

Mandeep Singh Basson

Department of Civil Engineering, University of California, Davis

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Education

- **University of California, Davis** **Davis**
PhD student in Geotechnical Engineering *Sept, 2018–Present*
- **Technical University of Munich** **Munich**
Student Exchange Program *Sept, 2017–April, 2018*
- **Indian Institute of Technology, Delhi** **New Delhi**
Masters in Geotechnical and Geoenvironmental Engineering *July, 2016–July, 2018*
- **Thapar Institute of Engineering and Technology** **Patiala**
Bachelors in Civil Engineering *June, 2011– June, 2015*

Research Experience

- **Doctoral research** (*Advisor: Dr Alejandro Martinez*)
Fabric properties of granular materials during cyclic loading using Discrete Element Modelling (DEM)
- **DAAD Research Fellow** (*Advisor: Dr Roberto Cudmani, Dr G V Ramana*)
Stress-Strain-Volume change behaviour of Karlsruhe sand under monotonic loading using Discrete Element Modelling
- **Graduate Research**
 - Seepage and stress deformation analysis of a plastic cutoff under CFRD dam. (*Advisor: Dr G V Ramana*)
 - Shrinkage crack determination: by Image processing techniques. (*Advisor: Dr Ayothiraman Ramanathan*)
- **Undergraduate Research**
 - Unsaturated Soil Mechanics: slope stability of unsaturated slopes. (*Advisor: Dr Vikas Pratap Singh*)
 - Steam curing of Concrete and implications on the strength of concrete. (*Advisor: Dr Shweta Goyal*)

Teaching Experience

- **Teaching Assistant, Lab. Mechanics of Materials** UCD, Winter 2019
- **Teaching Assistant, Intro. to Soil Mechanics** IITD, Spring 2018

Professional and Service Activities

- **Member, Academic Senate Committee for Distinguished Teaching Award** UCD
- **Member, Orchard Park Redevelopment Committee** UCD
- **Member, Graduate Student Association** UCD
- **Member, Teaching Assistant WellBeing Program** UCD
- **Member, National Service Scheme** IITD

Affiliations

- **Student Member, American Society for Civil Engineering** (ASCE)
- **Member, Indian Geotechnical Society** (IGS)
- **Member, Indian Geotechnical Society Delhi Chapter**

Scholarships

- **Deutscher Akademischer Austauschdienst Master Sandwich Program (DAAD IIT-MSP)**
Master Thesis research at Technical University of Munich, Germany from September, 2017 to March, 2018
- **Ministry of Human Resource Development (MHRD) Scholarship**
Scholarship for two years of Masters at Indian Institute of Technology, Delhi

Internships/Consulting Projects

- **Seepage analysis of a deep excavation near a canal using 3D FEM**
Consulting Project
Estimation of discharge from excavation sides and bottom using RS3D. Feasibility study of provision of a cutoff wall around the excavation
- **Estimation of undrained shear strength under a failed approach embankment**
Consulting Project
Slope Stability analysis of a failed embankment on an important National Highway in India using both Limit Equilibrium and Finite Element techniques. Probabilistic Slope Stability analysis to predict the likely values of undrained shear strength of foundation soil.
- **Ground improvement scheme for an Embankment and Pre/Post improvement Slope Stability Analysis**
Consulting Project
Ground improvement in form of stone columns designed for an embankment over a soft clay deposit. Static/Pseudo-Static slope stability was carried out using SLIDE.
- **Liquefaction potential of soil under an Oil Refinery Tank**
Consulting Project
Investigation of liquefaction susceptibility of a site under oil refinery tanks along with provision of ground improvement
- **CC-34 HCC-Samsung JV for Delhi Metro Rail Corporation**
Six months Industrial training
Complete experience of Precast Segments for Tunnel Boring Machines. Research on effect of steam curing on the strength of pre-casted segments

Memberships

- **Life time member of Indian Geotechnical Society, membership number LM-4183**
- **Life time member of Indian Geotechnical Society, Delhi Chapter, membership number LM-1094**

Technical and Personal skills

- **Geotechnical Package:** PLAXIS, GeoStudio, Rocscience Suite, FLAC, PFC
- **Data Analysis and Interpretation Package:** MSExcel, Paraview, VisIt, SciDAVis, Origin
- **Programming Package:** Python, C, C++, XML, MATLAB and FISH (FLAC/PFC)
- **Photo editing and processing:** GIMP, ImageJ, Inkscape
- **SPH Package:** ANSYS AutoDyn, DualSPHysics, SPHysics

Publications/Conferences

- **Evaluation of desiccation cracking potential of human hair fiber-reinforced soil**
'Mandeep S Basson, R Ayothiraman'
Submitted for review to ASTM Geotechnical Testing Journal (GTJ-2019-0017)
- **Evaluation of macroscopic soil model parameters using the Discrete Element Method**
'Mandeep S Basson, Roberto Cudmani, G V Ramana'
Accepted for publication in proceedings of IACMAG Symposium 2019, IIT Gandhinagar, India
- **Comparison of slope stability using Smoothed Particle Hydrodynamics, Finite Element Method, and Limit Equilibrium Method**
'Mandeep S Basson, R Venkatraman, G V Ramana'
Proceedings of Indian Geotechnical Conference 2018, IISc Bangalore, India, TH-03-31
- **Active Seismic Earth Pressure due to Unsaturated Backfill**
'Mandeep S Basson, Vikas Pratap Singh'
Proceedings of Indian Geotechnical Conference 2015, College of Engineering Pune, India, Sub No 112
- **Influence of Matric Suction on Short Term Stability Analysis of Unsaturated Slopes**
'Mandeep S Basson, Vikas Pratap Singh'
Proceedings of International Conference on Sustainable Civil Infrastructure (ICSCI) 2014, Hyderabad,India pp.437-442
- **Effect of Steam Curing on Precast Segments used as Tunnel Lining for Tunnel Bored by Shield TBM**
'Mandeep S Basson, Shweta Goyal'
Proceedings of UKIERI Concrete Congress 2015, N.I.T Jalandhar,India pp.493-504