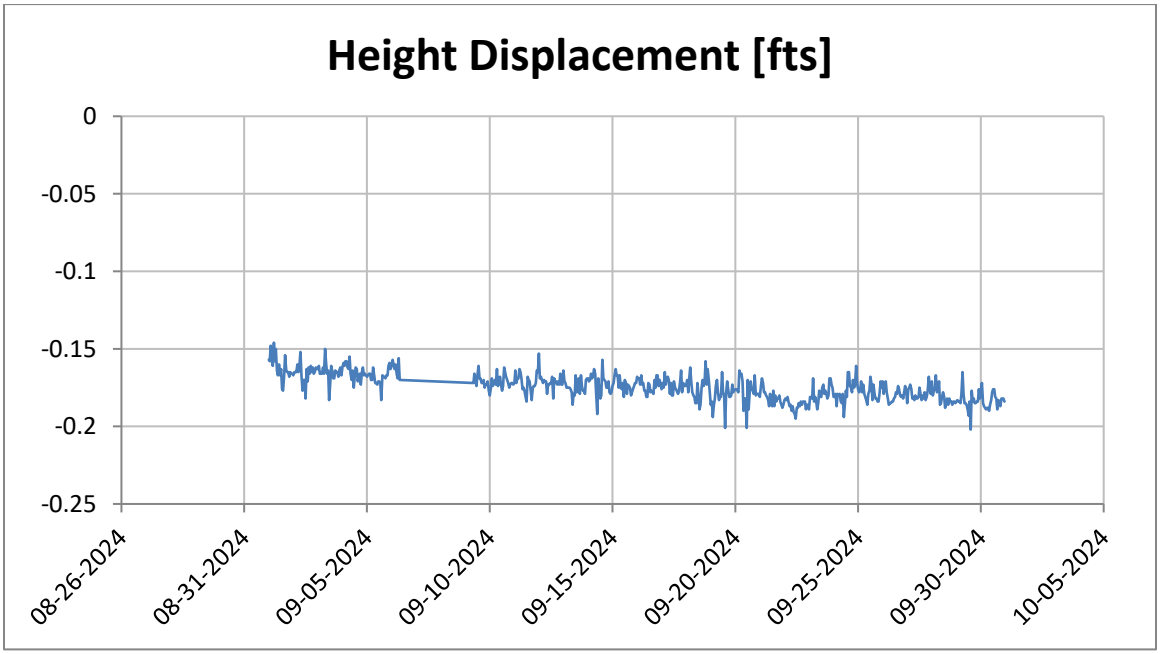
1. Survey accuracy is +/-0.016 feet.
2. Alert threshold is +/-0.35 feet.
3. Transverse displacement is in the horizontal direction. Positive direction means closer to the robotic total station.
4. Height displacement is in the vertical direction. Positive direction means higher in elevation.

Stantec

Prism B7300-4



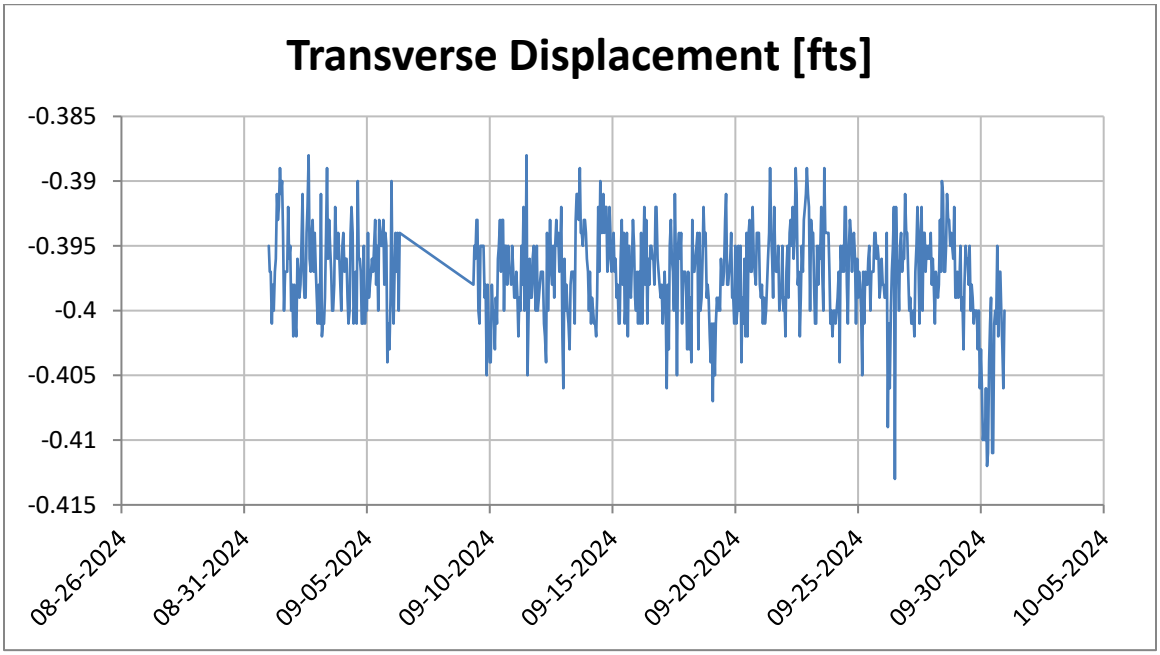


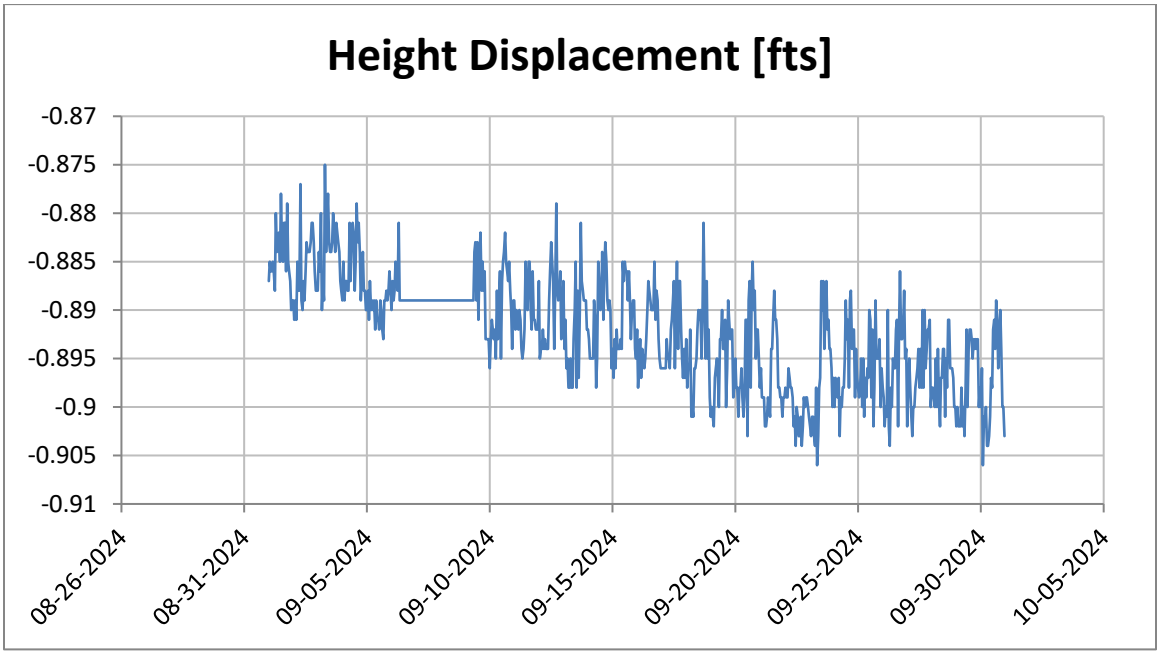
Notes:

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.

Stantec

Prism B7400-1



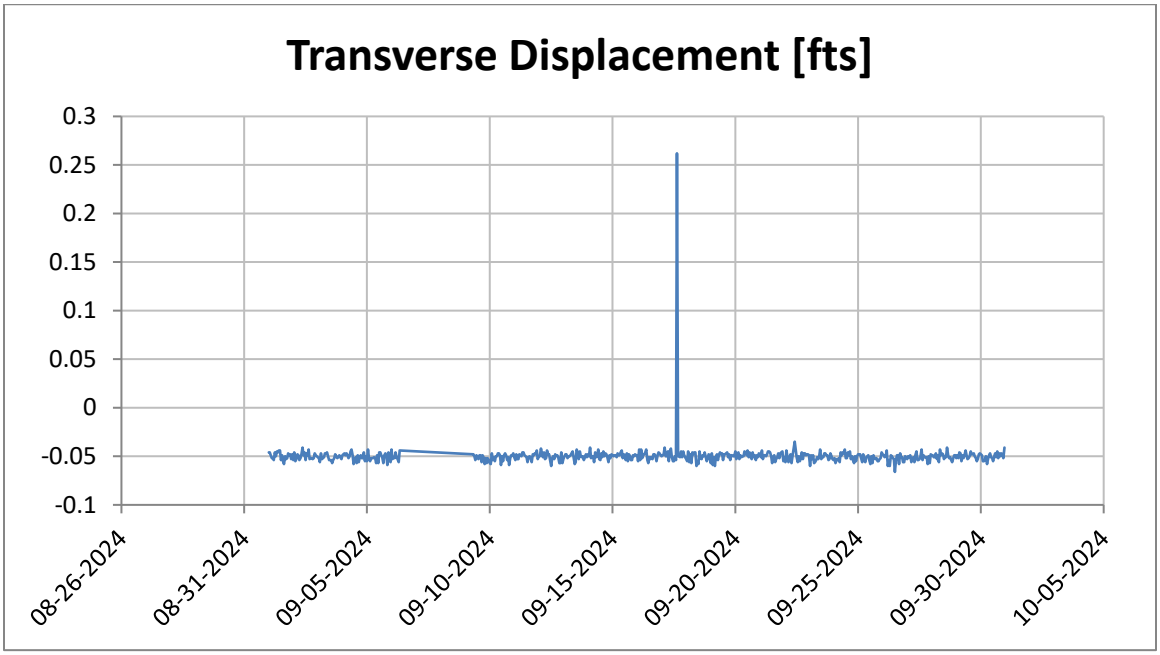


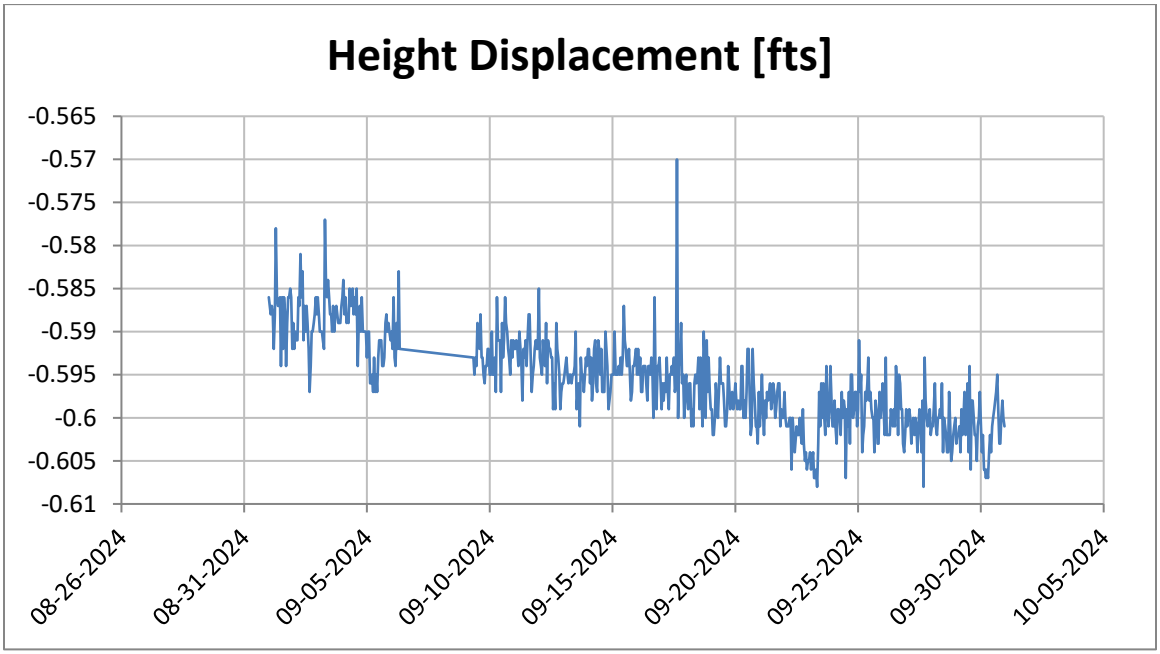
Notes:

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.

