IABMAS 2018 MELBOURNE AUSTRALIA

9TH INTERNATIONAL CONFERENCE ON BRIDGE MAINTENANCE, SAFETY AND MANAGEMENT

9-13 JULY 2018 MELBOURNE AUSTRALIA

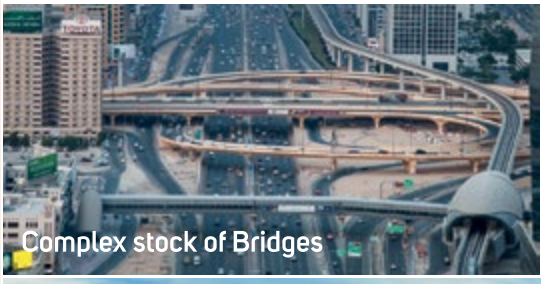
CONFERENCE PROGRAM

AMX

ASSET MANAGEMENT EXPERT

10 Benefits of Customisable Asset Management Software

The right solution for delivering quality asset management – without compromise.



Complex stock of Bridges

Single 24km Bridge

Tunnels

"Compared to other structure management systems this is so flexible and adaptable to what you need, in my opinion it is by far the market leader. We feel completely in control."

For more detail or to arrange your FREE demonstration:
+44 (0)333 456 0768
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Customisation helps to empower clients giving them complete control.

1 Manages multiple asset types
Associating different asset types such as Electro Mechanical and Civil Engineering assets enables a much more comprehensive approach to successful asset management. Whether for single or multiple assets, connecting relevant data provides an holistic view.

2 Ensures consistent and quality data capture
The ability to create standardised forms and custom data fields along with storing images and annotations, helps to ensure that detailed, relevant and contextual data is recorded at the point of capture, minimising errors.

3 Facilitates planning of resources
It is essential to have clear oversight of any surplus or shortfall in resources when delivering service-orientated maintenance contracts. Demonstrate a co-ordinated approach by optimising inspections and work order management, within budget constraints.

4 Integrates easily with changing processes
Assets themselves may be stable and enduring but the world around them is evolving quickly. New research, methods, and technologies continue to impact working practices. It is important to have a system that can grow with an organisation and its changing requirements.

5 Synchronises with other operational systems
A solution that stands alone requires extra time and effort to extract data critical to other operational systems. Using mobile connectivity and API services enables a cohesive approach to data sharing and synchronises multiple business activities.

6 Improves efficiency by identifying bottlenecks
In an industry with complex operational processes and financial pressures, being able to see where there may be delays, inefficiencies or resource issues is a key factor. Highlighting where improvements can be implemented provides real added-value.

7 Supports critical strategic decision-making
In-depth analysis and interrogation of data through customisable reporting means that decisions can be made at any operational level based on the most recent, accurate and detailed information available at any time.

8 Delivers accountability at all management levels
With user-defined permission levels and the entire database being fully auditable, managers are able to monitor, react and deliver against a variety of KPIs with substantiated evidence.

9 Provides confidence to stakeholders and clients
When looking to establish a good working relationship with new business partners as part of your service, it helps to have a proven system that uses only quality assured data, provides accountability and has the flexibility to adapt.

10 Brings it all together
Most asset management software will do the basics. The advantage comes with choosing one that sits at the heart of day-to-day operations to support your strategic objectives across the entire lifecycle of asset management while optimising return on investment and delivering complete customer satisfaction.

Come to our presentation:
2.45pm, Tuesday 10 July
Session 1C / MS01

IABMAS 2018 MELBOURNE AUSTRALIA 9-13 July 2018

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IABMAS 2018 is hosted by

vicroads

MONASH University

SWINBURNE UNIVERSITY OF TECHNOLOGY

RMIT UNIVERSITY

CITY OF MELBOURNE

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IABMAS 2018 Conference Secretariat

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Services And Technical Support: **Independent Advice You Can Trust**

Weld Australia has a team of highly qualified welding engineers and materials specialists available to provide expert advisory services on all welding and materials related matters. With broad expertise in infrastructure and bridge construction, maintenance and safety, we have the unique capability to solve your joining problems. Our advice can help you substantially increase the operational life of your assets, thereby reducing your maintenance and repair overheads.

Our Areas of Expertise

- Welding procedure development
- Welding coordination and management systems
- Material performance and weldability
- Welding processes and related equipment
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- Failure investigation
- Development of project quality plans
- Assessment of Construction Category in accordance with AS/NZS 5131:2016
- Product conformity assessments
- Expert witness in welding and related matters
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- On-site auditing of welding quality systems
- Welding codes and standards
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- Non-destructive testing
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- Structural and pressure equipment design
- Finite element analysis
- Weld cost estimating
- Life estimation

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WELCOME

Welcome to IABMAS 2018

The Australian IABMAS Group is honored to host the 9th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2018).

Australia is famed for its iconic Sydney Harbour Bridge, designed and built by Dorman Long and Co Ltd in the 1920s and 30s, but we have many bridges of significance, from the Melbourne's West Gate Bridge - which conference participants will have a chance to tour - to Australia's oldest continual-use bridge in Richmond, Tasmania, opened in 1825.

The conference is being held in Melbourne, from 9-13 July 2018 at the state-of-the-art Melbourne Convention and Exhibition Centre. This is the first time this conference is being held in Australia and the first time under the auspices of a road authority, VicRoads. Melbourne is Australia's second largest city with a population of almost 5 million people and voted the most livable city for seven years in a row, from 2011 to 2017, and we are pleased to welcome delegates from across the world.

IABMAS 2018 MELBOURNE AUSTRALIA
9-13 July 2018

IABMAS 2018 is organised on behalf of the International Association for Bridge Maintenance and Safety (IABMAS) under the auspices of VicRoads, Australia, with the organisational support of Monash University, Swinburne University of Technology, RMIT University and the Australian IABMAS Group.

IABMAS encompasses all aspects of bridge maintenance, safety and management. Specifically, it deals with: bridge repair and rehabilitation issues; bridge management systems; needs of bridge owners, financial planning, whole-life costing and investment of the future; bridge-related safety and risk issues and economic and other implications. The objective of the Association is to promote international cooperation in the fields of bridge maintenance, safety and management for the purpose of enhancing the welfare of society (http://www.iabmas.org).

We have an exciting five days planned for you with a comprehensive scientific program, technical tours, welcome reception, conference dinner, exhibitions and a farewell function. We aim to provide you with an environment where you can exchange knowledge, information and experiences with other academics, researchers and practitioners.

On behalf of IABMAS, the Australian IABMAS Group, VicRoads, Monash University, RMIT University and Swinburne University of Technology and the Conference Committees we would like to sincerely thank you for your support of IABMAS 2018. We hope you enjoy the conference!

Nigel Powers and Dan Frangopol
Chairs of IABMAS 2018

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Conference Chairs

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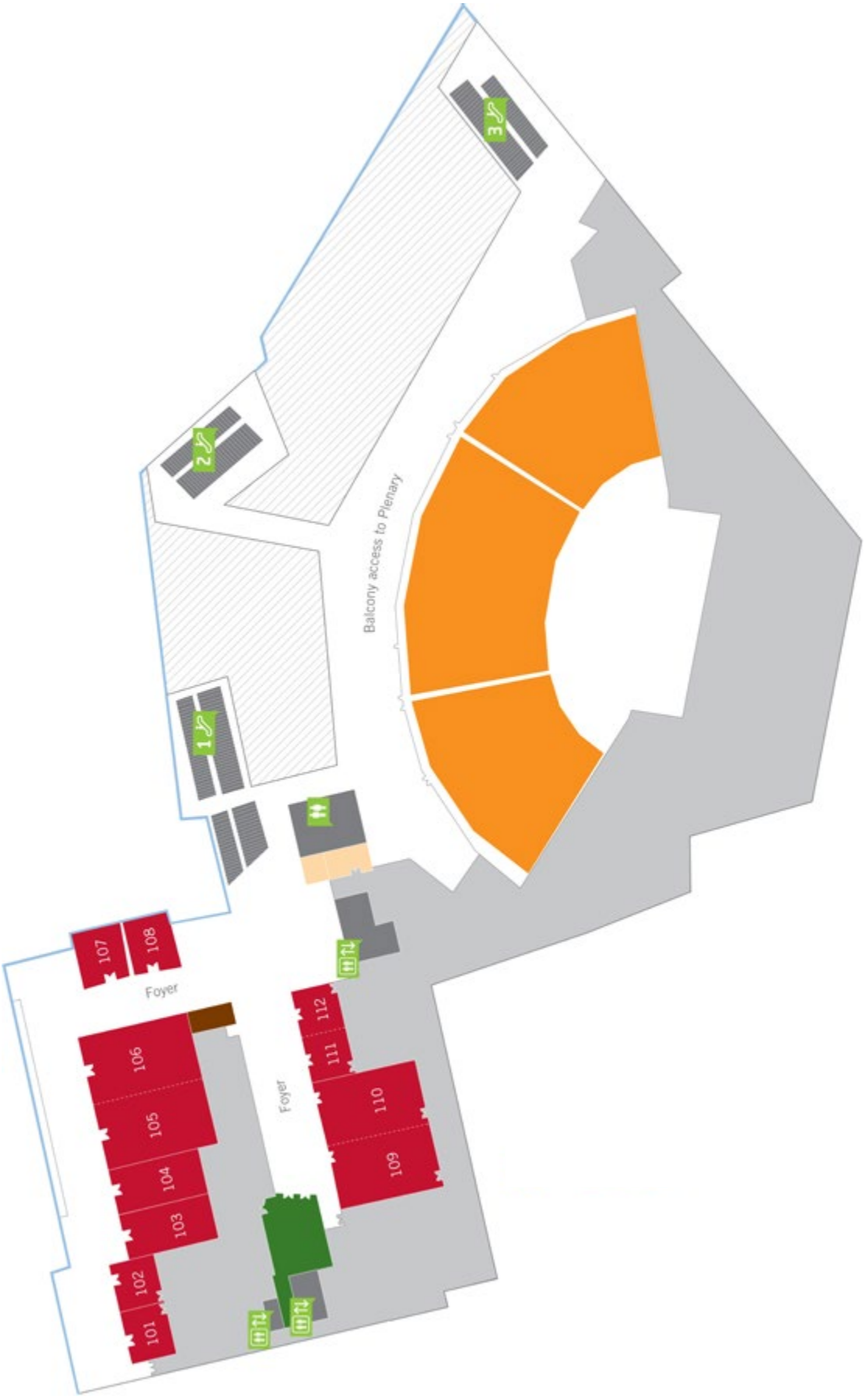
VENUE MAP

Level 1



GENERAL INFORMATION

ATMs

ATMs are located adjacent to the Convention Centre entry and on the Exhibition Centre concourse.

Business Centre

A business centre with reception, secretarial support and business equipment for sale and photocopying services is located off the Clarendon Street entrance to the Exhibition Centre.

Catering

Morning tea, lunch and afternoon tea will be available during the Conference in the Exhibition area and is included in your registration fee. Please refer to the program for catering times.

Cloakroom and Luggage Storage

Located off the main Convention Centre foyer, providing storage for visitors' and delegates' belongings.

Dietary Requirements

If you have advised the Conference Secretariat of special dietary requirements, please speak to a member of the catering staff during the designated break times. Catering staff will have a full list of those with special dietary requirements.

Emergency Details

In an emergency telephone 000 for Ambulance, Fire Service or Police.

Refer to the Melbourne Convention and Exhibition Centre emergency procedures document included in your Congress satchel for detailed information.

Exhibition

The Conference exhibition will be located in the Foyer, Level 1 at the Melbourne Convention and Exhibition Centre (MCEC) and will be open at the following times:

Tuesday	0845 - 1745
Wednesday	0900 - 1830
Thursday	0900 - 1800

Internet

Free wireless internet is available for conference delegates. To connect:

- Select the M Connect wireless service as you would normally do using your wireless device
- Open your preferred internet web browser (such as Safari, Firefox, Chrome, Internet Explorer)
- The M Connect log in page will appear in your browser
- Read the terms and conditions page and choose to agree in order to connect
- Click "Connect Now"
- Commence using M Connect

You will need to resubscribe (free of

charge) to the service after 12 hours, or once the 100MB download limit is reached.

or once the 100MB download limit is

Lost and Found

Any found item may be turned into the Registration Desk located in the Exhibition Area. Enquiries about lost items can be directed there.

SOCIAL PROGRAM

Mobile Phones

Delegates are asked to switch off their mobile phones or set them to silent when in sessions.

