

# GROUND ENGINEERING

March 31, 2021

Subject: Geotechnical Observation Summary  
Report, March 11, 2021 Site Visit , **Ralston  
Quarry**, Jefferson County, Colorado

Job No. 18-3046

Mr. Stan Opperman  
**Asphalt Paving Company**  
14802 West 44<sup>th</sup> Avenue  
Golden, Colorado 80403

Dear Mr. Opperman:

At your request, GROUND visited the Ralston Quarry to collect visual observations of the slope remediation completed on the western side of the site. This letter summarizes the site visit and observations collected by GROUND Engineering Consultants, Inc. (GROUND) at the Ralston Quarry in northeast Jefferson County, Colorado. This service was conducted as an additional service in general accordance with GROUND's Proposal No. 1807-1305, dated July 23, 2018.

GROUND previously completed an initial geotechnical and slope stability evaluation for this project. The results of that evaluation were provided in our report dated January 18, 2019.<sup>1</sup> We understand that the remediation discussed in that report has been completed. Reference is made to GROUND's 2019 report for a description of the site subsurface conditions, our geotechnical conclusions and parameters, and the limitations on our services, which also apply the parameters and considerations provided herein. We consider all parameters and considerations in our 2019 report not specifically superseded herein to remain valid for the project.

### ***Slope Observation Summary***

A representative of GROUND Engineering visited Ralston Quarry on March 11, 2021 to observe the remediated slopes. The following discussion details selected observations and our associated opinions.

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<sup>1</sup> GROUND Engineering Consultants, Inc., 2019, *Limited Geotechnical Evaluation, Slope Stability and Remedial Approach, Ralston Quarry, Jefferson County, Colorado*, Job No. 18-3046, prepared for Asphalt Paving Company, dated January 18.

In general, the remediated slopes appeared to have largely remained in their as constructed form. Relatively sparse vegetation was observed to be growing on the slopes and evidence of seeding efforts were observed, but the majority of the slopes were not vegetated. Large scale soil cracking or other signs of significant slope movement or instability were not apparent. However, rills and other relatively small, local erosional features were observed in the slope surfaces. These did not appear to be adversely affecting the slope at this time, but such features could present a source of risk, if they develop into larger features. These features should be monitored, and if they increase significantly in size, they should be regraded where appropriate.

A relatively small depression also was observed in the lower third of the northern portion of the remediated slope (Zone 4). The depression (pictured below) was about 15 to 20 in length (parallel to slope dip) and about 10 to 15 feet in width (perpendicular to slope dip). This depression may have resulted from the consolidation of fill soils, although other factors could be involved. The affected area should be filled with properly compacted fill to restore the design slope grades, and monitored for additional settlement.



Additionally, evidence of seepage was observed below the rock berm. This evidence included wet soils and calcium carbonate and other salt precipitation on the soil surface. Relatively small juvenile erosional features and channelization appeared to be developing locally. These areas

should be monitored and if larger erosional features and channelization features develop, the affected area should be filled and regraded as appropriate.

**Limitations** This letter has been prepared for Asphalt Paving Company to present the geotechnical observations herein. It should not be assumed to contain sufficient information for other parties or other purposes.

The geotechnical data in this report relied upon a limited number of visual observations of the exposed slope surfaces on March 31, 2021 as discussed herein. It is not possible to guarantee all significant surficial features were observed, that other significant surficial have not developed after our observations, or provide comment about the current subsurface conditions.

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We trust that this provides the information that you needed at this time. If you have any questions please contact this office.

Sincerely,

**GROUND Engineering Consultants, Inc.**

A handwritten signature in blue ink, appearing to read 'Ben Fellbaum', with a long horizontal stroke extending to the right.

Ben Fellbaum, P.G., E.I.

A handwritten signature in blue ink, appearing to read 'Brian H. Reck', with a stylized, cursive script.

Reviewed by Brian H. Reck, P.G., C.E.G., P.E.