Stantec

Prism B7400-2



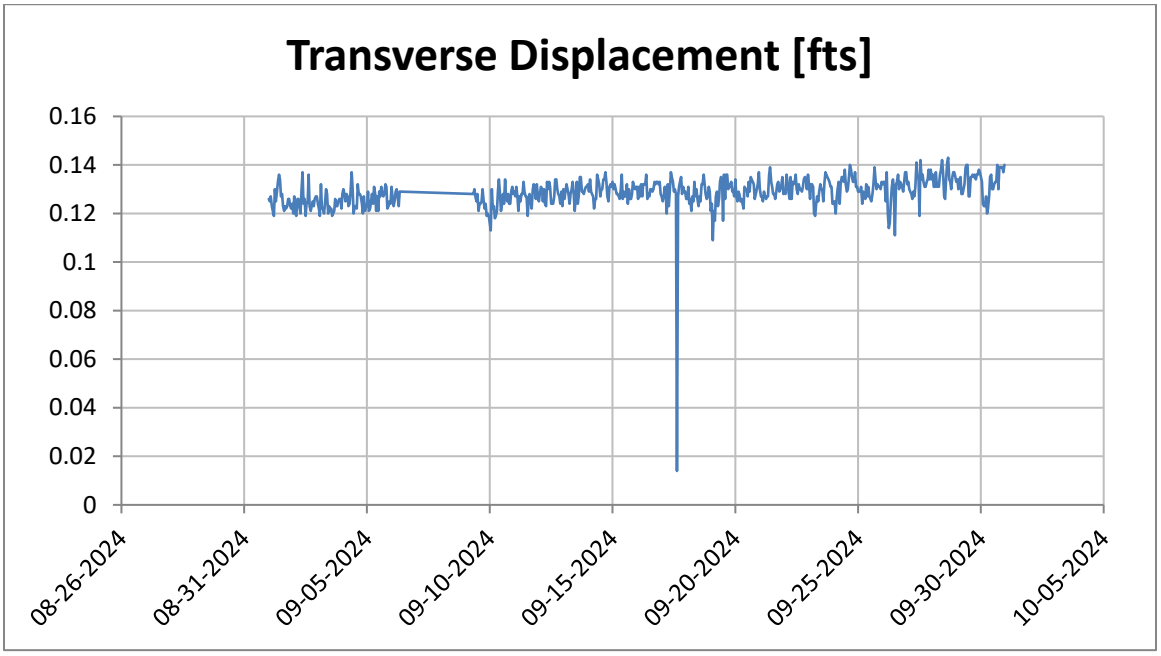


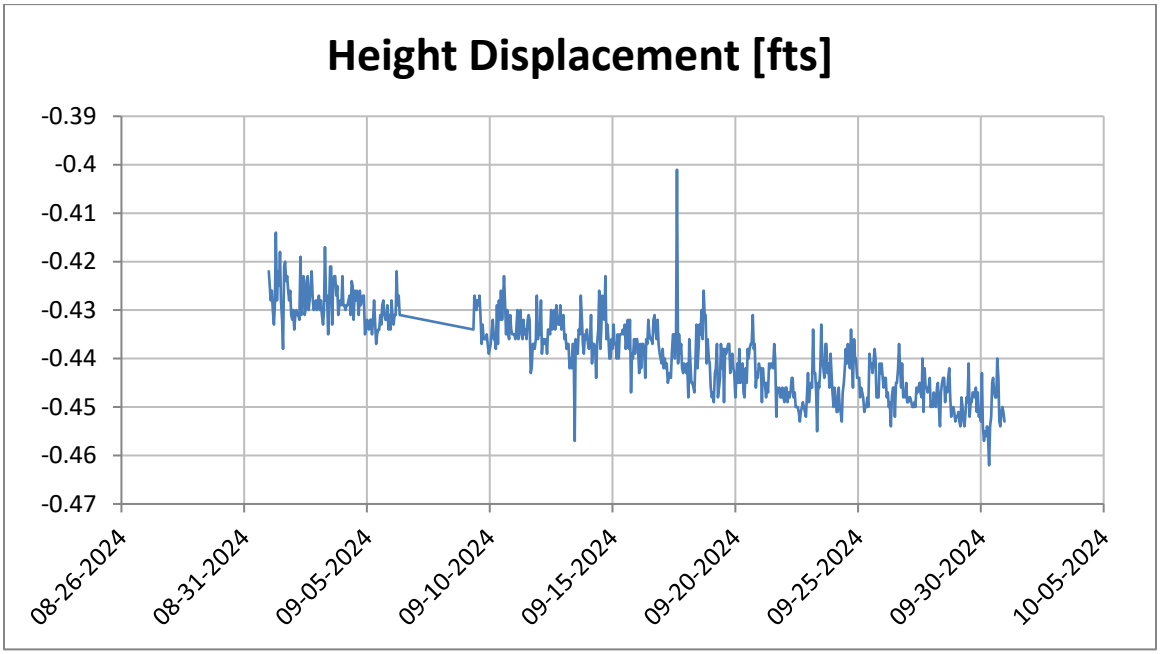
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism B7400-3



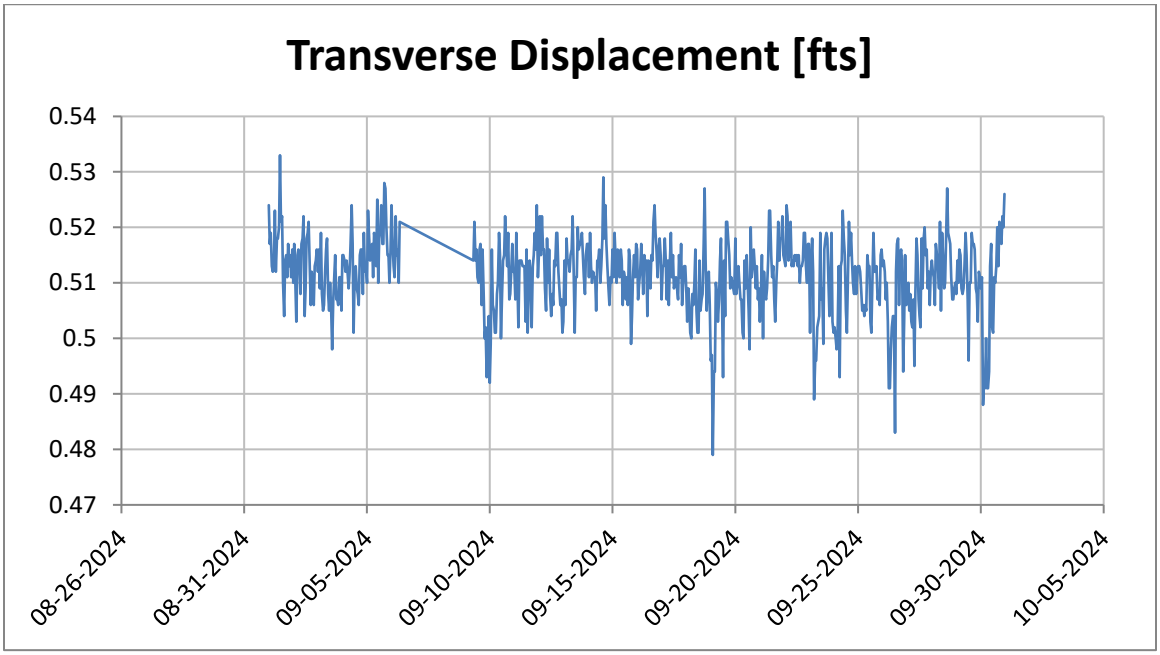


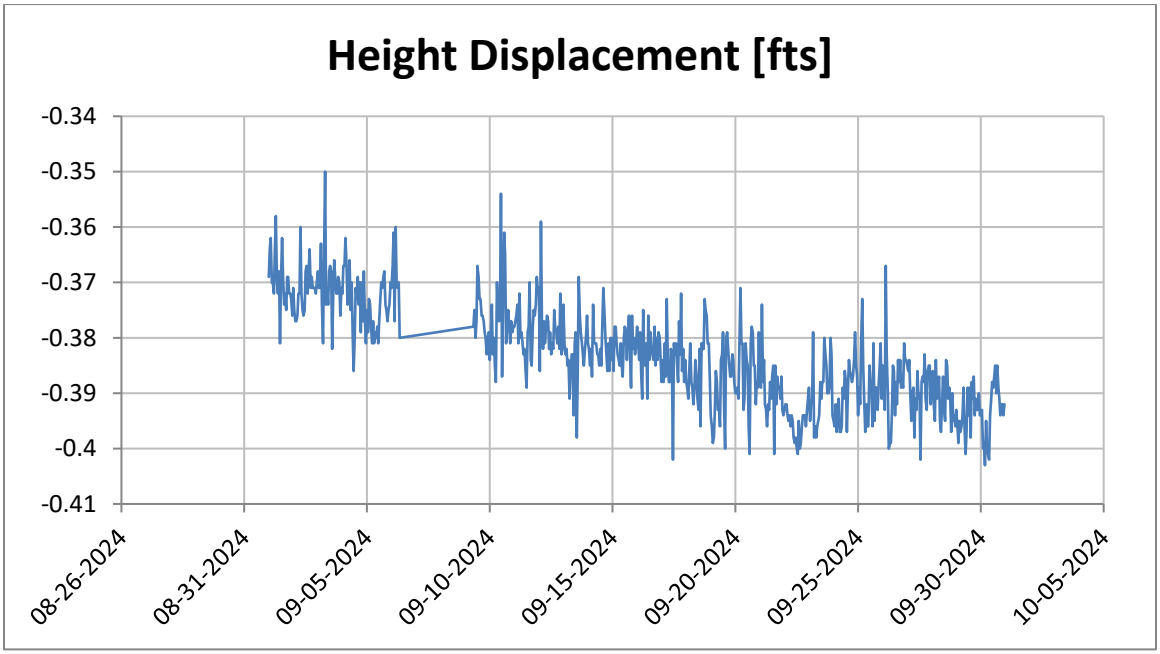
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism B7400-4



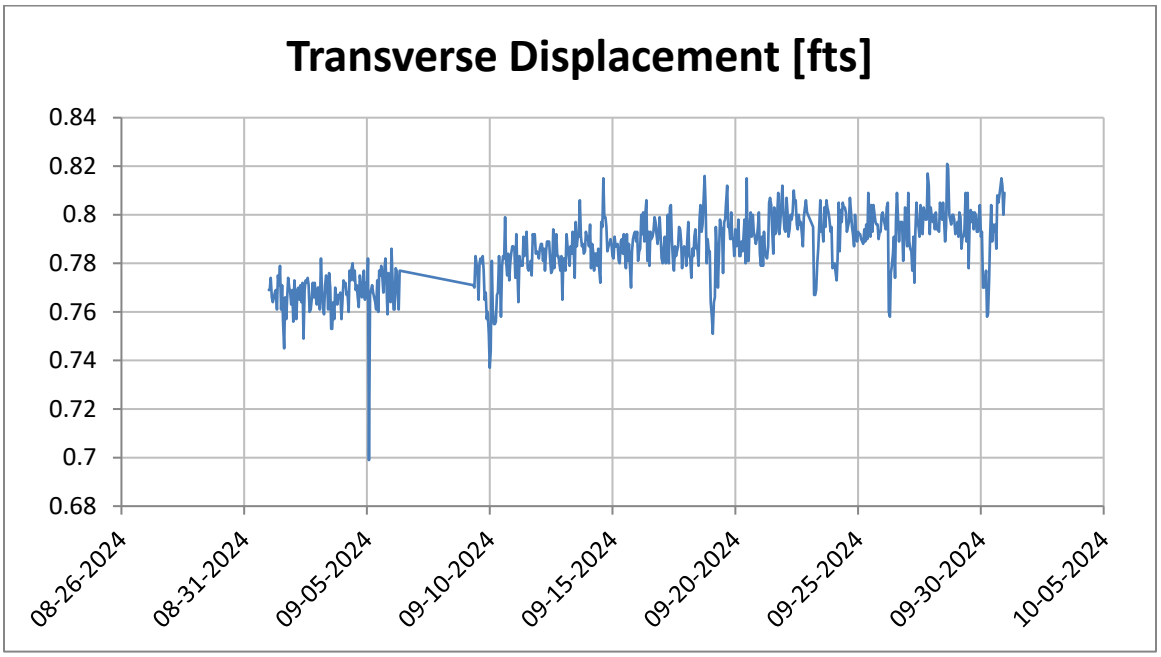


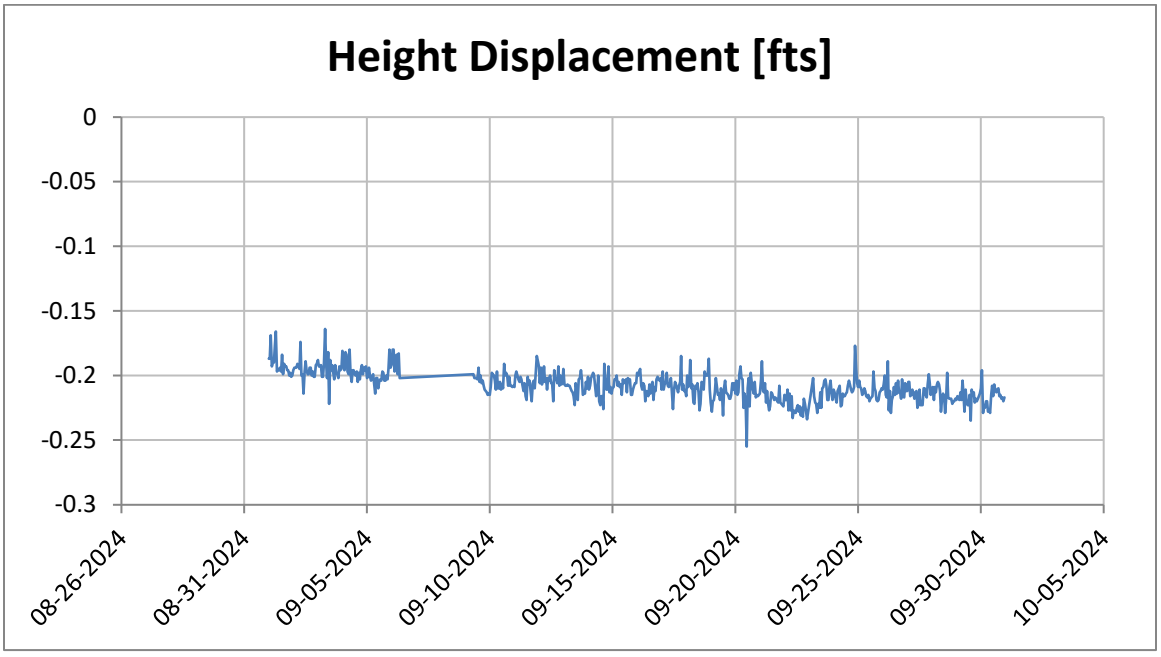
Notes:

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.

Stantec

Prism B7400-5



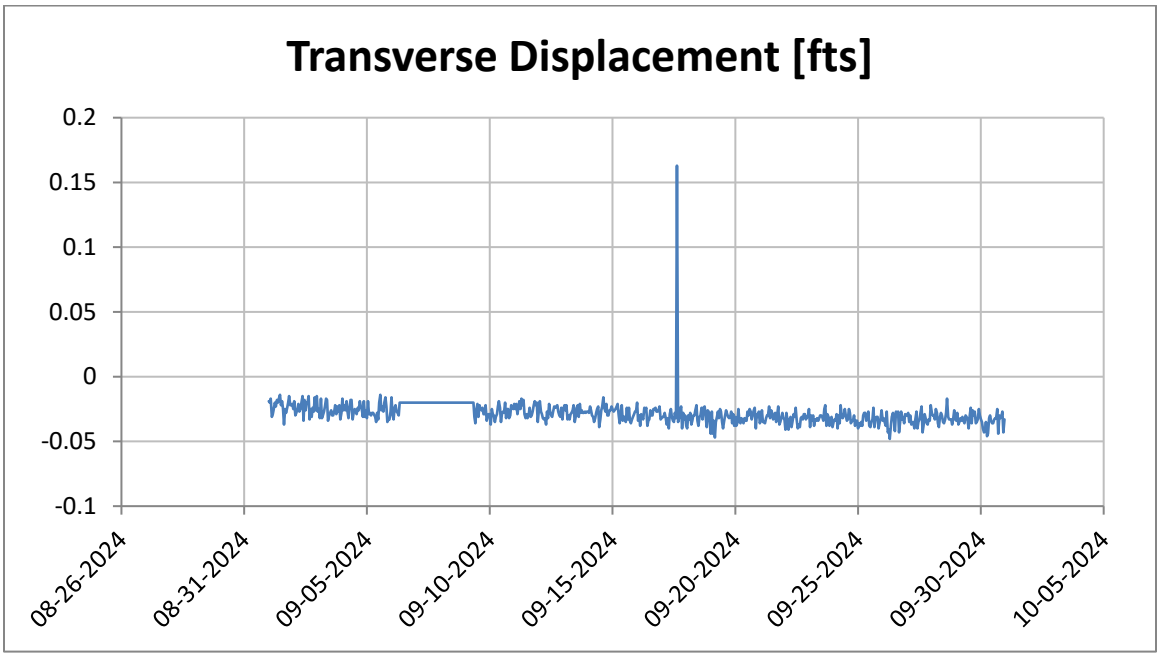


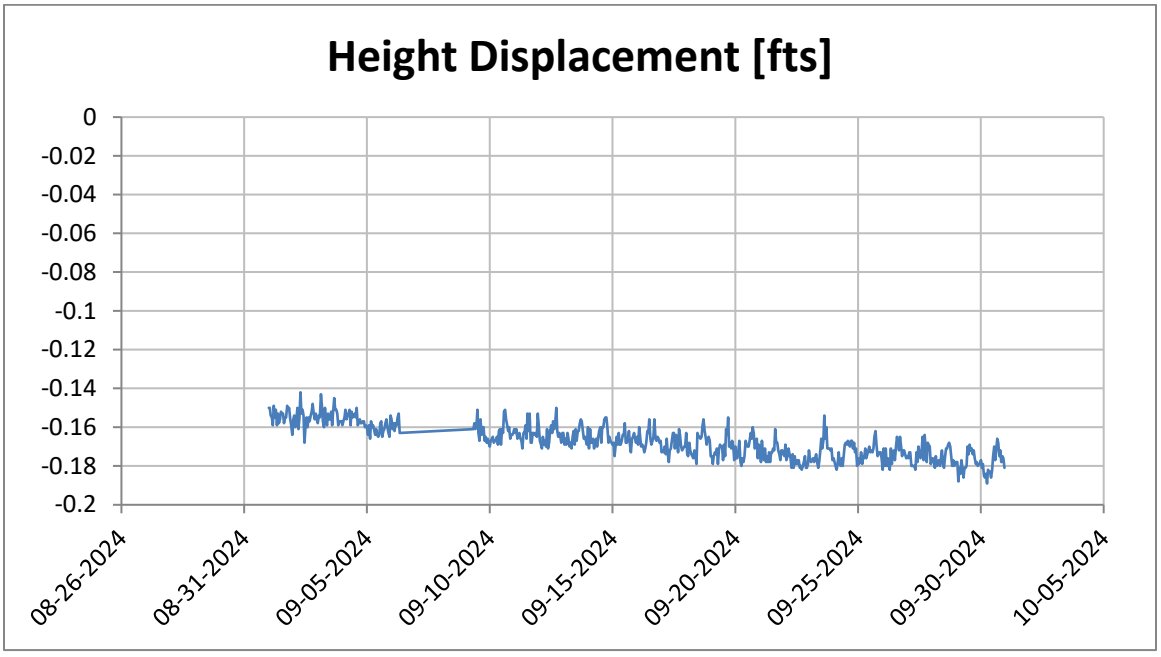
Notes:

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.

