Conference Programme

ICCRRR2024
04 - 06 NOVEMBER · CAPE TOWN, SOUTH AFRICA

SUNDAY 03/11/2024. 17:00 – 19:00: Registration and Welcome Function, GSB (V&A Waterfront)		
MONDAY 04/11/2024		
Session	**Venue A**	**Venue B**
1 (8:30 -10:00)	**Conference Opening & KEYNOTE LECTURES 1, 2**	
Tea & coffee break (10:00 – 10:30)		
2 (10:30 - 12:30)	**Condition assessment and non-destructive testing - 1**	**Service life extension and repair: methods, materials and techniques - 1**
Lunch (12:30 -13:30)		
3 (13:30 – 15:00)	**Condition assessment and non-destructive testing - 2**	**Concrete durability: material technology, modelling, design - 1**
Tea & coffee break (15:00 – 15:30)		
4 (15:30 – 17:00)	**Management of concrete infrastructure**	**Structural repairs and strengthening - 1**
17:45 – 19:30: Harbour Cruise		
TUESDAY 05/11/2024		
5 (8:30 - 10:00)	**KEYNOTE LECTURES 3, 4, 5**	
Tea & coffee break (10:00 – 10:30)		
6 (10:30 - 12:30)	**Structural repairs and strengthening - 2**	**Concrete durability: material technology, modelling, design - 2**
Lunch (12:30 -13:30)		
7 (13:30 - 15:00)	**Cathodic protection - 1**	**Concrete durability: material technology, modelling, design - 3**
Tea & coffee break (15:00 – 15:30)		
8 (15:30 - 16:30)	**Cathodic protection - 2**	**Concrete durability: material technology, modelling, design - 4**
Conference Dinner (18:00 – 22:00, bus transfer at 17:30)		
WEDNESDAY 06/11/2024		
9 (8:30 – 10:00)	**KEYNOTE LECTURES 6, 7, 8**	
Tea & coffee break (10:00 – 10:30)		
10 (10:30 -12:30)	**Service life extension and repair: methods, materials and techniques - 2**	**Developments in concrete technology - 1**
Lunch (12:30 -13:30)		
11 (13:30- 15:00)	**Condition assessment and non-destructive testing - 3**	**Developments in concrete technology - 2**
Tea & coffee break (15:00 – 15:30)		
12 (15:30 - 17:00)	**Condition assessment and non-destructive testing - 4**	**Developments in concrete technology - 3**
Closing Function 17:00 - 17:30		

MONDAY 04/11/2024 – Sessions 1 and 2

Session 1 (8:30 -10:00) (Venue A)

Conference Opening
Hans Beushausen, Mark Alexander, Pilate Moyo, Frank Dehn, Joanitta Ndawula

KEYNOTE LECTURES [Chair: Mark Alexander]

Life cycle strategy optimization:
A methodological framework for concrete structures rehabilitation decision making through LCA and LCCA
Bart Craeye

Opportunities for automation in the field of assessment of reinforced concrete structures
Marijana Serdar

Tea & coffee break (10:00 – 10:30)

Session 2 (10:30 – 12:30) [Chairs: Bryan Perrie (A), Joanitta Ndawula(B)]

