



Dr. Evert Hoek: Experience and Expertise

Dr. Evert Hoek is one of the world's leading expert on rock mechanics; an award-winning professor and consultant with decades of experience in the classroom and in the field. An independent consultant, Dr, Hoek currently serves on Panels of Experts for major international civil engineering projects, which carry out technical reviews for government and financial organizations. Recent projects have taken him to Canada, Greece, India, Venezuela, Chile, Hong Kong, Indonesia, Australia and the Philippines.

Rocscience: What reviews are you working on now?

Dr. Hoek: "The projects in which I am currently involved are the Egnatia Highway - a 680 km long 4 lane highway across northern Greece, the Ergose high speed railway development project from Thessaloniki to Athens and on to Patras in Greece and a subway system being constructed in the city of Oporto in Portugal. These three projects involve over 100 kilometers of large span tunnels as well as many cuts and embankments in very difficult geological conditions."

Dr. Hoek began building his expertise in geotechnical engineering in the fifties when he earned an undergraduate degree from the University of Cape Town and received a master's degree in three-dimensional photoelastic techniques. Dr. Hoek later joined the South African Council for Scientific and Industrial Research and became involved in the application of stress analysis techniques to the study of rock stress problems in deep level gold mines. He was awarded a PhD by the University of Cape Town for a thesis on brittle fracture in rock.

In 1966, Dr. Hoek accepted an invitation from the Imperial College of Science and Technology to establish an inter-departmental centre of research and teaching in rock mechanics. He was appointed Professor of Rock Mechanics and five years later, was awarded a DSc in Engineering by London University. Dr. Hoek later moved to Canada, where he became a Principal of Golder Associates, an international geotechnical consulting firm. In 1987, he accepted the post of Industrial Research Professor of Rock Engineering in the Department of Civil Engineering at the University of Toronto.

Dr. Hoek has received many awards during his illustrious career including the E. Burwell Award from the Geological Society of America and the William Smith Medal from the Geological Society of London. He has also been elected to prestigious positions that include Fellow of the Royal Academy of Engineering, UK, and the Rankine Lecturer, British Geotechnical Society. Dr. Hoek received an honorary DSc in Engineering by the University of Waterloo and presented the Glossop Lecture to the Geological Society in London in 1998. More recently, Dr. Hoek was selected to give the 2000 Terzaghi Lecture at the ASCE Civil Engineering Conference in Seattle, USA.



Rocscience: What do you think of the newest advancements in geotechnical engineering?

Dr. Hoek: “The time span between any “new” advance in geotechnical engineering and its acceptance as a reliable working tool is generally of the order to 10 years. Hence new advances are only interesting if they show real potential of developing into useful engineering tools or techniques. The final judgement can only be made after sufficient time has passed for these advances to be tested in practical applications. Only those that can meet these tests will gain the acceptance of practitioners and become part of the working tool-kit of future civil engineers.”

Rocscience: Then what is the most significant advancement that’s been made in the discipline?

Dr. Hoek: “From my point of view I do not think in terms of “breakthroughs” but rather of a gradual maturing of the subject of geotechnical engineering to the point where it is now an integral part of the planning and design process on most major civil engineering projects. The fact that geotechnical engineers work beside and on an equal footing with hydraulic, transportation and structural engineers is an important advance on the situation one or two decades ago in which geotechnical engineering was treated as a service function and geotechnical engineers played a relatively minor role in project design.”

In addition to his expertise, Dr. Hoek is a man with enviable energy. In addition to his full time consulting practice, Dr. Hoek has published numerous technical papers and three books. His most recent book on rock support for hard rock excavations, co-authored with Professors P.K. Kaiser and W.F. Bawden, was published in January 1995.

Rocscience: How do you predict geotechnical engineering will evolve?

Dr. Hoek: “There is a huge and growing demand for the application of geotechnical engineering in the design and construction of tunnels, slopes and foundations of all kinds. With the growing population pressure in most parts of the world, simple accessible sites have already been developed and the future lies in more difficult and less accessible sites on which larger structures will be placed and in which bigger tunnels will be excavated.

The demand for designing structures that are both safe and economical will place huge demands on geotechnical engineers of the future and the discipline has to evolve to meet these needs. Above all there will be a need for engineers and engineering geologists with a sound understanding of fundamentals and an ability to adapt this knowledge to real problems in the field. The role of laboratory studies and the development of numerical methods will be important but it is the ability to use these tools rather than the tools themselves that will be determine the success of geotechnical engineers of the future.”

Recently, Rocscience has worked collaboratively with Dr. Hoek to create **RocLab**, a program for determining rock mass strength parameters – available free exclusively from Rocscience. Our web site offers “Hoek’s Corner”, providing access to “Practical Rock Engineering”, notes prepared by Dr. Hoek. Rocscience is honored to work with Dr. Hoek, and like the rest of the geotechnical community, we’re watching his career with interest and are thankful that geomechanical engineering has such a rich resource.