

June 29, 2022
File No. 22-0110

Foothills Fire Protection District
28812 Rainbow Hill Road
Evergreen, Colorado 80439

Attn: Mr. Alan Anderson, Fire Chief

Subject: Geotechnical Engineering Services, Proposed Fire Station at 543 Paradise Road, Genesee, Colorado

Dear Mr. Anderson:

Martinez Associates, Inc. (Martinez) has completed an initial evaluation of the property at 543 Paradise Road as proposed in our proposal of June 1, 2022. This letter presents the results of our site visit and recommendations for additional work at the site.

On June 3, 2022, the undersigned visited the site to observe the existing site conditions and to excavate several hand dug holes. Hand dug holes were proposed as it was anticipated that the site had relatively shallow bedrock below grade as the site was reported to have been a borrow source for the construction of the adjacent I-70 highway.

As indicated on Figure 1 attached, four hand dug holes were excavated at the approximate locations shown. All four holes encountered a very thin, 7 to 8 inches, layer of a clayey sand and gravel soil. Beneath the thin soil layer, we encountered hard gneiss bedrock. The bedrock was fractured as fragments of the bedrock could be excavated using a shovel. The moisture content of the soil layer increased in the northern holes and wet conditions were observed along the base of the cut slope on the north side of the property as seen in the lower left side of Photograph 1, attached. There are natural drainages at the northwest and northeast corners of the site so the wet conditions may be the result of surface flows or groundwater flows associated with the drainages or a combination of both.

The fractured nature of the hard bedrock is evidenced by the talus slope conditions at the bottom of the cut slopes in Photographs 1 and 2. The fractured nature of the bedrock may also have been a factor in the selection of this site for a borrow source for the I-70 construction. Rockfall from the cut slope should be taken into account during sighting of the building and other developments.

Martinez Associates, Inc.

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The presence of the very shallow hard gneiss bedrock will make for difficult excavations on the site if selected for development. Additional site investigation work would be needed to evaluate the difficulty in excavating the bedrock. We would suggest test pitting the site using a large heavy excavator and/or a dozer with a ripping tooth. Even if the additional site investigation indicates the bedrock can be excavated, we anticipate that jack hammering and/or blasting maybe needed for deep narrow excavations at the site.

The shallow bedrock will provide more than adequate bearing capacity for the building foundations and floor slabs. As the bedrock is not frost susceptible, foundations will only need to extend to bear on the bedrock and not 3 feet below exterior grades. The presence of wet conditions on the northern end of the site may require the installation of surface or subsurface drains to control the water.

Martinez Associates appreciates being of service on the project and is available to discuss the additional site investigation options for the property.

Respectfully submitted,
MARTINEZ ASSOCIATES, INC.

Jere A. Strickland, P.E.
Principal Professional



A handwritten signature in blue ink, appearing to read "Gregg M. Tateyama".

Gregg M. Tateyama, P.E.
Senior Engineer



● Approximate Sample Location

Image taken from Google Maps



Photograph 1- North Cut Slope



Photograph 2- West Cut Slope