

CURRICULUM VITAE – RIAAN COMBRINCK

PERSONAL INFORMATION

NAME AND SURNAME : Riaan Combrinck
 NATIONALITY : RSA Citizen
 AGE : 33
 LANGUAGES : Afrikaans and English (Both Excellent)
 CURRENT OCCUPATION : Senior Lecturer at Civil Engineering Department
 (Structural Division) of Stellenbosch University

QUALIFICATIONS

2004 : Matriculated at Grey College
 2008 : BEng cum laude (Civil) at Stellenbosch University
 2011 : MScEng cum laude (Civil) at Stellenbosch University
 2016 : PhD at Stellenbosch University

WORK AND TEACHING EXPERIENCE

2006 - 2007 : Vacation training at Ninham Shand Consulting Engineers
 2010 - 2012 : Part-time Lecturer at Stellenbosch University
 Subject: Building Materials 254
 2013 - 2015 : Lecturer at Stellenbosch University
 Subjects: Building Materials 254 (2013-current), Theory of Structures
 324 (2014), Postgraduate course on Cement based Materials (2014-
 current)
 2016 - : Senior Lecturer at Stellenbosch University
 Subjects: Building Materials 254 (2013-current), Postgraduate course
 on Cement based Materials (2014-current)

COMMITTEES

2013 - : Committee member of the Western Cape Branch of the Concrete
 Society of Southern Africa
 2018 - 2019 : Chair of the organising committee of the SAP2019 international
 conference held in Kruger National Park, South Africa, Nov 2019

GRANTS AND PROJECT FUNDING

2013 - 2015 : Thuthuka (NRF) and SubCom B (SU) funding with total budget of
 R 480 000 over three years
 2014 - 2018 : Part of Unit of Construction Materials (UCM), whom receives industry
 funding of around R 900 000 per year
 2017 - 2019 : Thuthuka (NRF) and SubCom B (SU) funding, R 183 000 per year

SCHOLARSHIPS AND AWARDS

2000 - 2004	:	Dux scholar at Grey College
2005 - 2008	:	Stellenbosch University Undergraduate Merit Bursary
2009 - 2012	:	Stellenbosch University Postgraduate Merit Bursary
2009	:	THRIP funded Master's Scholarship on Low Volume Fibre Reinforced Concrete at the Institute of Structural Engineering at Stellenbosch University
2010	:	Innovation Master's Scholarship from NRF
2011	:	Pretoria Portland Cement prize for Deserving Work in the field of Concrete Engineering, awarded by the Department of Civil Engineering of Stellenbosch University
2011-2012	:	Wilhelm Frank Scholarship for Full-Time PhD study

INSTITUTIONAL RESPONSIBILITIES

2015 – current:	:	Member of the Unit of Construction Materials (UCM)
2016 - current :	:	Head of the laboratory of the structural division
2018	:	Risk representative for the Civil Engineering Department

REVIEWER AND SESSION CHAIR AT CONFERENCES

- Reviewer for Cement and Concrete Research, Construction and Building Materials, ASTM Journal of testing and evaluation, Case studies in construction materials, Concrete/Beton, Materials and Structures, Journal for Building Engineering.
- Session chair at the International *fib* Symposium, Cape Town, South Africa, Nov, 2016.
- External moderator for MTech proposals and final year projects for CPUT, 2019.

INVITED PRESENTATIONS

- “Cracking of fresh concrete: The fundamentals of plastic settlement and plastic shrinkage cracking”, February 2014, Annual General Meeting of the Western Cape Branch of the Concrete Society of Southern Africa, Cape Town, South Africa.
- “Fresh concrete - Cracking of plastic concrete and the prevention thereof”, May 2017, Concrete as structural engineering material short course, Stellenbosch, South Africa.
- “Concrete durability”, February 2019, Coastal engineering post graduate short course, Stellenbosch, South Africa.

PUBLICATIONS

Dissertations

- Combrinck, R., 2011, “Plastic shrinkage cracking in conventional and low volume fibre reinforced concrete”, Stellenbosch: University of Stellenbosch (MScEng-Thesis).
- Combrinck, R., 2016, “Cracking of Plastic Concrete in Slab-Like Elements”, Stellenbosch: University of Stellenbosch (PhD-Thesis).