Condition assessment and non-destructive testing – 1 (Venue A)	Service life extension and repair: methods, materials and techniques – 1 (Venue B)
DGZfP Subcommittee "Corrosion detection in reinforced concrete" - Standardization between theory and application *Jörg Harnisch; Gino Ebell; Rebecca Achenbach*	**Performance evaluation of surface repair on decommissioned Champlain Bridge concrete** *Stéphanie C. Blanchard; Richard Gagné; Benoit Bissonnette*
Residual service life assessment of an offshore concrete structure in the North Sea *Gro Markeset; Rolf Magne Larssen*	**Fast setting, low carbon infrastructure rehabilitation using Belitic Calcium Sulfoaluminate (BCSA) Concrete - State of research and prospects** *Eric Bescher*
Damage assessment of the Carinus Bridge (B2918) over the Berg River in Velddrif, South Africa *Philip D. Ronné; Wandie Olivier*	**Towards sustainable concrete rehabilitation: correlating resistivity measurements methods in commercial repair mortars** *Hanne Bielen; Louis Demet; Neel Renne; Robin Debaene; Amaryllis Audenaert; Bart Craeye*
An analysis of the impact of chloride-induced corrosion on reinforced concrete structures in the Port of Cape Town *Mishka Prinsloo; Hans Beushausen*	**Optimising bonded overlay substrate preparation methods: addressing knowledge gaps and best practices in industry** *Wayne Van Der Westhuizen; Hans Beushausen*
Demolition of refinery interchange bridge: condition of a 58-year old prestressed concrete bridge *Kinte van Breda; Anton Faure; Wandie Olivier*	**Analyzing crack distribution in textile-reinforced repair mortars** *Annette Dahlhoff; Michael Raupach*
Correlation between damage parameters and mechanical properties of concrete affected by ASR *E. Baret; B. Fournier; L. Courard; B. Bissonnette*	**A sustainable approach to Engineered Cementitious Composites (ECCs) as a repair material by combining fiber hybridization and high-volume binder substitution** *Thamara Tofeti Lima; Urs Buegger; Eliane Betania Carvalho; Ralf Jänicke*

Lunch (12:30 -13:30)

MONDAY 04/11/2024 – Sessions 3 and 4

Session 3 (13:30 – 15:00) [Chairs: Luc Courard (A), Marijana Serdar (B)]

Condition assessment and non-destructive testing – 2 (Venue A)	Concrete durability: material technology, modelling, design - 1 (Venue B)
Laser induced breakdown spectroscopy (LIBS) for the chemical investigation of concrete Status of application and regulations in Germany *Dirk Dalichow, Gerd Wilsch, Tobias Völker* **Assessment of SFRC slab-on-piles through in-situ load testing** *Cosmin Popescu; Björn Täljsten* **Assessing the seismic performance of existing reinforced concrete buildings in New Zealand** *Lusa Tuleasca; Wei Loo* **Non-destructive testing of a post-tensioned concrete road bridge in Norway** *Björn Täljsten; Cosmin Popescu; Mats Holmqvist* **Condition assessment of concrete railway sleepers: feasibility for South African applications** *Astrid Lambrechs; Hans Beushausen*	**Adopting the Torrent Permeability Tester for national South African durability specifications** *Zachariah Bloemstein; Mark Alexander; Hans Beushausen* **Reinforcing the future: the case for galvanized rebar in concrete** *Simon Norton* **A new way to design durable concrete: concrete capillarity refinement and contaminant purging with post-set applied Colloidal Silica** *Alex Brent Rollins; Nicolas Jr. Choucair; Nicolas Choucair* **Water absorption reduction of 3D printed concrete using silicones** *Linda Nienaber; Simba S. Kanyenze; Riaan Combrinck* **Approaches to improve carbonation resistance of concrete** *Matthias Müller; Matthias Lieboldt; Thomas Sowoidnich; Bettina Ines Elisabeth Kraft; Horst-Michael Ludwig;*

Tea & coffee break (15:00 – 15:30)

Session 4 (15:30 – 17:00) [Chairs: Bart Craeye (A), Björn Täjlsten (B)]

Management of concrete infrastructure (Venue A)	Structural repair and strengthening - 1 (Venue B)
On green management of existing civil engineering infrastructure *Tor Arne Martius-Hammer* **Implementation of Civil Structures Management System at TRANSPETRO** *Eduardo Lopes de Paula; Rodrigo Alves Spagnolo* **BIM-based diagnosis and assessment of concrete structures** *Michael Raupach; Hendrik Morgenstern* **Damage object catalogue for concrete structures in BIM** *M. Köhncke; L. Heinze; S. Keßler*	**Advanced rehabilitation method on airport pavements with 3rd generation rapid hardening concrete** *Özsar, S.D.; Stähli, P; Colombo M.G.G* **Structural reinforcement of specimen bridge columns with HPFRC** *Adriano Reggia; Ivan Trabucchi; Ivan Beltracchi; Alessandro Morbi; Giovanni A. Plizzari* **Repair and restoration of deteriorated bridge structures using ultra-high performance concrete** *Behrouz Shafei* **Experimental procedure to test effectiveness of UHPC jacketing repair against large scale ASR-damaged columns** *Devin Kumar; Kimberly E. Kurtis; Lauren Stewart* **The effectiveness of fabric-reinforced cementitious matrix to strengthen reinforced concrete beams** *Sandile Ngidi*

