# BEI-2026

## Bridge Engineering Institute Conference

## July 20-23, 2026

## Singapore

# Final Program

BEI

An International Technical Society

***Kyokuto Kowa Corporation*** is a construction company that has grown while continuously contributing to the development of transportation infrastructure, including roads and railways.

***Bridge Construction***

*We are working to extend the lifespan of concrete structures through the know-how we have accumulated and our continuously evolving technical expertise.*

Balanced Cantilever Construction

In Japan, where there are many mountainous areas, the cantilever construction method is widely used, and our company also has extensive experience with this method.

***Maintenance***

As the deterioration of concrete structures has become more evident nationwide, we have promoted the development of advanced repair techniques.

Lithium Nitrite Pressurized Injection

This method enables the repair of bridge decks damaged by salt attack or alkali-silica reaction from the underside without the need for traffic restrictions.

KYOKUTO KOWA CORPORATION
https://www.kkn.co.jp/ja/index.html

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# The Bridge Engineering Institute, An International Technical Society

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USA

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# Conference Organization

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Dan Tobias (USA)
Mark Williams (USA)
Takashi Yamane (Japan)
Wael Zatar (USA)
Zhiwen Zhu (China)

# Overview of Conference Program

| Monday, July 20 | | |
|---|---|---|
| Time | Event | Location |
| 5:00 to 6:30 pm | Registration | Pacific Room 2 |
| 5:00 to 6:30 pm | Welcome Reception | Pacific Room 2 |

| Tuesday, July 21 | | |
|---|---|---|
| Time | Event | Location |
| 8:30 to 8:40 am | Opening Ceremony | Pacific Room 1 |
| 8:40 to 9:20 am | Plenary Speech I<br>(Abdeldjelil Belarbi) | Pacific Room 1 |
| 9:20 to 10:00 am | Plenary Speech II<br>(Kian Hau Kong) | Pacific Room 1 |
| 10:00 to 10:10 am | Award Ceremony | Pacific Room 1 |
| 10:10 to 10:40 am | Coffee Break | Pacific Room 2 |
| 10:40 to 12:00 pm | Parallel Session A-1<br>(Modeling and Advanced Analysis I) | Pacific Room 1 |
| | Parallel Session A-2<br>(Monitoring I) | Victoria Room |
| 12:00 to 12:10 pm | Group picture | Grand Pacific |
| 12:10 to 1:20 pm | BEI Lunch | Pacific Room 2 |
| 1:20 to 3:00 pm | Parallel Session A-3<br>(Special Session: AI Plus K-Construction Infrastructure Resilience Center) | Pacific Room 1 |
| | Parallel Session A-4<br>(Seismic, Fatigue, and Durability I) | Victoria Room |
| 3:00 to 3:30 pm | Coffee Break | Pacific Room 2 |
| 3:30 to 4:50 pm | Parallel Session A-5<br>(Materials and Performance I) | Pacific Room 1 |
| | Parallel Session A-6<br>(Performance Evaluation I) | Victoria Room |
| 6:30 to 8:30 pm | BEI Meeting | Invitation Only |

| Wednesday, July 22 | | |
|---|---|---|
| Time | Event | Location |
| 8:30 to 10:00 am | Plenary Speech III<br>(Shozo Nakamura) | Pacific Room 1 |
| | Plenary Speech IV<br>(See Chee Tan) | Pacific Room 1 |
| 10:00 to 10:30 am | Coffee Break | Pacific Room 2 |
| 10:30 to 11:50 am | Parallel Session B-1<br>(Wind, Vibration, and Aerodynamics) | Pacific Room 1 |
| | Parallel Session B-2<br>(Modeling and Advanced Analysis II) | Victoria Room |
| 12:00 to 1:20 pm | Lunch | On your own |
| 1:20 to 3:00 pm | Parallel Session B-3<br>(Materials and Performance II) | Pacific Room 1 |
| | Parallel Session B-4<br>(Repair and FRP Composites I) | Victoria Room |
| 3:00 to 3:30 pm | Coffee Break | Pacific Room 2 |
| 3:30 to 4:50 pm | Parallel Session B-5<br>(Monitoring II) | Pacific Room 1 |
| | Parallel Session B-6<br>(Performance Evaluation II) | Victoria Room |
| 6:00 to 8:00 pm | BEI Dinner<br>(Presentation: BEI-Shantou by Zhiwen Zhu) | Pacific Room 2 |

| Thursday, July 23 | | |
|---|---|---|
| Time | Event | Location |
| 8:40 to 10:20 am | Parallel Session C-1<br>(Repair and FRP Composites II) | Pacific Room 1 |
| 8:40 to 10:00 am | Parallel Session C-2<br>(Performance Evaluation III) | Victoria Room |
| 10:20 to 11:40 am | Parallel Session C-3<br>(Experimental Techniques) | Pacific Room 1 |
| 10:00 to 11:40 am | Parallel Session C-4<br>(Railway Bridges and Seismic II) | Victoria Room |
| 11:45 to 12:00 pm | Closing Ceremony | Pacific Room 1 |

