
Design and Construction of Long Wall Panels Due to Coal Seam Mining

Ohio County, West Virginia

CLIENT/OWNER
WV Dept. of Transportation
D. of Highways - District 6
1 DOT Drive
Moundsville, WV 26041

DATES
Fall 2018 (Start Date)
Summer 2024 (End Date – Est)

PHASE OF EMERGENCY
MANAGEMENT
Hazard Mitigation, Preparation
and Response

E. L. ROBINSON'S ROLE
*Prime Consultant in a
modified design-build delivery
procurement*

PROJECT MANAGER
Dean Hatfield

KEY STAFF
Andrew Buchanan

E.L. Robinson Engineering (ELR) was contracted by WVDOT – DOH in a modified design-build delivery procurement as the engineer of record for items that included pavement relief joints, the new interstate profile for I-70, 24 /7 monitor, and owners' representative in support of the long wall panels mining passing under I-70. There is predicted subsidence of the roadway due to extraction of the coal seam by longwall mining operations approximately 800 feet below the Interstate roadway. The preparation, response, and mitigation efforts were necessary to keep the Interstate open to traffic without major interruption in the level of service. Project conditions that were anticipated were heavy traffic, significant roadway damage, urgent roadway maintenance and repair, and short project timelines. The health and safety of the public was premier in the planning and execution of this work.

Tunnel Ridge Mining (TRM) mining operation in the Pittsburgh (Longwall Panel Nos. 15 - 22) coal seam which is approximately seven feet thick and 800 feet below ground surface, under the Interstate 70. TRM, as owner of the mineral rights, the law allows the mining activity to subside the ground surface in order to extract the coal. The subsidence to the ground surface from longwall mining ranged from 4 to 5 feet to the roadway of Interstate 70.

ELR was contracted to provide operational, engineering, subsidence monitoring and inspection, and the administrative guidance services for this project. The longwall panels are three miles long and the width varies from 1,050 feet to 1,200. ELR designed the pavement relief joints and new interstate profile for each panel for both pre- and post-mining conditions. ELR's role also included the oversight of maintenance of temporary facilities at the westbound Welcome Center. ELR's design work included roadway, drainage, maintenance of traffic, signage, pavement marking, as well as the plans for repairs and reconstruction of I-70 monitoring at the Welcome Center site. The welcome center was affected by the mining subsidence.

ELR provided project operational, engineering, monitoring, inspection, and administration guidance for pre- and post-mining operations while restoring I-70 back to its 70-mph design speed after full subsidence has been realized. Traffic operations were maintained during the project. Mitigative measure utilized on this project were: installation of pavement relief joints, Welcome Center Building was taken offline for public use, deployment of portable restroom facilities was implemented, off-site emergency detour utilizing US Rte. 40, changeable message boarded were utilized. During the mining operation under the Interstate, ELR monitored the roadway 24 hours per day until the mining was completed. For that panel making sure that the roadway was safe for traffic and providing direction to the contractor in charge of maintenance.