CURRICULUM VITAE

Mostafa Gorjian, Ph.D.

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EXPERT SUMMARY

Dr. Mostafa Gorjian is an Associate in the Geotechnical & Mining Group at 30 Forensic Engineering and a faculty affiliate at the University of British Columbia (UBC), bringing over a decade of expertise as a Specialist Geotechnical Engineer and Rock Mechanics consultant. His extensive experience includes infrastructure projects such as piles, embankments, tunnels, and utilities, alongside work in the mining, environmental, and oil and gas sectors. With a Ph.D. in Geological Engineering, he specializes in rock mass characterization, in-situ stress measurement, seismic hazard analysis, and hydro-mechanical slope design. Dr. Gorjian's contributions are widely recognized through numerous publications in international journals and conferences, where he has also served as a guest editor for acknowledged journals. Recently, He has played pivotal roles in notable British Columbia projects like the Kamloops flood control, Waste Water Treatment Plant (WWTP), and introduced innovative methods that have significantly saved time and costs for clients, particularly in mega-sized constructions like the Broadway Subway Project.

SPECIALIZED PROFESSIONAL COMPETENCIES

- Geotechnical
- Mining
- Geo-Environmental and Redevelopment of Contaminated Sites
- Heavy Civil Infrastructure
- Waterfront Engineering
- Soil Mechanics and Soil Structures
- Technical & Project Finance Investigations
- Risk Management
- Multi-site and Multi-scope Project Management

ACADEMIC BACKGROUND

Ph.D., Civil and Geological Engineering, University of Saskatchewan, Canada, 2019

M.Sc., Rock Mechanics Engineering, University of Tehran, Iran, 2010

B.Sc., Mining Engineering, University of Tehran, Iran, 2007

ADDITIONAL COURSES

Pile Design and Construction Practice, June 13 to August 13, 2022

Geotechnical Engineering of Embankment, May 16 to June 27, 2022

Analysis and Design of Shallow Foundation, September 1 to October 1, 2022

Ground Support for Tunnels in Rock, October 15 to November 15, 2022

Soil Liquefaction: Applied Engineering Principles and Practical Use of CLiq Software for Analysis, January 15 to February 15, 2023

Basement excavation modelling using PLAXIS 2D, January 15 to February 15, 2023

PROFESSIONAL EXPERIENCE

30 Forensic Engineering

Associate, Geotechnical and Mining
February 2024 – Present, Vancouver, BC

- Provides geotechnical expertise for multidisciplinary forensic investigations including residential, commercial, and industrial-related losses.
- Investigates geotechnical, mining, and heavy civil infrastructure failures with a specific focus on foundations, slopes, excavations and earth-retaining systems.
- Performs site examinations relating to loss/failure.
- Reviews reports, plans and specifications to determine whether they meet relevant guidelines, codes, and other regulations.
- Develops and maintains research collaboration with academia.

EXP Services Inc.

Rock Mechanics Specialist
2021 – 2024, Vancouver, BC

- Conducted subsurface investigations and prepared Geotechnical Data Reports (GDR) for the Broadway Subway Project.
- Bored Pile design and construction (Elevated Guideway, Broadway Subway Project).
- Micro-Pile Design and Construction Inspection (Stations, Broadway Subway Project).
- Rock Mass Characterization of TBM Break In and Break Out walls (Stations, Broadway Subway Project).
- Analyzed the effect of TBM on shoring walls and investigated the plastic zone of the tunnel (Stations, Broadway Subway Project).
- Wastewater treatment plant design and construction inspection (Corix Multi-Utility Services Inc., Tobiano RIB Berm, Tobiano, Kamloops, BC).
- Reviewed settlement monitoring data to evaluate settlement performance (Shi Xing Tai Investment Co. Ltd., Big Bend Crossing Retail Mall 2021 Settlement Monitoring Review, Burnaby, BC).

- Induced stress and settlement analyses during the construction phase of the new overland gas line through the City of Burnaby (Kiewit., Pattullo Gas Line Replacement, Burnaby, BC).
- Conducted numerous slope stability and seepage analyses to design road embankment (Kiewit-Ledcor TMEP Partnership (KLTP)., Trans Mountain Expansion Project, Spread 7b Pipeline, CWP 106 Restoration, Burnaby, BC).
- Worked closely with EOR on inspecting subgrade sand and recommended removing /not removing 230mm of based material (Alpin & Martin, United Church Parking Lot Restoration, Richmond, BC).
- Interpreted the soil condition, updated borehole logs, investigated the clues of bedrock and designed soil nail wall and embankment slope stability for East Columbia Entrance Ramp (South Entrance Ramp) MUP Overpass, Royal Ave to Agnes St MUP Overpass, North Entrance Ramp MUP Overpass and Segment 1 retaining wall (Hatch Ltd., Pattullo Bridge Replacement Project - Design Stage, Vancouver, BC).

University of British Columbia

Post-Doc Fellow & Rock Mechanics Laboratory Manager
2019 – 2021, Vancouver, BC

- Provided a combination of hydrogeological field support, field and lab testing, numerical groundwater flow modelling and pore pressure cross sections for slope instability reported after heavy rain in the foreland belt of the western Canadian Sedimentary Basin (WCSB) (Teck Resource, Coal Open Pits Mine, Castle Mountain, BC).
- Characterized the Breccia, Porphyry, and Metamorphic rocks and recommended the failure properties to be used by the design team (Wyllie & Norrish Rock Engineers Inc, Cangrejos Project, Ecuador).
- Investigated the vein effect on rock burst phenomenon in an underground mine and developed the susceptibility framework and hazard map and recommended the post-peak failure behaviour (PT Freeport Indonesia (PTFI), Indonesia).
- Provided a multi-disciplinary approach linking orebody knowledge, footprint reliability and sensor-based sorting to improve safety and productivity (ICARN, Cave to Mine Project, Australia, and Indonesia).