# Conference Information

## Registration

Registered attendees and invited personnel may pick up their name badges and other necessary materials from the information desk in the conference venue.

## Administration Desk

BEI staff will be available at the administration desk during the conference.

## Proceedings

Accepted papers are published in the Proceedings of BEI-2026. Attendees can download electronic copies from the conference webpage. Because BEI is a non-profit organization committed to advancing state-of-the-art knowledge, the Proceedings are available free of charge.

## Name Badges and Tickets

Only registered attendees and invited personnel with name badges will be permitted to attend the BEI-2026 functions. Tickets will be required for all functional activities such as Welcome Reception, BEI Lunch, Coffee Breaks, and Gala Dinner. Please note that BEI will not reissue lost tickets.

## Welcome Reception

The Welcome Reception of BEI-2026 will be held in Pacific Room 2 from 5:00 pm to 6:30 pm on July 20.

## Coffee Breaks

All attendees are welcome to enjoy coffee breaks during intermissions between the parallel sessions at Pacific Room 2.

## BEI Lunch

Peranakan Buffet lunch will be served to registered attendees and invited personnel at Pacific Room 2: 12:10 pm to 1:20 pm on July 21.

## BEI Dinner

Plated course meals will be served to registered attendees and invited personnel at Pacific Room 2: 6:00 pm to 8:00 pm on July 22.

## Disclaimer

The Bridge Engineering Institute, An International Technical Society, will make every effort to accommodate the needs of all attendees. However, the Institute disclaims all responsibility and accepts no liability for any circumstances related to this conference.

# Plenary Speakers
(alphabetical order)

Professor Abdeldjelil Belarbi, Ph.D.
University of Houston, USA

Speech Title: *Towards Corrosion-Resistant Prestressed Concrete Bridge Members*

Dr. Abdeldjelil Belarbi is Hugh Roy and Lillie Cranz Cullen Professor Distinguished Professor of Civil Engineering at the University of Houston. During his career he taught more than fifteen different undergraduate and graduate courses on subjects related to civil and structural engineering. He is actively engaged in a broad spectrum of structural and infrastructure engineering research areas both at the fundamental level and applied approach. His primary research contributions focuses on the constitutive modeling, analytical, and experimental investigations of reinforced and prestressed concrete structures. Under his seven-year leadership as Chair of ASCE-SEI/ACI 445 Committee and his membership in ACI-318E, he took on the task of developing the one-way shear design procedures that were included in ACI318-19 code version. His recent research projects led to the development of three AASHTO-LRFD design, materials and construction specifications for the use of FRP and stainless-steel prestressing and auxiliary reinforcement in bridge design, which will be the subject of this talk at this conference. Dr. Belarbi has served as principal investigator or co-investigator on numerous research projects and has published over 260 technical papers and reports and had supervised over 55 MSCE theses and PhD dissertations. Dr. Belarbi is a Fellow of ASCE, ACI, SEI, and IIFC. He is also very active (member and/or Chair) on several national technical committees within ACI, PCI, ASCE, and TRB. Dr. Belarbi is the recipient of numerous awards and honors including the 1995 Outstanding Paper Award of the Earthquake Engineering Research Institute (Earthquake Spectra Journal), the 2003 Honorable Mention for Outstanding paper from the Masonry Society, and the 2024 Best Experimental Paper Award, 16$^{th}$ FRPRCS International Symposium.

