

**Sara Adlerborn****Geomechanical Engineer*****Expertise***

Rock mechanics, Numerical modeling

***Education***

M.Sc. Civil Engineering (Rock Mechanics and  
Geotechnical Engineering), 2018  
Luleå University of Technology, Luleå, Sweden

***Professional Experience****2021 - present**Itasca Consultants AB, Luleå, Sweden  
Geomechanical Engineer**2019 – 2021**AFRY, Luleå, Sweden  
Rock Mechanics Engineer**2018 – 2019**Norconsult AB, Luleå/Gothenburg, Sweden  
Rock Mechanics/Geotechnical Engineer**2017**Itasca Consultants AB, Luleå, Sweden  
Summer Internship, Numerical modeling**2016**Peab, Luleå, Sweden  
Foreman, House Construction****Project Experience******Infrastructure projects:***

Production support to Trafikverket for excavation of service tunnel in Kvarnberget, Västlänken. Work included discussions with management and contractor to optimize work during production.

Three-dimensional and two-dimensional continuum analysis (*FLAC3D* and *FLAC*) modeling for pylon foundations and anchor chambers for the new Grenlandsbrua, E18 Norway.

Work as Assistant Functional Manager for subproject Lovön, Förbifart Stockholm, including close work together with constructional managers and contractor to ensure that the design is implemented, e.g., example adjustments in design, revision of work plans, managing production errors, and field work.

Design work and three-dimensional continuum analysis (*FLAC3D*) for crossing between Kvarnberget and Götatunneln, Västlänken. Follow-up with contractor to plan and execute the complex rock excavation process. Internal project manager.

Design of reinforcement in horizontally jointed rock areas, Lovön, Förbifart Stockholm. Two-dimensional modeling (*FLAC*) and analytical calculations. Internal project manager.

Three-dimensional continuum analysis (*FLAC3D*) and development of construction documents for tunnel underneath Lambarfjärden, Förbifart Stockholm. As part of the analysis, the planned excavation process and the required reinforcement (bolts, lining, and spiling) were studied.

Calibration study with three-dimensional continuum models (*FLAC3D*) for an already excavated ramp tunnel with low rock coverage, subproject South, Förbifart Stockholm. The purpose of the study was to determine if installed reinforcement is efficient by performing a calibration study with the help of convergence measurements.

Three-dimensional continuum analysis (*FLAC3D*) and developing of construction documents for ramp tunnel with very low rock coverage in subproject Lovön, Förbifart Stockholm. The rock coverage in the area varies between 1.5– 6 m and with help of the models, the required bolts, lining, spiling, excavation process, and monitoring were determined. Internal project manager.

Three-dimensional continuum analysis (*FLAC3D*) and development of construction documents for Air Exchange Stations (AES) in subproject Lovön, Förbifart Stockholm. In total, eight AESes at depths between 50–100 m were studied. The AES-design includes large roof-spans up to 35 m, complex geometries and a connected vertical shaft. During the work reinforcement, the excavation procedure and monitoring were determined, and the design was followed-up during production. Internal project manager.

Three-dimensional continuum analysis (*FLAC3D*) and development of construction documents for vertical shafts in subproject Lovön, Förbifart Stockholm. The height of the shafts varies between 50–100 m, are 10 m diameter, and are designed to carry a heavy concrete lining on rock shelves.

Design of high, vertical rock slopes (up to 25 m) and reinforcement in subproject Kvarnberget, Västlänken. The slopes are located in central Gothenburg and are highly loaded by large buildings.

Study of stability and reinforcement for underwater slope for a dock in Asterholma, Åland.

Work with design for new double track tunnel along Malmbanan north of Kiruna.

#### *Mining:*

Coupled cave flow-mechanical analysis using *FLAC3D-CAVESIM* for the Hoppet orebody in the LKAB Malmberget Mine. The aim of the analysis was to evaluate the increased seismic activity in the orebody and to give a prognosis of future seismic activity.

Large-scale stability analysis of future mining in the LKAB Leveäniemi open pit. Analysis included a discontinuum numerical study (*FLAC3D*) with large shear zones integrated in the model.

Three-dimensional continuum analysis (*FLAC3D*) of mine design layouts for LKAB Kiirunavaara mine. The work contained evaluation of six different mine design layouts with the purpose of deciding on the most favorable design from a rock mechanics perspective.

Second opinion on performed structural analysis of a critical portion of Kevitsa open pit, including a study of the fault design basis.

Numerical study (*FLAC3D*) of alternative mining sequences for the Creighton mine. Evaluation included analysis of difference in seismic potential for the different sequence options during the entire life of mine.

Two- and three-dimensional continuum analysis (*FLAC* and *FLAC3D*) to evaluate mining method, geometries and excavation sequence in Tara Mine. The purpose of study was to increase extraction ratio.

Three-dimensional continuum analysis (*FLAC3D*) for slope stability in Kevitsa open pit.

#### *Field work:*

On-site ground control engineer at Kaunis Iron. Work comprised bench performance, stability-, and risk assessments.

Core logging for Kaunis iron, including rock mechanics logging.

Inspection of rock silos and control of loose rock in Överkalix and Övertorneå, Svedavia.

Inspection and action recommendations for problematic benches in the Kaunisvaara open pit mine.

Assistant project manager for inspection and action planning for Glödbergstunneln. Planning and execution of the work.

Inspection of tunnels along Botniabanan, in total around 24 km of tunnel.

Ice and water inspection for Laduberg and Bergträsk tunnels, Älvsbyn.

Prior inspection of rock quality before construction work in Ramsele Powerstation.

*Soil Engineering:*

Geotechnical engineering and project management of several soil engineering projects with design work for bridges, railways, power lines, buildings, industries, etc., in different types of soil.