Curriculum Vitae: Charles John MacRobert

Abridged Curriculum Vitae

Charles John MacRobert PhD

Nationality: South African (ID No. 8606286153081)
Date of Birth: 28 June 1986
Phone: +27 82 261 6625
Email: charles.macrobert@gmail.com, macrobert@sun.ac.za

EDUCATION

University of the Witwatersrand, South Africa
PhD in Civil Engineering **2017**
Thesis Topic: Effect of internal erosion on the mechanical behaviour of soils
(Supervisors: Dr P.W. Day, Dr I. Luker, Prof C. James)
M. Sc. in Civil Engineering **2012**
Dissertation Topic: A Field Study of the Beaching Behaviour and the In-situ Moisture Regime of Tailings during Active Deposition (Supervisor: Prof G.E. Blight)

University of Cape Town, South Africa
B. Sc. in Civil Engineering **2009**
First Class Honours
Thesis Topic: Correlations between the Dynamic Probe Super Heavy test and the Standard Penetration Test and their application within South Africa

WORK EXPERIENCE

Stellenbosch University, South Africa **May 2019**
Senior Lecturer in Geotechnical Engineering **– present**
University of the Witwatersrand, South Africa **Feb 2013 –**
Senior Lecturer in Geotechnical Engineering **Apr 2019**
Anglo Technical Services, Johannesburg, South Africa **Jan 2010 –**
Civil Engineer in Mine Tailings Services **Jan 2013**
SRK Consulting, Johannesburg, South Africa **Jul 2011 –**
Civil Engineer in ENGEO Department (Seconded from Anglo Technical Services) **Mar 2012**

ACADEMIC EXPERIENCE

Publications to date:
Journal Articles: 8
Magazine Articles: 7
Conference Papers: 21

Teaching to date:
Undergraduate Courses: 7
Postgraduate Courses: 2
Masters Supervision: 6

NOTABLE ACHIEVEMENTS

Principal author of the most requested South Africa Intuition of Civil Engineers journal article (over 7500 since 2010) as recorded by SciELO South Africa **2015**

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 as judged by Prof GE Blight **2010**

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Detailed Curriculum Vitae

CONTACT DETAILS	
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PERSONAL INFORMATION	
Name:	Charles John MacRobert
Family status:	Married, 2 Children
Nationality:	South African (ID No. 8606286153081)
Place of birth:	Harare, Zimbabwe
Date of birth:	28 June 1986

EDUCATION

2017	**PhD in Civil Engineering, University of the Witwatersrand**	
	Thesis Topic:	Effect of internal erosion on the mechanical behaviour of soils
	Supervisors:	Dr P.W. Day, Dr I. Luker and Prof C. James
	Overview:	Changes in mechanical behaviour, due to internal erosion, are being investigated experimentally. A novel method of replacing erodible fines with sodium chloride allows the changes to be observed under realistic seepage conditions but within experimental periods. The methodology has the potential to be applied to studies of other soil fabric interactions.
2012	**M. Sc. in Civil Engineering, University of the Witwatersrand**	
	Dissertation Topic:	A field study of the beaching behaviour and the in-situ moisture regime of tailings during active deposition
	Supervisor:	Prof G.E. Blight
	Overview:	In-situ drying of platinum tailings were tracked for an eleven-month period through gravimetric water contents. A steady-state condition related to the materials field capacity developed, along most of the beach. Only at the head of the beach, did sufficient drying take place, to provide impounding strength.
2009	**B. Sc. in Civil Engineering, University of Cape Town**	
	Thesis Topic:	Correlations between the Dynamic Probe Super Heavy test and the Standard Penetration Test and their application within South Africa
	Extracurricular activities:	SAICE Student Chapter Committee Secretary, Smuts Hall House Committee Member, Academic Sub-Committee and Mentor
2005	**Gateway High School**	
	Advanced Level:	Maths, Physics, Chemistry and Technical Drawing (A: 4)
	Ordinary Level:	Maths, Physical Science, Geography, Biology, Religious Studies, Integrated Science, Technical Graphics, English Language, Literature in English, First Language English, Foreign Language French (A*: 3, A: 5 and B; 3)
	Extracurricular activities:	School Vice-Captain, Kendrick House Captain and First Team Hockey Captain