Books

- Application of Superabsorbent Polymers (SAP) and other New Admixtures Towards Smart Concrete, Sukuza, South Africa, 2019. Proceedings of the 3rd International Conference. Editors: WP Boshoff, R Combrinck, V Mechtcherine and M Wyrzykowski, Rilem book series 24, Publishers: Springer, ISSN 2211-0444.

Journal articles

- R. Combrinck, W.P. Boshoff, 2012, "Investigation of Plastic Shrinkage Cracking in Conventional and Low Volume Fibre Reinforced Concrete", Journal of the Concrete Society of Southern Africa, Concrete Beton, Number 131, July 2012.
- R. Combrinck, W.P. Boshoff, 2013, "Typical plastic shrinkage cracking behaviour of concrete", Magazine of Concrete Research, Volume 65 Issue 8, March 2013.
- W.P. Boshoff, R. Combrinck, 2013, "Modelling the severity of plastic shrinkage cracking in concrete", Cement and Concrete Research, Volume 48 (34-29).
- JO Lerch, HL Bester, AS van Rooyen, R Combrinck, WI de Villiers, WP Boshoff, 2018, "The effect of mixing on the performance of macro synthetic fibre reinforced concrete", Cement and Concrete Research, Volume 103 (130-139).
- CM Odendaal, AJ Babafemi, R Combrinck, WI de Villiers, WP Boshoff, 2018, "Performance evaluation of locally available synthetic macro fibres in a single fibre pull-out test in concrete", Journal of the South African Institution of Civil Engineering (SAICE), Volume 60 Issue 1 (21-30).
- R Combrinck, L Steyl, WP Boshoff, 2018, "Influence of concrete depth and surface finishing on the cracking of plastic concrete", Construction and Building Materials, Volume 175 (621–628).
- R Combrinck, L Steyl, WP Boshoff, 2018, "Interaction between settlement and shrinkage cracking in plastic concrete", Construction and Building Materials, Volume 185 (1-11).
- G Olivier, R Combrinck, M Kayondo, WP Boshoff, 2018, "Combined Effect of Nano-Silica, Super Absorbent Polymers, and Synthetic Fibres on Plastic Shrinkage Cracking in Concrete", Construction and Building Materials, Volume 192 (85-98).
- R Combrinck, M Kayondo, BD Le Roux, WI De Villiers, WP Boshoff, 2019 "Effect of Various Liquid Admixtures on Cracking of Plastic Concrete", Construction and Building Materials, Volume 202 (139-153).
- R. Combrinck, W.P. Boshoff, 2019, "Tensile properties of plastic concrete and the influence of temperature and cyclic loading", Cement and Concrete Composites 97, (300-311).
- M Kayondo, R Combrinck, WP Boshoff, 2019, "State-of-the-art-review on plastic cracking of concrete", Construction and Building Materials, Volume 225 (886-899).
- J Kolawole, R Combrinck, WP Boshoff, 2019, "Measuring the thixotropy of conventional concrete: the influence of viscosity modifying agent, superplasticiser and water", Construction and Building Materials, Volume 225 (853-867).

- MD De Klerk; M Kayondo; GM Moelich; WI De Villiers; R Combrinck; WP Boshoff, 2020 “Durability of Chemically Modified Sisal Fibre”, Construction and Building Materials, Volume 241.
- J Louw; M Kayondo; WI De Villiers; R Combrinck; WP Boshoff, “Mechanical Properties of Alkali Activated Materials with Conventional Steel Reinforcement”, (Submitted, Journal of Construction and Building Materials)
- M Kayondo, R Combrinck, WP Boshoff, A Review of Plastic Concrete Bleeding Measurement Techniques and the Proposed use of Super Absorbent Polymers (Submitted, Journal of Cement and Concrete Research)
- J Kolawole, R Combrinck, WP Boshoff, “Rheo-viscoelastic behaviour of fresh cement-based materials: cement paste, mortar and concrete”, (Submitted, Construction and Building Materials).
- J Kolawole, R Combrinck, WP Boshoff, “Plastic cracking behaviour of concrete and its interdependence on rheo-physical properties”, (Submitted, Construction and Building Materials).
- J Kolawole, R Combrinck, WP Boshoff, “Shear rheo-viscoelasticity approach to the plastic cracking of concrete: experiments and model”, (Submitted, Cement and Concrete Research).
- M Meyer, WP Boshoff, R Combrinck, “Utilising SAP as alternative method to test plastic shrinkage cracks in concrete”, (Submitted, Construction and Building Materials).
- G Moelich, R Combrinck, “A weather data analysis method to mitigate and prevent plastic shrinkage cracking”, (Submitted, Cement and Concrete Research).