There is a charging station located in the Exhibition Building.

Name Badges

For security purposes, delegates, speakers and exhibitors are asked to wear their name badges to all sessions. Entrance into sessions is restricted to registered delegates only.

Program

The Conference Organising Committee reserves the right to change the Conference program at any time without notice. Please note that this program was accurate at the time of printing.

Registration Desk

The registration desk is located in the Foyer, Level 1 at the Melbourne Convention and Exhibition Centre (MCEC). The registration desk will be open at the following times:

Monday	1600 - 1900
Tuesday	0700 - 1730
Wednesday	0800 - 1730
Thursday	0800 - 1800

Security

Please ensure that you take all items of value with you at all times when leaving a room. Do not leave bags or laptops unattended.

Speakers

Please ensure that you are available in your presentation room at least 15 minutes prior to the start of the session to meet with the Session Chair. Speakers are requested to report to the Speaker Preparation Room at least 2 hours before their scheduled presentation with their presentation on a USB to allow sufficient time to upload and check their audio-visual presentations with the technician.

The Speakers Preparation Room is located in Room 101.

Telephones

Public telephones are located on all levels of the Convention Centre and in the Exhibition Centre foyer and concourse.

Welcome Reception

Monday 9 July 2018, 18:00 - 20:00

Venue: Showtime Events Centre, 61 S Wharf Promenade, South Wharf

Dress code: Smart Casual

Cost: Included in Full Registration Fee, additional tickets $75

Conference Dinner

Wednesday 11 July 2018, 19:00 - 23:00

Venue: Melbourne Room, Level 2 Melbourne Convention and Exhibition Centre

Dress code: Smart Casual

Cost: Included in Full Registration Fee, additional tickets $150

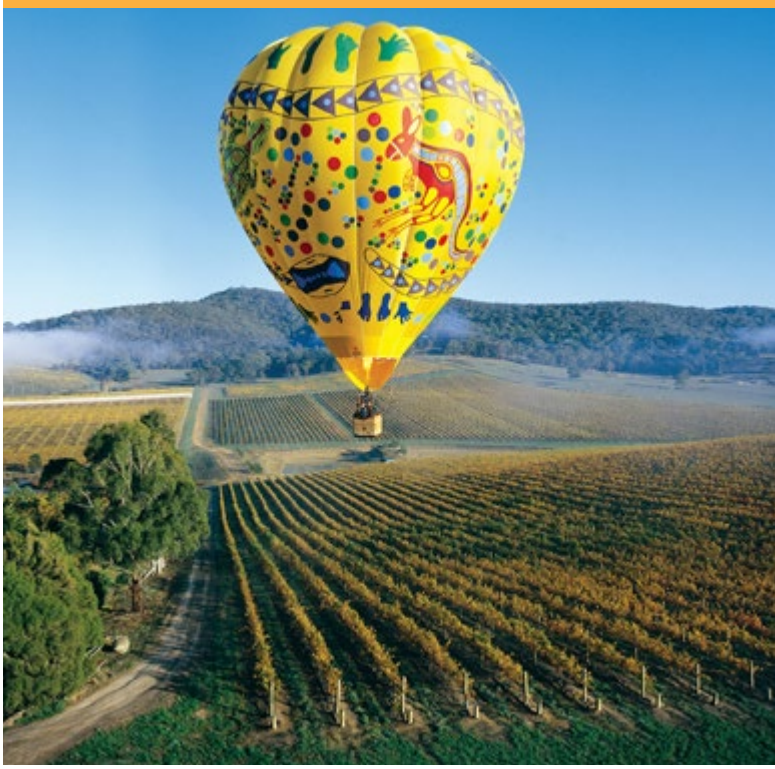
Conference Farewell Function

Friday 13 July 2018, 13:00 - 15:00

Venue: Munich Brauhaus, 45 S Wharf Promenade, South Wharf

Dress code: Smart Casual

Cost: Included in Full Registration Fee



TOURS

All tours depart from the Melbourne Convention and Exhibition Centre, you are kindly asked to announce your presence at least 15 minutes prior to the departure outside the Pan Pacific hotel.

West Gate Bridge Tour

The tour will include:

- A presentation covering the history of the bridge, a safety briefing, information presented about the strengthening works that took place to allow the bridge to carry five lanes of traffic in each direction and the provision of information of recent works.
- There will be a bridge tour where delegates will be able to explore the steel and concrete section of the bridge.

Monash University and Swinburne University of Technology Tour

The tour will include:

Monash University

- A visit to the Monash Immersive Visualisation Platform's peak facility and the ultrascale Monash CAVE2. It is a 2D and 3D virtual reality environment that can be programmed to render large and complex datasets in unparalleled clarity. CAVE2 provides a world-leading capability for the display and interactive exploration of rich and large scientific and engineering datasets from sources as diverse as the Australian Synchrotron, unmanned aerial vehicles, the world's largest radio telescopes, and the latest and greatest biomedical imaging systems. CAVE2 enables the collaborative, surround review of design models, building plans, architectural spaces, and more. Three dimensional models, rendered fly-throughs, and Building Information Models can be loaded and displayed in CAVE2.
- A tour of the university including a visit to the testing and research facilities.

Swinburne University of Technology

- A visit to the Smart Structures Laboratory.
  The laboratory houses Australia's first hybrid testing facility – the Multi-Axis Substructure Testing (MAST) system – cutting-edge technology used to test the integrity of new materials and structures. The Six-Degree of Freedom MAST system allows researchers to stress-test structural components and materials to determine a structure or material's capacity to withstand extreme forces. IABMAS conference visitors will be able to witness a real-time experiment on hybrid testing of a model bridge pier using the 6-DOF MAST system.

EJ Whitten and RMIT University Tour

The tour will include:

RMIT University

- A tour of the Advanced Manufacturing Precinct.
  The Advanced Manufacturing Precinct houses internationally recognised multi-axis CNC machines (Okuma and Haas) for machining high-performance alloys and composites for engineering applications. Robotic technology gives our subtractive manufacturing capability greater diversity and flexibility of applications. We have the latest in CAD software, allowing students and researchers to design components and models.

EJ Whitten Bridge

- An introductory presentation on the bridge and recent strengthening and widening works.
- A short tour of the bridge to view the nearly completed works for those who have their own Personal Protective Equipment (steel cap boots, long sleeve shirts and pants, hard hats, safety vests, and safety glasses)

EXHIBITION

Australian Road Research Board

Booth Number: 1

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Web: arrb.com.au

The Australian Road Research Board (ARRB) is the source of independent expert transport knowledge, advising key decision makers on our nation's most important challenges

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Booth Number: 2

Contact: Annie Cheng
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NVMS Solutions is creating the future of noise and vibration management solutions. We provide solutions for a wide range of measurement applications for industry

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Contact: Christine Moog-Ganzenmüller
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Email: info@moog-online.de
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IABMAS

Booth Number: 5

Web: www.iabmas.org

IABMAS promotes international cooperation in the fields of bridge maintenance, safety and management for the purpose of enhancing the welfare of society

IABMAS2020

Booth Number: 6

Contact: Prof.Hiroshi YOKOTA / Kazuyuki SHIMOJO or Maori YAMADA
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IABMAS2020 will be held in Sapporo, Japan from June 28 to July 2, 2020, on behalf of IABMAS and IABMAS-JAPAN Group

Board of Professional Engineers of Queensland

Booth Number: 8

Contact: Nathaniel Tunney
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BPEQ is Queensland's engineering regulator. BPEQ was established in 1930 and administers the Professional Engineers Act and the registered professional engineer of Queensland (RPEQ) system

Quakewrap Pty Ltd

Booth Number: 9

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QuakeWrap is the world's most innovative designer, supplier and installer of quality, Fiber Reinforced Polymer (FRP) products for repair and strengthening of structures

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Booth Number: 10

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Bd&e

Bridge design & engineering (Bd&e) is the only magazine exclusively dedicated to the international bridge industry. A high quality, visually stunning quarterly magazine, Bd&e offers subscribers details of the latest innovations, technical features, interviews and project reports.

Topics regularly covered in Bd&e include structural engineering, architectural design, construction engineering, asset management, cable technology, specialist software, formwork, protective coatings, seismic safety and new products and technologies across all bridge engineering sectors.

Bd&e subscribers benefit from exclusive access to the digital version of the magazine in advance of general publication, plus substantial discount offers on delegate rates at Bd&e events such as Bridges 2018.

If you finance, plan, design, build, maintain, operate or own a bridge, you need Bd&e. For more information, or to subscribe, please call +44 (0) 20 7973 6694 or email customer@hgluk.com.

PROGRAM AT A GLANCE

Monday 9 July

18.00 – 20.00 Welcome Reception - Showtime Events Centre, 61 S Wharf Promenade, South Wharf

Tuesday 10 July

Session 1A	**Room Plenary 1**			
8.45 – 9.30	Opening Ceremony			
9.30 – 10.00	TY Lin Lecture *Yozo Fujino*			
10.00 – 10.30	Keynote *Rade Hajdin*			
10.30 – 11.00	**Break**			
Session 1B	**Plenary 1**	**Room 105**	**Room 103**	**Room 106**
11.00 – 12.30	MS01 Innovations and World Leading Research and Practice in Bridge Management Systems	MS02 Innovative Methods in Strengthening of Concrete Bridges	MS03 Developments and Trends in Composite Steel-Concrete Structures	SS01 Perturbations on SHM Results Due to Environmental Changes
12.30 – 13.30	**Break**			
Session 1C				
13.30 – 15.15	MS01 Innovations and World Leading Research and Practice in Bridge Management Systems	MS02 Innovative Methods in Strengthening of Concrete Bridges	MS03 Developments and Trends in Composite Steel-Concrete Structures	MS05 Advancements in Performance Assessment, Monitoring, and Management of Bridges Under Fatigue Deterioration
15.15 – 15.45	**Break**			
Session 1D				
15.45 – 17.30	MS01 Innovations and World Leading Research and Practice in Bridge Management Systems	SS03 Bridge Safety, Maintenance and Management Under Hazards and Changing Climate	SS04 Structural Health Monitoring for Infrastructure Asset Management	MS05 Advancements in Performance Assessment, Monitoring, and Management of Bridges Under Fatigue Deterioration
17.30 – 17.45	**Break**			
17.45 – 19.00	General Assembly			

	Room 104	Room 101	Room 102	Room 107
	MS04 Strengthening, Monitoring and Life-Cycle Assessment of Steel Bridges	GS01 General Session: Bridge Design and Management	GS02 General Session: Bridge Design and Management	SS02 Continuous Bridge Monitoring and Damage Detection
Break				
	MS04 Strengthening, Monitoring and Life-Cycle Assessment of Steel Bridges	MS06 Footbridges: Advances in Vibration Serviceability Assessment	MS07 Recent Advances in Bridge Design and Construction	MS08 Submerged Floating Tunnels and Underwater Tunnel: Design, Safety and Maintenance Issues
Break				
	MS04 Strengthening, Monitoring and Life-Cycle Assessment of Steel Bridges	MS06 Footbridges: Advances in Vibration Serviceability Assessment	MS07 Recent Advances in Bridge Design and Construction	MS08 Submerged Floating Tunnels and Underwater Tunnel: Design, Safety and Maintenance Issues
Break				

PROGRAM AT A GLANCE

Wednesday 11 July

Session 2A	Room Plenary 1			
9.00 – 9.30	Keynote *Ian Firth*			
9.30 – 10.00	Keynote *Mitsuyoshi Akiyama*			
10.00 – 10.30	Keynote *Rui Calcada*			
10.30 – 11.00	**Break**			
Session 2B	Plenary 1	Room 105	Room 103	Room 106
11.00 – 12.30	SS05 Self-Sensing and Connected Infrastructures for a Smart Transport Future	SS06 Advances in Corrosion Modelling of Steel Bridges	SS07 European Standardization of Quality Specifications for Roadway Bridges	SS08 Construction Management Issues in Bridge Engineering and Construction
12.30 – 13.30	**Break**			
Session 2C				
13.30 – 14.00	Keynote *John Hilton*			
14.00 – 14.30	Keynote *Necati Catbas*			
14.30 – 15.00	Keynote *Man-Chung Tang*			
15.00 – 15.30	**Break**			
Session 2D				
15.30 – 17.15	SS12 Centenary Bridges - An Insight into Construction and Technology History	SS13 Value of Information of SHM for life-cycle management of Bridges	SS14 Resilience of Bridges to Climate Change, Natural & Man Made Hazards	SS15 Latest Developments on Jointless Bridges
17.15 – 19.00	**Break**			
19.00 – 23.00	Conference Dinner			

