

Principal Geotechnical Engineer

Expertise Mr Hebert is a Principal Geotechnical Engineer with more than 15 years of consulting experience in the mining and civil industries. He has performed numerical analyses for numerous open pit and underground mining operations around the world. His consulting and research experience has been focused on the development and application of a 3D hybrid method to simulate cave propagation and subsidence. Mr Hebert's expertise also includes underground excavation stability analyses (mine development, tunnels, caverns and nuclear waste storage).

Education Masters Degree (Civil Engineering), 2008
Institut National des Sciences Appliquées, Lyon, France

Professional Experience

2024 – Present	ITASCA Australia Pty Ltd, Australia Principal Geotechnical Engineer.
2014 – 2023	ITASCA Australia Pty Ltd, Australia Senior Geotechnical Engineer.
2011 - 2014	ITASCA Australia Pty Ltd, Australia Geotechnical Engineer.
2008 - 2011	ITASCA Consultants S.A.S., France Geotechnical Engineer.
2007 - 2008	Institut National des Sciences Appliquées, Lyon, France, Part time research assistant.
2006	Arcadis, Lyon, France Geotechnical Engineer internship.

Project Experience

Underground Mining

- Numerical LoM assessment of caveability and subsidence for the Oyu Tolgoi Mine, Mongolia.
- Numerical LoM assessment of caveability and subsidence for the Alpala optimisation PFS, Ecuador.
- Numerical LoM assessment of caveability and subsidence for the Resolution Mine PFS, USA.
- Numerical LoM assessment of caveability and subsidence for the Carrapateena Mine, South Australia, Australia.
- Numerical assessment of life of mine subsidence at Cadia, New South Wales, Australia.
- Numerical assessment of caveability for the Capricorn SLC Mine, Queensland, Australia.
- Numerical assessment of caveability and Subsidence for a triple lift block cave at Wafi Golpu mine, Papua New Guinea.
- Mine scale stability and subsidence assessment for the Jadar pre-feasibility study, Serbia.

- Three-dimensional caveability assessment at Mount Lyell Mine, Tasmania, Australia.
- Three-dimensional cave-propagation assessment including prediction of yielded, mobilized and seismogenic zones at NorthParkes E26 and E48 Mines.
- Three-dimensional numerical analysis of the geomechanical performance of the underground workings over the life of mine at BHPBilliton's Cannington Mine in Queensland, Australia.
- Back analysis of extreme deformations at Oceana Gold's Fraser Mine, New Zealand.
- Numerical analysis of Cave propagation behaviour and performance of the mine infrastructure at Carpentaria Gold's Mount Wright Mine in Queensland, Australia.
- Three-dimensional numerical investigation of paste-fill exposure stability at Rangold's Kibali Mine, Democratic Republic of Congo.
- Three-dimensional numerical investigation of paste-fill exposure stability and design of paste-fill barricade structures at Venturex Resources' Sulphur Springs Mine, Western Australia.

Open Pit Mining

- Three-dimensional numerical slope stability analyses for several mine designs at Oyu Tolgoi, Mongolia.
- Three-dimensional numerical slope stability analyses for Western Turner Syncline, Western Australia.
- Three-dimensional numerical analyses for the Koodaideri Spring Gorge Façade, Western Australia.
- Three-dimensional numerical slope stability analyses for the Deposit E at Rio Tinto's West Angelas open pit mine, Western Australia.
- Three dimensional numerical analyses for the North-East wall at Rio Tinto's Bingham Canyon open pit mine, Utah, USA.
- Investigation of open pit stability and probability of failure at Rio Tinto's Tom Price Mine, Western Australia.
- Three-dimensional back analysis of slope failure at AngloGold Ashanti's Sunrise Dam Mine, Western Australia.
- Analysis of crown pillar extraction at AngloGold Ashanti's Sunrise Dam Mine, Western Australia.
- Investigation of open pit slope stability and probability of failure at Newcrest Ltd's Cadia Hill Mine, NSW, Australia.
- Three-dimensional open pit stability analysis at Barrick's Cowal Gold Mine, NSW, Australia.
- Two-dimensional open pit stability analysis at Porgera Gold Mine, Papua New Guinea.

Civil Engineering

- Three-dimensional numerical analysis of tunnel behaviour and ground support performance of tunnel sections for the Brisbane AirportLink Project.
- Three-dimensional numerical analysis of tunnel behaviour and ground support performance for the Vehicle and Pedestrian Safety (VAPS) Project, beneath the Sydney Opera House.

- Three-dimensional numerical analysis of the effect of a large surface load applied on top of a tunnel intersection in the Stockholm Northern Link in Sweden.
- Numerical Modeling of underground nuclear waste disposal for ANDRA (French public body in charge of the long-term management of all radioactive waste). Involved in several studies, including the analysis of the long-term behaviour of the concrete support in a deposition tunnel, and the design verification for tunnel support.
- Three-dimensional stability analysis of a 30 year old cavern, taking into account a potential rupture of anchors. (Study realized for EDF, French Electricity Authority).
- Three-dimensional analysis of the effect of temperature on the behaviour of Asfalou arch dam, Morocco.
- Numerical modeling of a rock fill dam, built above a concrete gallery, Morocco.
- Numerical inverse analysis to determine the mechanical parameters of a soil during construction of a tunnel in Toulon (France).

Research Projects

- Caving 2040 – Designing Block Cave Interactions for High Recovery
- Mass Mining Technology Project 3 – Design Charts.

Papers and Publications

Hebert Y., Sharrock G. (2018) Three-Dimensional Simulation of Cave Initiation, Propagation and Surface Subsidence using a coupled Finite Difference – Cellular Automata Solution. Proceedings of the Caving2018 conference, Vancouver, Canada, October 2018.

Billiaux D., **Hebert** Y., Laigle F. (2010) Stability Conditions of Beams Supporting Overhead Travelling Cranes in Caverns. Proceeding of the National Geotechnics and Geology engineering day, Toulon, France, July 2010.

Johnson TM., Pere V., Dixon R., De Graaf P. Wines DR., **Hebert** Y. (2016) Geotechnical Optimisation of Southern Ridge Cutback 3 at Tom Price Mining Operations. Proceedings of the First Asia Pacific Slope Stability in Mining Conference, Brisbane, September 2016.

Mas Ivars D., **Hebert** Y., Billiaux D., Batres-Estrada R. and Dalmalm T. (2012) Tunnel Support and Stability Assessment Via Numerical Modeling – Norra Länken. Proceedings of the Berg Mechanic Dagen conference, Norway, 2012.

Shiu W., **Hebert** Y., Poutrel A., Billiaux D. (2012) Liner Failure and Long Term Behavior of the Surrounding Claystone – a 3D Distinct Numerical Model Study. Proceeding, 5th International meeting “Clays in Natural and Engineered Barriers for Radioactive Waste Confinement”, Montpellier (France), 2012.