

**Geotechnical Engineering**

**Position** Senior Geotechnical Engineer, Itasca Australia Pty Ltd

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**Education** Master's Degree (Civil Engineering), 2008  
Institut National des Sciences Appliquées (INSA), Lyon, France

**Professional Experience**

2014 – Present *Itasca Australia Pty Ltd, Melbourne, Australia, Senior Geotechnical Engineer.*

2011 - 2014 *Itasca Australia Pty Ltd, Melbourne, Australia, Geotechnical Engineer.*

2008 - 2011 *Itasca Consultants S.A.S., Ecully, France, Geotechnical Engineer.*

2007 - 2008 *Institut National des Sciences Appliquées, Lyon, France, part time research assistant.*

2006 *Arcadis, Lyon, France, geomechanical engineer internship.*

**Biographical Details**

Mr Hebert is a senior geotechnical engineer and numerical modelling specialist, with more than 10 years of experience in the use of Itasca codes (*FLAC<sup>3D</sup>* and *3DEC*) to analyse various geomechanics problems in Australia, Europe and other parts of the world. He has provided consulting on numerous projects including underground mining (e.g. block cave and SLC mining, narrow vein mining, pillar stability, paste exposure stability), open pit slope stability and underground excavations (e.g. tunnels, caverns, crusher chambers and nuclear waste storage).

**Project Experience****1) Underground Mining**

- Numerical assessment of caveability and subsidence for the Batu Hijau pre-feasibility study (analysis performed for AMC consultants)
- Numerical assessment of life of mine subsidence for the Curraghinalt feasibility study, Ireland.
- Numerical assessment of life of mine subsidence at Cadia, New South Wales, Australia.
- Numerical Assessment of caveability and subsidence for a triple lift block cave at Wafi Golpu, Papua New Guinea.

- Stability and subsidence modelling 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 seismic 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 behavior 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.

## 2) Open Pit Mining

- Three-dimensional numerical slope stability analyses for the phase 4a and 4b 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.

### 3) Civil Engineering

- Three-dimensional numerical analysis of tunnel behavior and ground support performance of tunnel sections for the Brisbane Airport Link Project.
- Three-dimensional numerical analysis of tunnel behavior 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 for the Stockholm Northern Link project 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 behavior of the concrete support in a deposition tunnel, and the design verification for tunnel support.
- Three-dimensional stability analysis of a 30 years 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 and water level on the behavior of the Asfalou arch dam, Morocco.
- Numerical modeling of the stability of a concrete gallery built under a rock fill dam, Morocco.
- Determination of the mechanical parameters of a soil through inverse analysis, within the framework of the excavation of a tunnel in Toulon (France).

### 4) Research Projects

- Mass Mining Technology Project 3 – Design Charts.

### **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., Billaux D. (2012) Liner Failure and Long Term Behavior of the Surrounding Claystone – a 3D Distinct Numerical Model Study. Proceeding, 5<sup>th</sup> International meeting “Clays in Natural and Engineered Barriers for Radioactive Waste Confinement”, Montpellier (France), 2012.