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APC Construction Co.
14802 W 44th Ave
Golden, CO 80403

Attention: Sara Weimer

Subject: Ralston Quarry
Annual Geotechnical Stability Report
Golden, Colorado

PROJECT UNDERSTANDING AND BACKGROUND

Brock Consulting, LLC (Brock Consulting) conducted a geotechnical stability evaluation on May 30, 2025, for the APC Construction Co., a CRH Company (APC) rock quarry located at 6569 Highway 93, just west of the intersection with West 64th Parkway, in Golden, Colorado.

Over the years a number of geotechnical evaluations have been completed at the project site by Brierley Associates Corporation (Brierley) including a Geotechnical Evaluation and Initial Opinion Report – Phase 1 dated August 2011, a Geotechnical Evaluation Report - Phase II dated November 2013, an Additional Slope Evaluation letter dated July 2014, and a Geotechnical Stability Report dated August 29, 2019.

In 2019, the Division of Reclamation, Mining and Safety (DRMS) added a geotechnical stability report as part of the annual reporting requirement. The extent of this evaluation is limited to the basalt quarry and does not include any peripheral areas. Brock Consulting has prepared Geotechnical Stability Reports dated July 8, 2020; June 13, 2021; June 17, 2022; July 16, 2023; June 4, 2024. This report presents the observations from the 2025 evaluation and was prepared as a continuation of the prior studies indicated above, which were relied on in preparation of this report.

1.1 Existing Conditions

1) Provide an accurate description of the existing high-wall material(s), geotechnical characteristics, bench, and wall configuration.

According to bedrock geologic maps of the area, the quarry is operating within the western half of the Ralston Dike, or Ralston Plug. Lava was extruded through the Pierre Shale from the Ralston Plug during Paleocene time forming basalt. An altered zone of the Pierre Shale is adjacent to the Ralston Plug. The contact between that Pierre Shale and the rim-phase of the Ralston Plug is mapped within the quarry as dipping from 60 to 80 degrees to the east (Drewes, 2006). The core-phase basalt is located towards the center of the Ralston Plug.

In general, a thin veneer of basalt has left in place overlaying the east-dipping shale contact on the west side during mining operations. A few "windows" of the altered Pierre shale have been exposed in the upper high walls as well as at lower elevations due to the undulating surface of the contact. Current mining practices are to maintain a setback from the altered shale. Based on 2010 mapping, and subsequent observations, the rim-phase basalt is very hard, fresh, gray, and very fine grained, with joint orientation ranging from moderately dipping to vertical. The core-phase basalt is hard, moderately weathered to fresh at depth, light gray, and very-fine grained, with joint orientation ranging from low angle to high angle.

General observations of the high walls indicate slopes were mined nearly vertical, up to 80 ft in height, with a series of benches and haul roads traversing the site. On the west side of the quarry approximately 230 vertical ft of the east-facing quarry wall have been exposed and about 50 vertical ft of the quarry wall has been exposed on the east side (west-facing). The current mining practice utilizes a 40-ft tall bench height with a 15-ft to 20-ft bench width.

The portion of the high-walls and benches at the southwest corner of the quarry had previously been backfilled, graded, and seeded exhibit vegetative growth. As of the 2025 site visit, mining has been completed in the area to the north above the tunnel and the area is being backfilled according to the remediation plan.

1.2 Evaluation of Slope Stability

2) Geotechnical evaluation of the stability of the existing high-wall configuration, with special consideration given to identify existing areas of potential weakness and/or instability, and for recommendations to correct these issues if observed.

Based on observations, the stability of the layer of basalt at the shale contact appears good. Where "windows" of the altered Pierre shale have been exposed in the walls of the quarry the altered shale appears to be standing well. Evidence of slaking (disintegrating and crumbling when exposed to moisture) due to weathering is evident, but to a degree less than expected from non-altered shale. The area of exposed shale is minimal and limited to the upper benches and a few knobs where the altered shale surface undulates. The current practice of leaving a basalt veneer over the shale appears successful for preventing weathering of the shale.

No large-scale slope failures were observed to have occurred at the quarry since last year's observation. Few localized dip-slope failures exist within the basalt across the site. Our evaluation indicates these surficial failures do not currently pose a significant slope stability hazard and are typically mitigated as part of the ongoing mining process. According to APC staff, the highwalls are monitored by multiple drones during blasting and no signs of instability of the highwalls have been observed.

The reclamation of the benches with overburden and seeding at the southwest corner of the quarry appears stable and exhibits vegetative growth to aid with stability and erosion prevention.

1.3 Conformance with Existing Permit

3) Determination if the existing high-wall conforms to the requirements of existing permit.

In a 2014 analysis, Brierley evaluated the allowable slope configuration based on the minimum factor of safety (FOS) of 1.3 for mine slopes. The results of this analysis indicated vertical bench heights up to 80 ft high have an allowable FOS on all exposed aspects of the quarry walls.

Additionally, a vertical height up to 200 ft has an allowable FOS on west-facing slopes (east side of quarry). South-facing slopes (north side of quarry) up to 400 ft high have an allowable FOS with an overall slope dip angle of 79 degrees. East-facing slopes (west-side of quarry) up to 400 ft high have an allowable FOS with an overall slope dip angle of 73 degrees.

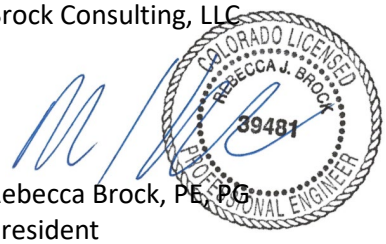
Based on the 2014 Brierley analysis and recent observations, the as-built high-wall benches and overall geometry of Ralston Quarry falls within the configuration limits for the minimum allowable FOS of 1.3 for mine slopes.

1.43 Conclusion

Brock Consulting did not observe any apparent large-scale slope instabilities that had occurred since the 2024 site visit. The basalt across the site does present a few localized failures along dip-slope joint orientations, our evaluation indicates these surficial failures do not currently pose a significant slope stability hazard.

The current practice of leaving a basalt veneer over the shale on the west side of the site appears successful for limiting slaking and weathering of the shale. Planned reclamation will further stabilize the weathering of the shale. Areas of recent reclamation appear stable.

Sincerely,
Brock Consulting, LLC



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