Break

Room 104	Room 101	Room 102	Room 107
SS09 CIM: Community Information Modeling - The New Frontier of Civil Engineering	SS10 Assessment and evaluation of deteriorated bridges	SS11 Life-cycle structural redundancy, robustness and resilience of bridges under multiple hazards	GS03 General Session: General Inspection and Maintenance

Break

Break

GS04 General Session: Bridge Safety	GS05 General Session: Bridge Design and Management	GS06 General Session: Bridge Safety	GS07 General Session: General Inspection and Maintenance

Break

PROGRAM AT A GLANCE

Thursday 12 July

		Room Plenary 1			
Session 3A	9.00 – 9.30	Keynote *Jens Sandager Jensen*			
	9.30 – 10.00	Keynote *Ho-Kyung Kim*			
	10.00 – 10.30	Keynote *Bruce Johnson*			
	10.30 – 11.00	**Break**			
		Plenary 1	Room 105	Room 103	Room 106
Session 3B	11.00 – 12.30	SS16 Revised Fatigue Detail Categories for Bridges (In European Standards)	SS17 Smart Bridge Components: Monitoring and Optimization of Ejs, Bearings and Dampers	SS18 Challenges for bridge technology implementation and management in developing countries	SS19 Bridge Deterioration Modeling and Probabilistic Bridge Maintenance Needs Forecasting
	12.30 – 13.30	**Break**			
Session 3C	13.30 – 15.15	MS10 Corrosion and Safety of Existing Concrete Bridges	MS11 Special Elements in Bridge Construction and Practice	MS12 Bridge Safety Evaluation and Risk Assessment: Code Requirements vs. Practical Considerations	MS13 Advanced Computational and Experimental Techniques for Extreme Load Performance of Bridges
	15.15 – 15.45	**Break**			
Session 3D	15.45 – 17.00	MS10 Corrosion and Safety of Existing Concrete Bridges	MS11 Special Elements in Bridge Construction and Practice	MS12 Bridge Safety Evaluation and Risk Assessment: Code Requirements vs. Practical Considerations	MS13 Advanced Computational and Experimental Techniques for Extreme Load Performance of Bridges
	17.00 – 18.00	Closing Ceremony			

Break			
Room 104	**Room 101**	**Room 102**	**Room 107**
MS09 Vibration-Based Structural Health Monitoring of Bridges: Research and Applications	GS08 General Session: Bridge Design and Management	GS09 General Session: Bridge Safety	GS10 General Session: General Inspection and Maintenance
Break			
MS09 Vibration-Based Structural Health Monitoring of Bridges: Research and Applications	MS14 Steel Bridge Rehabilitation	MS15 Bridge Loading – Measurement and Modelling	MS16 Bridge Monitoring: Techniques and Results Regarding Bridge Condition and Loading
Break			
SS20 Monitoring and Assessment of Bridges Using Novel Techniques	MS14 Steel Bridge Rehabilitation	MS15 Bridge Loading – Measurement and Modelling	MS16 Bridge Monitoring: Techniques and Results Regarding Bridge Condition and Loading

FULL PROGRAM

Monday 9 July

18.00 – 20.00 Welcome Reception - Showtime Events Centre, 61 S Wharf Promenade, South Wharf

Tuesday 10 July

Session 1A

	Room Plenary 1
8.45 – 9.30	Opening Ceremony Welcome
9.30 – 10.00	TY Lin Lecture - Bridge maintenance, renovation and management - Research and development of governmental program in Japan **Yozo Fujino**
10.00 – 10.30	Keynote - Managing existing bridges – On the brink of an exciting future **Rade Hajdin**
10.30 – 11.00	**Break**

Session 1B

	MS01 Innovations and World Leading Research and Practice in Bridge Management Systems	MS02 Innovative Methods in Strengthening of Concrete Bridges	MS03 Developments and Trends in Composite Steel-Concrete Structures	SS01 Perturbations on SHM Results Due to Environmental Changes
Session Organisers	*Nigel Powers, Sachin Joshi*	*Robin Kalfat, Riadh Al-Mahaidi, Binh Pham*	*Sang-Hyo Kim, Kwok Fai Chung, Gianluca Ranzi*	*Matthias Baessler, Falk Hille, Wei- Hua Hu, Guido Morgenthal*
	Plenary 1	**Room 105**	**Room 103**	**Room 106**
Session Chairs:	*Sachidanand Joshi & Jung Sik Kong*	*Robin Kalfat & Rebecca Gravina*	*Gianluca Ranzi & Sang-Hyo Kim*	*Matthias Baessler & Falk Hille*
11:00 - 11:15	Experience of Management of Bridges Prior to and Post Evaluation of BMS on NH network of India **Sachidanand Joshi,** N. Naga, U. Rajesh	Experimental investigation into the fatigue life of patch anchors used to anchor FRP laminates bonded to concrete **Robin Kalfat,** A. Al-Saoudi, R. Al-Mahaidi	Push-out test on shear behavior of joint structure between corrugated steel web and concrete lower slab **Sihao Wang**, Y. Liu, J. He, C. Li	A study on diverse strategies for discriminating environmental from damage based variations in monitoring data **Matthias Baessler,** F. Hille
11:15 - 11:30	BIM related workflow for an imagebased deformation monitoring of bridges **Norman Hallermann,** J. Taraben, G. Morgenthal	Mathematical analysis of innovative FRP pre-stressing method for concrete beams **Seyed Rasoul Atashipour,** J. Yang, R. Haghani, M. Al-Emrani	Effect of rebar strength in Y-type perfobond rib shear connectors **Oneil Han**, SH. Kim, KS. Kim, S.J. Kim, J.Y. Shin	Automated operational modal analysis of a lively footbridge for tracking long term dynamic behaviour **Wei-hua Hu**, DH. Tang, J. Teng, E. Caetano, A. Cunha
11:30 - 11:45	Utilizing BMS to Develop Programs and Reports for PEI Transportation **Darrell Evans**, RM. Ellis	Bond Performance of FRP-Strengthened Reinforced Concrete In Aggressive Environmental Conditions **Rebecca Gravina,** J. Li, H. Aydin, S. Setunge, P. Visintin, ST. Smith, R. Al-Mahaidi	Energy dissipating characteristics of Y-type perfobond rib shear connectors **Kun-Soo Kim,** SH. Kim, O. Han, JG. Choi	Damage detection under environmental variability using Bayesian virtual sensing **Jyrki Kullaa**

Session Chairs: Paulo Cruz & Xiao-Ling Zhao

Session Chairs: Colin Caprani and Eugen Brühwiler

Break

MS04 Strengthening, Monitoring and Life-Cycle Assessment of Steel Bridges *Elyas Ghafoori, Riadh Al-Mahaidi, Xiao-Ling Zhao, Masoud Motavalli, Mina Dawood*	GS01 General Session: Bridge Design and Management	GS02 General Session: Bridge Design and Management	SS02 Continuous Bridge Monitoring and Damage Detection *Ayaho Miyamoto, Eugen Brühwiler, Risto Kiviluoma, Peter Hradil*
Room 104	**Room 101**	**Room 102**	**Room 107**
Riadh Al-Mahaidi & Ardalan Hosseini	*Eugene OBrien & Ales Znidaric*	*Alessandro Palermo & Jamie Padgett*	*Eugen Brühwiler & Peter Hradil*
The effect of the CFRP properties on the fatigue strengthening of steel plates in multiaxial loading **Nazar Aljabar**, XL. Zhao, R. Al-Mahaidi, E. Ghafoori, M. Motavalli , YC. Koay	Numerical assessment of the loadcarrying capacity of a masonry bridge **Cristina Costa,** R. Silva, A. Arêde	Numerical Model Updating of Cable- Stayed Bridge Based on Experimental Data **Iviane Cunha Santos**, JL. V.Brito, ES. Caetano	Combined structural and traffic monitoring of steel suspension bridge **Petr Hradil**, K. Koski
Improving the fatigue design of orthotropic steel decks **Hans De Backer**, W. Nagy, A. Outtier	Bond behavior between CFRP and steel considering the types of adhesive layer and CFRP **Lu Ke,** CX. Li, ZY. Chen, YM. Xiong, Z. Hu	Rotational stiffness between vertical and horizontal members of system supports **Jeong-hun Won**, HD. Lee, AR. Oh, NK. Jang	"Pocket-Monitoring" for the fatigue safety verification of bridge members in steel and reinforced concrete **Eugen Brühwiler**
Flat Prestressed Unbonded Reinforcement (FPUR) System for Strengthening of Steel I-Beams **Ardalan Hosseini,** E. Ghafoori, M. Motavalli, A. Nussbaumer, XL. Zhao, R. Al-Mahaidi	Assessment of Shear Lag in Pultruded GFRP Bridge Decks **Shaohua Zhang,** C. Caprani	Research on Transverse Mechanical Property of Widened Box Girder Bridge **Wenqing Wu**, H. Zhang, ZX. Tang	Structural risk assessment and management through the capture of dynamic movement **Max Kudrenko**

FULL PROGRAM

		Plenary 1	Room 105	Room 103	Room 106
Session 1B	11:45 - 12:00	Creating the basis for implementing BIMS in existing infrastructure components **Finn Raun Gottfredsen,** JS. Jensen	Developments in External Post Tensioning Strengthening – An update of latest innovations and applications **Dimitri Cecan,** PY. Souesme	Strengthening of Steel Girder Flanges with Concrete-Filled Ribs **Jaehyub Shin**, SH. Kim, O. Han, K. Hwang, KB. Rho	Assessment of MEMS-based sensors for inclination measurements **Sebastian Rau,** G. Morgenthal
	12:00 - 12:15	Creation of "live data" for existing infrastructure **Finn Raun Gottfredsen,** H. Pedersen	S-N curves for RC beams strengthened with FRP **Monica Garcez**, LC. Meneghetti, RM. Teixeira	Redundancy Evaluation of Composite Twin I-Girder Bridges in Fractured Condition **Heang Lam**, W. Lin, T. Yoda, K. Ono	Fine temperature effect analysis based time-varying dynamic properties evaluation of longspan suspension bridges in natural environments **Jinsong Zhu**, QL. Meng
	12:15 - 12:30	A simulated maintenance costing using a Markov deterioration model for bridge components **Huu Tran**, S. Setunge, YC. Koay, H. Luckzac	UHPFRC Technology to enhance the performance of existing concrete bridges **Eugen Brühwiler**	Group effect of Y-type perfobond rib shear connectors **Altanzagas Ochirdorj,** E. Ganzorig, SH. Kim, O. Han, TS. Kim	Inverse analysis using compatible displacements **Michel Ghosn**, J. Lei, D. Xu, J. Turmo
	12.30 – 13.30	**Break**			
Session 1C		MS01 Innovations and World Leading Research and Practice in Bridge Management Systems	MS02 Innovative Methods in Strengthening of Concrete Bridges	MS03 Developments and Trends in Composite Steel-Concrete Structures	MS05 Advancements in Performance Assessment, Monitoring, and Management of Bridges Under Fatigue Deterioration
	Session Organisers	*Nigel Powers, Sachin Joshi*	*Robin Kalfat, Riadh Al-Mahaidi, Binh Pham*	*Sang-Hyo Kim, Kwok Fai Chung, Gianluca Ranzi*	*Mohamed Soliman, Dan Frangopol*
		Plenary 1	**Room 105**	**Room 103**	**Room 106**
	Session Chairs:	*Nigel Powers & Edwin Kruger*	*Riadh Al-Mahaidi & Binh Pham*	*Gianluca Ranzi & Sarah Skorpen*	*Mohamed Soliman & Caroline Bennett*
	13:30 - 13:45	Maintenance Cost Evaluation based on Bridge Performance Degradation Model **Sang-Hyo Kim**, WH. Heo, JG. Choi, M. Gombosuren	Strengthening of concrete bridges girders using FRP and patch anchors **Robin Kalfat,** R. Jumaah, R. Al-Mahaidi	Evaluation of the ultimate response of post-tensioned composite slabs **Gianluca Ranzi**	Large-scale strain sensing approach for detecting fatigue cracks in steel bridges **Caroline Bennett,** X. Kong, J. Li, W. Collins, S. Laflamme, H. Jo
	13:45 - 14:00	An Integrated Model-Based Bridge Management System **Shitong Hou,** G. Wu, HL. Li	FRP strengthening of concrete structures using AS5100-2017 **Binh Pham**	Service behaviour of composite steelconcrete slabs with a simplified approach and a hygro-thermochemical- mechanical model for the non-uniform shrinkage evaluation **Gianluca Ranzi,** M. Bocciarelli	Fatigue Assessment of Concrete Girder Bridges Based on Traffic Information **Pei-jie Zhang,** CS. Wang, Q. Wang, L. Duan