17:45 – 19:30: Harbour Cruise

TUESDAY 05/11/2024 – Sessions 5 and 6

Session 5 (8:30 -10:00) (Venue A)

KEYNOTE LECTURES [Chair: Mark Alexander]

Enhancing maintenance and sustainability of concrete sewers using a predictive service life approach
Alice Titus Bakera

Challenges in implementation of durability design in concrete construction projects in India
Manu Santhanam

Concrete resistivity revisited: experience with testing on existing structures
Rob Polder

Tea & coffee break (10:00 – 10:30)

Session 6 (10:30 – 12:30) [Chairs: Behrouz Shafei (A), Manu Santhanam (B)]

Structural repairs and strengthening - 2 (Venue A)	Concrete durability: material technology, modelling, design – 2 (Venue B)
Sustainable construction practices in repair and strengthening of concrete bridges *Leila Farahzadi; Amin Askarifarsangi; Mahdi Kioumarsi*	**Application of stainless-steel reinforcing bars in infrastructures – requirements and evaluation of corrosion resistance** *Amir Rahimi*
Repair and strengthening with carbon reinforced concrete - insight and experience *Frank Schladitz; Matthias Tietze; Alexander Schumann; Birgit Beckmann*	**Quantification of the crack-reducing effect of fibers on thin concrete slabs using polypropylene and basalt fibers** *Timo Kniebühler; Niklas Lingner; Manuel Koob; Jens Minnert; Joaquín Díaz*
Repairing the fire damaged Thakaneng Bridge at the University of the Free State, Bloemfontein, South Africa *Johnnie Strydom; Craig Black*	**Freeze-thaw induced microstructural degradation of hardened cement paste – localized exposure history, crack formation and their impact on mechanical properties** *Markus Mahlbacher; Felix Mett; Matteo Broggi; Michael Beer; Michael Haist*
The rehabilitation and retrofitting of the flood damaged Mhlali River Bridge *Kerusha Ayer: Mohamed Parak*	**Influence of sulfide and oxygen on the passivation behavior of steel in alkali-activated slag/fly ash mortars** *Marina Licht; Ali Nikoonasab; Gregor J. G. Gluth; Michael Raupach*
Extending the service life of Wessels Ventshaft, in Hotazel, South Africa *Johnnie Strydom; Jared da Silva*	**Review of the C³ project THE CUBE - Implementation of a new carbon-reinforced concrete wall system under consideration of resource-efficiency and durability** *Matthias Tietze; Frank Schladitz; Stefan Minar*
Rehabilitation and strengthening of a monumental building using Agro waste-derived engineered Graphene cement composite and corrosion resistant steel mesh and reinforcing bars *A. Ganesh Kumar; S. Arunachalam; K. Pazhanivel; M. Arivanandhan*	**The influence of curing methods on the carbonation of LC³ concrete** *Thato Mile; Mark Alexander*

TUESDAY 05/11/2024 – Sessions 7 and 8

Session 7 (13:30 – 15:00) [Chairs: Michael Grantham (A), Alice Titus Bakera (B)]

Cathodic protection - 1 (Venue A)	Concrete durability: material technology, modelling, design - 3 (Venue B)
CP specifications from specific to general and back *Anthony van den Hondel; Rob B. Polder* **Reinforced concrete demo-wall illustrating service life extension through cathodic protection** *Robin Debaene; Bjorn Van Belleghem; Bart Craeye* **Efficiency and throwing power of hybrid anode cathodic protection in chloride contaminated reinforced concrete** *Emile Godefroidt; Tim Soetens; Bjorn Van Belleghem* **Challenges faced by inventors developing solutions to corrosion in concrete** *Gareth K. Glass*	**Comments about tests methods for chloride´s penetration in cement-based materials** *R. C. Lopes; A. M. Oliveira; H. Carasek; O. Cascudo* **Investigation of corrosion product layers in chloride containing mortars** *Gino Ebell; Wolfgang Breit* **Carbonation induced corrosion of steel in alkali-activated mortars** *Rebecca Achenbach; Michael Raupach* **Compressive strength and water absorption performance of one-part geopolymer concrete masonry units** *Moegamat Tashriq Bhayat; Adewumi John Babafemi; Wibke De Villiers* **Carbonation of sodium carbonate alkali-activated slag: influence on microstructure and corrosion** *Patrick Azar; Gabriel Samson; Cédric Patapy; François Cussigh; Laurent Frouin; Rachida Idir; Martin Cyr*