University of Saskatchewan

Research Associate and Rock Mechanics Laboratory Engineer
2013 – 2019, Saskatoon, SK

- Investigated the effect of the creep behaviour of Potash samples and the resultant instability in underground mines (Nutrien (Previously known as Potash Corp), Saskatchewan, Canada).
- Optimized the monitoring system in saline carbon dioxide (co2) storage Aquistore Project (Petroleum Technology Research Center (PTRC), Aquistore Project, Saskatchewan, Canada).
- Analyzed wireline log properties, conducted laboratory experiments, developed a toolbox to analyze Thermo-Hydro-Mechanical stress perturbation, developed a fully coupled thermos-hydro-mechanical simulation of fracture propagation, predicting in-situ stress (PetroBakken, Hydraulic Fracturing in Bakken Formation, Saskatchewan, Canada).

Soil Mechanics and Technology

Ministry of Road and City Planning
2012 – 2013, Iran, Tehran

- Led a team of specialists to perform/inspect/qualify the test and control the construction operations in accordance with notified technical specifications.
- Compiled and reviewed the related standards in cooperation with the Institute of Standards and Industrial Research of Iran.
- Investigated the physical, mechanical, and chemical properties of soil, rock, and concrete, and led a team to investigate Free Swelling Strain (FSST), Semi Confined Swelling Strain (SCSST), Swelling Pressure Test (SPT) on the Marlstone, and investigated the effect of temperature and stress on creep behaviour of evaporite Formation.
- Pioneered the application of photogrammetry in rock mechanics to determine the stress-strain curve of material under uniaxial compressive stress in Iran.

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

- Canadian Geotechnical Society (CGS), Member
- International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), Member
- American Society of Civil Engineers (ASCE), Member
- Vancouver Geotechnical Society
- UBC Guest Lecturer & Adjunct Professor
- Canadian Geotechnical Journal Paper Reviewer
- Visiting lecturer University of British Columbia (UBC) teaching Rock Mechanics and advanced Geotechnical Laboratory for undergraduate and graduate students
- Editor of MDPI Journal Special Issue of "*Structural Characterization and Hydraulic Fracturing Responses of Deep-Buried Geomaterials*"

AWARDS AND ACHIEVEMENTS

- Developed assessment tools for strain bursting and rock mass bulking hazards for improved footprint reliability and preventive support maintenance, MITACS, 2019
- Fiber Optic application for stress measurement application, RTI, NSERC, 2020

PUBLICATIONS AND ACADEMIC SPEAKING ENGAGEMENTS

- Li, P., Cai, M., Gao, Y., Gorjian, M., Miao, S. and Wang, Y., (2022). Macro/mesofracture and instability behaviors of jointed rocks containing a cavity under uniaxial compression using AE and DIC techniques. Theoretical and Applied Fracture Mechanics, 122, p.103620.
- Hendi, S., Eberhardt, E. and Gorjian, M., (2022). Investigating the Effect of Contributory Factors on the Response of Fibre Optic Cable for Underground Monitoring of Geological Stress in British Columbia, Geoscience BC.

- Peng Li, Mostafa Gorjian, Zhengyang Song (2022), Call for paper: Special Issue "Structural Characterization and Hydraulic Fracturing Responses of Deep-Buried Geomaterials" in the journals Materials (SCI, Q1, IF=3.748), Minerals (SCI, Q2, IF=2.818), Energies (SCI, Q3, IF=3.252), and Geosciences (ESCI). Please refer to: https://www.mdpi.com/topics/7FV1L4F2I9
- Mehrabifard, A., Amini, A., Gorjian, M., Rogers, S., Eberhardt, E. and Damjanac, B., (2021). The mechanistical study of the effects of rock stiffness and wellbore orientation with respect to SHmax on induced seismicity: a numerical study.
- Gorjian, M., Hendi, S. and Hawkes, C.D., (2021). An Analytical Framework for Stress Shadow Analysis During Hydraulic Fracturing–Applied to the Bakken Formation, Saskatchewan, Canada. Solid Earth Discussions, pp.1-42.
- Hendi, S., Gorjian, M. and Hawkes, C.D., (2020), June. A Workflow for Predicting the Effect of Bedding and Drilling-Induced Stresses on Borehole Sonic Logging, With Application to the Montney Formation, Northeastern British Columbia. In 54th US Rock Mechanics/Geomechanics Symposium. OnePetro.
- Hendi, S., Gorjian, M., Bellefleur, G., Hawkes, C.D. and White, D., (2020). Investigation of the Effects of Surrounding Media on the Distributed Acoustic Sensing of Helically-Wound Fiber-Optic Cable with Application to the New Afton Deposit, British Columbia. Solid Earth Discussions, pp.1-31.
- Gorjian, M., (2020). Investigation of the Geomechanical Controls on Hydraulic Fracturing in the Bakken Formation, Southeast Saskatchewan (Doctoral dissertation, University of Saskatchewan).
- Gorjian, M., O'Neill, S, Eberhardt, E., (2019). Experimental investigation of Coupled Hydro-Mechanical Properties of western Canadian Coal-bearing Formation, International Journal of Rock Mechanics and Mining Science