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SUMMARY OF WORK EXPERIENCE	
May 2019 – Present	**Senior Lecturer, Stellenbosch University, South Africa** • Presentation of geotechnical engineering final year design project • Coordination of postgraduate studies in geotechnical engineering
Feb 2013 – Apr 2019	**Senior Lecturer, University of the Witwatersrand, South Africa** • Co-supervision and supervision of 4 Masters student. • Presentation of geotechnical engineering final year design project • Lecturing of undergraduate geotechnical topics to civil engineers, architects and construction economics students (Slope stability, Compaction, Lateral pressures, Bearing capacity, Stress distributions, Consolidation, Soil Improvement, Problem soils, Geology for Civil Engineers). • Co-ordinator of a successful university fund application for new triaxial system. • Co-ordinator of school research output submission to South African Department of Higher Education.
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)
UNIVERSITY VACATION WORK EXPERIENCE	
Nov 2008 – Jan 2009	**Golder Associates Africa, Johannesburg, South Africa** Gained experience in various aspects of geotechnical site investigations, including borehole logging, test pit logging, percussion drilling work for determining dolomite risk, installation of piezometers for the management of tailing dams and use of penetration tests.
Jul 2008	**Bombela Turnkey Contractor, Johannesburg, South Africa** Exposed to the various aspects involved in the construction of the tunnels for the Gautrain Rapid Rail Link project involving Tunnel Boring Machines (TBM) and Drill and Blast techniques.
Nov 2007 – Jan 2008	**Franki Africa, Cape Town, South Africa** Involved in various aspects of practical geotechnical engineering including pile installation and pile load testing.

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NOTABLE ACHIEVEMENTS

2018	Faculty of the Build Environment and Engineering nomination for University of the Witwatersrand Individual Teaching Award
2018	Best presentation at the 6th International Mining and Industrial Waste Management Conference, 29-31 October 2018, Limpopo, South Africa
2017	Best poster at the 9th South African Young Geotechnical Engineers Conference, 13-15 September 2017, Durban, South Africa
2016	Principal author of the most downloaded South Africa Intuition of Civil Engineers journal article (over 7500 since 2010) as recorded by SciELO South Africa.
2010	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 as judged by Prof GE Blight.
2009	PDNA Prize for Best Conceptual Design in Final Year.
2007 – 2009	Jan Smuts Academic Award, Smuts Hall Deans Merit List, Engineering and the Built Environment
2007	Anglo American Technical Division Bursary Engineering and Build Environment Scholarship
2006	Class Medal, Department of Civil Engineering
2004	J. Chipo Makanyanka Trophy for Academic Excellence, Gateway High School

ACADEMIC ACTIVITIES

2010 – present	8 Journal Articles, 7 Magazine Articles and 21 Conference Papers (See publication list for details)
2017 – present	Reviewer for ASCE Journal of Geotechnical and Geoenvironmental Engineering, SAICE Journal, Environmental Earth Sciences Journal
2016 – present	Reviewer for First South African Geotechnical Conference, 2019 Africa Regional Conference Soil Mechanics and Geotechnical Engineering Conference
2018	Head of the Scientific Review panel for 6th International Mining and Industrial Waste Management Conference
2017	External examiner for University of Johannesburg final year projects External Examiner for University of Cape Town M.Sc. Report
2015	External Examiner for University of Johannesburg Geotechnical Engineering Course
2010	Evening lecture on SPT and DPSH correlation to the SAICE Geotechnical Division

POSTGRADUATE SUPERVISION

Stellenbosch University

Student	*Title of research*	*Status*
Niel Marais	Factors leading to tailings flow failures	Underway
Yusuf Simjee	Staged Construction and Static Liquefaction Assessment of a Tailings Storage Facility in South Africa	Underway