Stantec

B7500-1



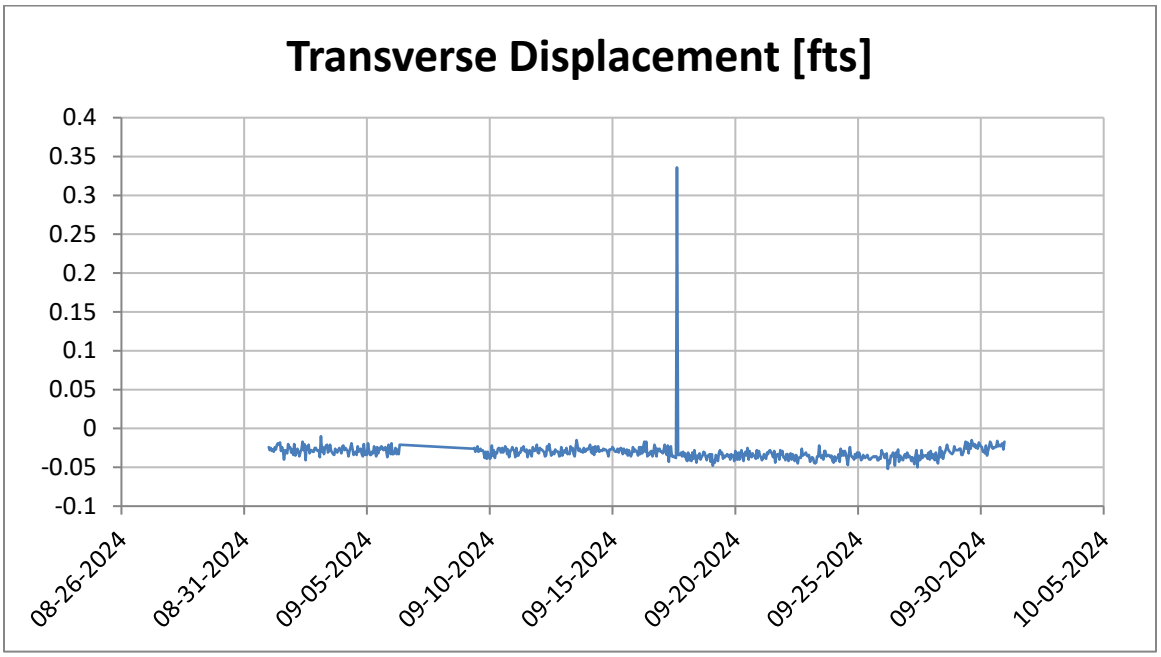


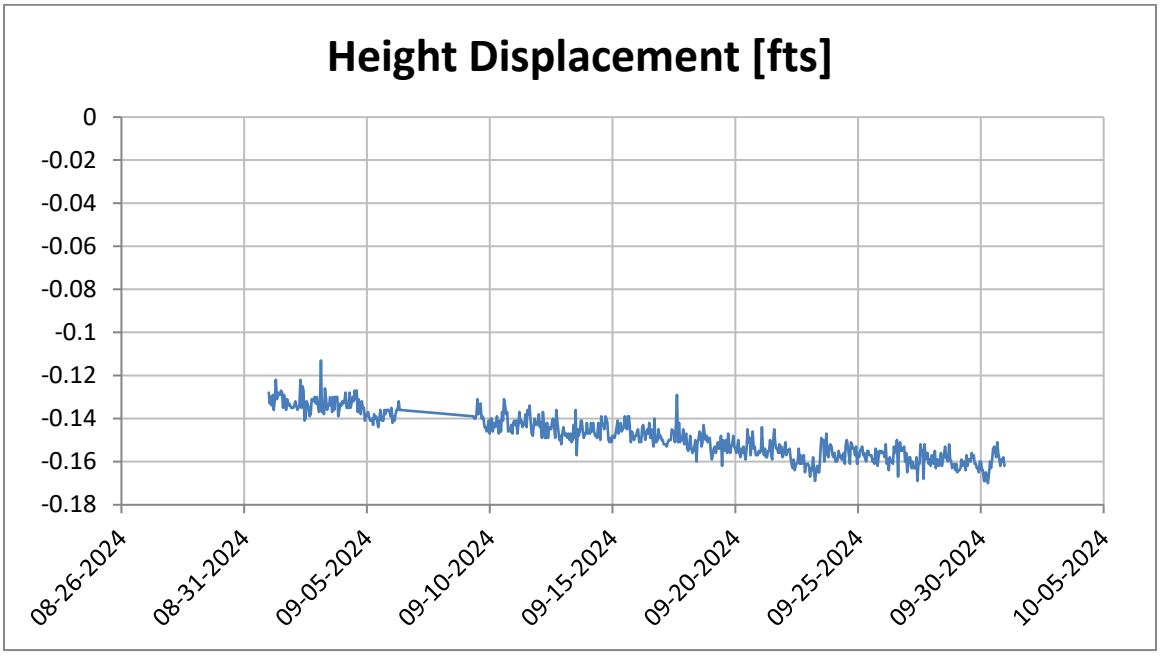
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

B7500-2



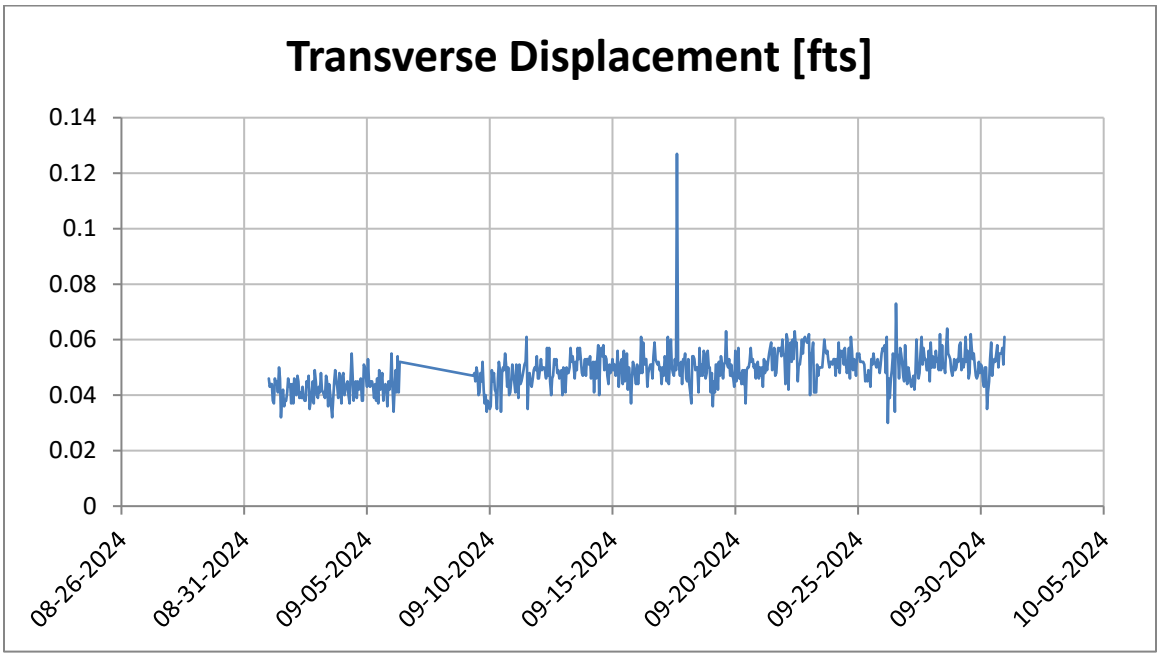


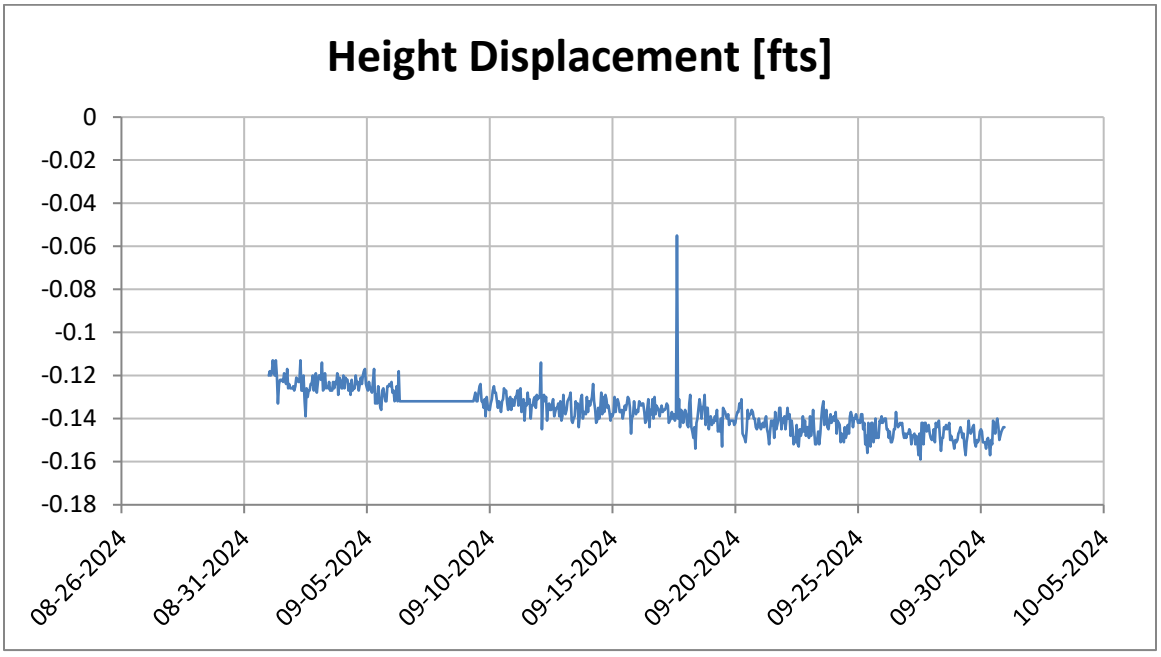
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

B7500-3



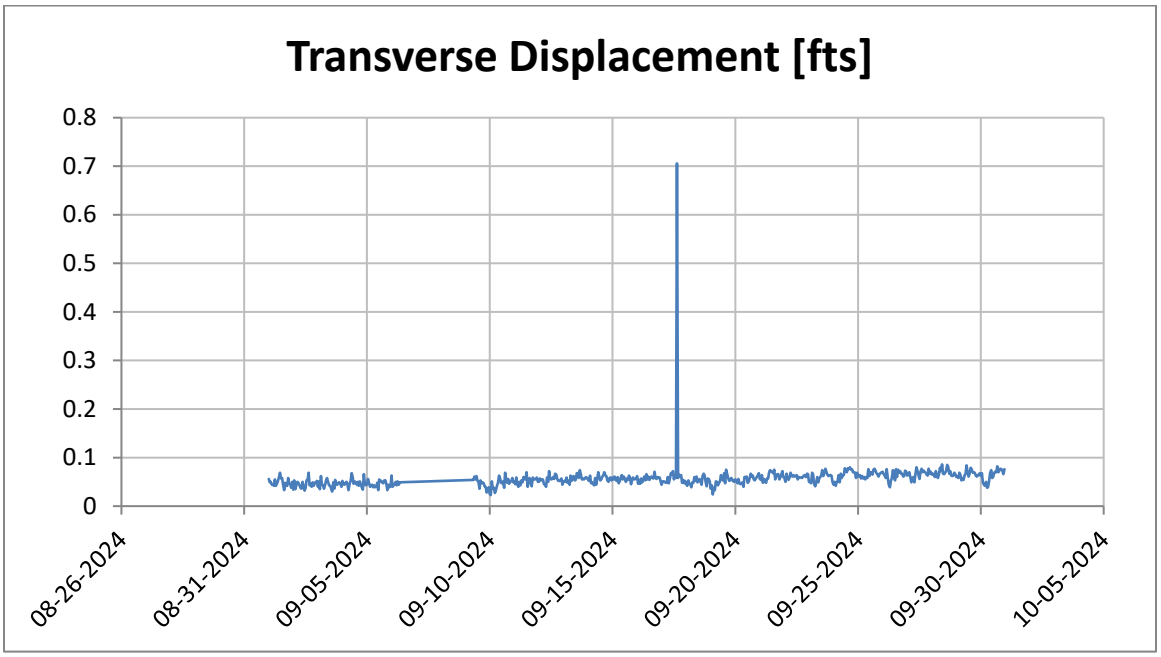


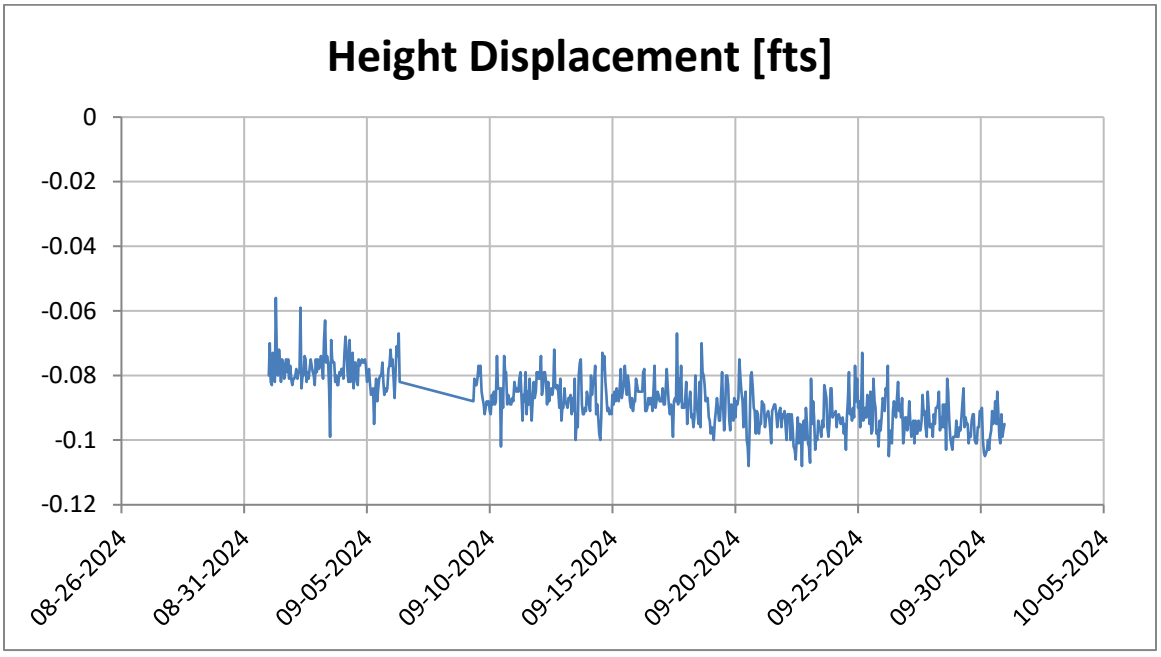
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