Room 104	Room 101	Room 102	Room 107
Prestressed FRP-Strengthening and Wireless Monitoring of a Metallic Bridge in Australia **Ardalan Hosseini,** E. Ghafoori, R. Al-Mahaidi, XL. Zhao, M. Motavalli, YC. Koay	Dynamic response analysis of widening bridge due to moving vehicles **Yan Li,** T. Yang, Z. Li, L. Liu	Sensitivity and Reliability Analysis of Long span Cable stayed Bridge **Wentao Wu**, X. Wang, J. Zhang, Y. Cai	Continuous structural health monitoring for short and medium span bridges **Ayaho Miyamoto**
	A Preventive Strengthening Strategy for Aged Steel Columns **Nozomu Taniguchi**, W. Lin, T. Yoda, S. Satake	The development of the reinforcement method for Ushaped rib on orthotropic steel decks to improve the fatigue durability from the lower side **Hitoshi Yatsumoto,** A. Tabata, H. Kobayashi, S. Inokuchi, H. Matsushita	A strain sensor based monitoring and damage detection system for a twospan beam bridge **Patrick Waibel**, O. Schneider, HB. Keller, J. Müller, O. Schneider, S. Keller
	Generalized Pareto Distribution for reliability of bridges exposed to fatigue **Mariia Nesterova**, F. Schmidt, E. Brühwiler, C. Soize	Effect of the shear deformation in the structural system identification methods **Jose Turmo**, JA. Lozano-Galant, D. Tomás, G. Ramos	Automatic Data Collection System For Structural Health Monitoring **Akito Yabe**, T. Iye, A. Miyamoto
Break			
MS04 Strengthening, Monitoring and Life-Cycle Assessment of Steel Bridges *Elyas Ghafoori, Riadh Al-Mahaidi, Xiao-Ling Zhao, Masoud Motavalli, Mina Dawood*	MS06 Footbridges: Advances in Vibration Serviceability Assessment *Colin Caprani, Federica Tubino, Katrien Van Nimmen, Fiammetta Venuti*	MS07 Recent Advances in Bridge Design and Construction *Upul Attanayake, Haluk Aktan*	MS08 Submerged Floating Tunnels and Underwater Tunnel: Design, Safety and Maintenance Issues *Luca Martinelli, Yiqiang Xiang, Beatrice Faggiano*
Room 104	**Room 101**	**Room 102**	**Room 107**
Xiao-Ling Zhao & Zhongqiu Fu	*Colin Caprani & Federica Tubino*	*Eric Scheepbouwer & Shuichi Ono*	*Luca Martinelli & Daniel Cantero*
The Peak Stress Method for fatigue analysis of welded details **Giovanni Meneghetti**, A. Campagnolo, B. Atzori	Dynamic analysis of scissors-type of deployable pedestrian bridge under earthquake **Yuki Chikahiro**, S. Zenzai, S. Shigeru, I. Ario	Deployable Mobile Bridge created from ORIGAMI **Shuichi Ono,** I. Ario, I. Tanikura, Y. Chikahiro, M. Nakazawa, P. Pawlowski, C. Graczykowski, J. Holnicki-Szulc	Dynamic interaction with travelling vehicles in a submerged floating tunnel **Gabriella Mulas**, L. Martinelli, G. Palamà
Prolonging the service life of steel truss bridges **Alessio Pipinato**, R. Pavan, P. Collin, R. Hallmark, S. Ivanov, R. Geier, M. Van der Burg	A Dynamic System Identification of the Ha'penny Footbridge **Alan O'Connor**, R. Donnelly, M. Nogal, P. Gorman	Rational decision-support system for selecting bridge construction alternatives **Haluk Aktan,** U.Attanayake	Maximum stresses in mooring lines during parametric excitation **Daniel Cantero**, A. Rønnquist

FULL PROGRAM

		Plenary 1	Room 105	Room 103	Room 106
Session 1C	14:00 - 14:15	Indian Bridge Management System- Overview and Way forward **Sachidanand Joshi & Sitarama Sagi Raju**	Flexural FRP Strengthening of Concrete Bridges Using an Innovative Concept **Reza Haghani,** J. Yang, M. Al-Emrani	Behavior of an innovative demountable steel-concrete connector under static loading **Fei Yang**, Y.Liu	Historical load effects on fatigue of metallic railway bridges **Boulent Imam**, PA. Salter
	14:15 - 14:30	Bridge Management Implemented by the South African National Roads Agency **Edwin Kruger**, AA. Nyokana	CFRP Strengthening of ASR affected concrete piers of railway bridges **Mehdi Lima**, R. Salamy, D. Miller	A new era of steel bridge service life **Roberto Pavan**, F. Piccoli, E. Siviero	Multi-Objective Optimum Service Life Bridge Management Based on Fatigue Damage Detection **Sunyong Kim**, D. Frangopol
	14:30 - 14:45	The Optimal Maintenance Strategy of Bridge using Bayesian Approach **Jin Hyuk Lee**, K. Yong Lee, S. Mi Ahn, J. Sik Kong	Feasibility of reinforcement in Brazilian concrete highway bridges using carbon fiber-reinforced polymer **Arthur Medeiros,** W. Mazer, CE. Rossigali , TN. Bittencourt	Designing Long Integral Bridges for Environmental Loading in South Africa **Sarah Skorpen**, EP. Kearsley, EJ. Kruger	Probabilistic fatigue life prediction employing an advanced crack propagation model **Young Joo Lee**, J, Lee. S, Lee
	14:45 - 15:00	Development and implementation of digital bridge management systems in the Gulf region **David Moore**, S. Naelini	Influence of arch bridge skewness **Amelie Outtier,** E. Van Puymbroeck. H, De Backer	Seismic Performance and Retrofit Evaluation of Hollow-Core Composite Bridge Columns **Mohamed Elgawady**, M. Abdulazeez, A. Gheni, N. Colbert	Development of Calibration Factor for Fatigue Assessment **Jun Yong Park**, HK. Kim, YC. Park
	15:00 - 15:15		Ensuring safety and assessment of life-cycle costs using SHM for concrete bridges **Jasper Creighton**, S. Kazi, K. Islami		Fatigue assessment of deteriorated steel bridge members considering corrosion **Yeun Chul Park**, HK. Kim, YC. Park
	15:15 - 15:45	**Break**			
Session 1D	*Session Organisers*	MS01 Innovations and World Leading Research and Practice in Bridge Management Systems *Nigel Powers, Sachin Joshi*	SS03 Bridge Safety, Maintenance and Management Under Hazards and Changing Climate *You Dong, Mohamed Soliman, Dan Frangopol*	SS04 Structural Health Monitoring for Infrastructure Asset Management Advancements in Performance *Jun Li, Xiao-Wei Ye, Ting-Hua Yi, Huapeng Chen*	MS05 Assessment, Monitoring, and Management of Bridges Under Fatigue Deterioration *Mohamed Soliman, Dan Frangopol*
		Plenary 1	**Room 105**	**Room 103**	**Room 106**
	Session Chairs:	*Nigel Powers & Sachin Joshi*	*Mark Stewart & You Dong*	*Janne Wuorenjuuri & Robin Kalfat*	*Mohamed Soliman & Lihai Zhang*

Room 104	Room 101	Room 102	Room 107
Steel bridge retrofit solution for movable cases **Federico Piccoli**, R. Pavan, A. Ruzzante	Parameter identification of a biodynamic walking model for humanstructure interaction **Andrei Firus**, J. Schneider, H. Berthold, M. Albinger, A. Seyfarth	Standardizing Lateral Bridge Slide Design **Upul Attanayake**, HM. Aktan	Overview on the structural features of Submerged Floating Tunnels **Bolin Jiang,** B. Liang, B. Faggiano, G. Iovane, FM. Mazzolani
Steel Box-Girder Bridge Diseases Identification Based on Computer Vision System **Yue Pan**, D. Wang, B. Peng	Robust vibration serviceability assessment of footbridges for crowd walking excitation **Klaus Lievens,** P. Van den Broeck, G. De Roeck, G. Lombaert	Accelerated Construction of Robust Bridges through Material and Detailing Innovations **Benjamin Graybeal,** Z. Haber, I. De la Varga, R. Sprag	Research on the Finite Element Analysis Method of the Bucket Foundation of Submerged Floating Tunnel **Shilun Feng**, J. Xiang, X. Feng, J. Mao
Bond behaviour of CFRP-steel double-lap shear joints exposed to marine atmosphere **Qian Yu**, RX. Gao, XL. Gu, XL. Zhao	Model Updating of a GFRP footbridge using Tchebichef Moment Descriptors **Justin Ngan**, C. Caprani, Y. Bai	Bearing friction values for slide-in bridge construction **Marvin Halling**, KR. Johnson, S. Dorafshan, M. Maguire, P.J. Barr, M.P. Culmo	Feasibility Study on a Submerged Floating Tunnel for the Qiongzhou Strait **Bolin Jiang**, B. Liang, B. Faggiano, G. Iovane, FM. Mazzolani
Drilling-Hole Shape for Retarding the Fatigue Crack Propagation **Zhiyuan Yuanzhou**, BH. Ji, ZQ. Fu	Vibration Serviceability Assessment of a Multi-Span Footbridge **Justin Ngan**, C. Caprani, A. de Lacy	Dynamic Effects Caused by SPMT Bridge Transport **Marvin Halling**, S. Dorafshan, M. Maguire, P. Barr, M.P. Culmo	
Study on crack stop holes in weld of orthotropic steel bridge decks **Zhongqiu Fu,** GY. Sun, Y. Yao, BH. Ji	A study of pedestrian evacuation on bridge sidewalk by simulation **Xin Ruan,** ZR. Jin, Y. Li		
Break			
MS04 Strengthening, Monitoring and Life- Cycle Assessment of Steel Bridges *Elyas Ghafoori, Riadh Al-Mahaidi, Xiao-Ling Zhao, Masoud Motavalli, Mina Dawood*	MS06 Footbridges: Advances in Vibration Serviceability Assessment *Colin Caprani, Federica Tubino, Katrien Van Nimmen, Fiammetta Venuti*	MS07 Recent Advances in Bridge Design and Construction *Upul Attanayake, Haluk Aktan*	MS08 Submerged Floating Tunnels and Underwater Tunnel: Design, Safety and Maintenance Issues *Luca Martinelli, Yiqiang Xiang, Beatrice Faggiano*
Room 104	**Room 101**	**Room 102**	**Room 107**
Riyadh Hindi & Xiao-Ling Zhao	*Katrien Van Nimmen & Fiammetta Venuti*	*Marvin Halling & Upul Attanayake*	*Yiqiang Xiang & Federico Perotti*