Tea & coffee break (15:00 – 15:30)

Session 8 (15:30 – 16:30) [Chairs: Rob Polder (A), Joanitta Ndawula (B)]

Cathodic protection – 2 (Venue A)	Concrete durability: material technology, modelling, design - 4 (Venue B)
Effect of cathodic protection of ordinary reinforcement on damaged prestressed tendons, outline for a numerical study *Suraksha Sharma; Karla Hornbostel; Mette Geiker* **Performance of repair mortars used for CP of RC structures and its assessment** *Christian Helm; Michael Raupach* **CAS Composite Anode – 25 years of experience with the concept of micro-capillary matrix applied to carbon-based conductive coatings for the CP of steel in concrete** *W. Schwarz; N. Katsumi; A. van den Hondel; H. Esteves*	**Effect of impregnation on the resistance of the concrete surface to freezing/thawing with de-icing salt** *Jakob Šušteršič; Sandi Drolc; Branko Bandelj* **Effect of pyrrhotite content on the deterioration potential of concrete in sulfide-bearing aggregates as assessed by the oxygen consumption test** *J. Duchesne; B. Fournier; M. Ben Amor; A. Rodrigues* **Use of electrolytic resistivity and the measurement of charge as test methods for chloride resistance of concrete – correlations with the rapid chloride migration test** *Hannah Drenkard; Christian Fischer* **Characterization of sustainable biomaterials for infrastructure durability in Yucatan, México** *M. Soria-Castro; J. Genescá-Llongueras; G. I. Hernández-Bolio; P. Castro-Borges*

Conference Dinner (18:00 – 22:00)
including guided tour in the National Botanical Gardens at Kirstenbosch, Bus transfer (from the GSB) at 17:30

WEDNESDAY 06/11/2024 – Sessions 9 and 10

Session 9 (8:30 -10:00) (Venue A)

KEYNOTE LECTURES [Chair: Frank Dehn]

Survival analysis for concrete pavement service life assessment
Peter Taylor

Guidance for the ACI/ICRI Cementitious Repair Material Data Sheet
Benoit Bissonnette

Durability design and prediction – opportunities and challenges
Mark Alexander

Tea & coffee break (10:00 – 10:30)

Session 10 (10:30 – 12:30) [Chairs: Sreejith Nanukuttan (A), Riaan Combrinck (B)]

Service life extension and repair: methods, materials and techniques - 2 (Venue A)	Developments in concrete technology – 1 (Venue B)
The long-term effects of cementitious materials for structural repair of axially loaded members *Nicholas Jarratt; Hans Beushausen*	**Use of glass waste powder in concrete – a review of microstructure and durability properties** *Jacob Ikotun; David Sithole; Bolanle Deborah Ikotun; Shaverndran Moonsamy*
In-situ experiences in remediations of wind turbine generator (WTG) foundations with epoxy resin and various cementitious materials *Kay Bode*	**Optimising the use of waste glass in Portland cement concrete: the role of metakaolin in enhancing performance** *Mandisa Hlabangana; Nqobile Msiza; Victor S. Gilayeneh; Sunday O. Nwaubani*
Replacement of pedestal foundation concrete without dismantling of the wind turbine generator *Kay Bode*	**Use of ceramic waste powder as a sustainable cement material – a review of microstructure and durability properties** *Jacob Ikotun; Peace Adedeji; Adewumi Babafemi*
Durability of innovative cementitious coatings for concrete wastewater treatment plants: impact of cracks on biodeterioration *Reem Hoballah; Matthieu Peyre Lavigne; Ahmed Toumi; Laurie Lacarriere; Cédric Patapy; Carole Soula; Amr Aboulela; Alexandra Bertron*	**Compressive strength and water absorption of limestone calcined clay cement concrete with recycled fine aggregates** *Tafadzwa Mthokozisi Mhene; Adewumi John Babafemi*
Long-term effectiveness of electrochemical realkalization in repairing chloride-induced corrosion in reinforced concrete structures *Austin Moropane*	**The role of water content and cement proportions on the density and strength development of recycled aggregate concrete blocks: a literature perspective** *Jaziitha Simon; Hans Beushausen; Mark Alexander*
Analysis of chemical realkalinization and recarbonation of concretes containing supplementary cementitious materials *Oswaldo Cascudo; Maryah Costa de Moraes; Andrielli Morais de Oliveira; Helena Carasek*	**Feasibility of utilizing fine recycled concrete aggregates as a dune sand replacement in concrete production** *Areej Gamieldien; Bhooshay Dookee; Hans Beushausen; Mark Alexander*