B7500-4



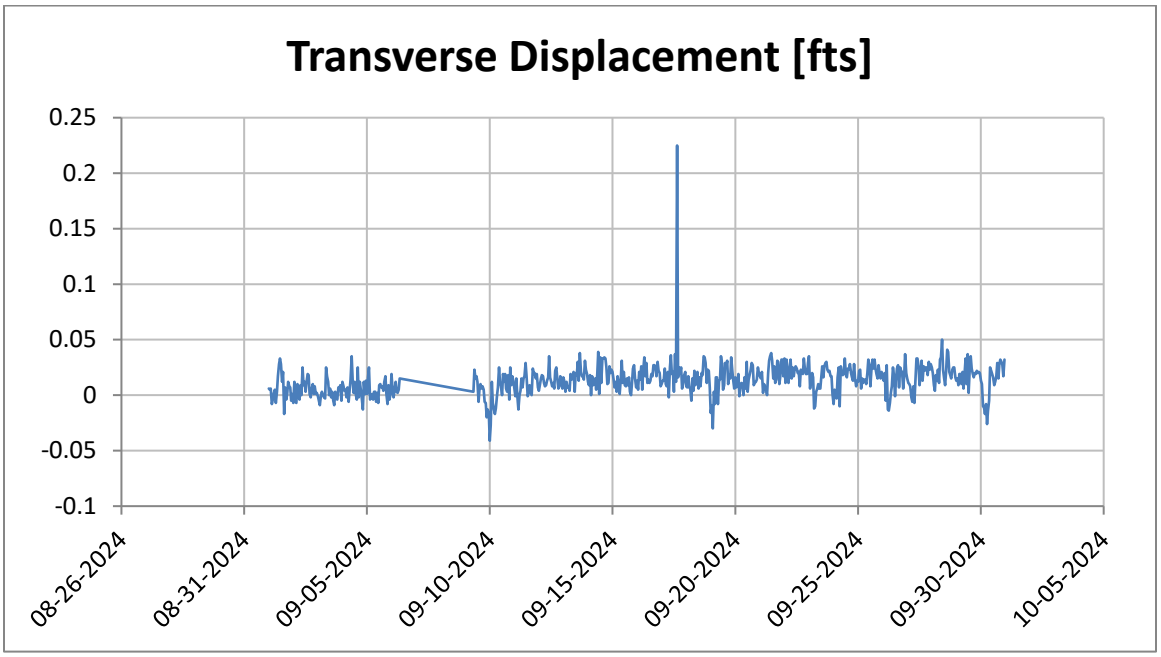


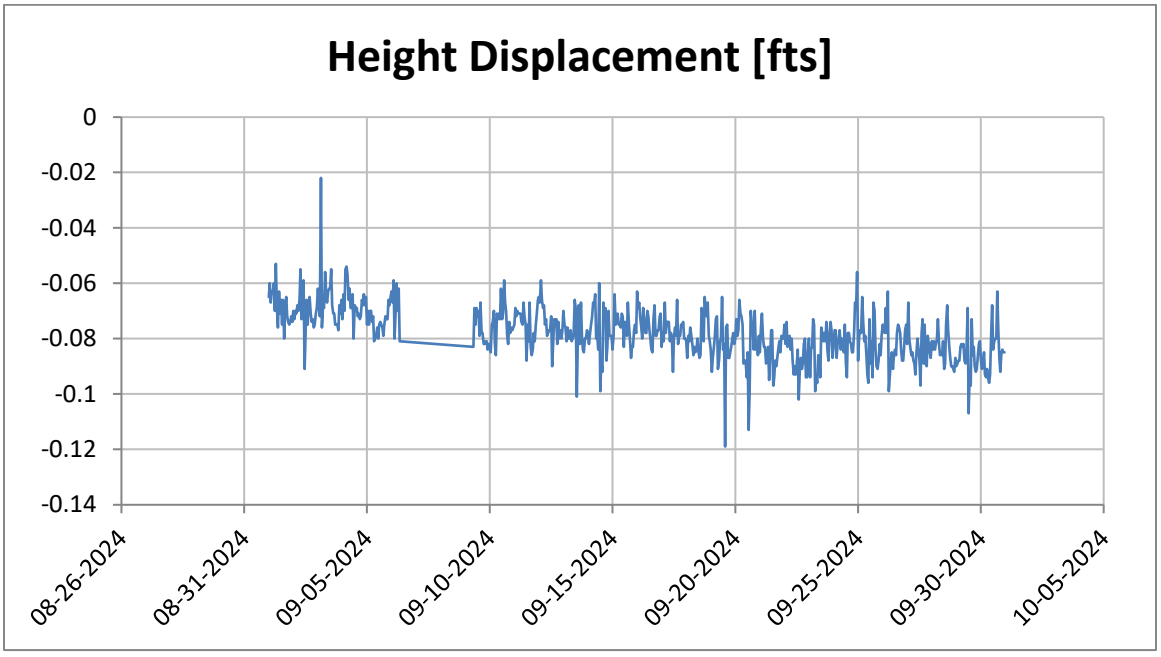
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

B7500-5



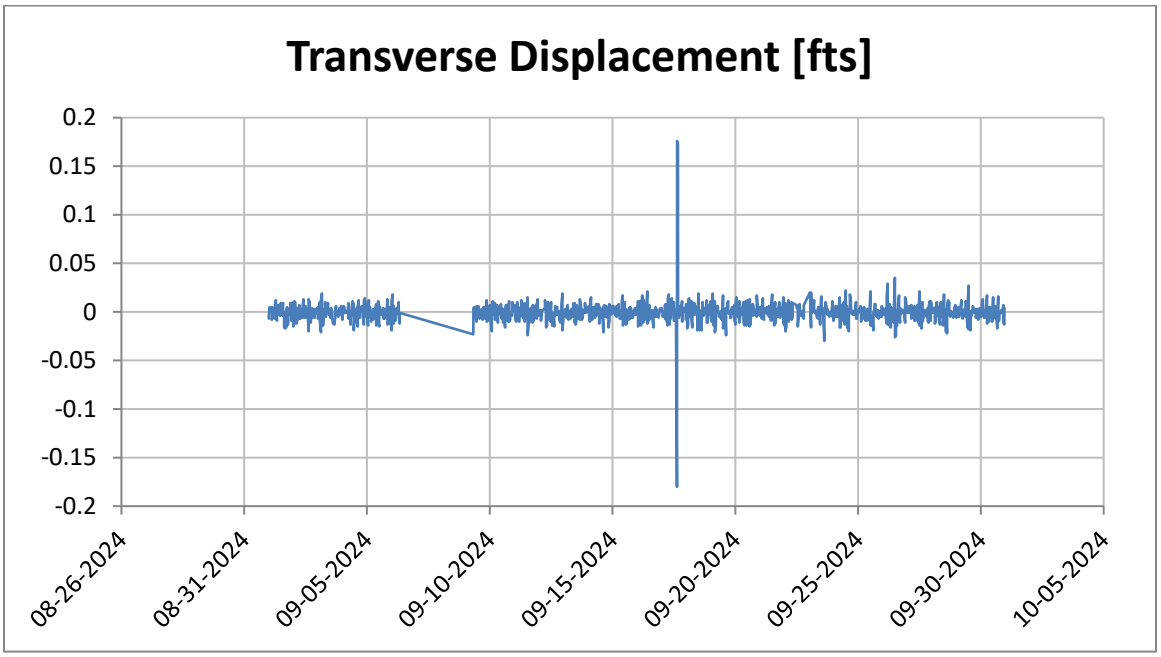


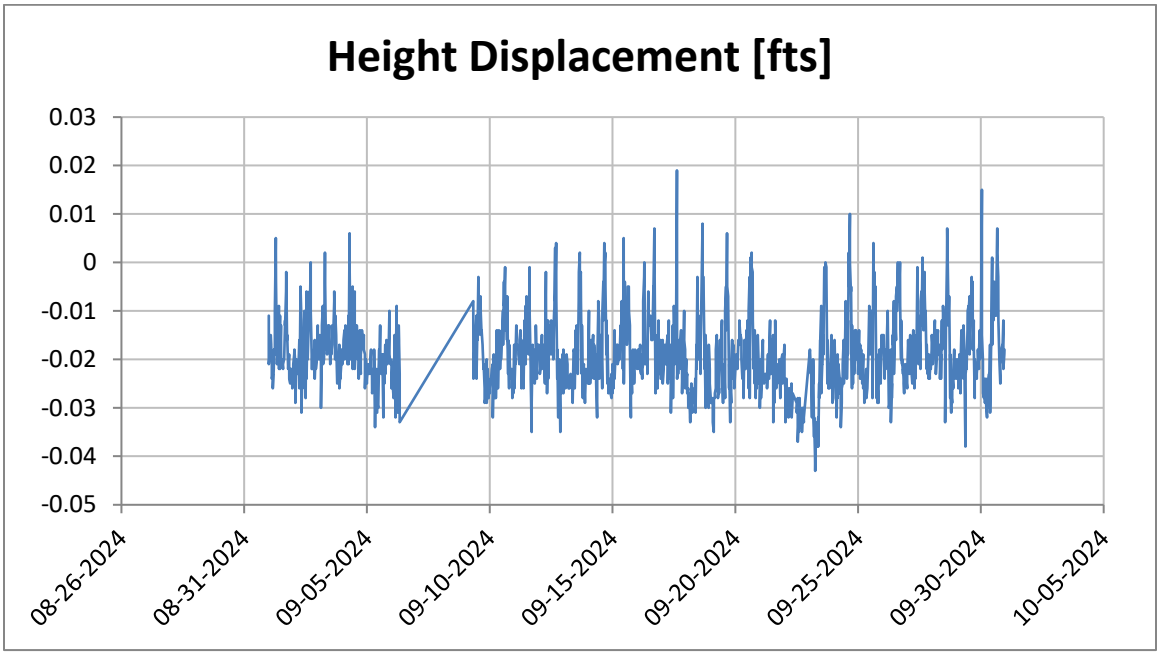
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism CP6



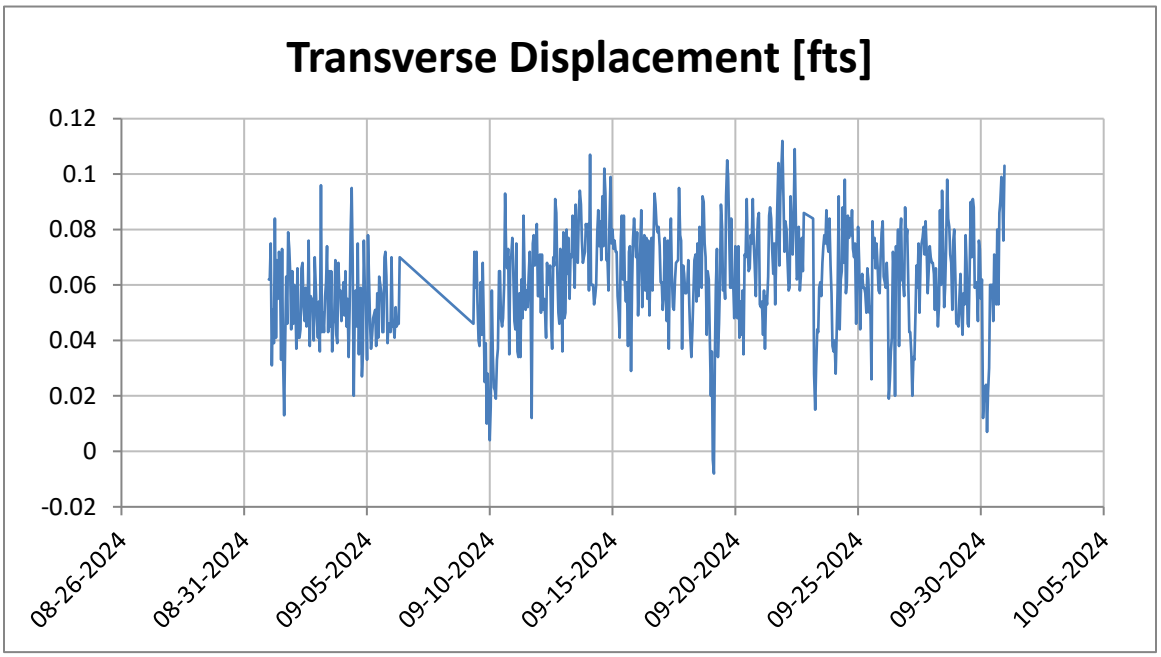


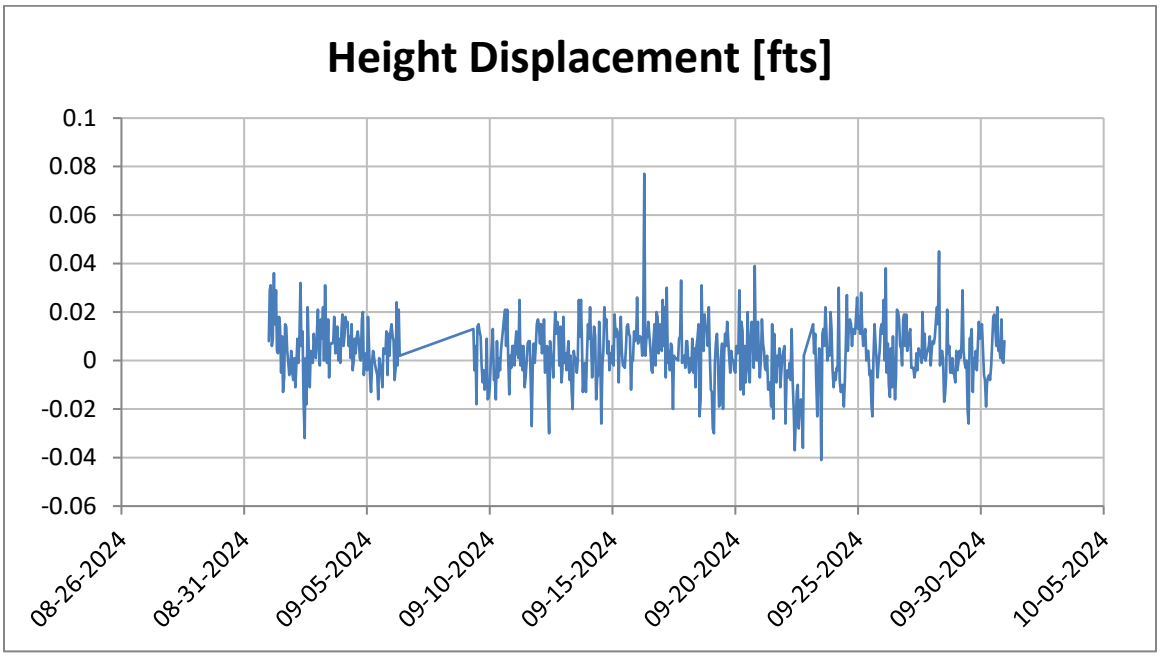
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism CP7



