Fredrik Perman ITASCA

Rock Mechanics & Rock Engineer

Expertise Rock Mechanics, Mining Engineering

Education M.Sc. Civil Engineering (Rock Mechanics), 2003
Luleå University of Technology, Sweden

Professional Experience

2011 – Present	*Itasca Consultants AB, Luleå, Sweden* *Rock Mechanics Consultant*
2006 – 2011	*Vattenfall Power Consultant AB, Luleå, Sweden* *Rock Mechanics Consultant*
2003 – 2006	*SwedPower AB, Luleå, Sweden* *Rock Mechanics Consultant*
2001	*Luleå University of Technology, Dept. Rock Mechanics, Luleå, Sweden* *Intern*
2000	*Boliden Mineral AB, Aitik, Gällivare, Sweden* *Trainee*
1997	*SEI Datasvar, Sveg, Sweden* *Computer Support Specialist*
1996 – 1997	*Vattenfall Training Centre, Jokkmokk, Sweden* *Civil Servant - Waterpower Production Assistant*

Project Experience

Infrastructure (Tunneling): Detailed design work for the Citybanan (City Link) commuter-train tunnel project in Stockholm. Three-dimensional continuum and discontinuum analyses of the crossing between Citybanan City Station and Blue Subway Station. Design and analysis of tunnel intersections between Citybanan and pre-existing energy tunnels, including three-dimensional continuum analyses.

Evaluation, interpretation and analysis of all rock-stress measurements in the Stockholm area to obtain design data for the Citybanan project. Rock stress measurements for the Citybanan project in different locations, participating as field engineer, interpretation and reporting.

Rock mechanics analysis of bridge foundation over open-mine stopes for a new railroad in Kiruna. Numerical analysis of shotcrete reinforcement in rock tunnels, using two- and three-dimensional models, with the objective of developing guidelines for simulation and evaluation of shotcrete in tunnel design work.

Participated in developing design guidelines for railroad tunnels in rock for Banverket (the Swedish Railroad Administration), and in the slope inspection of road cuts.

Nuclear Waste Disposal: Analysis and interpretation of rock stress data for the Forsmark site, including regional stress data, to assess the confidence of measured stresses with different methods and to provide input to stress modeling, and detailed site characterization. The work included analysis and evaluation of earlier rock-stress measurements. Interpretation of overcoring data using transient analysis of old measurements.

Rock stress measurements with overcoring method for SKB (Swedish Nuclear Fuel and Waste Management Company) in Forsmark and Oskarshamn, and for Posiva (Nuclear waste management company in Finland) in Olkiluoto.

Stress Measurements: Project manager and responsible field engineer for rock stress measurements using overcoring method in various projects both in Sweden and international, including both shallow and deep boreholes.

Evaluation, interpretation and reporting of rock stress measurements using overcoring. Investigation of core disking and overcoring rock-stress measurements in high-stress environments through field testing (drilling and overcoring) and analyses.

Development of quality operation procedures and manuals for rock stress measurements using overcoring with the Borre-method, and hydraulic fracturing (HF) and hydraulic tests on pre-existing fractures (HTPF) methods.

Mining: Numerical modeling using *3DEC* focusing on the potential for fault-slip seismic events for different mining scenarios. Scenario description of caving and crown-pillar stability comprised of data compilation, analysis of seismicity data and empirical assessment of stope stability and caveability.

Three-dimensional forensic numerical modeling using *3DEC* for a rockburst fatality. Three-dimensional discontinuum analyses of an area in the Kirunavaara Mine, where a major seismic event occurred. Numerical analysis of the Malmberget Mine comprising several orebodies. Evaluation of shaft stability in the LKAB Kiirunavaara sublevel caving mine. Numerical analysis of stresses in pillars for a new sublevel layout at the LKAB Kiirunavaara sublevel caving mine.

Study of the parameters (distance, rock parameters, etc.) that control if two shafts will affect each other via numerical analysis. Analysis of rock mechanical consequences of mining near the main haulage level at the LKAB Kiirunavaara sublevel caving mine. Analysis of optimal tunnel geometry for the new main level KUJ1365 for the Kirunavaara mine. Numerical analysis of rock stresses around drifts and main gallery at the LKAB Kiirunavaara sublevel caving mine.

Project manager for pit slope design for an open pit, collecting data according to proposed survey program. Rock mechanical core logging (RQD-, RMR-, and Q-characterization).

Development of a survey program to obtain new data and of a preliminary slope angle for an open pit, based on available data.