



The Diamond Pro Stone Cut® retaining wall system is a barrier that protects the road for the tanker trucks that make the daily commute on this steep slope to the nearby Interstate highway.

**LOCATION**

Garden Gulch Road  
PARACHUTE, COLORADO

**PRODUCT**

Diamond Pro Stone Cut®  
retaining wall units

**WALL DESIGNER**

Ground Engineering Consultants  
Englewood, Colorado

**WALL CONTRACTOR**

Bryan Miller Company  
Denver, Colorado

**WALL AREA**

32,000 square feet

**THE CHALLENGE**

An oil company needed to improve the treacherous driving conditions of a mountainside service road traveled exclusively by tanker trucks. Drivers faced the constant threat of falling boulders from the very steep slopes that rise nearly 7,000 feet above the Colorado River Valley. An alternative, safer route added more than an hour to their haul time. To improve the road's safety, a rock fall barrier was needed to stop falling rock before it hit the road. Constructing the barrier was risky, as it required cutting into the mountain slope, which would further destabilize it.

**THE SOLUTION**

A back-to-back terraced retaining wall using the Diamond Pro Stone Cut® retaining wall system was designed to function as a barrier for falling rocks and boulders.

Sean Chang, P.E., of Ground Engineering Consultants in Englewood, Colorado, worked closely with the wall design engineers at Anchor Wall Engineering and the geosynthetic reinforcement company Strata Systems. Designing a retaining wall on the site of a steep slope requires extraordinary analysis. The team designed the wall so that a high-quality backfill material would reduce the amount of compaction needed. Large compaction equipment would have further destabilized the slope and made more rocks fall, increasing dangers to the construction crew.



**The back-to-back Diamond Pro Stone Cut® retaining wall is a creative solution that stops falling boulders from the steep mountain onto the service road.**

Building the retaining wall was the toughest installation experience ever for the crew from Bryan Miller Company. Extra crew members were hired to stand watch and provide warning of falling rock. As the mountainside was excavated, the slope became steeper and further destabilized, requiring constant adjustment of machines and crews. The site is also remote, necessitating careful planning for daily transportation of workers and supplies and an emergency plan had injuries occurred.



**The three-level terraced retaining wall is where falling rocks stop safely away from the road.**

### THE RESULT

The well-balanced design of the massive terraced structure stops the tumbling boulders from landing on the road. The oil company that commissioned the barrier considers it a complete success as crews can now use a short route between the mountain and the nearby Interstate highway, saving time and miles. But safer driving conditions are the ultimate success, as drivers can now focus on the job itself: negotiating hairpin curves, rugged dirt conditions and frequent blizzards.

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