



Decline Tunnels Project Martin Marietta

Location: Fort Calhoun, Nebraska

Date: 2018

Structure: Quarry Decline Tunnels

Length: 3,140 ft (957 m) each

Cross-Section: 27 ft width x 25.5 ft height (8.3 x 7.8 m)

Geology: Shale with limestone interlayers and coal seams

Client: Kiewit

Owner: Martin Marietta



Figure 1. East tunnel portal.

Expert Engineering Services to the Contractor:

Two tunnels were constructed in the Martin Marietta Fort Calhoun Quarry at a 14.5 percent decline gradient from the portal face at the bottom of the cut and cover notch to the level of the underground mining complex within the Gilmore City Limestone. The two declines, each with a length of 3,136 ft., were primarily constructed with mechanical excavation by road header with drill and blast excavation within the limestones as necessary. The tunnels were constructed in sub-horizontal shales with limestone interlayers and coal seams with the final 80 ft. excavated in limestone at a near horizontal grade with a rectangular profile matching the mine development drift geometry.

Gall Zeidler Consultants (GZ) evaluated the encountered ground conditions and the in-tunnel monitoring data to delineate rock mass behavior and identify the causes of the failures of the initial lining and provided recommendations for initial support rehabilitation and safe continuation of tunneling works.



Figure 2. West tunnel face.