# Plenary Speakers
(alphabetical order)

Dr. Kian Hau Kong
National University of Singapore, Singapore

Speech Title: *Developments of Progressive Collapse Analysis and Design for Precast Structural Concrete Bridges*

Er. Dr. Kong Kian Hau is a Senior Lecturer at the Dept. of Civil & Environmental Engineering (CEE), College of Design & Engineering (CDE) at National University of Singapore (NUS). He is currently the Co-Principal Investigator the HTX-NUS R&D on “Development of Design Guidelines for Precast Concrete Structures against Progressive Collapse”. In the C&S industry, Dr. Kong has more than 15 years of experience as a practicing qualified engineer in Buildings & Infrastructure Projects (including Bridges). He is Chartered Structural Engineer from Institution of Structural Engineers (IStructE), International Professional Engineer (UK) from Engineering Council and is a Professional Engineer (CIVIL) registered with the Professional Engineers Board of Singapore (PEB). He was involved as Design & Project Engineer supporting the Accredited Checker (AC) at ECAS Consultants Pte. Ltd. and contributed to several completed Bridge Projects in Singapore notably in "Development of 2 Bridges for Road Access at Tuas View Basin at Tuas South Avenue 9 & Tuas South Lane (Permanent Routes 2 & 3)” comprising 76m main bridge span, 45m approach structure, 140m ramp structure, 14m carriage width, LTA Projects on: “Flyover from Seletar West Link to Seletar Expressway”, “Works at Slip Road from Pan Island Expressway to Airport Boulevard” and “New road connections to Seletar Link & widening of Tampines Expressway between Jalan Kayu & Punggol West Flyovers”. He also worked on Infrastructures related LTA Projects in “New Road between MacRitchie Viaduct & Adam Flyover”, “Widening of Clementi Road & improvement to Commonwealth Avenue West” and “Construction of Flyover & Drains from Mediapolis at One North to Portsdown Avenue & Ayer Rajah Expressway”. Since 2018 to present, Er. Dr. Kong also is one of the Co-Lecturers for several Bridge Design Project Courses at CEE, NUS for example Eco-Bridge at Bidadari Park, Vehicular Bridge at Tanah Merah Coast Road and Pedestrian Overhead Bridge at Tampines Avenue. Since 2022, Dr. Kong has also served as Member of Working Group (WG) for development of SS EN 13670:2022 & SS EN 13791:2024 and review of SS 544, SS EN 206 and SS EN 12620.

# Plenary Speakers
(alphabetical order)

Professor Shozo Nakamura, Ph.D.
Nagasaki University, Japan

Speech Title: *Damage Cases of Large Steel Bridges in Nagasaki Prefecture, Japan*

Prof. Shozo Nakamura received his Diploma of Engineering in 1986 and his Master of Engineering in 1988 from Kyushu University. Then, he joined Kawasaki Steel Corporation in 1988 and worked for 11 years mainly as a research engineer. During the period, he received his Doctor of Engineering in 1995 from Kyushu University. He moved to Nagasaki University as an associate professor in 1999 and promoted to a professor in 2010. In the university, he served as a vice president in 2019-2020 and a vice dean in 2017-2018 and 2024-2025. His main area of expertise is “steel structures”. He has been conducting various research projects on their design and maintenance. He won the Encouragement Award for Papers from Japanese Society of Steel Construction (JSSC), Innovative Technique Award of western branch and Civil Engineering Informatics Paper Award from Japan Society of Civil Engineers (JSCE), and BEI-2024 Best Paper Award. He is a member of International Association for Bridge and Structural Engineering, American Society of Civil Engineers, JSCE, JSSC and Japan Society of Corrosion Engineering. In JSCE, he is currently the Chair of the Structural Engineering Committee. Recently, he was elected president of Kyushu Association for Bridge and Structural Engineering.

# Plenary Speakers
(alphabetical order)

Mr. See Chee Tan
SC Consulting, Singapore

Speech Title: *Evolution of Bridge Design and Construction in Singapore Since 1980*

