

Matthew Pierce

matt@pierce-engineering.com; +1-612-201-7560; www.pierce-engineering.com

<i>Expertise</i>	Mining Engineering, Geological Engineering
<i>Education</i>	PhD, Mining Engineering, 2010 University of Queensland, Brisbane, Australia MSc, Mining Engineering, 1997 BSc, Geological Engineering, 1995 Queen's University, Canada
<i>Professional Affiliations</i>	Registered Professional Engineer, Ontario Committee on Geotechnical and Geological Engineering, National Academy of Engineering, 2016-2019 Commission on Underground Nuclear Power Plants, ISRM, 2013-2019 Society for Mining, Metallurgy and Exploration American Rock Mechanics Association
<i>Honors</i>	Rock Mechanics Award, Society for Mining, Metallurgy and Exploration, 2023 Manuel Rocha Medal, International Society of Rock Mechanics, 2013 President's Award, Itasca International, Inc., 2011 R. Samuel McLaughlin Fellowship, Queen's University, 1995 Medal in Geological Engineering, Queen's University, 1995
<i>Keynote Lectures</i>	55th U.S. Rock Mechanics/Geomechanics Symposium, Houston, 2021 EUROCK 2013 - ISRM International Symposium, Wroclaw, Poland, 2013 ISRM 12th International Congress on Rock Mechanics, Beijing, 2011
<i>Professional Experience</i>	
2016 – Present	Pierce Engineering (Minneapolis, USA) -President
2014 – 2015	Rio Tinto Center for Underground Mine Construction (Sudbury, Canada) -Director
2013 – 2019	University of Toronto (Toronto, Canada) -Adjunct Professor
1998 – 2016	Itasca Consulting Group, Inc. (Minneapolis, USA) -Principal Engineer -Member, International Board of Directors -Mining/Geotechnical Engineer
1995 – 1997	Bawden Engineering Ltd. (Kingston, Canada) -Mining Engineer

Skills and Experience

Cave Mining: 25 years of experience in sublevel, block and panel caving mines from concept to feasibility and operations. Specialized in rock mass characterization, undercut and extraction-level design, draw scheduling, forecasting of caveability, fragmentation, recovery, infrastructure stability and surface subsidence and the assessment of hazards related to induced seismicity and inrushes. Caving consulting clients include Grasberg, Merdeka and Hu'u (Indonesia); Henderson and Resolution (United States); Oyu Tolgoi (Mongolia); Cadia, Northparkes and Ernest Henry (Australia); New Afton, Renard, Red Chris and Kemess (Canada); El Teniente and Chuquicamata (Chile); Kiruna and Malmberget (Sweden); Ghaghoo and Karowe (Botswana); Palabora and Cullinan (South Africa).

Underground Mining: Experience with open stoping, cut-and-fill, room-and-pillar and longwalling operations includes sequencing and dimensioning of excavations and pillars, stability analysis and design for shafts, access, and backfill, ground support design and the assessment of hazards related to induced seismicity, subsidence and liquefaction. Consulting clients include Jansen, Red Lake, Niobec, Westwood, Goldex and Eleonore (Canada); Montanore, Solvay, General Chemical, Tronox, Sage Creek and Twin Metals (United States); La Encantada (Mexico); Kittila (Finland); Osborne (Australia).

Surface Mining: Over 20 years of experience in open pit mining, specializing in rock mass characterization, inter-ramp and overall slope stability analysis, interaction with underground mining (including caving-induced instability) and sequencing. Open pit consulting clients include Victor (Canada) as well as Bingham, Cresson, Lemont and McCook (United States).

Research: Have pioneered methods for the estimation of rock mass properties and developed specialized tools and constitutive models for the study of mining-induced rock mass yield, fragmentation, collapse and gravity flow from tunnel-scale to mine-scale. Involved in the industry-funded International Caving Study and Mass Mining Technology research consortia for over 15 years. Led and directed the Rio Tinto Center for Underground Mine Construction with the specific objective of creating value through the innovative application of rock engineering principles in Rio Tinto caving mines. Authored/co-authored over 80 technical papers.