

Charles John MacRobert Pr Eng PhD MSc BSc

BIOGRAPHICAL SKETCH

Dr Charles John MacRobert, received his BSc (Eng) from UCT, and both his MSc (Eng) and PhD from Wits. He is currently a Senior Lecturer of Geotechnical. His research interests lie predominantly in understanding the role of engineering judgement in dealing with epistemic uncertainty, which often abounds in practice due to limited resources. Charles also provides specialised consulting support to industry.



NOTABLE ACHIEVEMENTS

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| International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) Bright Spark Lecture at the 17th African Regional Conference on Soil Mechanics and Geotechnical Engineering. | 2019 |
| Barry van Wyk Award for best final year thesis in Geotechnical Engineering at a South African University awarded by the South Africa Intuition of Civil Engineers Geotechnical Division. | 2010 |

EDUCATION

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| 2017 | PhD in Civil Engineering, University of the Witwatersrand |
| 2012 | M. Sc. in Civil Engineering, University of the Witwatersrand |
| 2009 | B. Sc. in Civil Engineering, University of Cape Town |
| 2005 | Gateway High School, Zimbabwe |

SUMMARY OF WORK EXPERIENCE

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| May 2019 – Present | Senior Lecturer, Stellenbosch University, South Africa
Lecturing and supervision of undergraduate and postgraduate students in geotechnical engineering and design. |
| Ad hoc basis | Specialist Geotechnical Consultant to Isithelo Mining Consultants and Services, South Africa
Peer review of technical work. Characterisation and modelling of geomaterials for global stability and seepage assessments |
| Aug 2018 – Apr 2019 | Senior Lecturer, University of the Witwatersrand, South Africa
Lecturing and supervision of undergraduate and postgraduate students in geotechnical engineering and design. |
| Feb 2013 – Jul 2018 | Lecturer, University of the Witwatersrand, South Africa
Lecturing and supervision of undergraduate students in geotechnical engineering and design. |
| Jan 2010 – Jan 2013 | Civil Engineer, Anglo Technical Services, Johannesburg, South Africa
Geotechnical oversight of Kimberlite slimes, Mineral sand slimes and tailings, Coal discard, and Platinum tailings. Oversight of technical, legal and environmental aspects of mine waste disposal. |
| Jul 2011 – Mar 2012 | Civil Engineer, SRK Consulting, Johannesburg, South Africa
Design work on coal slimes drying beds, seismic ground motion studies, feasibility studies for Kimberlite waste, and Iron ore waste. (Secondment from Anglo Technical Services). |

MEMBERSHIPS

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| 2010 - present | Candidate Engineer with the Engineering Council of South Africa |
| 2008 - present | Associate Member of the South African Institution of Civil Engineers (Geotechnical Division) |
| 2015 - 2018 | South African National Congress of Large Dams |

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Publication List

JOURNAL PAPERS

1. Stark, T. D., and MacRobert, C. J. (2021). "Liquefied Strength Ratio with Stress Densification and Low Stresses." Canadian Geotechnical Journal. 10.1139/cgj-2018-0730
2. Sukumar Pathmanandavel & Charles John MacRobert (2020) Digitisation, sustainability, and disruption – promoting a more balanced debate on risk in the geotechnical community, Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards, DOI: 10.1080/17499518.2020.1790012
3. MacRobert, C.J. (2020). A review of impacts associated with infrastructure news coverage in South Africa. South African Geographical Journal, 102(2):236-248
4. MacRobert, C.J., Bernstein, G.S. and Nchabeleng, M.M. (2019). Dynamic Cone Penetrometer (DCP) Relative Density Correlations for Sands. Soils and Rocks 42(2):201-207
5. MacRobert, C.J. (2019). Discussion of "Liquefaction Resistance and Steady-State Characterization of Shallow Soils within the Christchurch Central Business District" by Christopher S. Markham, Jonathan D. Bray, Misko Cubrinovski, and Michael F. Riemer ASCE Geotechnical and Geoenvironmental Engineering, 145(9)07019015
6. MacRobert, C. J., Day, P. W., and Luker, I. (2019). Strength changes during internal erosion of gap-graded soils. Proceedings of the Institution of Civil Engineers - Geotechnical Engineering, 172(4):331-343.
7. MacRobert, C.J. (2018). Introducing engineering judgement through active learning. ASCE Journal of Professional Issues in Engineering Education and Practice 144:4
8. MacRobert, C. J. (2017). Interpreting DPSH penetration values in sand soils. Journal of the South African Institution of Civil Engineering 59(3): 11-15.
9. MacRobert, C. J. and G. E. Blight (2013). A field study of the in situ moisture regime during active hydraulic tailings deposition. Journal of the South African Institution of Civil Engineering 55(3): 57-68.
10. Blight, G., A. Copeland, P. Jardine and C. MacRobert (2012). Measurements on freshly-deposited surfaces of two platinum tailings dams. Journal of the South African Institute of Mining and Metallurgy 112(11): 911.
11. MacRobert, C., D. Kalumba and P. Beales (2011). Correlating standard penetration test and dynamic probe super heavy penetration resistance values in sandy soils. Journal of the South African Institution of Civil Engineering 53(1): 46-54.