Conference articles

- R. Combrinck, W.P. Boshoff, 2010, “Investigation of plastic shrinkage cracking in concrete”, 4th International Conference on Structural Engineering, Mechanics and Computation (SEMC), Cape Town, South Africa.
- R. Combrinck, W.P. Boshoff, 2011, “Investigation of the critical period for plastic shrinkage cracking”, *fib* International Workshop on Performance-Based Specifications for Concrete, Leipzig, Germany.
- J. Maritz, R. Combrinck, W.P. Boshoff, 2011, “Investigation of the behaviour of low-volume fibre reinforced concrete in the fresh state”, FIB International Workshop on Performance-Based Specifications for Concrete, Leipzig, Germany.
- W.P. Boshoff, R. Combrinck, J. Maritz, 2012, “A model for the prediction of plastic shrinkage cracking in concrete”, 3rd International Conference on Concrete Repair, Rehabilitation and Retrofitting (ICRRR), Cape Town, South Africa.
- R. Combrinck, W.P. Boshoff, 2012, “Theory for the early age plastic cracking behaviour of concrete”, 9th *fib* International PhD Symposium in Civil Engineering, Karlsruhe, Germany.
- R. Combrinck, W.P. Boshoff, 2012, “Influence of restraint on the early age cracking of concrete with and without fibres”, 8th RILEM International Symposium (BEFIB), Guimarães, Portugal.

- R. Combrinck, W.P. Boshoff, 2013, “The origin of plastic settlement cracking and the effect on re-vibration”, 5th International Conference on Structural Engineering, Mechanics and Computation (SEMC), Cape Town, South Africa.
- R. Combrinck, W.P. Boshoff, 2014, “Fundamentals of plastic settlement cracking in concrete”, International Conference on Construction Materials and Structures (ICCMATS), Johannesburg, South Africa.
- J.D. Dippenaar, W.P. Boshoff, R. Combrinck, 2014, “Initial study to determine the tensile material properties of fresh concrete”, International Conference on Construction Materials and Structures (ICCMATS), Johannesburg, South Africa.
- B.D. Le Roux, W.P. Boshoff, R. Combrinck, 2015, “Influence of admixtures on plastic shrinkage cracking of concrete”, Fifth International Conference on Construction Materials (ConMat), Whistler, Canada.
- L. Steyl, W.P. Boshoff, R. Combrinck, 2016, “Proposed mould for the assessment of pure plastic shrinkage cracking”, International *fib* Symposium, Cape Town, South Africa.
- R. Combrinck, W.P. Boshoff, 2016, “Analytical model of the cracking of plastic concrete”, International *fib* Symposium, Cape Town, South Africa.
- R. Combrinck, L. Steyl, W.P. Boshoff, 2017, “Influence of depth on the cracking of plastic concrete”, Second International *RILEM* Conference on Early Age Cracking and Serviceability on Cement-based Materials and Structures, Brussels, Belgium.
- M.Y. Khan, J.T. Kolawole, W.P. Boshoff, R. Combrinck 2017, “Influence of relaxation and cyclic loading on the tensile material properties of plastic concrete”, Second International *RILEM* Conference on Early Age Cracking and Serviceability on Cement-based Materials and Structures, Brussels, Belgium.
- M Diekmann, WP Boshoff, R Combrinck, 2018, “Creating a low embodied carbon concrete with conventional concrete properties”, 4th International Conference on Service Life Design for Infrastructures, Rilem Week 2018, Delft, Netherland.
- H Fataar, R Combrinck, WP Boshoff, 2018, “Preliminary study on the single fibre pull-out fatigue resistance of fibre reinforced concrete”, 4th International Conference on Service Life Design for Infrastructures, Rilem Week 2018, Delft, Netherland.
- L. Stone, R. Pretorius, R. Combrinck, 2019, “Compatibility between cement and superplasticiser in combination with fines, gypsum and fly ash”, 3rd International Conference on the Application of Superabsorbent Polymers (SAP) and Other New Admixtures Towards Smart Concrete, Sukuza, South Africa.
- G. Moelich, R. van Huffel, R. Combrinck, 2019, “Used oil as an admixture to improve the rheological properties of concrete”, 3rd International Conference on the Application of Superabsorbent Polymers (SAP) and Other New Admixtures Towards Smart Concrete, Sukuza, South Africa.
- J. Bessinger, L. Parker, R. Combrinck, 2019, “Influence of supplementary cementitious materials and superplasticisers on the rheological properties of concrete, 3rd International Conference on the Application of Superabsorbent Polymers (SAP) and Other New Admixtures Towards Smart Concrete, Sukuza, South Africa.

