

Keynote 5

Professor Nick Barton

NB&A, Oslo

Keynote Title

Cavern and Tunnel Failures
due to Adverse Structural Geology
and
due to Inadequate Support Designs



Nick Barton obtained a London University B.Sc. in Civil Engineering from King's College in 1966, and a Ph.D. concerning shear strength and rock slope stability from Imperial College in 1971. He worked for two long periods at NGI in Oslo, and for four years at TerraTek in Salt Lake City. Since 2000 he has had his own international rock engineering one-man consultancy, Nick Barton & Associates, based in Oslo and São Paulo.

He has consulted on several hundred rock engineering projects in a total of 38 countries during 45 years, has 260 publications as first or single author, and has written two books, one on TBM prognosis, the other linking rock quality and seismic attributes of rock masses at all scales. He is currently writing a book with Bandis: Engineering in jointed and faulted rock (expected 2017). He has ten international awards including the 6th Müller Lecture of ISRM. He developed the widely used Q-system for classifying rock masses, and for selecting rock tunnel and cavern single-shell support in 1974. He was originator of the rock joint shear strength parameters JRC and JCS and co-developer of the resulting Barton-Bandis constitutive laws for rock joint coupled M-H modelling in 1982, which was incorporated as a sub-routine in UDEC-BB in 1985. He has also developed the *Q_{tbm}* prognosis method and *Q_{slope}* for selecting maintenance-free rock cutting and bench-face angles. His chief areas of consulting activity have been in hydropower tunnelling and cavern construction and performance, nuclear waste disposal site characterization, metro tunnels and caverns, and site characterization at high dams. He has given more than thirty five keynote lectures in international conferences.