MAGAZINE ARTICLES

1. MacRobert, C.J. (2020). Judgement in ground engineering. Civil Engineering. Johannesburg, SAICE. 28(3):52-55
2. MacRobert, C. J. (2019). "Power perceptions: How the media affects public perception." Energize, ee Publishers, Johannesburg.
3. MacRobert, C. J. (2018). "Predicting the World Cup winner: An engineer's working guide " The Conversation, The Conversation, News article.
4. MacRobert, C. J. (2018). "South Africa needs to refresh how it manages by-products from mining." The Conversation, The Conversation, News article.
5. MacRobert, C. J. (2018). Factors of safety and probabilities of failure in geotechnical engineering: What do we mean? Civil Engineering. Johannesburg, SAICE. 26(3): 45:50.
6. MacRobert, C. J. (2017). Are you smarter than a student? Civil Engineering. Johannesburg, SAICE. 25(3): 81.
7. Torres-Cruz, L. A., C. J. MacRobert and I. Luker (2017). Geotechnical research at Wits. Civil Engineering. Johannesburg, SAICE. 25(3): 74-76.
8. MacRobert, C. J. (2016). Social geotechnics. Civil Engineering. Johannesburg, SAICE. 24: 68-71.

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9. MacRobert, C. J., L. A. Torres-Cruz and I. Luker (2015). Geotechnical research at Wits. Civil Engineering. Johannesburg, SAICE. 23(3): 62-63.
10. MacRobert, C. J. (2013). Public transport: why not? Civil Engineering. Johannesburg, SAICE. 21: 26-28.
11. MacRobert, C. J., D. Kalumba and P. Beales (2010). Penetration testing: test procedures and design use in South Africa. Civil Engineering. Johannesburg, SAICE. 18(3): 29-30, 32-38.

