

GEOMECHANICS RESEARCH CENTRE

GRC conducts engineering and scientific research and development in the field of geotechnical engineering and applies its findings to promote safer and more economical excavations at depth.

IT'S WHAT WE DO...



GROUND SUPPORT

Static and Impact Testing of Support

- Laboratory and in-situ testing of support components or systems following recommended ISRM or ASTM standards
- Custom designed evaluation procedures for special applications such as new support technologies

Performance Assessment

- Monitoring support performance under field loading conditions for design compliance

Support in Burst-prone Ground

- Evaluation of current support measures, design for dynamic loading, and seismic risk assessment

Crack Identification System Ground

Penetrating Radar (CRIS GPR)

- High frequency GPR, utilizing stepped frequency radar technology, for locating near surface parallel fractures in rock

Other Services

- Numerical Modelling
- A/E Monitoring
- Near-Field Seismicity
- Stress and Stress Change Determination
- Borehole Logging



ROCK EXCAVATION

Drillability Assessment

- Capabilities include the suite of drillability and abrasivity tests developed at the Norwegian Institute of Technology and those developed at the Laboratory du Centre d'Etudes et Recherches des Charbonnages de France



INSTRUMENTATION AND MONITORING

NEW! Potash Roof Inspection System (PRIS):

- Ultra-wide bandwidth stepped frequency GPR developed specifically for the potash mining industry
- Capable of identifying both cracks and clay seams in the roof of a mine opening

Borehole Acoustic Televiewer

- ALT FAC-40 instruments to characterize geologic structures and borehole breakouts to depths of 2000 metres

For more information contact:

Sean Maloney, Director, GRC
705.675.1151 x 5086
smaloney@mirarco.org

CURRENT PROJECTS...

In-Situ Stress Determination

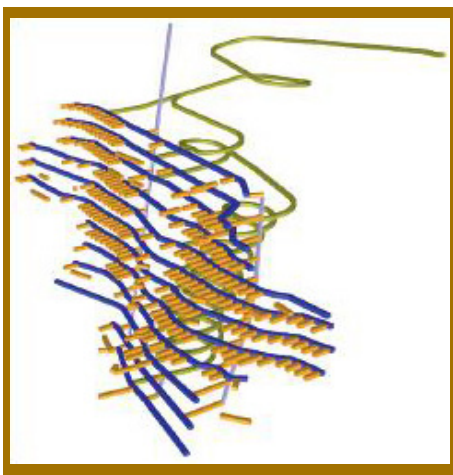
GRC was engaged by Metro Vancouver to undertake conventional overcoring stress measurements on a specific chosen sites to establish constraints on the stress state by borehole imaging analysis at the proposed low to medium waste repository. As well as in northwestern Ontario to establish/validate input values for modelling while using the recorded deformation response around a deep raise at a specific mine

Strength at Depth

In an attempt to provide continuity in strength data by back-analysis of borehole logging data, significant discrepancy has been observed between the strength obtained in the lab and that back calculated. This provided for research that has culminated in the development of a new failure criterion for brittle rock. This criterion recognizes that samples taken at depth are damaged through stress relief, and hence do not give the true UCS (Uniaxial Compressive Strength) of the rock. Refinement of this criterion and the scaling to the rockmass is ongoing.

Site Characterization

Site characterization studies were done at two mines, updating the rock characterization and in-situ stress state to better reflect the conditions at depth. Guidelines for support designs were provided that identified the geotechnical ground conditions to be encountered in the drifts along with a rock support plan to manage potential instability problems.



Mining Induced Seismicity

GRC utilized a new tool, the virtual reality technology, and the MIRARCO developed ParaviewGeo visualization platform, Seismic Excavation Hazard Maps, to be able to visually depict deep mines in the Canadian Shield.



Underground Mine Ventilation

In collaboration with EVO, both recognizing the benefits of controlling energy usage in underground mines, has undertaken two projects where computer optimization tools were used to improve overall ventilation design, thereby, reducing energy usage in mines.

Introduction to Seismicity in Mines

- Presented by Marty Hudyma, Assistant Professor with the School of Engineering, Laurentian University and Pavai Vasak, Geological Engineering at MIRARCO on February 20, 2009, this seminar covered a range of topics to help create a broad understanding of the causes and consequences of mining-induced seismicity, and the methodologies used for managing seismic related risk.

For more information contact:

Sean Maloney, Director, GRC
705.675.1151 x 5086
smaloney@mirarco.org