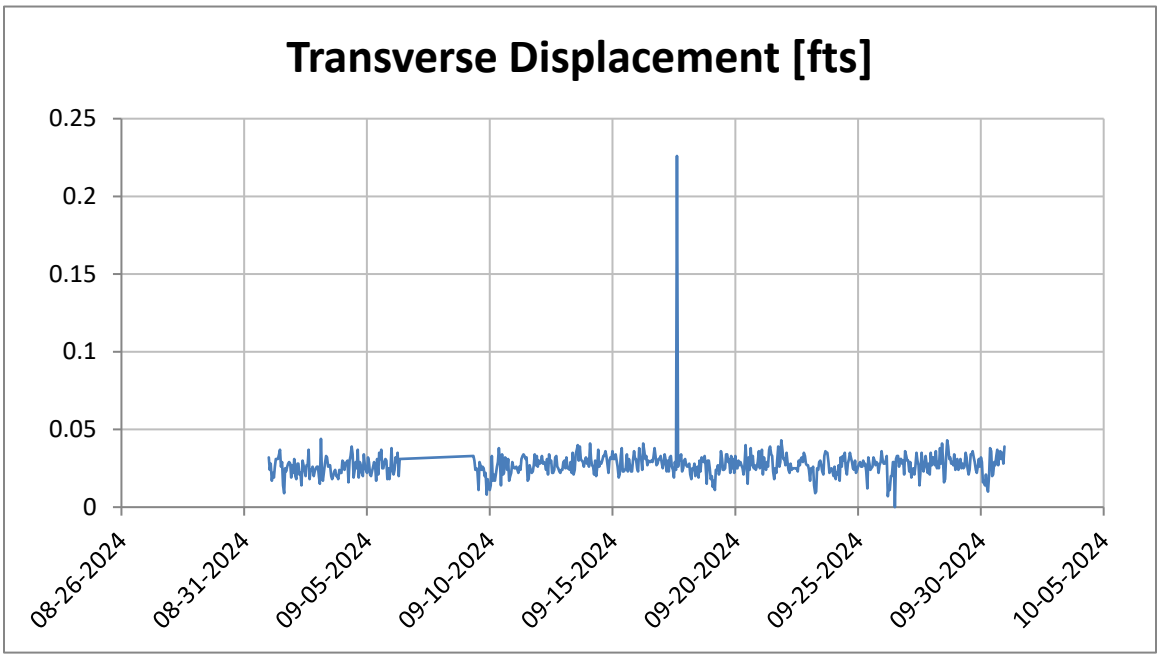


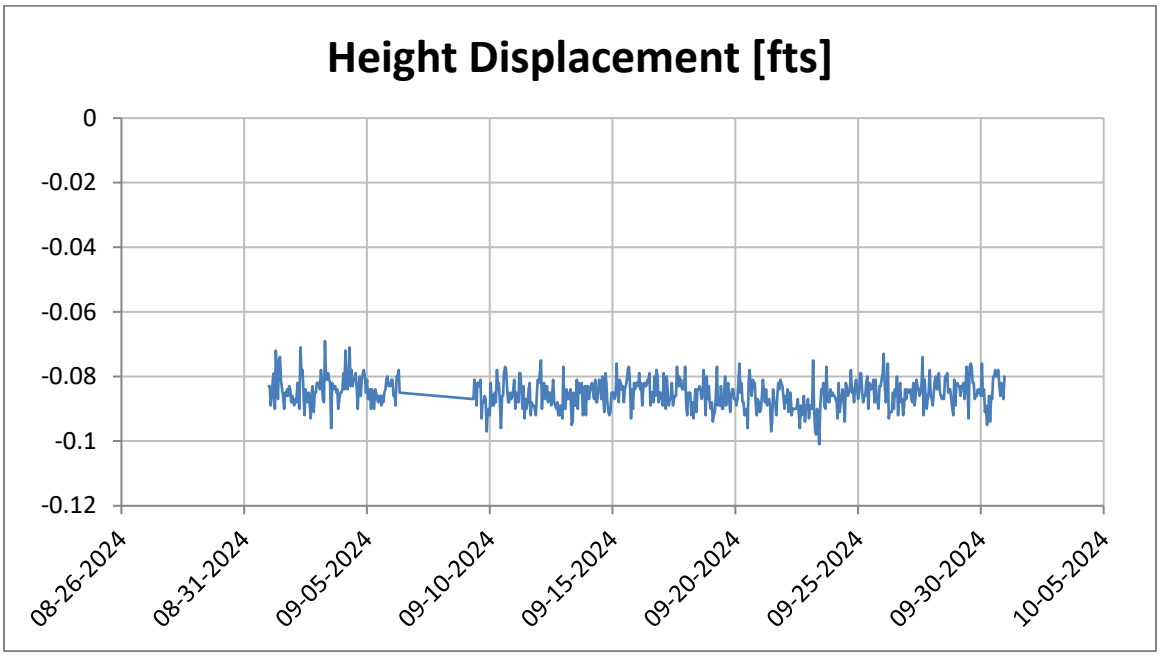
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism NP4



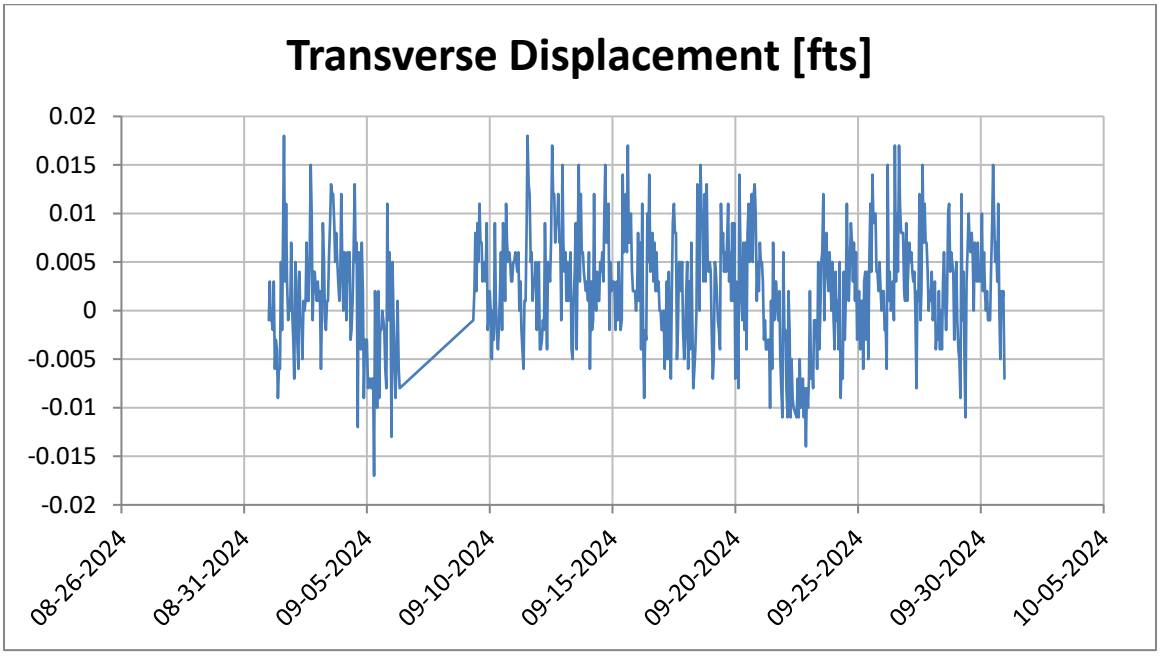


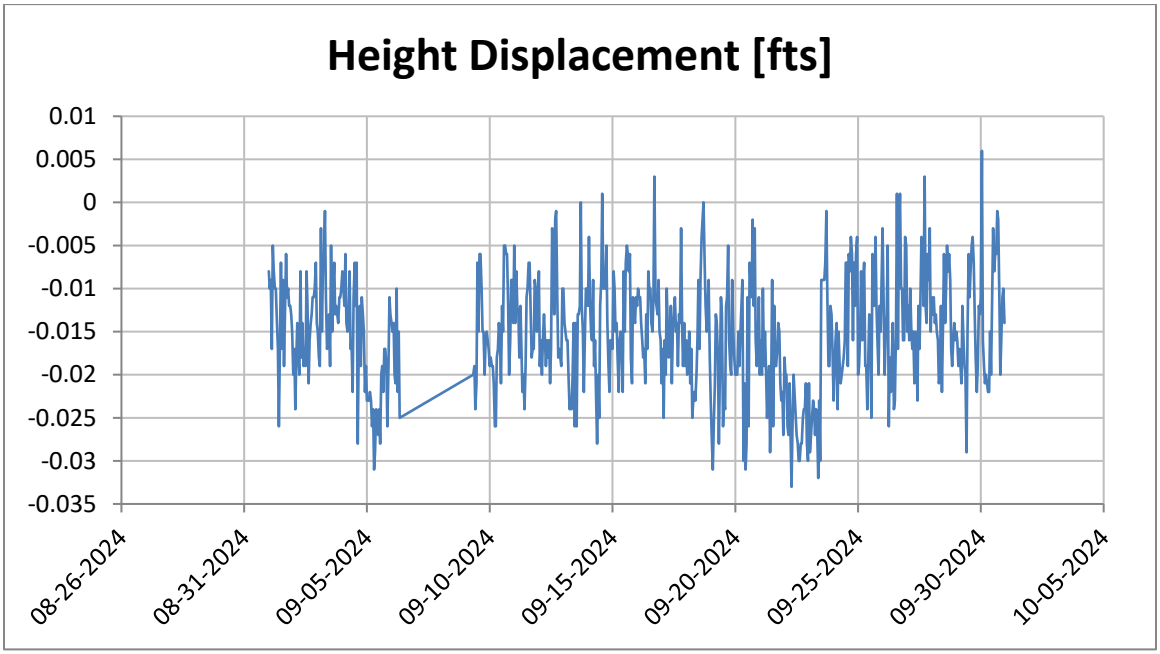
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism P2



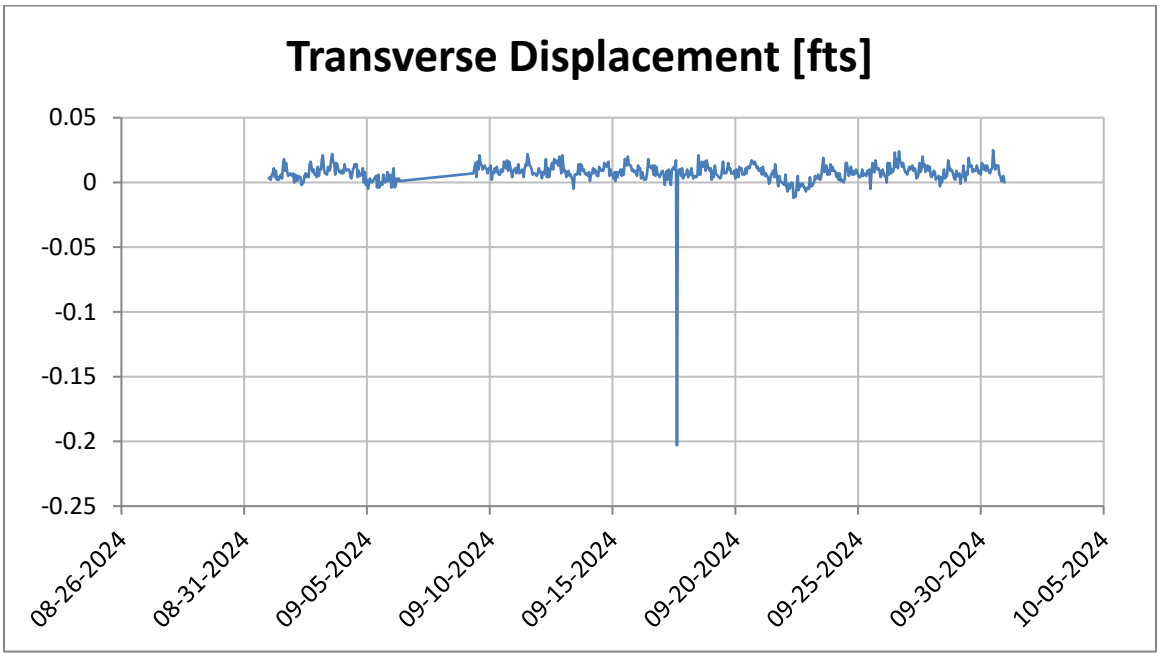


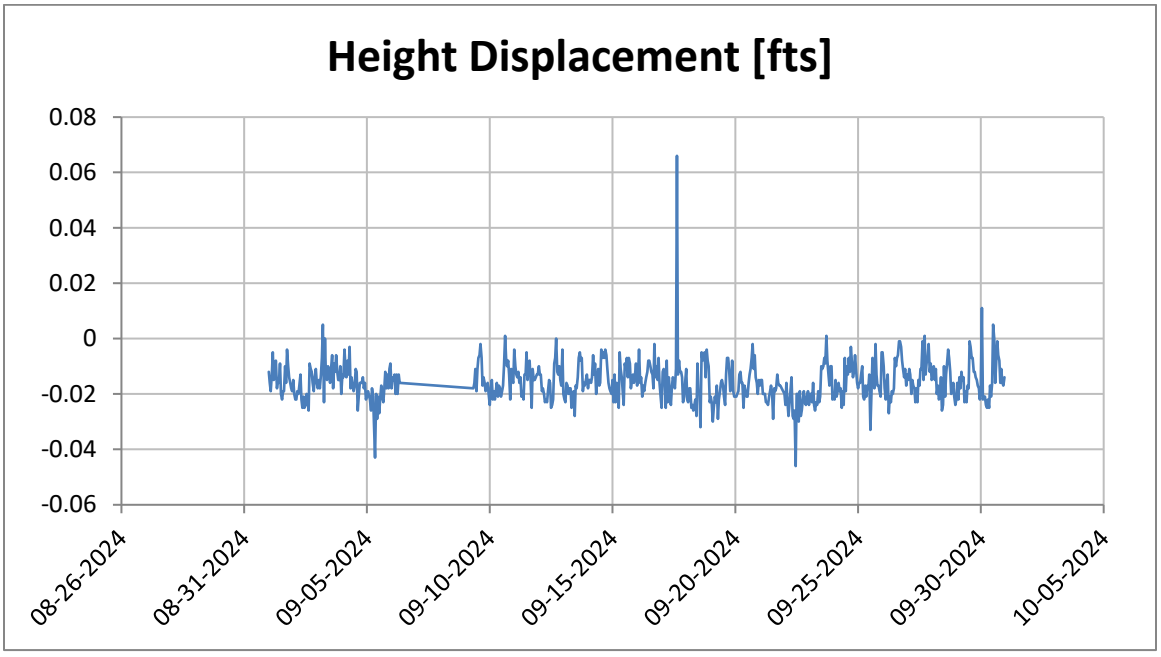
Notes:

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.

