



Rob Bewick, P.Eng., M.A.Sc.

Mr. Rob Bewick is a Rock/Mining Engineer on an educational leave of absence from Golder Associates Ltd. where he has worked for more than 5 years. He is currently engaged with MIRARCO under CEMI sponsorship to improve the understanding of the strength and behaviour of highly stressed rock masses with a specific focus on fault-slip processes. This research also constitutes the focus of his PhD studies at the University of Toronto. In his work with Golder, Mr. Bewick participated in: deep and high stress mining challenges (rockbursting) in various countries around the world including Canada, Sweden, and Brazil; various stability assessments, determination of rehabilitation options, and extraction of near surface crown pillars; designed, collect data, and established rock slope engineering departments at various open pit mines located in Canada and the U.S.



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Education

PhD Candidate	Current
Civil Engineering, University of Toronto, Toronto, ON, Canada	
Masters of Applied Science	2008
Mineral Resources Engineering, Laurentian University, Sudbury, ON, Canada	
Bachelor of Engineering	2005
Mining Engineering, Laurentian University, Sudbury, ON, Canada	

Employment History

Research Engineer	August 2010 – present
Geomechanics Research Centre, MIRARCO – Mining Innovation, Sudbury, ON, Canada	
Rock Mechanics/Mining Engineer	May 2005 – August 2010 (still affiliated with Golder)
Golder Associates Ltd. Sudbury, ON, Canada	

Research Interests

Deep and high stress mining, fault-slip and rupture seismic events, loading and system stiffness, rock mass characterization, ground support design, pit wall stability, crown pillar stability.

Professional Affiliations

Professional Engineers of Ontario



Selected Projects

Deep Canadian Mine

A geomechanical assessment was completed using three-dimensional data visualization to integrate all relevant data and create an Engineering Geology Model which focused on identifying seismically active structures at the mine and understanding the relationship between mining and seismicity along these structures. Numerical modelling was carried out using 3DEC, UDEC, Phase², and MAP3D to determine the likely boundary/initial conditions and then investigate the mining sequence and ground support requirements. This global approach was used to supplement the current tactical measures being implemented at the mine and gain a more informed understanding of observed rock mass behaviour in relation to the seismically active structures. Focus was placed on providing practical recommendations and guidelines to the mine for current and future mining.

Deep Mine in Brazil

Completed a site visit and rock mechanics review of both the underground and open pit mining areas. Numerical modelling, geology, major structures, rock quality, ground support and open stope sizes were reviewed. A presentation was made at the end of the site visit the discuss recommendations with mine personnel.

Site Characterization

Managed a team from multiple offices and provided training and technical direction on the collection of geotechnical data from drill core for a scoping level mining study. Typically five personnel were in the field logging core, point load index testing, and selecting UCS specimen. A technical memorandum was provided to the client summarising rock mass characteristics and quality (Q, RMR, rock mass fabric, UCS, point load index test correlation to UCS, and axial and diametral point load index strengths). Recommendations were provided to allow the project to move towards pre-feasibility.

Site Characterization

Conducted a geotechnical field program for pit wall and dyke foundation data collection. Data collection included packer testing (single wireline and double on AQ and NQ rod setups), diamond drill core logging, and televiewer logging (Acoustic, Optical, Calliper, and Temperature/Resistivity probes) of boreholes. Also organised rock strength testing of UCS and shear samples. Also performed geotechnical underground and open pit scan line mapping and SiroVision (3D photogrammetry) structural mapping.

Tunnel Inspection

Conducted an inspection of three water control tunnels. The assessment included inspections of the three tunnels, major structure mapping, and comments regarding their stability, and required remediation/support. A report was provided based on the site visit and recommendations were provided regarding a baseline inspection plan.

Crown Pillar

Completed numerous stability assessments for relatively simple crown pillars to assessments of stability and impacts to hydraulic conductivity for crown pillars located under bodies of water. Have also been involved in the assessment and expert review of crown pillar failures that have occurred during mining.



Selected Publications

Invited Lectures and Presentations

Invited lecture at the University of Toronto. "Structural Characteristics of Fault-Slip Events in Mining. " Seminars on Recent Developments in Structural & Engineering Geology in Deep Mines (January 20, 2010).

Conference Proceedings

Bewick, R.P. & Kaiser, P.K. "Influence of Rock Mass Anisotropy on Tunnel Stability." 3rd Canada-U.S. and 20th Canadian Rock Mechanics Symposium. Toronto, Canada, 2009.

Bewick, R.P. & Kaiser, P.K. "Numerical Assessment of the Factor B in Mathews` Method for Open Stope Design." 3rd Canada-U.S. and 20th Canadian Rock Mechanics Symposium. Toronto, Canada, 2009.

Bewick, R.P., Valley, B., Runnals, S., Whitney, J. & Krynic, Y. "Global Approach to Managing Deep Mining Hazards." 3rd Canada-US Rock Mechanics Symposium: Rock Engineering in Difficult Ground Conditions. Toronto, Canada, 2009.

Kaiser, P.K., Kim, B., **Bewick, R.P.** & Valley, B. "Rock mass strength at depth and implications for pillar design." Deep Mining 2010: 5th International Seminar on Deep and High Stress Mining. Santiago, Chile, 2010.

Potsch, M., Pischinger, G., **Bewick, R.P.** & Gaich, A. "Geotechnical Data Collection and Analysis in Jointed Rock." Fels bau Rock and Soil Engineering. 2007.

Theses

Bewick, R.P. Effects of Anisotropic Rock Mass Characteristics on Excavation Stability. Sudbury, Canada: M.A.Sc. Thesis, Laurentian University, 2008.

Bewick, R.P. The use of the Kaiser Effect to Determine the Previous Stress Level in a Pre-Stressed Model Soft Brittle Rock. B.Eng. Thesis, Laurentian University, 2005.