

# **Assessing the Stability of Large-scale Open Pit Mines**

**Abbas Taheri**

Queen's University, Canada

## **Extended Abstract**

Evaluating the stability of large-scale open pit mines is a crucial concern in mining engineering, extending beyond the feasibility study into the excavation and operational phases. This speech discusses the development of geological and geotechnical models for slope design. It explains the implications of various geological parameters and structures on pit stability. The lecture offers simple approaches to designing rock slopes on different scales following structurally controlled and non-structurally-controlled analyses. It discusses the application and limitations of limit equilibrium and numerical modeling and simulation tools to predict the behavior of open pit slopes under different conditions. Furthermore, the speech addresses challenges associated with the utilization of renowned classification systems in jointed rock masses and large-scale rock slopes. The discussion emphasizes the practicality and utility of empirical methods in designing rock slopes for engineering projects. It highlights the challenges engineers may encounter when employing empirical approaches to assess the stability of rock slopes. Case studies of slope stability issues in open pit mines are also presented to illustrate real-world applications and lessons learned.