Stantec

Prism P5



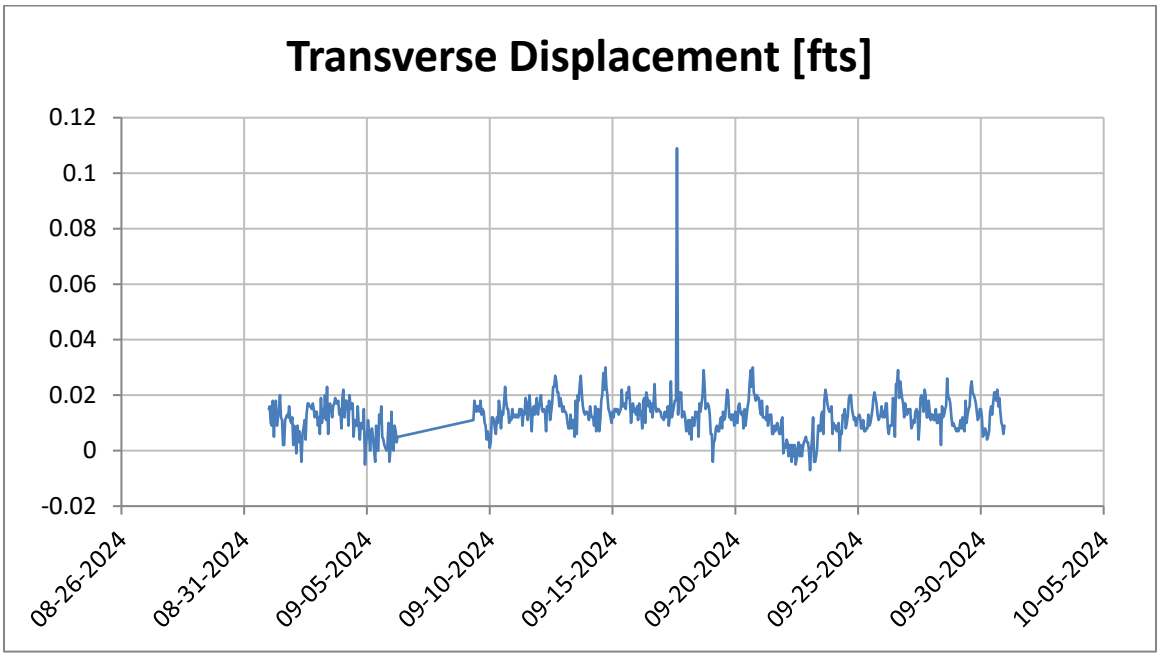


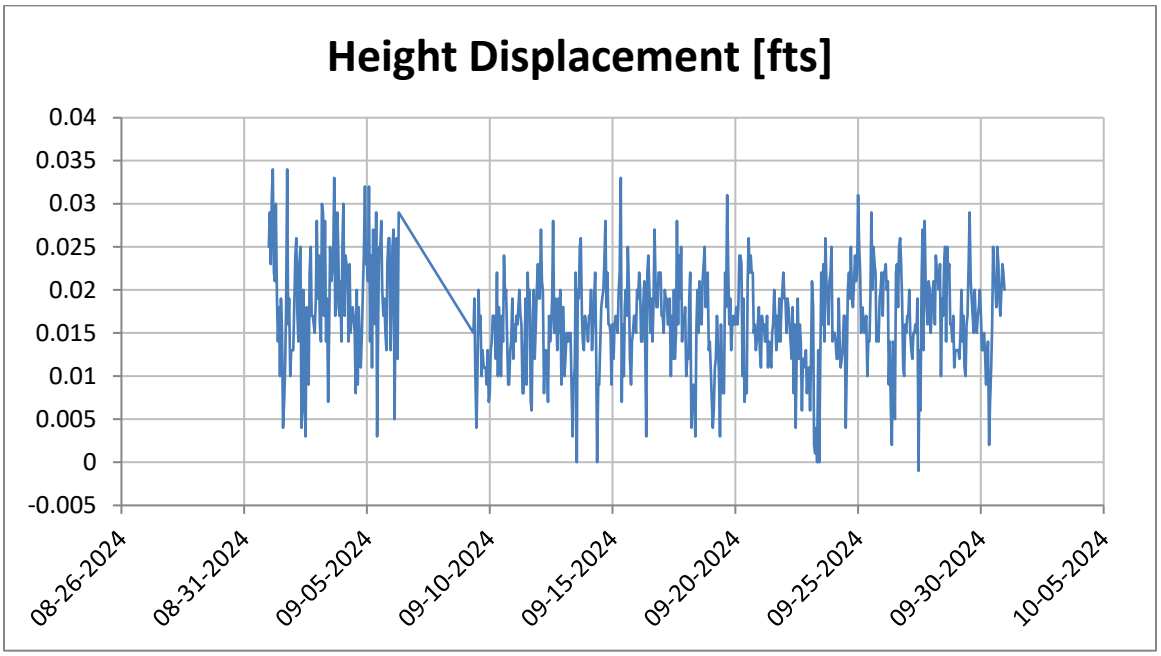
Notes:

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. Regression limit alert received on September 17.
6. Rain and fog caused erroneous data on September 17.

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. Regression limit alert received on September 17.
6. Rain and fog caused erroneous data on September 17.

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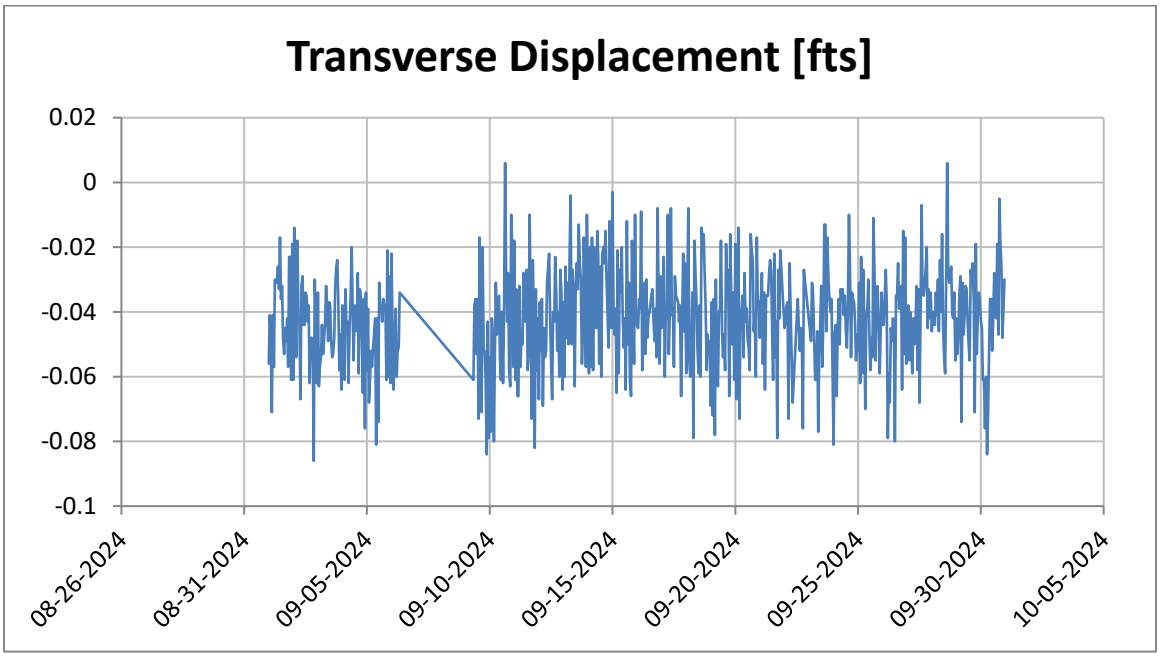
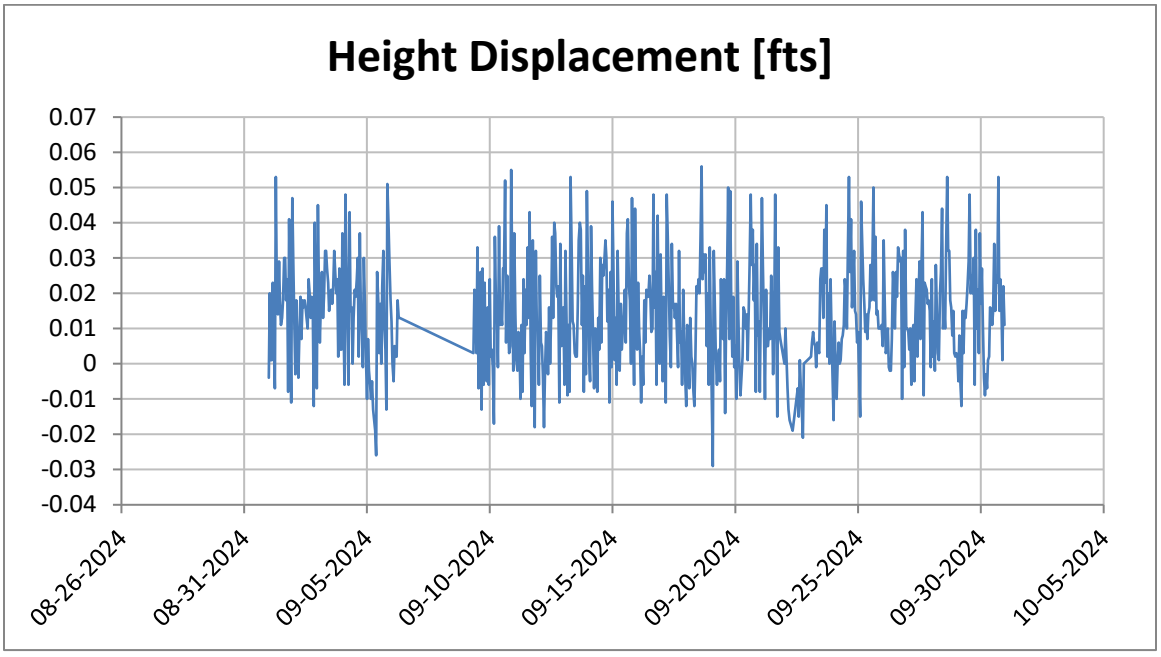
Stantec

Prism P32R



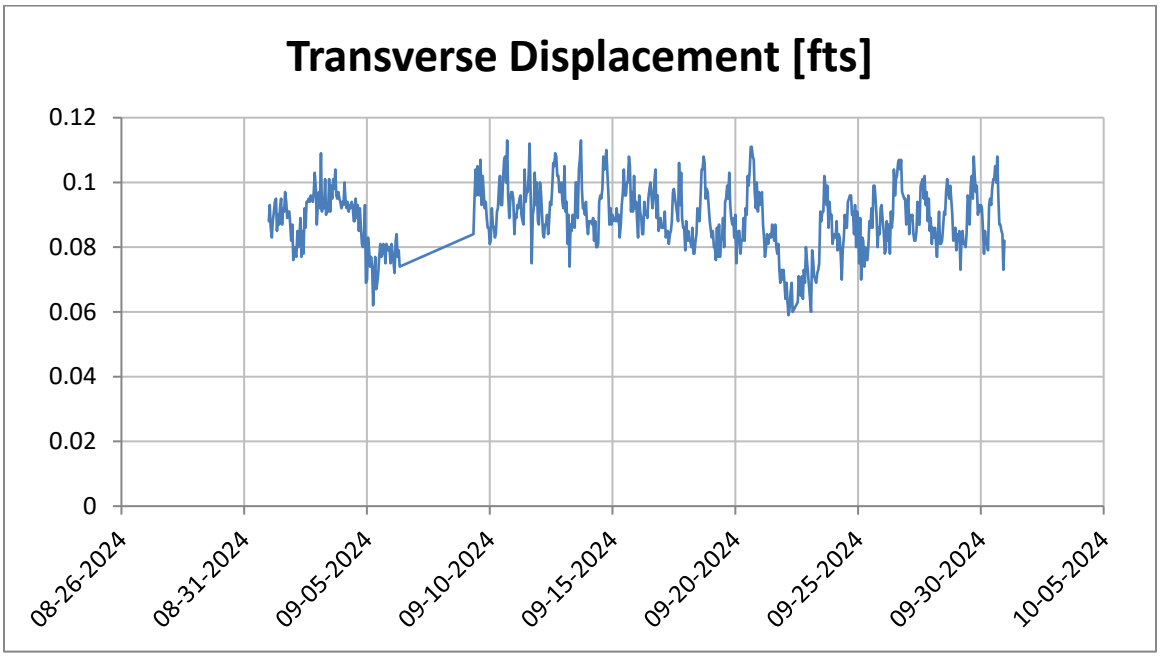


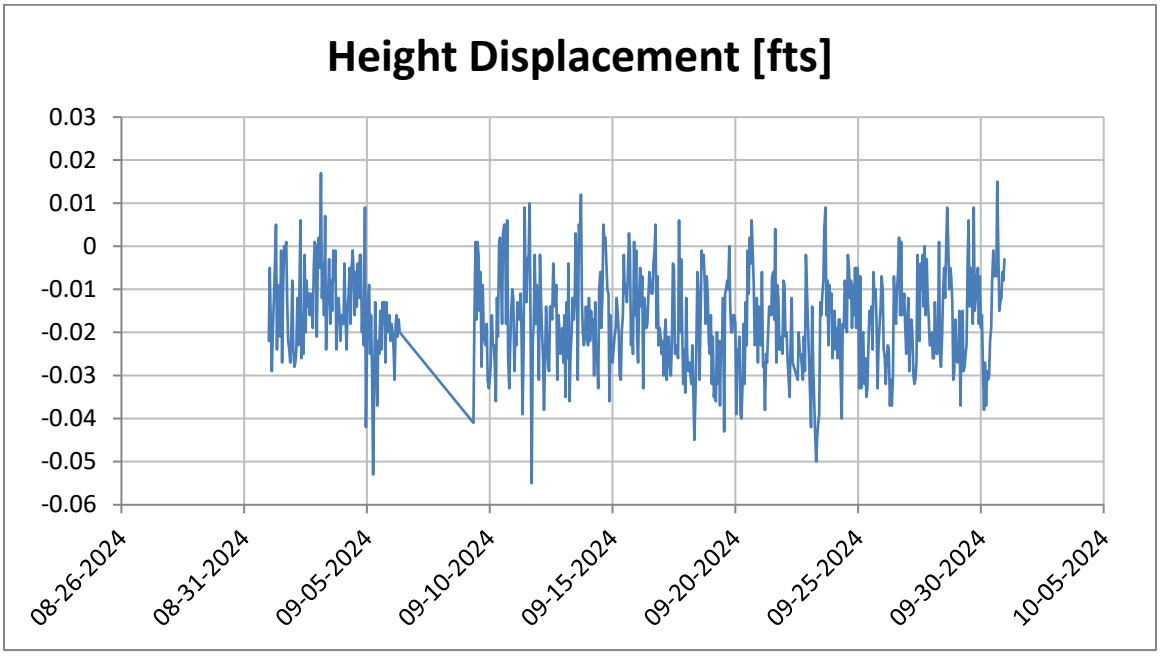
Notes:

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.