FULL PROGRAM

Session 1D

	Plenary 1	Room 105	Room 103	Room 106
15:45 - 16:00	Research on Bridge Management System Based on BIM Technology **Yidong Qin**, RC. Xiao	Vulnerability of bridges exposed to coastal hazards and climate change **Jamie Padgett**, GP. Balomenos, S. Kameshwar, B. Bass, P. Bedient	Traffic Load Modelling for Urban Highway Bridges using Weigh-in- Motion Data **Tianli Huang,** JJ. Liao, J. Zhong, J.W. Zhong, HP. Chen	Reliability Analysis of Steel Bridges under Propagating Fatigue Cracks **Mohamed Soliman**, H.Ali
16:00 - 16:15	Bridge Maintenance Strategies - A brief comparison among different countries around the world **Maria Scutaru**, CC. Comisu, G. Boaca, N. Jaranu	Probabilistic multi-hazard assessment of seismic and scour effects on bridge structures **Xuan Guo**, Z. Chen	Acceleration Response Analysis of a Long-span Steel Arch Bridge Subjected to High-speed Trains Integrating SHM Data **Huile Li**, YL. Ding, HW. Zhao, ST. Hou	A non-concurrent multiscale simulation of fatigue crack onorthotropic steel decks **Benjin Wang**, H. De Backer, A. Chen
16:15 - 16:30	The development of a modern bridge asset management system **Andrew Sonnenberg**	Reliability based corrosion damage assessment for concrete bridge decks under a changing climate **Mark Stewart**, LI. Peng	Optimal weight problem for response sensitivity-based damage identification **Junxian Zhou,** LI. Wang, ZR. Lu	Numerical Fracture Mechanics Simulation and Analysis of Distortion-induced Fatigue **Chunsheng Wang,** B. Cui, NX. Ma, L. Duan , YZ. Wang
16:30 - 16:45	Risk assessment for bridge management systems **Paul Thompson**	Risk-Informed Assessment of Climate Change by Considering Deterioration and Hazards **You Dong**, YH. Li	A mesoscopic analysis of chloride diffusion with adaptive mesh refinement **Zichao Pan**, D. Wang, R. Ma, A. Chen	Fatigue life assessment of reinforced concrete bridges from monitoring data **Paulo Junges**, RCA. Pinto, LF. Fadel Miguel
16:45 - 17:00	What are the attributes of a superior bridge management system? **Huu Tran**, S. Setunge, YC. Koay, H. Luczak	Climate change and potential impact on the seismic vulnerability of highway bridge structures **Mohamed Mortagi**, J. Ghosh	Bridge Displacement Monitoring using Acceleration Measurement for Efficient Bridge Management **Yutaro Umekawa**, H. Suganuma	Measurement of time-dependent corrosion of steel bridge from corrosion monitoring **Jeon Seok Hyeon**, JM. You, JH. Ahn, KI. Cho, YS. Jeong
17:00 - 17:15	Using Petri-Net Modelling for a Data- Driven Approach to Bridge Management and Safety **Panayioti Yianni**, LC. Neves, D. Rama, JD. Andrews, R. Dean		Guide for a Successful Monitoring Project in Finland **Janne Wuorenjuuri**	Structural monitoring of Eltham Rail Trestle Bridge using advanced non-destructive testing techniques **Lihai Zhang**, M. Maizuar, S. Miramini, P. Mendis
17:15 - 17:30	Network Importance of Melbourne's Metropolitan Bridges –Development of a Strategic Bridge Prioritisation Framework **Armin Shoghi**, S. Di Cicco		Bending-Shear Fatigue Behavior of Concrete Girder Bridges **Ming Yuan**, D. Yan, Y. Liu	Fatigue life assessment of damaged steel strands **Yeun Chul Park**, SM. Yoo, CY. Kim, MS. Park
17:30 - 17:45		**Break**		
17:45 - 19:00	General Assembly			

Room 104	Room 101	Room 102	Room 107
Fatigue performance of hammerpeened diaphragm-to-rib welds in orthotropic steel decks **Qiudog Wang**, BH. Ji, ZQ. Fu	Uncertainty propagation in serviceability assessment of footbridges **Federica Tubino,** L. Pagnini, G. Piccardo	Development of precast slab using ultra high strength fiber reinforced concrete for replacement on highway bridge **Takeshi Kitamura,** W. Zhao, I. Iwasaki, M. Kishida, Y. Ishihara, I. Iwaki	Research on Simulation of Traffic Loads in Submerged Floating Tunnel **Linjie Chen,** B. Jiang, S. Wu, B. Liang
Fatigue stress analysis of diaphragm- U-rib welding joints and local optimization **Ye Zhi,** YX. Wang, HB. Sun, BH. Ji	Vision-based methodology for characterizing the flow of a highdensity crowd **Jeroen Van Hauwermeiren,** P. Van den Broeck, K. Van Nimmen, M. Vergauwen	An advanced technique for the analysis of box girder bridge superstructures **Kiana Kashefi**, AH. Sheikh	Submerged Floating Tunnels under Seismic and Seaquake Loadings **Luca Martinelli**
Study on soil-steel bridge response during backfilling **Damian Beben**, T. Maleska	Using full-scale observations to estimate the parameters governing human-structure interaction **Katrien Van Nimmen,** P. Van den Broeck, G, Lombaert	Construction simulation of cablestayed bridges **Jose Turmo,** JA. Lozano-Galant, D. Xu	SFTs under dynamic loads: new design issues and numerical simulation **Federico Perotti**, F. Foti, L. Martinelli, M. Tomasin
Experimental Investigation of Retrofitted Web-Gap Regions in Steel Bridge Girders **Riyadh Hindi**, M. Motaleb, M. Rahman, W. Lindquist, A. Ibrahim	Comparison between structure- and crowd-based mitigation strategies on vibrating footbridges **Fiammetta Venuti,** A. Reggio	Design of Pergola Structures for High Speed Rail Bridges **Arjuna Ranasinghe,** EG. Honarvar	An Experimental Study on Bending Behavior of Composite Hollow RC in Submerged Floating Tunnel (SFT) **Deokhee Won,** JH. Seo, WS. Park
Investigation of Live Load Deflection Limit for Steel Cable Stayed and Suspension Bridges **Seung Hwang**, DY. Kim, KJ. Park	Dynamic Study of Yangtze River Bridge at Chongqing-Lichuan Railway **Yongping Zeng**, KJ. Chen, SX. Chen	How new performance based contracts add value in maintenance contracts **Eric Scheepbouwer,** JD. Van der Walt	A Novel Life-Cycle based management system for disaster mitigation of bridges **Chun-Chung Chen**, YC. Sung, KC. Chang, CC. Hsu, KW. Chou, HH. Hung
	FIR and IIR Filtering and Data Driven Stochastic Subspace Identification for the Continuous Dynamic Modal Parameter Identification of Cable Stayed Bridge **Inamullah Khan**, K. Malik, S. Ali, D. Shan	Design method for scissors-type bridges **Yuta Hama,** I. Ario, K. Adachi	

Break

FULL PROGRAM

Wednesday 11 July 2018

Session 2A

	Room Plenary 1
9:00 - 9.30	Keynote - The engineering and management of major steel box girder bridges; lessons from West Gate Bridge **Ian Firth**
9.30 – 10.00	Keynote - Life-cycle reliability of bridges under independent and interacting hazards **Mitsuyoshi Akiyama**
10.00 – 10.30	Keynote - Assessment of the dynamic behaviour of railway bridges for high-speed traffic **Rui Calcada**
10.30 – 11.00	**Break**

Session 2B

	Plenary 1	Room 105	Room 103	Room 106
	SS05 Self-Sensing and Connected Infrastructures for a Smart Transport Future *Filippo Giustozzi*	SS06 Advances in Corrosion Modelling of Steel Bridges *Mojtaba Mahmoodian*	SS07 European Standardization of Quality Specifications for Roadway Bridges *Joan Ramon Casas, José António Silva De Carvalho Campos*	SS08 Construction Management Issues in Bridge Engineering and Construction *Mohamed Nasser Darwish*
Session Organisers				
Session Chairs:	*Lu Deng & Eugene Obrien*	*Sujeeva Setunge & Mojtaba Mahmoodian*	*Joan Ramon Casas & Alfred Strauss*	*Mohamed Nasser Darwish & Xin Ruan*
11:00 - 11:15	Pervasive Fibre-Optic Sensor Networks in Bridges: A U.K. Case Study **Liam Butler,** M.Z.E.B. Elshafie, CR. Middleton	Structural Reliability Analysis of Corroding Steel Bridges Using Random-Field Representation **Vahid Aryai,** M. Mahmoodian, V. Ferdowsi, F. Ariai	Quality specifications for roadway bridges in Europe **Joan Ramon Casas**, JC. Matos	A case study of early cracks of a concrete pylon **Xin Ruan**, J. Song, XF. Shi
11:15 - 11:30	Shear force-based method for detecting vehicle speed and axle spacing **Wei He,** L. Deng, Y. Yu, CS. Cai	Corrosion risks: assessment of enclosed spaces, monitoring real bridges **Mark Bowers**	Quality specifications and performance indicators for road bridges in Europe **Alfred Strauss,** S. Fernandes, JR. L, Mold. J.C, Matos.	A case study with SVM on bridge inspection data **Arong Arong**, S. Murakami
11:30 - 11:45	Virtual design of adaptive road-bridgetypes in a comprehensive 5D-BIM assessment **James Lim**, M. Nöldgen, S. Giebat	Effect of Corrosion on Mechanical Properties of Steel Bridge Elements **Le Li,** M. Mahmoodian, CQ. Li	Quality control plan for RC bridges exposed to flooding events **Nikola Tanasic,** R.C.A. Hajdin	Evaluation of slab lifting strategies for maintenance of middle slabs in double-deck tunnels **Beom Keun Park,** SM. Kim, YK. Cho
11:45 - 12:00	TRUSS-ITN methods for detecting bridge damage from response to traffic **Eugene Obrien**, AP. González, D. Martínez, M. Casero, JJ. Moughty, JR. Casas, M. Vagnoli, R. Remenyte-Prescott, J. Andrews, F. Huseynov, J. Brownjohn	3D cellular automata based numerical simulation of atmospheric corrosion process on weathering steel **Jinsong Zhu,** XY. Guo, JF. Kang	Monitoring in management of roadway bridges **Tomasz Kaminski,** J. Bien, M. Kuzawa	Research and application of maintenance for a combined highway-railway bridge **Jun Fu,** T. Zhang, Z. Li, Q. Ding, J. Huang

Session Chairs: Riadh Al-Mahaidi & Naeem Hussain

Session Chairs: Fabio Biondini & Sujeeva Setunge

Session Chairs: Hitoshi Furuta & Eugene OBrien

Break

SS09 CIM: Community Information Modeling - The New Frontier of Civil Engineering *Gian Paolo Cimellaro, Marco Domaneschi, Steve Mahin*	SS10 Assessment and evaluation of deteriorated bridges *Ho-Kyung Kim, Joan Ramon Casas*	SS11 Life-cycle structural redundancy, robustness and resilience of bridges under multiple hazards *Fabio Biondini, Dan Frangopol*	GS03 General Session: General Inspection and Maintenance
Room 104	**Room 101**	**Room 102**	**Room 107**
Gian Paolo Cimellaro & Marco Domaneschi	*Ho-Kyung Kim & Eiki Yamaguchi*	*Fabio Biondini & Alessandro Palermo*	*Peng Lou & Sofia Diniz*
Fuzzy Based Tool to Measure the Resilience of Communities **Paolo Cimellaro**, O. Kammouh, Z. Noori, M. Domaneschi,	Seismic retrofit of truss bridge for highway and railway **Taku Hanai,** T. Tamura, Y. Hirayama	Survey on life-cycle structural performance indicators for bridges **Fabio Biondini**, D. Frangopol	Optimizing rehabilitation strategies for bridge decks under performance-based contracting setting **Tarek Zayed,** M. Alsharqawi, S. Abu Dabous
Resilience Assessment of City-Scale Transportation Networks Using Monte Carlo Simulation **Paolo Cimellaro**, O. Kammouh, A. Cardon, S. Marasco, S. Mahin	Safety Assessment of Bridges for Transportation of Power Plant Generator **Inyeol Paik,** KH. Jeong, MK. Jun, JH. Jeong, SH. Hong, H. Koo, RC. Lee	Seismic resilience of road bridges: lessons learned from the 14 November 2016 Kaik-ura Earthquake **Alessandro Palermo**, AI. Sarkis, O. Kammouh, GP. Cimellaro	Impacts of dynamic loads on the soilsteel bridges **Damian Beben**
Seismic Resilience of Electric Power Networks in Urban Areas **Paolo Cimellaro**, S. Sordo, M. Domaneschi, S. Mahin	Evaluation of adhered sea-salt particle amount to bridge, anti-adhesion countermeasures **Aibek Toktorbai Uulu**, H. Katsuchi, H. Yamada	Renewal-theory-based Life-cycle Risk Assessment of Bridge Deck Unseating under Hurricanes **Dan Frangopol,** DY. Yang	Automated Steel Bridge Coating Inspection using Neural Network Trained Image Processing **Tarek Zayed,** A. Elbeheri
Seismic resilience of bridges in transportation networks **Marco Domaneschi,** G. Scutiero, GP. Cimellaro , AA. Khalil, C. Pellecchia, EM. Ricciardi	Influence of collision on structural performance of steel girder **Eiki Yamaguchi,** Y. Tanaka, H. Tsuji	Life-cycle seismic resilience of aging bridges and road networks considering bridge capacity correlation **Luca Capacci,** F. Biondini	Inspection, Structural Health Monitoring, Repair and Maintenance of a Cable-Stayed Bridge in Vienna, Austria **Peter Furtner**