University of the Witwatersrand

Student	*Title of research*	*Status*
Gift Baloyi	Long term performance of filter materials	Underway
Megan van der Haar	Guidelines for the stabilisation of banks using the functional traits of roots	Completed
Daan Killian	Application of regulations for hazardous waste liners within the mining industry	Completed

Daryn Searle	Cost-effectiveness and quality improvements to unsuitable soils utilizing Impact Compaction technology	Completed

FUNDING APPLICATIONS

University of the Witwatersrand

1. URC Major Capex Application in 2017 – Lead applicant Prof Akpofure Taigbenu and co-application Luis Torres-Cruz. Equipment purchases worth R350 000 were approved.
2. URC Minor Capex Application in 2015 – Lead applicant Prof Mitch Gohnert and co-application Luis Torres-Cruz. Equipment purchases worth R68 000 were approved.
3. URC Major Capex Application in 2013 – Lead applicant Prof Geoff Blight and co-application Luis Torres-Cruz. Equipment purchases worth R500 322 were approved.

UNDERGRADUATE COURSES COMMITMENTS

Stellenbosch University

1. Advanced Design 446: Geotechnical design

University of the Witwatersrand

2. CIVN4003 Final year design project: Geotechnical design
3. CIVN4004 Geotechnical Engineering 2: Lecture components on Stress distributions, Consolidation, Problem soils, Soil improvement methods and Slope stability.
4. CIVN3004 Geotechnical Engineering 1: Lecture components on Compaction, Bearing capacity and Lateral support.
5. CIVN2003 Civil Engineering Theory 1: Lecture components on Trusses, Timber materials, Timber design and Geotechnical engineering.
6. CIVN2000 Earth Materials and Processes: Lectured components on Minerals, Rock types, Structural geology and Geomorphology. Currently course coordinator with lecturing done by School of Geosciences.
7. CIVN1004 Engineering Skills: Currently course coordinator with lecturing done by School of Mechanical, Industrial and Aeronautical Engineering and Academic Development Unit.

POSTGRADUATE COURSES COMMITMENTS

University of the Witwatersrand

1. CIVN7023 Deep Foundations and Anchors (Masters Level): Lecture component on Anchors. Course coordinator with various external and internal lectures.
2. CIVN4013 Civil Engineering Theory 3 (Honours Level): Lecture components on Compaction, Shallow foundations, Deep foundations and Lateral Support.

UNIVERSITY ADMINISTRATIVE DUTIES

University of the Witwatersrand

1. Chairman of School Plagiarism & Ethics Committee
2. Collation of school research activity report
3. School Transformation Committee
4. School Postgraduate Committee
5. Several academic selection committees

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CONSULTING ACTIVITIES	
2018	Review of hazardous waste facility liner stability
	Large shear box testing for liquid petroleum gas tanker facilities
2017	Slope stability analysis of various coal waste storage facilities
	Large shear box testing of coal discard
	Determination of safe cut back angles for remining coal waste storage facilities
	Seepage modelling of coal waste storage facilities
2016	Slope stability analysis of various coal waste storage facilities
	Large shear box testing of Kimberlite waste materials
	Constant head permeability tests of Kimberlite waste materials
2015	Large shear box testing for Kariba hydroelectric plant expansion
2014	Large shear box testing to determine geosynthetic interface friction values
	Experimental study to determine relationship between back fill quality tester (BQT) index and relative density of tailings
2013	Large shear box testing of aggregate materials
	Slope stability analysis of various coal waste storage facilities
	Slope stability analysis of a box cut for a mine portal