Stantec

Prism P33



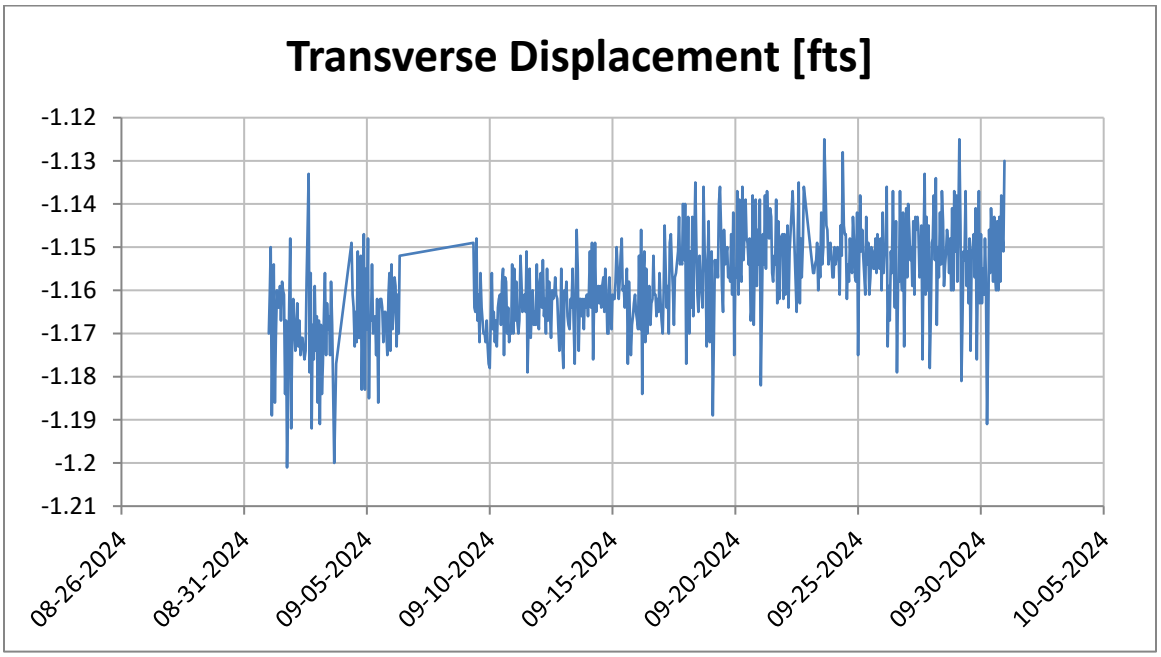


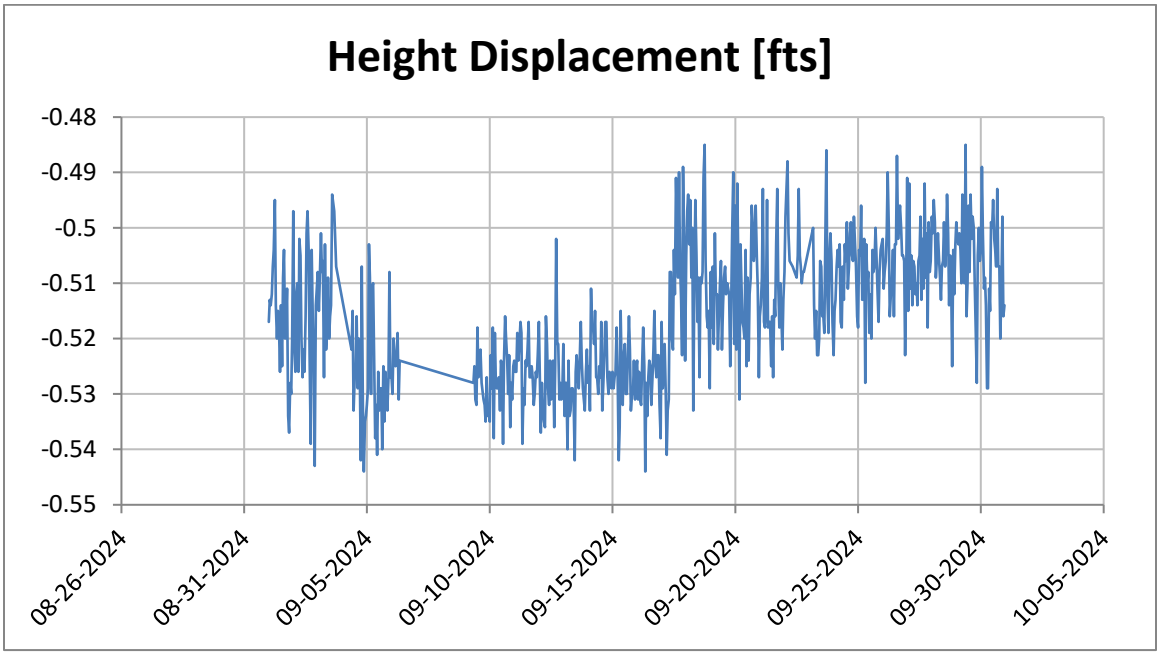
Notes:

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.

Stantec

Prism P70R



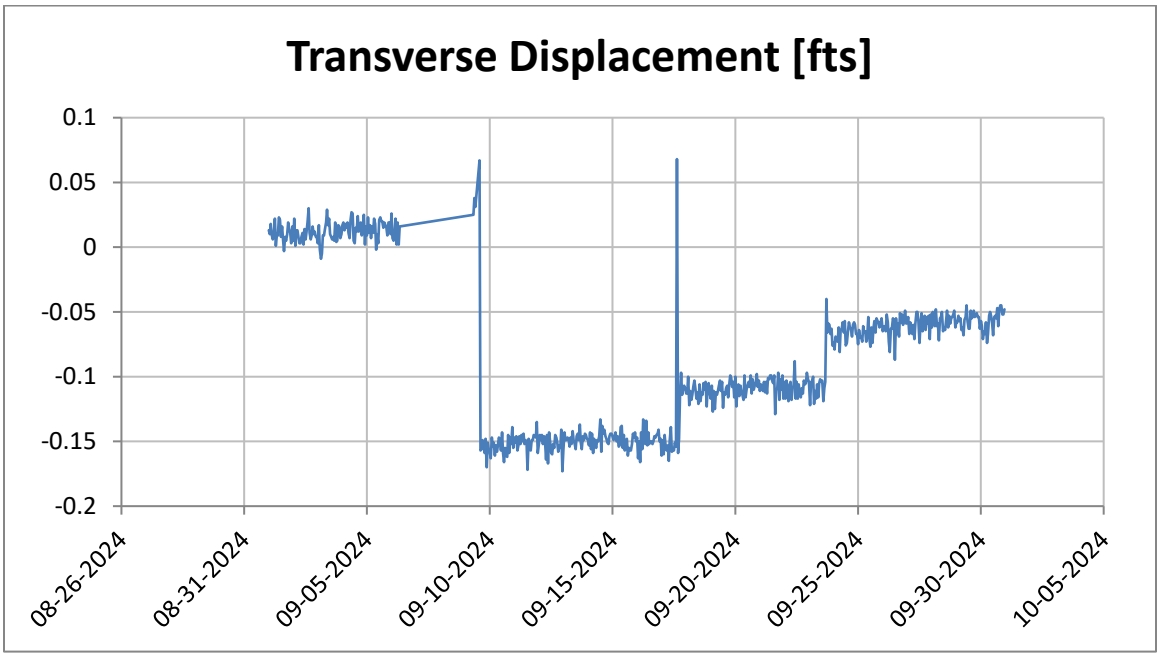


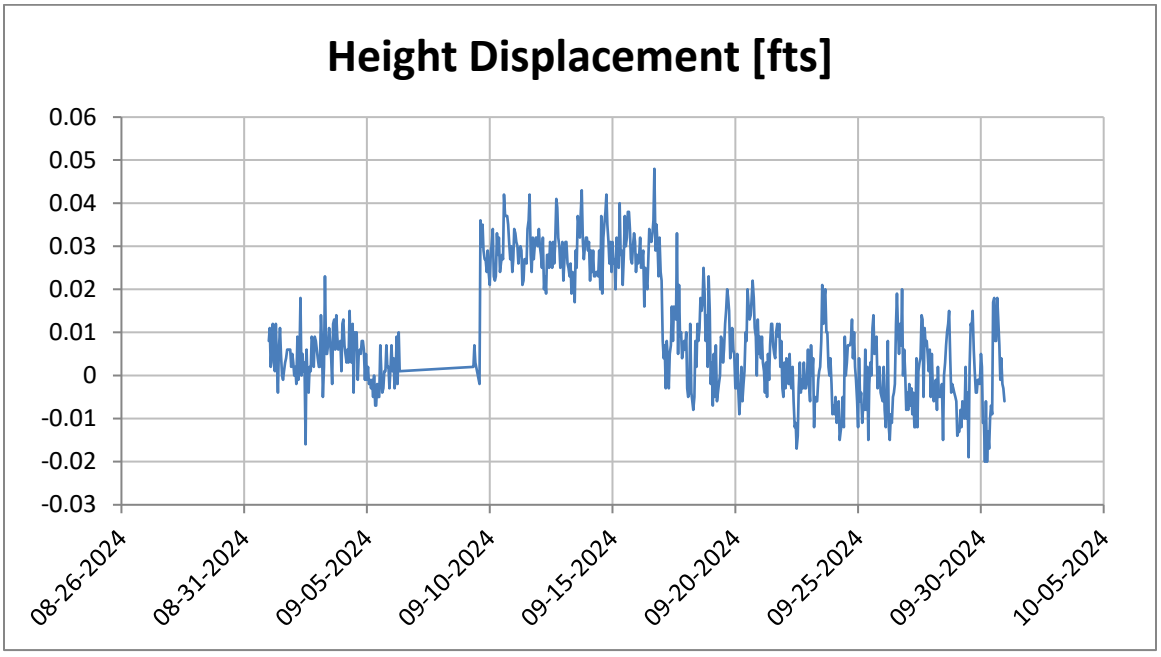
Notes:

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. Regression limit alert received on September 17.

Stantec

Prism B7700-1



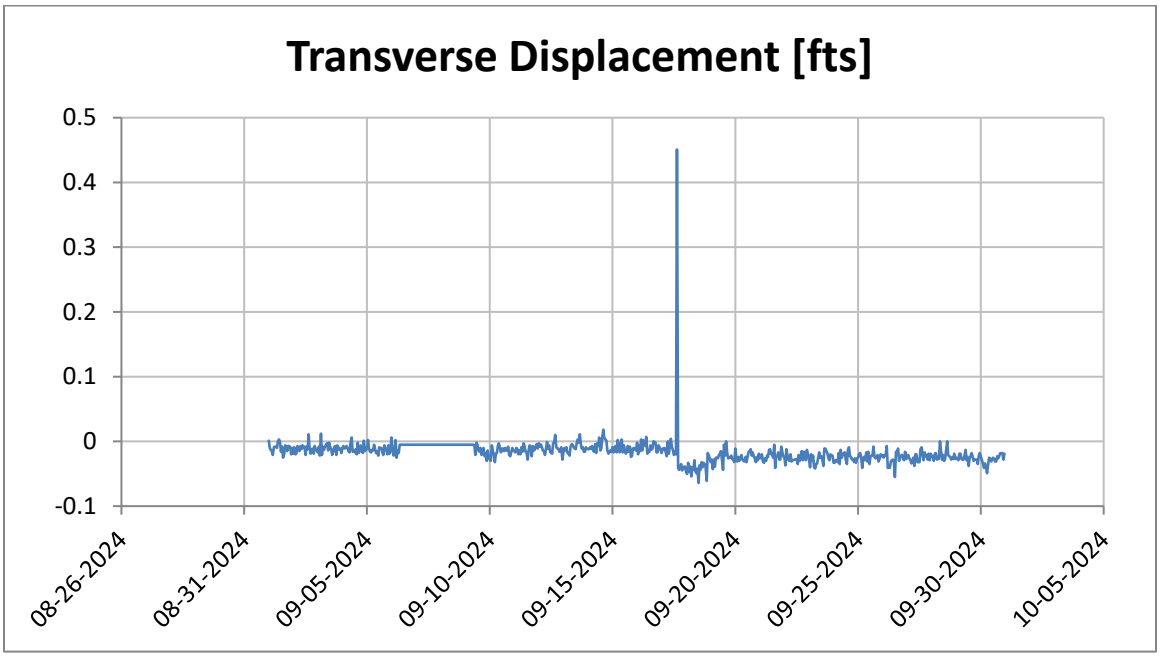


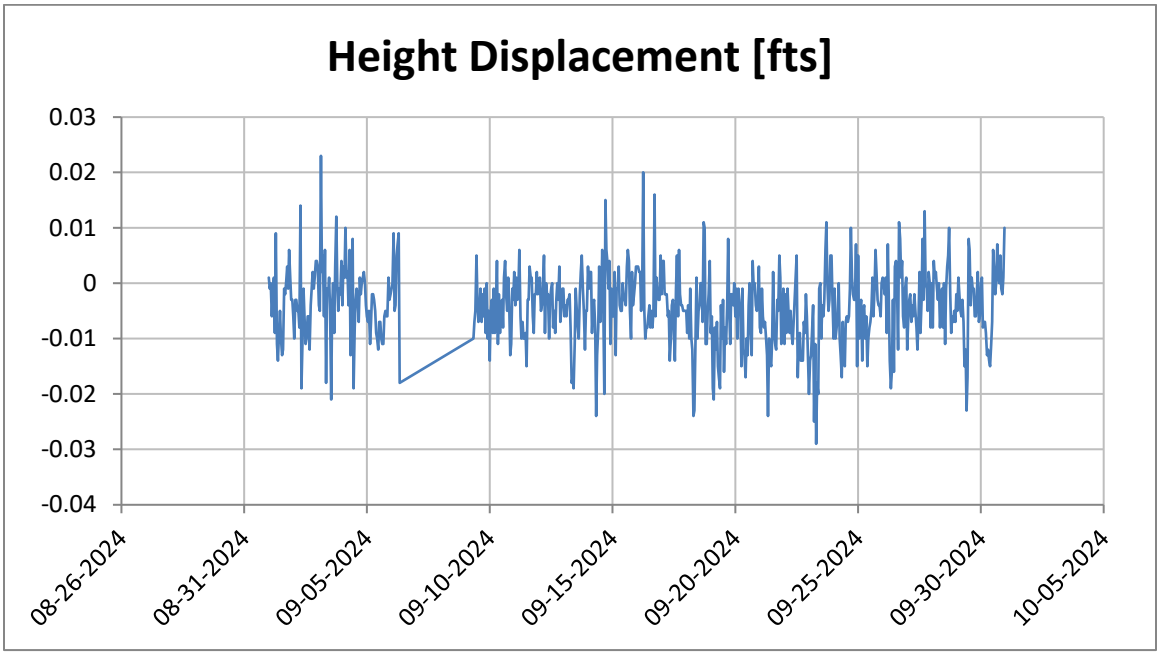
Notes:

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. Prism was impacted by construction workers on September 9 and then realigned.
6. Rain and fog caused erroneous data on September 17.