FULL PROGRAM

Session 2B	12:00 - 12:15		Predictive modelling of the deterioration of Australian state bridge network **Sujeeva Setunge**, HD. Tran, YC. Koay, H. Luckzac	Bridge Management in Australia and New Zealand: Current Approaches and Future Needs **Mayer Melhem**, C. Caprani, A. Ng	
	12:15 - 12:30			Repair and Retrofitting of Bridges under IBMS protocol **Sitharama Raju Sagi**, TK. Kumar	
	12.30 – 13.30	**Break**			
Session 2C	13:30 - 14:00	Keynote - Timber bridges in Australia, where to from here? **John Hilton**			
	14:00 - 14:30	Keynote - A vision for vision-based technologies for bridge health monitoring **Necati Catbas**			
	14:30 - 15:00	Keynote - Design concept of the twin river bridges in Chongqing **Man-Chung Tang**			
	15.00 – 15.30	**Break**			
Session 2D		SS12 Centenary Bridges - An Insight into Construction and Technology History	SS13 Value of Information of SHM for life-cycle management of Bridges	SS14 Resilience of Bridges to Climate Change, Natural & Man Made Hazards	SS15 Latest Developments on Jointless Bridges
	Session Organisers	*Paulo Cruz, Pier Giorgio Malerba*	*Sebastian Thöns, Mark Stewart, Dagang Lu, Alan O'Connor*	*Alan O'Connor, Maria Nogal*	*Bruno Briseghella, Phillip Yen, Baochun Chen*
		Plenary 1	**Room 105**	**Room 103**	**Room 106**
	Session Chairs:	*Paulo Cruz & Pier Giorgio Malerba*	*Mark Stewart & Sebastian Thons*	*Jamie Padgett & You Dong*	*Phillip Yen & Baochun Chen*
	15:30 - 15:45	The dream of building bridges over the Tagus River mouth in Lisbon **Paulo Cruz**	Sensitivity Analysis of Value of Information Framework **Mohammad Shihabuddin Khan,** S. Ghosh, J. Ghosh, C. Caprani	Seismic Performance of Bridges with Rocking Piers in Hanshin Expressway **Kyoko Azumi,** K. Sugioka, N. Mitsukawa	Trial design study on integral abutment bridge supported on UHPC-RC segmental pile **Fuyun Huang,** GD. Chen, BC. Chen, YZ. Zhuang, H. Tabatabai
	15:45 - 16:00	Articulated and continuous cantilever bridges after a century of experience **Pier Giorgio Malerba**	Health monitoring data modeling and reliability prediction of an actual bridge based on ARMA model **Dagang Lu,** WH. Zhang, Z. Zhao	Resilience Assessment of Highway Bridges using SMA-based Isolation Bearings **You Dong,** Y. Zheng, YH. Li	Parametric Studies on Seismic Behavior of Integral Abutment Steel Bridges Considering SSI **Qiuhong Zhao,** S. Dong, Z. Qi, B. Chen
	16:00 - 16:15	Whipple's 1841 Bowstring Truss – World's First Scientifically Designed Truss Bridge **Ian Nitschke,** FE. Griggs Jr	Assessment of Terrorism Risk Mitigation Measures for Iconic Bridges **Sebastian Thons,** MG. Stewart	Resilience evaluation of a cablestayed bridge **Heung Bae Gil,** K. Han, S. Seo, J. Park	Research on SSI simulation method of integral abutment bridge under earthquake **Qiuhong Zhao,** J. Qiu, Z. An, Z. Qi

Resilience Framework for Seaport Infrastructure: Theory and Application **Omar Kammouh,** A. Balbi, MP. Repetto, GP. Cimellaro	Sectional Analysis of Corroded Wires in Chloride-contaminated Tendon **Chul-hwan Yoo,** SH. Bong, HK. Kim, YC. Park	Time-Dependent Probability of Exceeding Restoration Levels in Resilience Analysis **Gian Paolo Cimellaro,** F. Nocera, P. Gardoni	Determination of stay cable forces using highly mobile vibration measurement devices **Sebastian Rau,** G. Morgenthal, J. Taraben, T. Abbas, N. Hallermann
Seismic damage assessment of a virtual large-scale city model **Omar Kammouh,** M. Domaneschi, S. Marasco, G. Scutiero, A. Zamani Noori, V. Taurino, GP. Cimellaro	GA-based Model Updating for Existing Bridges **Soonbong Shin,** JC. Kim, J. Yoon	Computational Investigation on the Piers of a U-Slab Bridge under Raising Flood Intensity **Maryam Nasim,** S. Setunge, H. Mohseni, SW. Zhou	Estimation of bridge frequencies from a passing vehicle **Nan Jin,** TS. Paraskeva, EG. Dimitrakopoulos

Break

Session Chairs: Pier Giorgio Malerba & Andy Ng

Session Chairs: Joan Ramon Casas & Jamie Padgett

Session Chairs: Xiao-Ling Zhao & Nigel Powers

Break

GS04 General Session: Bridge Safety	GS05 General Session: Bridge Design and Management	GS06 General Session: Bridge Safety	GS07 General Session: General Inspection and Maintenance
Room 104	**Room 101**	**Room 102**	**Room 107**
Robin Kalfat & David Hugget	*Mohamed Elgawady & Andy Ng*	*Riyadh Hindi & Tomasz Kaminski*	*Alfred Strauss & Rosemarie Helmerich*
Study on compressive strength of steel plates with a partial loss of cross-sectional area **Katsuyoshi Nozaka,** K. Saito	AS5100.2: 2017 changes to trafficbarrier loadings – a Victorian perspective **Bruce Gibbens**	Intermodal research to increase the reliability of transport infrastructures **Ralph Holst**	Methods for fast and reliable determination of damping and tension force of stay cables **Alfred Strauss,** T. Mack, R. Geier
Use of stochastic optimization in the analysis of weigh-in-motion data **Fatima El Hajj Chehade,** R. Younes, H. Mroueh, F. Hage Chehade	Displacement-based seismic design to AS5100.2: 2017 – simplified **Bruce Gibbens**	Traffic safety and passenger comfort for steel railway bridges **Seung Hwang,** DY. Kim	Noise radiation from steel bridge structure – Old Årsta bridge Stockholm **Anders Olsen,** R.S. Lützen, S. Holmes
Parametric analysis of rib distortion in orthotropic steel decks **Heng Fang,** H. De Backer	How did the future work out? The tale of E J Whitten Bridge **Robert Percy,** PJ. Robinson	The Ultimate Limit State vs. Limit Analysis of masonry arch bridges **Tomasz Kaminski**	Damping performance identification for large-scale dampers of a cable-stayed bridge **Rujin Ma,** XH. Hu, CX. Ge

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Session 2D

	Plenary 1	Room 105	Room 103	Room 106
16:15 - 16:30	The use of machine learning techniques to assess damage in critical infrastructure **Romualdo Alves,** MA. Terra, RA. Pereira Junior, L.F.M. Sanchez, M. Noel, WR. Junior	Evaluation of fatigue crack propagation considering the modal superposition technique **Cláudio Horas**, G. Alencar, R. Calçada, A. Jesus	Seismic Fragility of Highway Bridges Considering Improved Bearing Deterioration Modeling **Shivang Shekhar,** J. Ghosn	Seismic Behavior and Cyclic Tests on Integral Abutment–Pile Joints **Qiuhong Zhao,** Y. Li, Z. Qi, B. Chen
16:30 - 16:45	Shear Capacity of an Existing RC Bridge Deck Slab: FE Analysis Using Continuum Elements **Jiangpeng Shu**	Inspection and Assessment of One of Australia's Earliest Masonry Bridges **Dara Mcdonnell,** D. Ashurst, I. Berger	Structural Behavior of a Steel- Concrete Composite Beam under Fire Condition **Moon Soo Kang,** H. Pak, JW. Kang, SH. Kee, B.J. Choi	Design and Construction Challenges of Jointless Bridges in Seismic Regions **Wenhuei Phillip Yen,** B. Khaleghi
16:45 - 17:00	Rehabilitation of timber bridge piles using a wrapping system **Weena Lokuge**		The performance estimation of pileprotective structures using simplified collision model **Gyehee Lee**	Fatigue strength improvement of welded joints using SBHS700 by applying ICR treatment **Yuki Ono,** K. Kinoshita
17:00 - 17:15	Investigating snipe depth in girders and corbels in timber bridges **Weena Lokuge**		Effect of Slenderness-Ratio Parameter on Seismic Performance of Steel Piers **Hiroki Takezawa,** K. Ono, S. Okada, K. Azumi	Three Bridges with the Same Name "Kömürhan Bridge" **Nurdan Apaydin,** O. Yaldiz
17:15 - 19:00	**Break**			
19:00 - 23:00	Conference Dinner - Melbourne Room, Level 2 Melbourne Convention and Exhibition Centre			

Room 104	Room 101	Room 102	Room 107
Rehabilitation of the swing bridge from 1905, North of Spain **Collazos Felipe,** D. Garcia-Sánchez, ML. Ruiz-Bedia, OR. Ramos-Gutiérrez, MA. Delgado-Nuñez	How strong is your bridge? Optimising New Zealand's longest road bridge **Jeremy Waldin,** B. McHaffie, V. Wong	Importance of Simulation in the Design of Experimental Tests **Memduh Karalar,** M. Dicleli	Use of Comparative Vacuum Monitoring Sensors for Automated, Wireless Health Monitoring of Bridges and Infrastructure **Dennis Roach**
Management of Risk Disasters: Application in Aysen and Valparaiso, Chile **Matias Valenzuela,** N. Valenzuela, P. Moraga, F. Pineda, M. Márquez, R. Romo	Performance of prestressed concrete girder in ultimate bending for AS5100:2004 and AS5100:2017 **Mayer Melhem,** C. Caprani, M.G. Stewart	Experimental Investigation on the Low Cycle Fatigue Life of Piles **Memduh Karalar,** M. Dicleli	Considerations for identification of moisture in building materials using Bluetooth® **Rosemarie Helmerich,** L. Moldenhaue, G. Voigt, F. Adao, E. Köppe
Fatigue behavior of full-penetration inclined cruciform welded-joints with artificial pit corrosion **Xing Wei,** Z.Y. Jie	Coupling finite elements to model steel to concrete bond **Rebecca Gravina,** L.A.G. Bitencourt Jr, LC. Meneghetti	Investigation on the Closed Longitudinal U-ribs Corrosion of Cable Stayed Bridge with Steel Plate Deck **Kang Yeon Lee,** S. Ho Jin, B. Dal Soo Oh, C. Hyeong Seok Joo, D. Do Kyoun Kim	Quantifying increasesin maintenance costs of prestressed reinforced concrete (PRC) bridges due to increasing fatigue from heavier traffic loads **Michele Frizzarin,** L. Mancassola, P. Franchetti
Stress-concentration effects due to weld root imperfections in orthotropic steel decks **Hans De Backer,** W. Nagy, A. Outtier	Shear and Torsion Design Review – Australian and International Standards **Tahmina Hossain,** S. Mikhael, A. Chaudry, S. Mohanakumar	Experimental and analytical investigation of bridge deck under restrained shrinkage **Riyadh Hindi,** M. Rahman, Y. Chen, A. Ibrahim, W. Lindquist	Assessment of concrete pylon of cable stayed bridge with floating crane collision **Jae-Hoon Lee,** SC. Lee, HY. Kim, SK. Park

Break

FULL PROGRAM

Thursday 12 July 2018

Session 3A

	Room Plenary 1
9:00 - 9.30	Keynote - Innovative and sustainable operation and maintenance of bridges **Jens Sandager Jensen**
9.30 – 10.00	Keynote - Value of monitoring data for long-span bridge operation – Aerodynamic point of view **Ho-Kyung Kim**
10.00 – 10.30	Keynote - Long Term Bridge Performance Program Status and Preliminary Results **Bruce Johnson**
10.30 – 11.00	**Break**

