

**Rock Engineering**

<b>Expertise</b>	Rock Mechanics, Geotechnical Engineering, Numerical Modeling
<b>Education</b>	Ph.D. (Rock Mechanics), 1988, Luleå University of Technology, Sweden M.Sc. (Soil and Rock Mechanics), 1978 University of Newcastle-Upon-Tyne, England B.Sc. (Mining Engineering), 1975, Tehran, Iran
<b>Professional Affiliations</b>	Member: International Society of Rock Mechanics, Swedish Association for Engineering Geology (BGS)
<b>Professional Experience</b>	
1993 - Present	<i>Itasca Geomekanik AB, Stockholm, Sweden, Consultant</i>
1989 - 1993	<i>Swedish Detonic Research Foundation (currently, Swedish Rock Engineering Research Foundation), Research Engineer</i>
1988 - 1989	<i>Ecole Polytechnique, Institute of Solid Mechanics, Paris, France Research Fellow in Geotechnical Engineering</i>
1983 - 1988	<i>Luleå University of Technology, Division of Rock Mechanics, Sweden Research Assistant</i>
1981 - 1983	<i>Mahab Geotechnical Engineers (Ministry of Energy), Tehran, Iran Geotechnical Engineer</i>
1980 - 1981	<i>Foundry Sand Co., Tehran, Iran, Production Manager</i>
1978 - 1980	<i>Zamiran Geotechnical Consulting Engineers, Tehran, Iran Geotechnical Engineer</i>

**Project Experience**

**Numerical Modeling:** Numerical analyses related to tunneling; numerical investigations related to underground repositories for radioactive waste and other hazardous materials; hydro-geomechanical numerical analyses related to a planned shaft sinking in England; numerical simulations of fresh concrete.

**Site Characterization:** Site investigations including geological/structural characterization of mapping, laboratory rock-mechanics tests and in-situ stress measurements, and detailed tunnel design and blast specifications for an urban system of shallow traffic tunnels in Stockholm (Ring Road, Northern Link 2).

**Blasting:** Studies on blast-induced damage zones, including design and field testing of destress blasting in Laisvall Mine (Sweden) and Pyhäsalmi Mine (Finland), and site instrumentation and rock mechanics investigations in connection with destress blasts.

*Laboratory Testing:* Laboratory triaxial compression tests of a hard clay from a proposed site for radioactive waste disposal in France; coupled gas flow studies of pore-volume relation for a sandstone under triaxial loading condition.

Development of unique experimental techniques for controlled uni- and tri-axial testing of hard brittle rocks; experimental research on the post-failure behavior of rock samples from the Deep Borehole in Siljan Ring, Sweden; laboratory investigations of the effect of heat on stress redistribution and fracturing of large granite blocks.

Rock mechanics investigations of the foundation of large bridges; laboratory tests on soil and aggregate samples related to highway construction; concrete-mix design and laboratory tests on concrete samples.