Stantec

Prism B7700-2



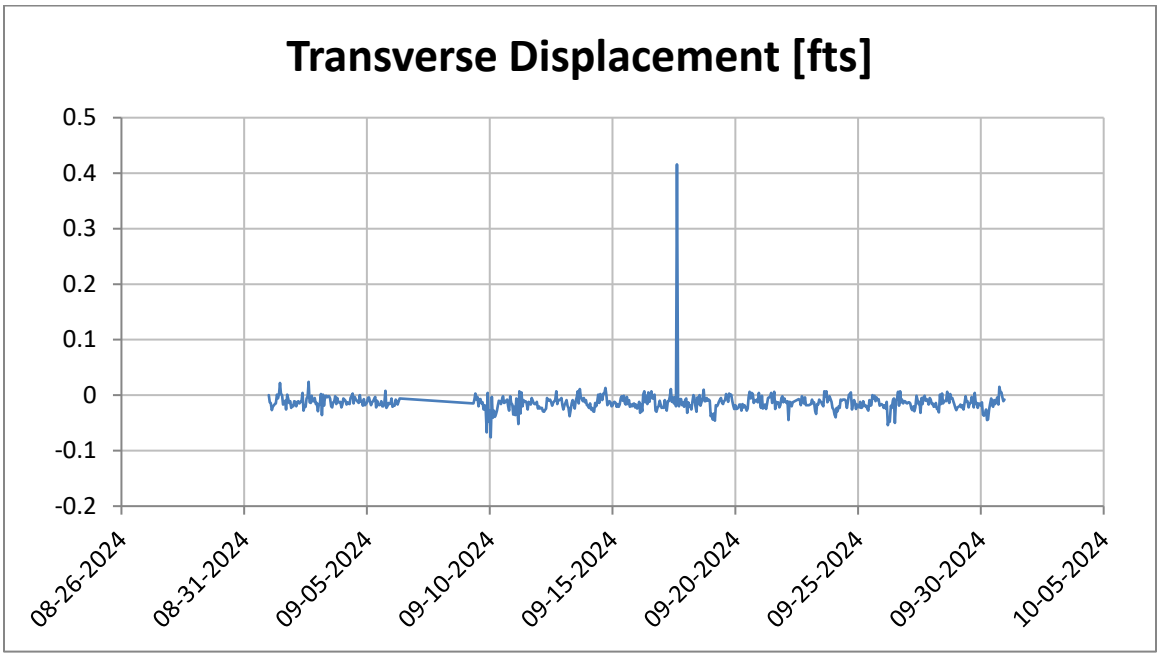


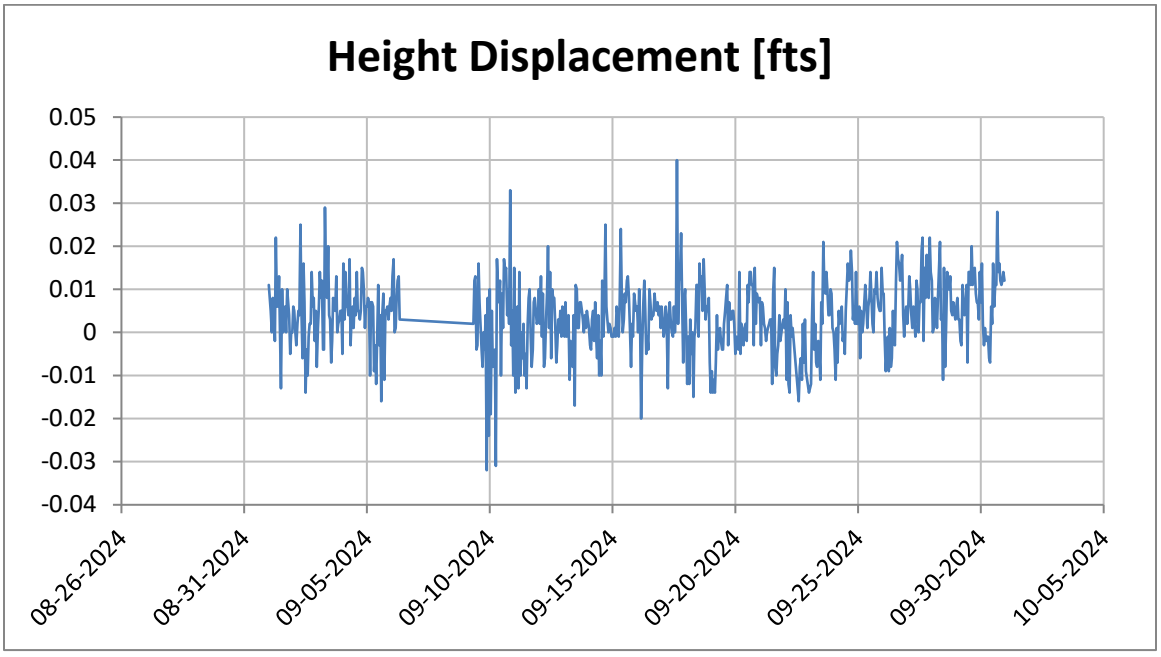
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism B7700-3U



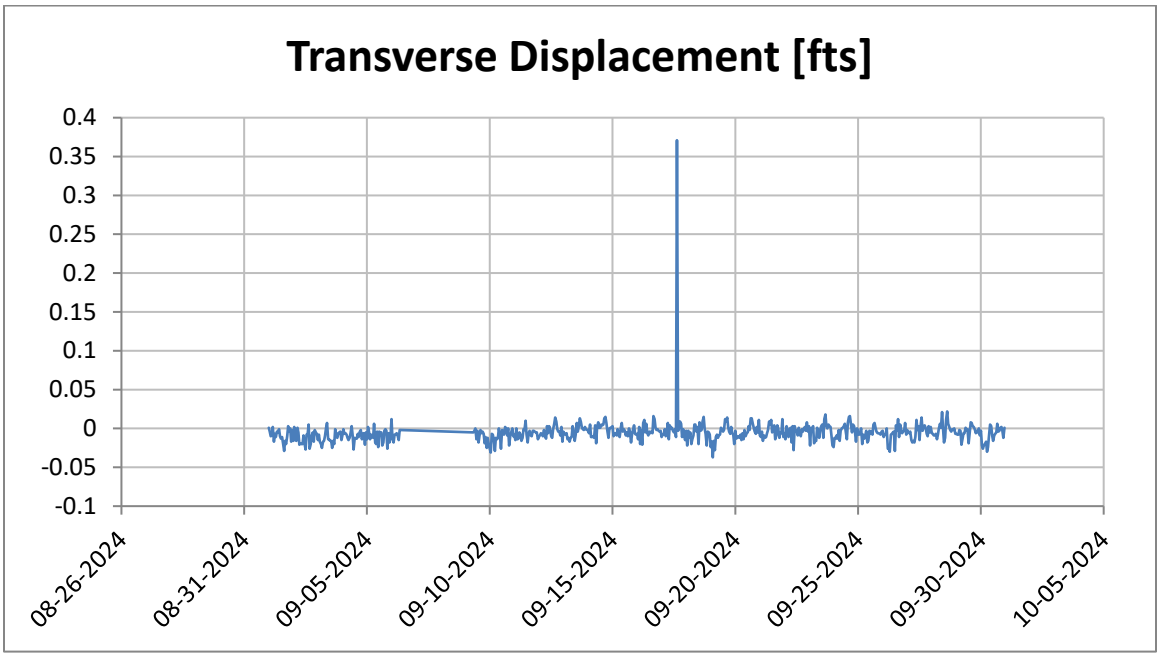


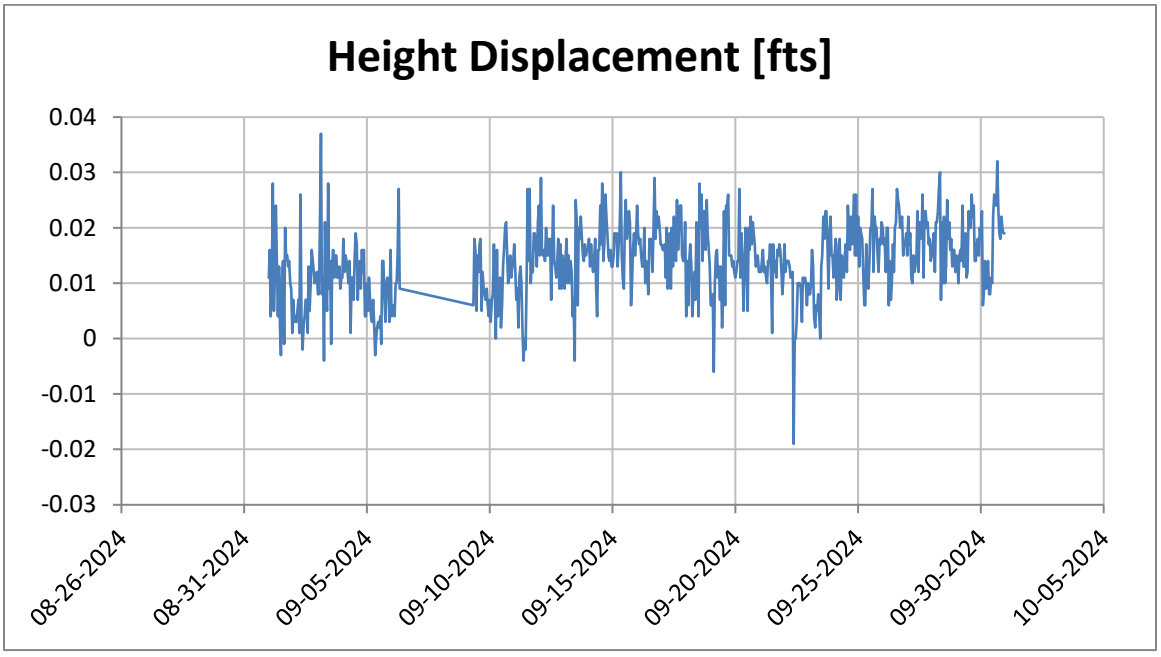
Notes:

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. Rain and fog caused erroneous data on September 17.

Stantec

Prism B7700-3L





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. Rain and fog caused erroneous data on September 17.

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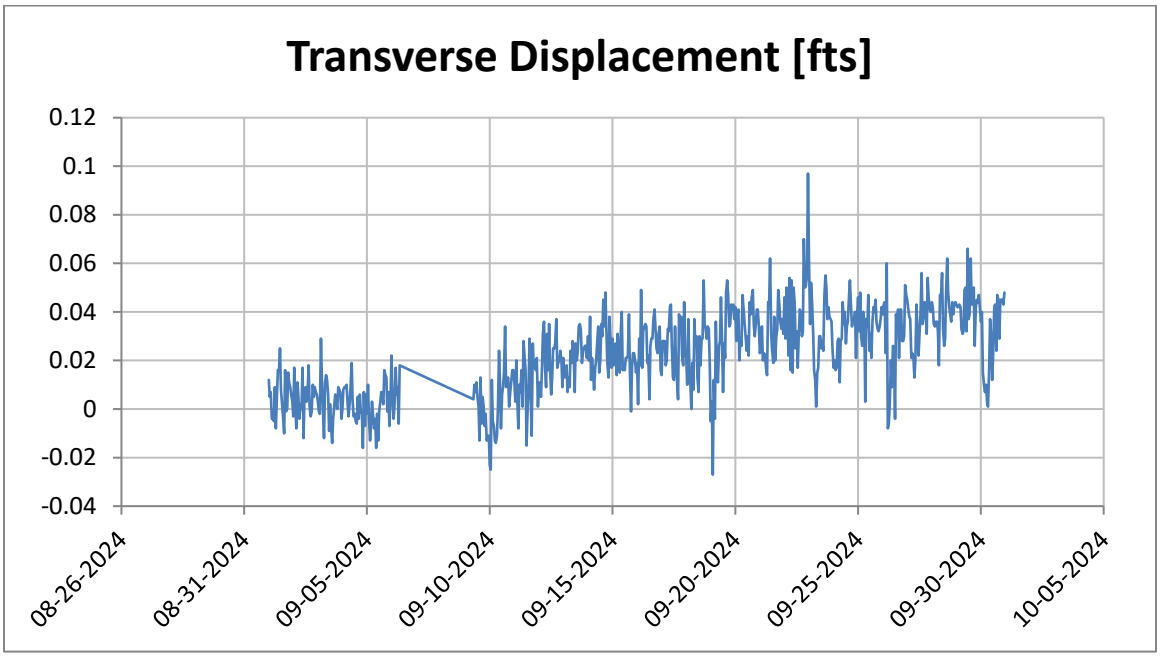
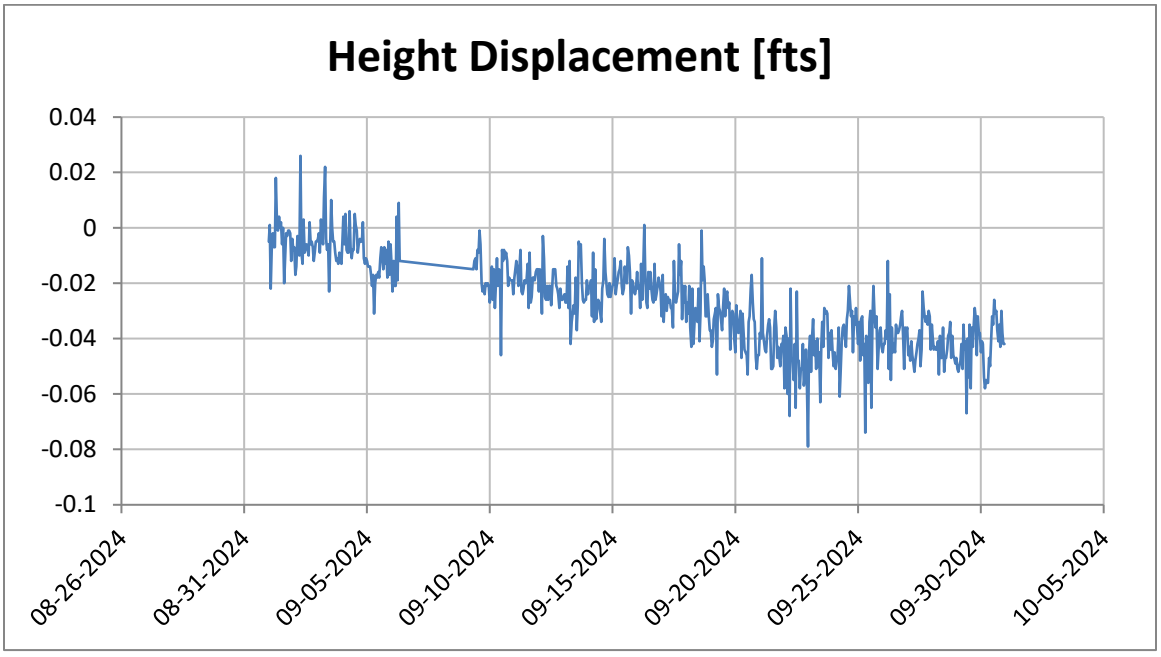
Prism B7600-5





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Appendix C

Drone Survey

u:\2057288200\06_design\monitoring\2024-09\dwg\pikeview ptsms_20241011

2024.10.22 7:55:57 PM

Stantec

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Denver CO 80202-4427
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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 08/01/2024 TO 09/30/2024

Client/Project
CASTLE AGGREGATE

PIKEVIEW QUARRY SLOPE MONITORING

Project No.
2057288200

Title
COMPARISON OF RECENT AND PREVIOUS SURVEYS

Revision	Date
#	2024.10.31
Drawn By	Figure No.
PK	4