Session 3B

	SS16 Revised Fatigue Detail Categories for Bridges (In European Standards)	SS17 Smart Bridge Components: Monitoring and Optimization of Ejs, Bearings and Dampers	SS18 Challenges for bridge technology implementation and management in developing countries	SS19 Bridge Deterioration Modeling and Probabilistic Bridge Maintenance Needs Forecasting
Session Organisers	*Ulrike Kuhlmann*	*Virendra Ghodke*	*Túlio Bittencourt, Matías Valenzuela, Fernando Cerda Carrizo, Marcelo Márquez*	*Raka Goyal, Matthew Whelan, Tara Cavalline*
	Plenary 1	**Room 105**	**Room 103**	**Room 106**
Session Chairs:	*Marek Salamak & Helen Bartsch*	*Xin Ruan & Chunsheng Wang*	*Túlio Bittencourt & Matías Valenzuela*	*Raka Goyal & Paul Thompson*
11:00 - 11:15	Assessment of fatigue tests to review detail categories of EC3 **Helen Bartsch**, M. Feldmann	"Smart" bridge expansion joints enabling optimized decision-making at different lifecycle stages **Pascal Savioz,** K. Islami, V. Ghodke	Maintenance Plan Proposal on Cable- Stayed Bridge: Application to Yelcho Bridge **Marcelo Marquez,** J. Campusano, F. Hernández, J. Errazuriz, MA. Valenzuela	Predictive fidelity of bridge deterioration models:probabilistic vs deterministic **Raka Goyal,** M. Whelan, TL. Cavalline
11:15 - 11:30	Recommended fatigue strengths of thick-walled circular K-joints and influence of weld root irregularities **Simon Bove,** M. Euler, U. Kuhlmann	Advances in materials and types of bearings **Sabia Kazi,** V.V. Ghodke, C. Sarmiento	Management Systems for Inspection and Maintenance of Chilean Road Bridges **Marcelo Marquez,** MA. Valenzuela, G. Arias, M. Pertierra, C. Sepulveda	Life Cycle Assessment for Civil Engineering Structures of Railway Bridges **Gerhard Lener,** J. Schmidt, A. Strauss
11:30 - 11:45	Considering High Frequency Mechanical Impact Treatments in Design **Stephanie Breunig**, U. Kuhlmann	Breaking the Asphalt code –Polyurethane flexible plug expansion joint **Chito Sarmiento,** G. Pope, S. Kazi	Dynamic analysis of a steel-concrete composite railway bridge considering vehicle-bridge interaction **Ladislao Roger Ticona Melo,** TN. Bittencourt, D. Ribeiro, R. Calçada	National-scale bridge element deterioration model for the USA **Paul Thompson**
11:45 - 12:00	Statistical Analysis of Fatigue Test Data according to Eurocode 3 **Karl Drebenstedt,** M. Euler	Critical factors in minimizing total life cycle costs of bridge expansion joints **Gabriel Pope,** J. Creighton, W. Ghodke	Management System for Natural Risk Disaster on Infrastructure: A Regional Approach **Matias Valenzuela,** N. Valenzuela, A. Peña-Fritz, R. Romo	Damage location in experimental/numerical models by acceleration amplitude change **Luiz Carlos de Almeida,** RL. Silva, LM. Trautwein, GH. Siqueira, CS. Barbosa

Session Chairs: Michel Ghosn & Alfred Strauss

Session Chairs: Airong Chen & Xin Ruan

Session Chairs: Tullio Bittencourt & Riadh Al-Mahaidi

Break

MS09 Vibration-Based Structural Health Monitoring of Bridges: Research and Applications *Maria Pina Limongelli, Joan Ramon Casas, Alvaro Cunha*	GS08 General Session: Bridge Design and Management	GS09 General Session: Bridge Safety	GS10 General Session: General Inspection and Maintenance
Room 104	**Room 101**	**Room 102**	**Room 107**
Maria Pina Limongelli & Chul-woo Kim	*Naeem Hussain & You-Lin Dong*	*Lu Deng & Elisa Conti*	*Joan Ramon Casas & Ho-Kyung Kim*
Monitoring Footbridges Using Wireless Mesh Networks **Marco Domaneschi,** C. Apostoliti, GP. Cimellaro, B. Glisic, K. Kliewer	Parametric analysis of dissipative rocking superstructures **Alessandro Palermo**, Z. Chegini	Experimental study on the fatigue resistance of prestressing strands at low temperature **Frederik Bomholt,** H. Alawieh, M. Knobloch	Detection of fatigue crack of rib-to-deck weld by ultrasonic test **Hiromi Shirahata**
Ambient vibration monitoring of a railway bridge for scour detection **Chul-woo Kim,** D. Kawabe, M. Kondo	Mechanical properties of alkali activated concrete based class C fly ash **Mohamed Elgawady,** E. Gomaa, S. Sargon, A. Gheni	Multi-scale finite element model updating of highway bridge based on long-gauge strain response **Shizhi Chen,** G. Wu, H. Li	Inspection of steel bridges by modal hammer from bridge deck only **Anders Rønnquist,** BT. Svendsen, GT. Frøseth
System identification of a bridge by a sparse-like system matrix **Chul-woo Kim,** T. Mimasu, Y. Goi	Bayesian integration of NDT with corrosion model for service-life predictions **Sharvil Alex Faroz,** S. Ghosh	Limit Analysis of an old and damaged R.C. grillage deck **Elisa Conti,** PG. Malerba, M. Quagliaroli, A. Maffei	Assessment of Lateral Thermal Diffusion of Impulse Thermography Method in Measuring Size of Non-Planar Defects **Quang Huy Tran,** J. Huh, C. Kang, K. Kwak, J. Ahn
Obtaining full-field response for optimal sensor placement **Jyrki Kullaa**	Brunei Temburong Link – Temburong Viaduct **Naeem Hussain,** S. Yip, J. Cain	Nonlinear Analysis of a R.C. grillage deck exposed to corrosion **Elisa Conti,** PG. Malerba, M. Quagliaroli, D. Scaperrotta	Corrosion Segmentation and Quantitative Analysis Based on Deep Neural Networks **Bo Peng,** D. Wang, Y. Pan

FULL PROGRAM

		Plenary 1	Room 105	Room 103	Room 106
Session 3B	12:00 - 12:15	Quantifying Uncertainty in Visual Inspection Data **John Bennetts**, G. Webb, S. Denton, PJ. Vardanega, N. Loudon	Smart bridge components (expansion joints, bearings, seismic devices) for intelligent infrastructure **Pascal Savioz**, K. Islami, N. Meng, C. O'Suilleabhain	Strengthened Chilean bridges using carbon fiber: State of Knowledge **Marcelo Marquez,** MA. Valenzuela, H. Pinto	Early detection of reinforcing-bar corrosion with Linearized Inverse Scattering Method **Takaya Tsunoda,** K. Suzuki
	12:15 - 12:30	BrIM bridge inspections in the context of Industry 4.0 trends **Marek Salamak**, M. Januszka		UAV: First Chilean Proposal of use on Road Bridge Inspections **Matias Valenzuela,** N. Valenzuela, A. Peña-Fritz, D. Torres, M. Márquez	Fragility Curves for concrete girder bridges under flood hazard **Farook Kalendher,** S. Setunge, D. Robert, H. Mohaseni
	12:30 - 13:30	**Break**			
Session 3C		MS10 Corrosion and Safety of Existing Concrete Bridges	MS11 Special Elements in Bridge Construction and Practice	MS12 Bridge Safety Evaluation and Risk Assessment: Code Requirements vs. Practical Considerations	MS13 Advanced Computational and Experimental Techniques for Extreme Load Performance of Bridges
	Session Organisers	*Mitsuyoshi Akiyama, Dan Frangopol, Hiroshi Matsuzaki*	*Mohamed Nasser Darwish*	*Ming Liu, Hani Nassif*	*Javad Hashemi, Riadh Al-Mahaidi, Dan Frangopol*
		Plenary 1	**Room 105**	**Room 103**	**Room 106**
	Session Chairs:	*Mitsuyoshi Akiyama & Hassan Baji*	*Mohamed Nasser Darwish & Hiroshi Yokota*	*Peng Lou & Sofia Diniz*	*Riadh Al-Mahaidi & Cristina Costa*
	13:30 - 13:45	Effect of different steel weight loss distributions on the life-cycle reliability of PC girders **Mitsuyoshi Akiyama**, N. Nishiya, H. Fukushima, A. Sakurai, P. Bocchini, D. Frangopol	Bridges Approach Slabs with Fibre Reinforced Polymers **Mohamed Nasser Darwish**	Code development for existing structures: influence of concrete strength statistics **Sofia Diniz,** BL. Badimuena	Advanced Nonlinear Finite Element Modelling of Reinforced Concrete Bridge Piers **Edvard Bruun,** A. Kuan, GT. Proestos, EC. Bentz, MP. Collins
	13:45 - 14:00	Optimum Strengthening Strategy for Deteriorating Reinforced Concrete Bridges **Hassan Baji,** CQ. Li	Guidance on Defects in Hidden Bridge Components **Torill Pape,** P. Burnton, J. Collins, D. Ashurst, P. Sparkes, J. Webb	Risk-based performance evaluation for concrete bridge deck repair **Ming Liu**	Seismic analysis of a stone masonry arch railway bridge **Cristina Costa,** A. Arêde, R. Silva
	14:00 - 14:15	Strengthening of Reinforced Concrete Bridges by External Prestressing **Luiz Carlos de Almeida,** LH. Pinheiro, LM. Trautwein	Captain Cook Bridge Bearing Replacement **John Spathonis,** W. Mengel, P. Adams, W. Hansford	The Bridge Assessment Maze **Claire Jager,** T. Pape, P. Shaw, R. Heywood	Numerical assessment of composite bridges subjected to Wildland Urban Interface (WUI) fires **Amila Dissanayake,** S. Setunge, S. Venkatesan, K.A.M. Moinuddin, D. Sutherland

Room 104	Room 101	Room 102	Room 107
Potential of Drive-By Inspection for Railway Bridges **Amirhossein Eslamikhouzani,** C. Caprani	Effect of cracks on air-tightness of vacuum tube bridge structures **Prakash Devkota,** J. Park, E. Choi	Determining vehicle weight limit based on the cumulative fatigue damage on bridges **Lu Deng,** W. Yan	Effect of small steel-piece size on Charpy absorbed energy **Daiki Kitazume,** K. Ono, K. Anami, T. Lida
	Moving Substrate in an Ephemeral Stream Revisited: A Continuing Case Study **George Herrmann,** TG. Cleveland	Vortex-induced Vibration Prediction of Bridges Based on Data Fusion Theory **Dalei Wang,** S. Xu, R. Ma, A. Chen , H. Tian	A two-stage static structural system identification by observability method **Joan Ramon Casas,** J. Lei, M. Nogal, JA. Lozano-Galant, D. Xu, J. Turmo
Break			
MS09 Vibration-Based Structural Health Monitoring of Bridges: Research and Applications *Maria Pina Limongelli, Joan Ramon Casas, Alvaro Cunha*	MS14 Steel Bridge Rehabilitation *Masahiro Sakano*	MS15 Bridge Loading – Measurement and Modelling *Colin Caprani, Andrzej Nowak, Eugene Obrien, Xin Ruan*	MS16 Bridge Monitoring: Techniques and Results Regarding Bridge Condition and Loading *Eva Lantsoght, Dick Hordijk*
Room 104	**Room 101**	**Room 102**	**Room 107**
Joan Ramon Casas & John Moughty	*Masahiro Sakano & Riyadh Hindi*	*Colin Caprani & Xin Ruan*	*Javad Hashemi & Keigo Suzuki*
The Interpolation Method for vibration based damage localization: influence of feature uncertainties **Maria Pina Limongelli,** A. Fathi	AYALA BRIDGE, retrofitting of an historic steel bridge in Manilla (Philippines) **Vanessa Buchin-Roulie,** N. Kaczkowski, A. Gros, F. Tesson	Traffic load patterning on long span bridges **Colin Caprani,** D. Guo	Structural health monitoring and serviceability assessment of bridges in Romania **Claudiu Comisu,** MC. Scutaru, N. Jaranu , G. Boaca
Uncertainties reduction on modal parameters estimation in existing bridges using ambient and freevibration test **Filippo Lorenzoni,** N. De Conto, F. Da Porto, C. Modena	Orthotropic steel bridge deck study with UHPFRC cold composite overlay **Lan Duan,** T.O.N. Houankpo, CS. Wang	Traffic and wind simulation for extreme loads on long-span bridges **Alisa Hayrapetova,** AJ. O'Connor, JD. Sørensen, HS. Toft	Deformation Monitoring of a Simply Supported Railway Bridge under Varying Dynamic Load **Karen Faulkner,** F. Huseynov, J. Brownjohn, Y. Xu
Monitoring of the Chillon viaduct after strengthening with UHPFRC **Henar Martin-Sanz,** V. Dertimanis, LD. Avendaño-Valencia, E. Chatzi, E. Brühwiler	Effect of Diaphragms on the Exterior Girders during Bridge Construction **Riyadh Hindi,** F. Hraib, L. Hui	Developing a new bridge live load model for South Africa **Pierre Van Der Spuy,** R. Lenner	DIC-monitoring of full-scale concrete bridge using high-resolution wide-angle lens camera **Philip Halding,** JW. Schmidt, CO. Christensen