INDEPENDENT SHORT COURSES ATTENDED	
2012	University of Pretoria: Project Management Principles and Practices
	SAICE Geotechnical Division Short Course on Design of Spread Footings
2011	Anglo American A3 Safety Course
	Kaytech Filtration and Drainage with Geosynthetics Course
2010	Fraser Alexander Tailings Disposal Course
	SAIEG Geotechnical Soil Profiling Course
	SANCOLD Specialized Dam Engineering Course
	KPMG Helping People Buy Course

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

LANGUAGES	
English	Mother tongue
Shona	Speak fluently
Spanish	Completed basic course

COMPUTER SKILLS	
Office:	Word, Excel, PowerPoint, Excel, Endnote, AutoCAD
Geotechnical Software:	Seep/W, Slope/W, Sigma/W

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REFEREES

Emeritus Professor Chris James
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Dr Peter Day
Adjunct Professor, University of Stellenbosch
Technical Director, Jones and Wagner
PO Box 1434, Rivonia
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Dr Irvin Luker
Senior Lecturer Geotechnical Engineering
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University of the Witwatersrand
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South Africa
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Duncan Cameron
Lead Civil Engineer: Mineral Reside Management
Isithelo Mining Consultants & Services (Pty) Ltd
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South Africa
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Email: dcameron@isithelo.com

Charles John MacRobert, Johannesburg, 4 July 2019

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Publication List

JOURNAL PAPERS

1. MacRobert, C.J., Bernstein, G.S. and Nchabeleng, M.M. (Accepted). Dynamic Cone Penetrometer (DCP) Relative Density Correlations for Sands. Soils and Rocks
2. MacRobert, C.J. (Accepted). 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
3. MacRobert, C. J., Day, P. W., and Luker, I. (In Press). Strength changes during internal erosion of gap-graded soils. Proceedings of the Institution of Civil Engineers - Geotechnical Engineering, 1-13.
4. MacRobert, C.J. (2018). Introducing engineering judgement through active learning. ASCE Journal of Professional Issues in Engineering Education and Practice 144:4
5. MacRobert, C. J. (2017). Interpreting DPSH penetration values in sand soils. Journal of the South African Institution of Civil Engineering 59(3): 11-15.
6. 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.
7. 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.
8. 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. (2018). Factors of safety and probabilities of failure in geotechnical engineering: What do we mean? Civil Engineering. Johannesburg, SAICE. 26(3): 45:50.
2. MacRobert, C. J. (2017). Are you smarter than a student? Civil Engineering. Johannesburg, SAICE. 25: 81.
3. Torres-Cruz, L. A., C. J. MacRobert and I. Luker (2017). Geotechnical research at Wits. Civil Engineering. Johannesburg, SAICE. 25: 74-76.
4. MacRobert, C. J. (2016). Social geotechnics. Civil Engineering. Johannesburg, SAICE. 24: 68-71.
5. MacRobert, C. J., L. A. Torres-Cruz and I. Luker (2015). Geotechnical research at Wits. Civil Engineering. Johannesburg, SAICE. 23: 62-63.
6. MacRobert, C. J. (2013). Public transport: why not? Civil Engineering. Johannesburg, SAICE. 21: 26-28.
7. MacRobert, C. J., D. Kalumba and P. Beales (2010). Penetration testing: test procedures and design use in South Africa. Civil Engineering. Johannesburg, SAICE. 18: 29-30, 32-38.

CONFERENCE PAPERS

1. 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.
2. 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.
3. 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.

4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. MacRobert, C. J. (2015). Appraisal of seepage-induced erosion of earth dams. SANCOLD Annual Conference 2015. Cape Town, SANCOLD: 333-343.
12. 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.
13. MacRobert, C. J. and D. Cameron (2014). Coal Residue Disposal in South Africa. 5th International Mining and Industrial Waste Management Conference. Rustenburg, South Africa.
14. 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.
15. 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.
16. 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.
17. 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.
18. 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.
19. MacRobert, C. J. (2011). Applying resistivity to determining the phreatic surface in embankments. Young Geotechnical Engineers Conference 2011, Kruger, South Africa, SAICE Geotechnical Division.
20. 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.

21. 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.