

To:	Jerald Schnabel	From:	Paul Kos
	Castle Aggregate		Denver, CO 80202
File:	August 2024 Monitoring Summary	Date:	September 24, 2024

#### Reference: August 2024 Geotechnical Monitoring Summary Pikeview Quarry

## **1.0 INTRODUCTION**

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

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

#### Table 1 Monitoring Frequency

# Stantec

# 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 August 29, 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.

- Site maintenance, topsoil placement and riprap production continued throughout the month.
- No cracking was observed on the native granite slopes above the extents of the disturbed area.
- No cracking was observed on the slope south of the southern scarp.
- Topsoil was placed on areas at final grade.
- 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 33 prisms active in August; 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. As the slope was backfilled and graded, additional prisms were installed. Five prisms were installed in August; no additional prism installations are planned. A log of prism removals and installations is included in Appendix B. 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 erroneous readings and regression limit alerts on two occasions during August. The alerts are listed in Table 2.



### Table 2 Prism Alert Summary

Date(s)	Alert	Cause/Actions taken	
4-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	
4-Aug	B7500-3 not found	Single event. No work being performed at time of alert.	5-Aug
5-Aug to 6-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	6-Aug
6-Aug	B7300-4 not found	Prism moved by wildlife. No work being performed at time of alerts.	7-Aug
7-Aug	B7300-4 not found	Prism moved by wildlife. No work being performed at time of alerts.	7-Aug
7-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	7-Aug
8-Aug to 9-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	9-Aug
9-Aug to 10-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	10-Aug
12-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	12-Aug
12-Aug	P2 regression limit	Rain and fog. No work being performed at time of alerts. Readings in positive and negative directions.	12-Aug
12-Aug	P33 regression limits	Rain and fog. No work being performed at time of alerts. Readings in positive and negative directions.	12-Aug
13-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	13-Aug
13-Aug	P32 regression limit	Rain and fog. No work being performed at time of alert. Prism replaced by P32R, and no alerts received for P32R.	13-Aug
15-Aug	B7300-0 not found	Single event. No work being performed at time of alert.	16-Aug
16-Aug	P25 not found	Equipment operations in area blocking prism. Operators watching out for each other.	16-Aug
16-Aug	NP4 not found	Equipment operations in area blocking prism. Operators watching out for each other.	
17-Aug	P25 not found	Equipment operations in area blocking prism. Operators watching out for each other.	
18-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	18-Aug
20-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	20-Aug
21-Aug	P32 regression limits	Prism inspected and no sign of movement. Readings in positive and negative directions. Prism replaced by P32R, and no alerts received for P32R.	
21-Aug	P32R not found	Single event. No work being performed at time of alert.	22-Aug
22-Aug	P25 not found	Equipment operations in area blocking prism. Operators watching out for each other.	22-Aug
22-Aug	Points not found	Rain and fog. No work being performed at time of alerts.	
22-Aug	P5 regression limits	Rain and fog. No work being performed at time of alerts. Readings in positive and negative directions.	
22-Aug	P33 regression limits	Rain and fog. No work being performed at time of alerts. Readings in positive and negative directions.	
24-Aug	B7200-3 not found	Equipment operations in area blocking prism. Operators watching out for each other.	
25-Aug	P25 not found	Equipment operations in area blocking prism. Operators watching 2 out for each other.	
28-Aug	P25 not found	Equipment operations in area blocking prism. Operators watching 28-Au out for each other.	
28-Aug	B7700-3U not found	Prism being installed.	28-Aug



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 displacement measures the change in the vertical distance from the robotic total station to the prism; positive 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.

The data show stable conditions with no or very small settlement movements at each 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 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. 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
BR4	-0.012	0.009	0.0129	0.0170	
CP6	0.000	-0.018	-0.0076	0.0341	
CP7	0.052	0.019	-0.0267	0.0564	
NP4	0.022	-0.083	-0.0017	0.1694	
P2	0.006	-0.007	-0.0134	0.0129	
P5	0.011	-0.006	-0.0083	0.0129	
P25	0.010	0.022	0.0143	0.0295	
P32r	-0.036	0.017	-0.0150	0.0403	
P33	0.096	-0.002	0.0012	0.1309	
P70R	-1.157	-0.502	0.0119	2.0848	
B7200-1	-0.055	0.015	0.0022	0.0654	
B7200-2	0.006	-0.027	-0.0012	0.0697	
B7200-3	0.207	-0.083	0.0068	0.2792	
B7300-0	-0.957	-0.220	0.0231	1.1727	
B7300-1	-0.205	-0.198	0.0054	0.4278	
B7300-2	0.009	-0.284	0.0137	0.3539	
B7300-3	0.220	-0.181	0.0007	0.3430	
B7300-4	0.206	-0.150	0.0081	0.2838	
B7400-1	-0.399	-0.885	0.0593	1.4470	
B7400-2	-0.051	-0.583	0.0391	1.1604	
B7400-3	0.124	-0.425	0.0109	0.5607	
B7400-4	0.514	-0.367	-0.0126	0.7402	
B7400-5	0.768	-0.182	-0.0022	0.8170	
B7500-1	-0.029	-0.153	0.052	0.199	
B7500-2	-0.030	-0.128	0.037	0.157	
B7500-3	0.043	-0.119	0.039	0.150	
B7500-4	0.046	-0.076	0.016	0.182	
B7500-5	0.004	-0.067	0.017	0.072	
B7600-5	0.002	-0.001	-0.007	0.006	
B7700-1	0.006	0.014	-0.007	0.016	
B7700-2	-0.017	0.001	-0.002	0.019	
B7700-3U	-0.014	-0.001	0.012	0.015	
B7700-3L	-0.011	0.011	0.007	0.016	

# Stantec

# 4.0 DRONE SURVEY

The site was flown for aerial imagery and LiDAR using an unmanned aircraft system (UAS or 'drone') on August 1, 2024. No fill placement occurred in August and the flight from August 1 was used for this report.