FULL PROGRAM

		Plenary 1	Room 105	Room 103	Room 106
Session 3C	14:15 - 14:30	Inhibiting Corrosion of Prestressed Cables Using an Ultrasonic Impregnation Process **Xavier Hallopeau,** PM. Dubois, D. Michaux	Reliability Assessment of Reinforced Concrete Pylons Subjected to Biaxial Bending **Ji Hyeon Kim,** H. Sung Lee	Bridge risk management: Credibility gaps **Peter McCarten**	Joint irregularity in the seismic behavior of highway bridges **Maria Consolación Gómez Soberón,** AE. Gómez-Benítez, RJ. Aguirre-Eligio
	14:30 - 14:45	Effects of current density on the spatial variability associated with steel corrosion and flexural behavior of corroded RC beams **Sopokhem Lim**, H. Song, M. Akiyama , D. Frangopol	Experimental research on shear behavior of rubber-ring perfobond connector **Yangqing Liu**, F. Wang	Codes and standard issues in assessing existing bridges **Alessio Pipinato**, R. Pavan, E. Siviero	Linking seismic resilience into sustainability assessment of limiteductility RC bridges **Ali Al-Atraqchi,** MJ. Hashemi, R. Al-Mahaidi, P. Rajeev
	14:45 - 15:00	Seismic failure mode evaluation of bridges with deteriorated isolators **Hiroshi Matsuzaki,** Y. Kubo, T. Tsumura, S. Unjoh		Horizontal Interface Shear Requirements for Precast Prestressed Concrete Bridge Beams **Alan O'Connor,** M. Slevin	Study on Impact Behavior of Piers Subjected to Vehicle Collisions **Ruiwen Li,** DY. Zhou
	15:00 - 15:15	Durability of reinforced concrete bridges in marine environments **Rob Melchers,** IA. Chaves		Bridge Safety Assessment for Strength II Limit State in AASHTO LRFD Specifications **Peng Lou,** H. Nassif, P. Truban	
	15:15 - 15:45	**Break**			
Session 3D		MS10 Corrosion and Safety of Existing Concrete Bridges	MS11 Special Elements in Bridge Construction and Practice	MS12 Bridge Safety Evaluation and Risk Assessment: Code Requirements vs. Practical Considerations	MS13 Advanced Computational and Experimental Techniques for Extreme Load Performance of Bridges
	Session Organisers	*Mitsuyoshi Akiyama, Dan Frangopol, Hiroshi Matsuzaki*	*Mohamed Nasser Darwish*	*Ming Liu, Hani Nassif*	*Javad Hashemi, Riadh Al-Mahaidi, Dan Frangopol*
		Plenary 1	**Room 105**	**Room 103**	**Room 106**
	Session Chairs:	*Hiroshi Matsuzaki & Bhaskar Panchiredd*	*Mohamed Nasser Darwish & Hiroshi Yokota*	*Ming Liu & Carlos Jurado*	*Javad Hashemi & Riadh Al-Mahaidi*
	15:45 - 16:00	Damage accumulation in aging highway bridges considering multiple earthquake events **Bhaskar Panchireddi,** U. Yadav, J. Ghosh	Effect of Hinge-Type Connections on the Lateral Cyclic Behavior of Prestressed High-Strength Concrete Pile **Byungho Lim,** JW. Kang, YJ. Kim, H. Yoon	Repair and Retrofitting of Bridges - Present and Future **Harminder Singh**	Fragility analysis of non-ductile RC bridges subjected to extreme hydrodynamic forces **Ismail Qeshta,** MJ. Hashemi, R. Gravina, S. Setunge

Room 104	Room 101	Room 102	Room 107
Development of Vibration-Based Parameters as Damage Sensitive Features for Bridge Structures **John Moughty,** JR. Casas	Inspection of Bingo Bridge by using high-sensitivity magnetic nondestructive testing **Toshiyuki Ishikawa,** Y. Kuramitsu, H. Furuta, K. Tsukada	Using Images to Estimate Traffic Loading on Long-Span Bridges **Alexandra Micu,** F. Daize, EJ. OBrien, A. Malekjafarian	Monitoring crack width and strain during proof load testing **Eva Lantsoght,** C. Van der Veen, DA. Hordijk
A bespoke signal processing algorithm for operational modal analysis of post-tensioned steel and concrete beams **Alan O'Connor,** D. Noble, M. Nogal, V. Pakrashi	Theoretical analysis of CFRP bonding repair method using low-elasticity adhesive at the plate end **Kazuki Komon,** T. Ishikawa, H. Suzuki , Y. Fujii, H. Namaki	Long span bridges – current age & design life – a global survey **James De Maria,** C. Caprani, D. Guo	Twenty years monitoring of a high strength concrete cantilever bridge **Eva Lantsoght,** C. Van der Veen, H. Van der Ham, A. De Boer
The effect of local scour of a single pier on the vibration parameters of a multi-span bridge under seismic excitation **Maria Pina Limongelli,** A. Anžlin, LJ. Prendergast, K. Gavin	Fatigue strength and improvement effect of the center stay rod **Shinya Kawano,** S. Ogo, A. Okumura, Y. Mizokami, M. Sakano	A New Method to Understanding Loading and Traffic characteristics of Traffic flow **Xin Ruan,** XJ. Wang	Estimating Climate Effects on Bridge Decks Deterioration **Shuang Liu,** H. Zhu, L. Yang, M. Habib
		Bridge Live Load Models in U.S. and Europe **Anjan Ramesh Babu,** AS. Nowak, EJ. OBrien	Railway bridge monitoring system using inertial sensors **Piotr Olaszek,** D. Sala, M. Kokot, M. Piatek
Break			
SS20 Monitoring and Assessment of Bridges Using Novel Techniques *Alfred Strauss, Konrad Bergmeister, Dan Frangopol*	MS14 Steel Bridge Rehabilitation *Masahiro Sakano*	MS15 Bridge Loading – Measurement and Modelling *Colin Caprani, Andrzej Nowak, Eugene Obrien, Xin Ruan*	MS16 Bridge Monitoring: Techniques and Results Regarding Bridge Condition and Loading *Eva Lantsoght, Dick Hordijk*
Room 104	**Room 101**	**Room 102**	**Room 107**
Alfred Strauss & Michel Ghosn	*Masahiro Sakano & Chunsheng Wang*	*Eugene OBrien & Xin Ruan*	*Eva Lantsoght & Wojciech Anigacz*
Performance analysis of distributed optical fiber bonding adhesives to concrete **António Barrias,** JR. Casas, S. Villalba	Repair of corroded steel plate girders with ultra-high performance concrete **Arash Zaghi,** KF. McMullen, MP. Culmo	Bridge Network Planning for Heavy Vehicles in Queensland **Torill Pape,** P. Shaw, C. Doherty, A. Robertson, D. Wilson	Non-Destructive Testing of Bridges – Health Assessment & Monitoring **Chetan Raikar**

FULL PROGRAM

Session 3D

	Plenary 1	Room 105	Room 103	Room 106
16:00 - 16:15	Optimum lifetime inspection and maintenance planning for bridges considering utility **Samantha Sabatino**, D. Frangopol	Seismic vulnerability analysis of typical bearings for simply supported railway bridges **Guojing Yang,** J. Dong, DS. Shan	Displacement Coefficient Method for Bridge subjected to Pulse-Like Ground Motions **Kuang-yen Liu** ST. Wang, CC. Hwang, CH. Kuo	Dynamic response of an isolated bridge under basic pulse-type ground motions **Meng-hao Tsai,** ZY. Jiang
16:15 - 16:30	Techniques to Rehabilitate Bridge Columns Affected by Alkali-Silica Reaction (ASR) **Leandro Sanchez**, G. Pesso, M. Noel, V.A.A Santos	Hanger replacement effect: experimental and numerical investigation on the Bosphorus Bridge **Nurdan Apaydin,** S. Bas, A. Ilki, N. Catbas	The Condition of Padang's Bridges after 2009 Earthquake Disaster **Masrilayanti Masrilayanti,** R. Kurniawan, N. Nidiasari, N. Hamidah	Research on Seismic Performance of Self-Compacting Concrete Bridge Columns **Zhiqiang Wang,** H. Duan, H. Wei, J. Yang, X. Sun
16:30 - 16:45	FEM Approach to Appraise Bridges Affected by Alkali Silica Reaction (ASR) **Rodrigo Gorga**, L.F.M Sanchez, B.Martin-Perez, M.Noel	Investigation of limit temperature span of continuous bridges considering track-bridge interaction **Yan Yihang,** DJ. Wu, Q. Li		Seismic Fragility of High-Speed Railway Bridge with High Pier **Jun Dong,** DS. Shan, GJ. Yang, YP. Zeng
16:45 - 17:00	Influence of Tendon Breaks on Structural Behavior of Concrete Beams **Hirotaka Kaneko,** K. Suzuki, K. Amaya, K. Hamaoka, M. Hara, M. Fukuda, E. Sasaki, P. Tuttipongsawat, T. Kuroda, K. Takase, Y. Ikawa			Research on the influence law of central buckle on long-span suspension bridge's dynamic and seismic performance **Lipeng Liu,** Y. Liu, Y. Li
17.00 - 17.30	Closing Ceremony			

Room 104	Room 101	Room 102	Room 107
Structural performance assessment using digital image correlation systems **Alfred Strauss,** R. Wendner, M. Marcon, B. Krug, P. Castillo, D. Frangopol	Retrofitting method against fatigue cracking of web gap plates **Chihiro Sakamoto,** M. Sakano, H. Konishi, M. Koyama	Strength Evaluation of Prestressed Concrete Bridges by Dynamic Load Testing **John Myers,** ES. Hernandez	Rating of Masonry Arch Bridges in USA **Arjuna Ranasinghe,** NY. Khadbai, AK. Ranasinghe
Development of Response-Based Load and Resistance Factor Rating (RB-LRFR) Methodology **Michel Ghosn,** B. Sivakumar, E. Senturk	Adhesive and Bolt Reinforcement for Distortion-induced Fatigue of Steel Bridges **Chunsheng Wang,** YZ. Wang, B. Cui, Q. Wang, L. Duan	Limiting exterior girder rotation during construction for non-skewed bridges **Riyadh Hindi,** L. Hui, F. Hraib	Monitoring Design for Long-Span Bridges **Keigo Suzuki,** C. Miki, E. Sasaki, A. Tanabe
Monitoring-based quantification of input parameters for chloride ion ingress models **Alfred Strauss,** M. Šomodíková, B. Teplý, I. Zambon	Vibration Study of Train Passing Bridge with Small Radius and Reverse Curve **Yumin Song,** DJ. Wu, J. Zhang	Impacts of Specialized Hauling Vehicles on the Texas Bridge Network **Jose Weissmann,** AJ. Weissmann	Testing of bridge structures using laser scanning method **Wojciech Anigacz,** D. Beben, J. Kwiatkowski
In-service stress and strain behavior of Missouri bridge A7957 **John Myers,** HH. Alghazali		Impact of quantity of weigh-inmotion data on load effects on bridges **Ales Znidaric,** M. Kreslin, J. Kalin	

NOTES

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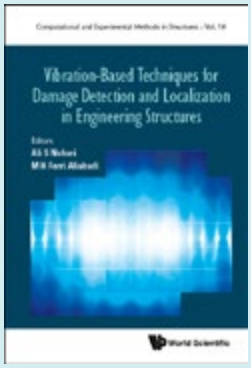

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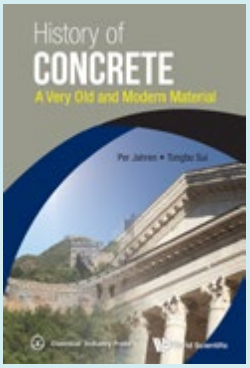

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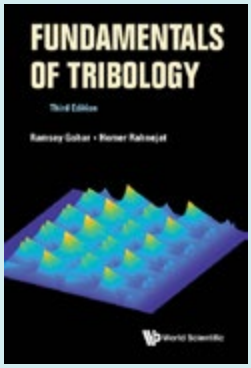

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