STUDENT SUPERVISION

- Diederick Dippenaar, MEng cum laude, 2015, “Tensile properties of early age concrete and the experimental apparatus required for its determination”.
- Bernard Le Roux, MEng cum laude, 2016, “Influence of admixtures on the plastic shrinkage cracking of concrete”.
- Lourens Steyl, MEng cum laude, 2016, “Influence of depth and curing on the cracking of plastic concrete”.
- Nuraan Ebrahim, 2017, “Using superabsorbent polymers in high performance concrete to mitigate autogenous and plastic shrinkage without compromising the compression strength”.
- Yaseen Khan, MEng cum laude, 2018, “The tensile material properties of plastic concrete and the influence on plastic cracking”.
- Michael Diekmann, 2019, “Developing a low embodied carbon-content concrete with conventional concrete properties”.
- John Kolawole, PhD, 2020, “The influence of rheology on the cracking of plastic cracking”.
- Jurie Visagie, MEng, 2020, “Influence of liquid curing measures on plastic shrinkage cracking of concrete”.
- Lorna Stone, MEng, 2020, “Compatibility issues between cement and admixture”.
- Marnu Meyer, Enrolled in 2020 for PhD to be completed in 2021, “Fundamentals of volume change of plastic concrete”.
- Humaira Fataar, Enrolled in 2019 for PhD to be completed in 2021, “Fatigue behaviour of fibre reinforced concrete”.
- Vital Alexander, Enrolled in 2018 for PhD to be completed in 2020, “Creep of textile reinforced concrete”.
- Gerius Moelich, Enrolled in 2019 for PhD to be completed in 2021, “Plastic cracking risk guideline for South Africa”.
- Hanru Muller, Enrolled in 2019 for MEng to be completed in 2020, “Glocrete”.
- Jaundre van Zyl, Enrolled in 2019 for MEng to be completed in 2020, “Influence of temperature on the plastic cracking of concrete”.
- Johandre Bessinger, Enrolled in 2019 for MEng to be completed in 2020, “Rheological and time-dependent compatibility issues between cement and admixtures”.
- Abrie Brits, Enrolled in 2019 for MEng to be completed in 2020, “Influence of plastic shrinkage cracking on the durability of concrete”.
- Friedhelm Gunzel, Enrolled in 2020 for MEng to be completed in 2021, “3D-printing of conventional concrete”.

COMMERCIAL RESEARCH PROJECTS

2009 : Project for fibre supplier – Involved in the testing of Poly-Ester Fibres for increased resistance against plastic shrinkage cracking

- 2012 : Project for flooring contractor – Involved in the experimental and on-site investigation of the cracking of concrete pavements and prescribing possible mitigation methods
- 2014 : Project for extender supplier – Involved in the testing of Diatomite as possible extender for Portland Cement
- 2014 : Project for admixture supplier – Involved in the testing of setting times of an Roller Compacted Concrete for Clanwilliam dam
- 2015 : Project for pavement contractor – Involved in the testing of a fibre reinforced pavement near Paarl
- 2016 : Project for Burglar bar supplier – Involved in the testing of burglar bars
- 2016-2017 : Project for Temporary works supplier – Involved in the testing of a temporary support system
- 2017 : Testing of paint film samples – Executed and completed entire project
- 2017 : Crack evaluation for pavement contractor – Executed and completed entire project
- 2018 : Project for consulting engineer contractor – Involved in the on-site investigation of cracking in thin overlays
- 2017-2018 : Project for admixture company regarding extruded clay units – Executed and completed entire project
- 2019 : Project for masonry ties supplier – Project leader
- 2019-2020 : Project for wood supplier – Project leader