

Barrick Cortez Front Range Decline Crescent Valley, Nevada

Founded in 1983 by Canadian entrepreneur and philanthropist Peter Munk, Barrick is headquartered in Toronto and has mining operations in the United States and around the world. More than 75% of the gold production comes from the Americas region. As traditional surface mining becomes less and less productive, efforts have been moved underground creating a more efficient ore harvesting operation. When Barrick decided that this type of approach was worth exploring at their Barrick Cortez location in Crescent Valley, Nevada, they turned to Contech Engineered Solutions for help. First and foremost, it was decided that two portal culverts were needed to provide rock fall protection for vehicles and personnel entering and exiting a decline tunnel.

In order to provide adequate vehicular access, a 27' wide x 19.5' tall clearance box was required by the structures. As the best solution, twin 29'-8" x 17'-10" BridgeCor Structural Plate, 35' in length, were selected and installed on site. BridgeCor enhances the established performance of 6" x 2" MULTI-PLATE® by offering nine times the stiffness and three times the strength. Not only is BridgeCor economical and easily assembled, but its bolted, segmental construction is manufactured with the industry's best equipment allowing for the longest laying length sheets in the industry.

The project's biggest challenge was devising a way to marry the inverted beveled ends of the culverts to the existing slope of the high wall. Although the bevel cuts matched the plans, the wall face was irregular making it nearly impossible to obtain a clean connection. In the end, concrete "flush collars" were reinforced with rebar, anchored to the face of the rock wall, and poured at varying thicknesses to provide a smooth surface connection. Afterward, a "primary collar" was poured to encase the "flush collars" and tie it to the culvert.

Last but not least, the portals needed to accommodate a ventilation system that would hang from the top of the structures. After evaluation of the additional load, hanging brackets were designed, and the structures were manufactured with the proper material gauge.

Also utilized on the project was 3,878 square feet of Keystone Compac units, which were installed between and around the two BridgeCor structures. Overall, the project was a success and the owner was pleased with the outcome.

"Contech's BridgeCor system proved to be very versatile for our new underground portal decline tunnels," stated Tyler Lewis, Project Engineer with Barrick Cortez. "We were able to mount our ventilation fan systems directly to the culvert structure which gave it a seamless look. Along with the Keystone block wall, this portal entrance will be a project that we can be proud of for years to come."

Owner: Barrick Cortez Mine

Engineer: Golder Associates

Contractor: Brahma Group, Inc.

Keystone Producer: Oldcastle Superlite

Technical Description:

- Keystone Compac® II - Straight Split
- Total Wall Area: 3,878 sq.ft.
- BridgeCor® Structural Plate - 35 LF

Installation: August 2016