WEDNESDAY 06/11/2024 – Sessions 11 and 12

Session 11 (13:30 – 15:00) [Chairs: Michael Raupach (A), Mark Alexander (B)]

Condition assessment and non-destructive testing - 3 (Venue A)	Developments in concrete technology - 2 (Venue B)
Assessment for fire damage in concrete structures with electrical resistance measurement *Toru Kinose* **Case study – fire damage repair of the Sarnia Road Bridge** *Thobekile Ngcobo* **Emergency rehabilitation of Bridge N7, in Kerouane, Guinea** *Johnnie Strydom; Kulani Mapimele* **Leaching led deterioration of concrete service reservoirs and service life prediction** *Sree Nanukuttan; Neil Campbell* **Infrared Thermography for Delamination Detection on UCT Buildings** *Meghan McClarty; Hans Beushausen; Nicholas Jarratt*	**Characterisation and formulation of waste augmented 3D printed concrete for BIM-based automation** *Jandré Immelman; Mohammed Pourbehi; Leslie Petrik; Alechine Emmanuel Ameh; Vinny Ndjate* **Flexural fatigue deterioration behaviour of pre-cracked fibre reinforced concrete** *Humaira Fataar; 'Nyane Makara; Riaan Combrinck* **Failure of cementitious heritage plaster on UCT campus – failure analysis and updated design guidelines** *Matthew Arnot; Hans Beushausen* **Evaluating temperature effects on concrete shrinkage using South African Test methods** *Nicholas Kizito; Sivuyile Q. Mkalali; Philemon Arito*

Tea & coffee break (15:00 – 15:30)

Session 12 (15:30 – 17:00) [Chairs: Benoit Bissonnette (A), Alice Titus Bakera (B)]

Condition assessment and non-destructive testing - 4 (Venue A)	Developments in concrete technology - 3 (Venue B)
Structural response sensitivity of concrete arch dams to environmental effects and swelling due to chemical reactions *P. Moyo; B. R. Nyoni; C. Mahlabela* **Combination and automation of computer-aided methods for quantitative crack analysis of concrete** *Max Patzelt; Mohamed S.H. Alabassy; Horst-Michael Ludwig; Andrea Osburg* **Integration of multispectral imagery in drone technology for infrastructure monitoring** *Dan Richard Isdahl-Engh; Mette Susann Husemoen* **Development of a methodology for a real concrete cover measurement using alternating field magnetization** *Domenic Graffi; Michael Raupach* **Condition assessment framework for concrete arch dams** *B. R. Nyoni; P. Moyo; L. Hattingh*	**Use of secondary gold tailings as fine aggregate in concrete** *Rhoda A. Adeyeye; Jacob O. Ikotun; Mike Otieno* **Factors leading to inconsistent slump and setting behaviour of concrete using different clinkers, sulphates and superplasticizers** *Carla van Wyk; Lorna Stone; Riaan Combrinck* **Roadmap to develop the first Afrocentric Graphene Ecosystem through the South African Built Environment** *Abraham van Wyk; Riaan Combrinck* **Investigating the properties of soil obtained from Olifantsfontein resource facility and its potential use in earth bricks** *Nerissa Chinsamy; Rochelle Appalsamy; Janina P Kanjee*

Closing Function 17:00 - 17:30