Er. Tan has received Outstanding Design Awards from ACES for the SAFTI Link Bridge and Telok Blangah Viaduct (Phase I), and Innovative Design Merit Awards from ACES for the Esplanade Underground Car Park and Sengkang / Punggol LRT viaduct designs; in 2008 he also received a BCA Design and Engineering Excellence Merit Awards for the Fort Canning NTAM Vehicular Tunnel project. He was an Adjunct Associate Professor with National University of Singapore, sharing his design experience with the under- and post-graduate students. He has amassed vast expertise, experiences, and knowledge, being deeply involved in a multitude of projects valued at billions of dollars in total construction cost. His experience ranges from environmental works, high rise building, rail transit, road and bridge structures. Notable bridge and vehicular projects are, Singapore-Malaysia 2nd Crossing (S'pore section), SAFTI Link Bridge, KL-Karak Highway Upgrading (Selangor), CTE-PIE-Woodsville Interchange and expansion, Tebrau Bridge at Permas Jaya & Tanjung Sedili Bridge (Johor), Santubong Bridge (Sarawak), Telok Blangah Viaduct (Phase I), Crawford Underpass, Gali Batu KJE/BKE Interchange, Kaki Bukit Vuaduct and CTE/SLE/TPE interchange upgrading. He was the Project Director for the Fort Canning vehicular tunnel constructed by NATM method. He was involved in the design of an innovative reclamation project for Marina Coaster Expressway contract C481. He supervised the construction of Bedok Reservoir & Tampines stations on Downtown Line and the connecting EPBM tunnels. He supervised and completed the Stamford Detention Tank and Diversion Canal with twin EPBM tunnels. He was the QP for DTSS II T09 Shafts and Slurry TBM tunnel Contract. He introduced the innovative concept of framed and integral bridges to the region and has worked on many bridges of various forms and sizes. Recent projects include Pinnacle@Duxton Sky Decks, Braddell/Adam Road flyover extension, Sungei Serangoon Bridge Crossing and approach road structures and Eco-Bridge at Bidadari Park. On rail transit structures, he was the Project Director for the design of Gali Batu Rail Depot with a bus terminal and Kim Chuan Underground Depot (KCD) serving Circle and Downtown Lines, KCD received LTA's Best Design Infrastructure Project Award.

# Conference Venue

**Hotel Grand Pacific Singapore**
Address: 101 Victoria St, Singapore, 188018
Phone: 65 6336 0811








# Technical Program

## Monday, July 20

| **General** | Location: Pacific 2 |
|---|---|
| 5:00 to 6:30 pm | Registration/Welcome Reception |

## Tuesday, July 21

| **General** | Location: Pacific 1 |
|---|---|
| 8:30 to 8:40 am | Opening Ceremony<br>Moderated by **Yail Jimmy Kim**, University of Colorado Denver, USA |
| 8:40 to 9:20 am | Plenary Speech I: **Abdeldjelil Belarbi**, University of Houston, USA<br>Moderated by **Issam Harik**, University of Kentucky, USA |
| 9:20 to 10:00 am | Plenary Speech II: **Kian Hau Kong**, National Univ. of Singapore, Singapore<br>Moderated by **Isamu Yoshitake**, Yamaguchi University, Japan |

| **Award Ceremony** | Location: Pacific 1 |
|---|---|
| 10:00 to 10:10 am | Paper Awards |

| **Break** | Location: Pacific 2 |
|---|---|
| 10:10 to 10:40 pm | Coffee Break |

| **Parallel Session A-1**<br>**(Modeling and Advanced Analysis I)** | Location: Pacific 1 |
|---|---|
| *Chair*: **Xuhui He**, Central South University, China | |
| 10:40 to 11:00 am | An Exploratory Study on AI-Assisted Dynamic Hydrological Monitoring and Flood Forecasting<br>Daoyu Niu, Qipeng Zhang, and Yongcheng Ji |
| 11:00 to 11:20 am | Use of Machine Learning for Long-term Effectiveness of Digitizing and Categorizing Historical Bridge Records<br>Vanissorn Vimonsatit, Matthias Cheen Khian, and Subik Shrestha |
| 11:20 to 11:40 pm | Numerical Modeling of Sacrificial Anode Cathodic Protection Applied to Steel Reinforced Concrete<br>Zhao Wang, Yifang Ji, and Xuhui He |
| 11:40 to 12:00 pm | Efficient Reliability-Based Design Optimization of Footbridges<br>Nir Itzhak Ben-Israel, Michalis Fragiadakis, and Oren Lavan |

| **Parallel Session A-2**<br>**(Monitoring I)** | Location: Victoria |
|---|---|
| *Chair*: **Kian Hau Kong**, National Univ. of Singapore, Singapore | |
| 10:40 to 11:00 am | Optimal Detection Duration Determination Method for Statistical Damage Detection |

| **Parallel Session A-2 (Monitoring I)** | Location: Victoria |
|---|---|
| | Yuhao Wang, Dongsheng Li, and Jiezhong Huang |
| 11:00 to 11:20 am | Real-time Identification of Bridge Foundation Scour Using Structural Monitoring Data via Bayesian Inversion and Physics Informed Neural Networks |
| | Zijie Lin and Dongsheng Li |
| 11:20 to 11:40 am | Damage Identification of Shear Key Joints in Precast Concrete Hollow Slab Bridges |
| | Changzhou Fu |
| 11:40 to 12:00 pm | Trial Construction of a Full-Scale Hyperloop Tube using UHPC and Evaluation of Its Vacuum Retention Performance |
| | Jae-Yoon Kang, Gi-Hong An, Gum-Sung Ryu, Kyung-Taek Koh |