## 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 – 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 – Reclamation Grading	Completed February 2022 to July 2024
Phase 4 – Contractor Demobilize from Site	Completed Summer 2024
Phase 4 – Reclamation Planting	September 2024 (est.)
Phase 4 – Channel Armoring	September 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 topsoil placement.
- Continued seeding, matting, tree planting, and mulching operations.

Work planned for next month includes:



- Complete placing topsoil.
- Complete seeding, tree planting, matting, and mulching operations.
- Continue processing filter gravel and riprap.
- Continue to place filter gravel and riprap armoring.
- Continue geotechnical monitoring.

### 6.0 CONCLUSIONS

The data collected in August 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 August 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.





u:\2057288200\06 desian\monitoring\2024-08\dwa\pikeview prisms 202

024.09.16 9:37:23 AM



# Appendix A

**Visual Inspections** 



Staniec Consulting Services Inc. 410 17th Street Suite 1400 Denver CO 82022-4127 Tel: (303) 295-1717 www.stant.ec.com

- Proposed Disturbance Limit
- Landslide Extent
- Buttress Fill Extent

3. PHOTOS TAKEN AUGUST 29, 2024.



Client/Project	Title	
CASTLE AGGREGATE	OBSERVA	tions from
	AUGUST	NSPECTIONS
PIKEVIEW QUARRY SLOPE		
MONITORING	-	
	Revision #	2024.09.24
Project No. 2057288200	Drawn By PK	Figure No. 3



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

### Table A-1 Summary of Daily Inspections



# Appendix B

Prism Survey



## 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		
NP3	22-Apr-22	Prism Added	Originally NP1. Prism re-set in same spot and is now NP3.	
TOE3	22-Apr-22	Prism Removed	Originally TOE3. Prism moved to a higher elevation and is now	
TOE6	22-Apr-22	Prism Added	TOE6.	
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	
P69A	20-Jul-22	Prism Added	and is now P69A. Related to robotic total station relocation.	
P35	20-Jul-22	Prism Renamed	Prism was originally P35. It has been re-set to Higher Elevation	
CP6	20-Jul-22	Prism Added	and is now CP6. Related to robotic total station relocation.	
CP5	20-Jul-22	Prism Renamed	Prism was originally CP5. It has been re-set to Higher Elevation	
CP7	20-Jul-22	Prism Added	and is now CP7. Related to robotic total station relocation.	
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	24-Jan-24	Prism Added	New prism added.	
B7400-2	24-Jan-24	Prism Added	New prism added.	
B7400-3	24-Jan-24	Prism Added	New prism added.	
B7400-4	24-Jan-24	Prism Added	New prism added.	
B7400-5	24-Jan-24	Prism Added	New prism added.	
B7500-1	1-Jun-24	Prism Added	New prism added.	
B7500-2	1-Jun-24	Prism Added	New prism added.	
B7500-3	1-Jun-24	Prism Added	New prism added.	
B7500-4	1-Jun-24	Prism Added	New prism added.	
B7500-5	1-Jun-24	Prism Added	New prism added.	
BR3	1-Jun-24	Prism Removed	Reclamation grading to affect prism in near future.	
BR1	17-Jun-24	Prism Removed	Reclamation grading to affect prism in near future.	
P70	25-Jun-24	Prism Removed	Reclamation grading to affect prism in near future.	
P70R	26-Jun-24	Prism Added	New prism added. Replacement for P70.	
BR4	26-Jun-24	Prism Added	New prism added. Replacement for BR3.	
B7600-5	27-Aug-24	Prism Added	New prism added.	
B7700-1	27-Aug-24	Prism Added	New prism added.	
B7700-2	27-Aug-24	Prism Added	New prism added.	
B7700-3L	27-Aug-24	Prism Added	New prism added.	
B7700-3U	27-Aug-24	Prism Added	New prism added.	



Prism BR4





- 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.







- 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.







- 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.



Prism B7200-3





- 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.







- 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.



Prism B7300-1





- 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.







- 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.







- 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.







- 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.







- 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.







- 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.







- 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.







- 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.



Prism B7400-5





- 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.



B7500-1





- 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.



B7500-2





- 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.



B7500-3





- 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.



B7500-4





- 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.



B7500-5





- 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.



**Prism CP6** 





- 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.







- 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.







- 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.







- 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 alerts received on August 12.



Prism P5





- 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 alerts received on August 22.



Prism P25





- 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.



Prism P32R





- 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 alerts received for P32 on August 13 and 21. P32 was replaced by P32R, and no alerts were received for P32R.



Prism P33





- 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 alerts received on August 12 and 22.



Prism P70R





- 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.









- 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. New Prism installed August 27.



Prism B7700-2





- 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. New Prism installed August 27









- 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. New Prism installed August 27.









- 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. New Prism installed August 27.



Prism B7600-5





- 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. New Prism installed August 27.