CONFERENCE PAPERS

1. MacRobert (2019). Challenge to judgement. 17th African Regional Conference on Soil Mechanics and Geotechnical Engineering. SAICE Geotechnical Divisions and ISSMGE, Cape Town: 59-67.
2. MacRobert (2019). A comparison of approaches to determine bottom liner stability. 17th African Regional Conference on Soil Mechanics and Geotechnical Engineering. SAICE Geotechnical Divisions and ISSMGE, Cape Town: 391-395.
3. Killian, D. G., and MacRobert, C. J. (2018). Application of legislation and regulations for waste liners within the mining industry. 6th International Mining and Industrial Waste Management Conference, C. J. MacRobert, ed., SAICE Geotechnical Division, Legend Golf and Safari Resort, Limpopo, South Africa: 21-30.
4. MacRobert, C. J. (2018). Slope stability: overconfidence in experts and novices. 6th International Mining and Industrial Waste Management Conference, C. J. MacRobert, ed., SAICE Geotechnical Division, Legend Golf and Safari Resort, Limpopo, South Africa: 99-108.
5. MacRobert, C. J. (2018). Strength assumptions for assessing liquefaction of upstream constructed tailings dams. 6th International Mining and Industrial Waste Management Conference, C. J. MacRobert, ed., SAICE Geotechnical Division, Legend Golf and Safari Resort, Limpopo, South Africa: 179-188.
6. MacRobert, C. J., Dippenaar, L., and London, J. M. (2018). Influence of permeability ratio on phreatic surfaces at interfaces between coarse and fine material. 6th International Mining and Industrial Waste Management Conference, C. J. MacRobert, ed., SAICE Geotechnical Division, Legend Golf and Safari Resort, Limpopo, South Africa: 231-238.
7. MacRobert, C.J. (2017). Development of the Vertical Axis Restraint Internal Erosion Direct Shear Box. Proceedings of the 9th South African Young Geotechnical Engineers Conference, Durban, South Africa, SAICE: 1-12.
8. MacRobert, C.J. (2017). Computational difficulties in predicting phreatic surfaces in coarse coal discard. Proceedings of the 9th South African Young Geotechnical Engineers Conference, Durban, South Africa, SAICE: 159-168.
9. MacRobert, C. J. (2016). A theoretical framework to understand the mechanical consequences of internal erosion. Appropriate technology to ensure proper Development, Operation and Maintenance of Dams in Developing Countries. L. Hattingh. Johannesburg, South African National Committee of Large Dams (SANCOLD): 2b-159 - 152b-168.
10. MacRobert, C. J. and P. W. Day (2016). Considerations for using soil-salt mixtures to model soil fabric changes. Proceedings of the First Southern African Geotechnical Conference, Sun City, South Africa, CRC Press.
11. MacRobert, C. J. and L. A. Torres-Cruz (2016). Evaluation of methods to determine reference void ratios. Proceedings of the First Southern African Geotechnical Conference, Sun City, South Africa, CRC Press.
12. MacRobert, C. J. and M. van der Haar (2016). Numerical modelling rapid drawdown in riverbanks. Proceedings of the First Southern African Geotechnical Conference, CRC Press: 149-153.
13. MacRobert, C. J. (2015). Appraisal of seepage-induced erosion of earth dams. SANCOLD Annual Conference 2015. Cape Town, SANCOLD: 333-343.

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14. Copeland, A. and C. J. MacRobert (2014). Does your TSF water balance? Lessons from case studies. 5th International Mining and Industrial Waste Management Conference. Rustenburg, South Africa, SAICE Geotechnical Division.
15. MacRobert, C. J. and D. Cameron (2014). Coal Residue Disposal in South Africa. 5th International Mining and Industrial Waste Management Conference. Rustenburg, South Africa.
16. MacRobert, C. J. and A. Copeland (2014). On site measurement of tailings waters balances. 5th International Mining and Industrial Waste Management Conference. Rustenburg, South Africa.
17. Naidoo, D., T. Christopher and C. J. MacRobert (2014). Permeability characterisation of mixed coal residue. 5th International Mining and Industrial Waste Management Conference, Rustenburg, South Africa, SAICE Geotechnical Division.
18. Blight, G. E., A. Copeland, P. Jardine and C. J. MacRobert (2013). Measurements on freshly-deposited surfaces of two platinum tailings dams. Paste 2012. Sun City, South Africa.
19. MacRobert, C. J. (2013). Field capacity and moisture loss during active deposition on Tailings Dams. 18th International Conference on Soil Mechanics and Geotechnical Engineering, Paris.
20. MacRobert, C. J. (2011). Advances in the use of DPSH testing for site investigations. Young Geotechnical Engineers Conference 2011. Kruger, South Africa, SAICE Geotechnical Division.
21. MacRobert, C. J. (2011). Applying resistivity to determining the phreatic surface in embankments. Young Geotechnical Engineers Conference 2011, Kruger, South Africa, SAICE Geotechnical Division.
22. MacRobert, C. J., D. Kalumba and P. Beales (2011). An alternative to the re-drive for determining rod friction exerted in Dynamic Probe Super Heavy testing. 15th African Regional Conference on Soil Mechanics and Geotechnical Engineering. C. Quadros and S. W. Jacobsz. Maputo, Mozambique, IOS Press: 559-564.
23. MacRobert, C. J., D. Kalumba and P. Beales (2011). Empirical equivalence between SPT N and DPSH n values. 15th African Regional Conference on Soil Mechanics and Geotechnical Engineering. C. Quadros and S. W. Jacobsz. Maputo, Mozambique, IOS Press: 565-570.