



Thierry Lavoie – Senior Geomechanics Engineer

Thierry is a geological engineer cumulating over ten years of experience in consulting, research and development, technical services and support, and teaching. His project experience spans over more than 100 consulting projects at more than 30 mine sites. His areas of specialization are advanced numerical modelling and geomechanical mine design. Thierry is a Registered Professional Engineer in Canada in the Province of Quebec.

Expertise

- Geomechanical mine design
- Rock mechanics
- Advanced numerical modelling
- Ground support design

Professional experience

- 2018 – present: Senior Geomechanics Engineer at Andrieux & Associates Geomechanics Consulting, Quebec, Canada.
- 2017 – 2018: Senior Geomechanics Engineer at Itasca Consulting Canada, Inc., Sudbury, Ontario, Canada.
- 2015 – 2017: Senior Geomechanics Engineer at Itasca Consulting Group, Inc., Minneapolis, Minnesota, USA.
- 2014 – 2015: Research Associate at The University of British Columbia, Earth and Ocean Sciences Department, Vancouver, British Columbia, Canada.
- 2010 – 2015: Geomechanics Engineer at Itasca Consulting Group, Inc., Minneapolis, Minnesota, USA.
- April – May 2010: Consultant at Diavik Diamond Mine, Diavik, Northwest Territories, Canada.
- 2009 – 2010: Research Assistant at The University of British Columbia, Earth and Ocean Sciences Department, Vancouver, British Columbia, Canada.
- 2008 – 2009: Teacher Assistant at The University of British Columbia, Earth and Ocean Sciences Department, Vancouver, British Columbia, Canada.



Education

- Ph.D. candidate (Geological Engineering, Rock mechanics), 2015–present, The University of British Columbia, Vancouver, British Columbia, Canada.
- M.A.Sc. (Geological Engineering, Rock mechanics), 2010, The University of British Columbia, Vancouver, British Columbia, Canada.
- B.Sc. (Geological Engineering), 2008, École Polytechnique de Montréal, Montreal, Quebec, Canada.

Registration

- Registered Professional Engineer in the Province of Quebec (OIQ), Canada.

Project experience

Various projects for different mining companies operating on a national and international scale.

Conceptual, scoping, pre-feasibility and feasibility studies

- Geotechnical data review, consolidation and gap analysis
- Site characterization (scanline mapping, oriented core logging)
- Rock mechanics in support of underground mine design
- Pit slope stability assessment

Geomechanical stability analyses

- Empirical and analytical analyses
 - Stope dimensioning and design
 - Dilution estimates
 - Pillar stability assessment (for sill, crown, rib pillars)
 - Ground support requirements
 - Paste strength requirements
- Numerical modelling
 - Two- and three-dimensional continuum and discontinuum numerical methods for geomechanical mine design of underground and open-pit mines:
 - Open stope, cut-and-fill, room-and-pillar and caving operations: evaluation of mine extraction sequences, dimensioning of pillars,



dimensioning of underground excavations, evaluation of backfill requirements, seismic risk assessment.

- Sublevel, block and panel caving operations: undercut and extraction level design, draw scheduling, prediction of caveability, evaluation of infrastructure stability, prediction of surface subsidence.

Ground support systems

- Design of underground support systems

Technical services and support

- Evaluation of site conditions for design reviews
- Photogrammetry data acquisition and processing

Softwares

- Geomechanics: *FLAC3D*, *FLAC*, *3DEC*, *UDEC*, *FISH*, Rocscience suite
- Scientific: C++
- Computer-Aided Design: AutoCAD, Rhinoceros
- Others: Office suite

Publications

Sjöberg, J., Perman, F., Lope Alvarez, D., Stockel, B.-M., Makitaavola, K., Strovall, E., and Lavoie, T. (2017). *Deep Sublevel Cave Mining and Surface Influence*. Australian Centre for Geomechanics, Deep Mining 2017. Perth, Australia.

Larson, M., and Lavoie, T. (2016). *Calibrating a Caving Model for Sedimentary Deposits*. 35th International Conference on Ground Control in Mining.

Lavoie, T. (2010). *An Analytical Geomechanical Upscaling Approach for Modelling Jointed Rock Mass Behaviour Using Ubiquitous Joints*. The University of British Columbia.