| **Group Picture** | Location: Grand Pacific |
|---|---|
| 12:00 to 12:10 am | Group Picture |

| **Lunch** | Location: Pacific 2 |
|---|---|
| 12:10 to 1:20 pm | BEI Lunch |

| **Parallel Session A-3 (Special Session: AI Plus K-Construction Infrastructure Resilience Center)** | Location: Pacific 1 |
|---|---|
| *Chair*: **Seunghee Park**, Sungkyunkwan University, Korea | |
| 1:20 to 1:40 pm | Non-Contact Camera-Based Assessment of Tuned Mass Damper for Footbridges Using Eulerian Video Magnification |
| | Sangil Na, Dongyoung Ko, Junseok Yu, Dongkyu Lim, and Seunghee Park |
| 1:40 to 2:00 pm | Experimental Evaluation of Buildability Using Estimated Static Yield Stress in 3D Concrete Printing |
| | Ki-Yeol Kim and Myoung-Sung Choi |
| 2:00 to 2:20 pm | Directionally Sensitive Cement-Based Sensor Using CNT–CIP Nanohybrid Clusters |
| | Jinho Bang and Solmoi Park |
| 2:20 to 2:40 pm | AI-Driven Autonomous Emergency Repair System Integrating Quantitative Damage Assessment and Robotic Execution for Post-Disaster Infrastructure |
| | Dongkyu Lim, Myoungsung Choi, and Seunghee Park |
| 2:40 to 3:00 pm | Semi-Transparent Carbon Nanotube Electrodes for Building-Integrated Perovskite Photovoltaics |
| | Il Jeon |

| **Parallel Session A-4**<br>**(Seismic, Fatigue, and Durability I)** | Location: Victoria |
|---|---|
| *Chair*: **Toshihiko Aso**, Yamaguchi University, Japan | |
| 1:20 to 1:40 pm | Influence of Variations in Hysteretic Properties of Seismic Isolation Rubber Bearings on the Seismic Responses of a Three-Span Elevated Bridge<br>Takuma Kubo, Hiroshi Shimmyo, Shozo Nakamura, Toshihiro Okumatsu, and Takafumi Nishikawa |
| 1:40 to 2:00 pm | Study on Corrosion Progression Near Cracks in Weathering Steel and Sub-rust Crack Detection Using Eddy Current Testing<br>Ryota Konishi, Yasushi Nagasaka, Toshio Takebuchi, Rina Hasuike, and Toshihiko Aso |
| 2:00 to 2:20 pm | Study on Time-Varying Characteristics and Extremes of Temperature in Steel-Concrete Composite Girders During Construction and Operation Phases of High-Speed Railways<br>Wenshuo Liu, Ang Li, Gonglian Dai, and Hongxi Qin |
| 2:20 to 2:40 pm | An Experimental Study on the Durability of Biochar-Incorporated Concrete with PVA Fibers under Rapid Freeze-Thaw Cycling<br>Sangwoo Kim, Yeiji Hong, Wonchang Choi, and Jinsup Kim |
| 2:40 to 3:00 pm | Seismic Evaluation Criteria for Bridges in Kentucky<br>Cody Hutchinson, Raj Kumar B C, Issam Harik, and Abheetha Peiris |

| **Break** | Location: Pacific 2 |
|---|---|
| 3:00 to 3:30 pm | Coffee Break |

| **Parallel Session A-5**<br>**(Materials and Performance I)** | Location: Pacific 1 |
|---|---|
| *Chair*: **Issam Harik**, University of Kentucky, USA | |
| 3:30 to 3:50 pm | Synergistic Enhancement Mechanisms and Multi-Scale Modeling of Sustainable Concrete Incorporating Multi-Source Solid Wastes<br>Yongcheng Ji |
| 3:50 to 4:10 pm | Study on the Properties of Modified Straw Fiber Alkali-Activated Concrete and Its Multi-Objective Evaluation<br>Chenxuan Lu, Yongcheng Ji, and Dayang Wang |
| 4:10 to 4:30 pm | Effect of CO2 Mineralization of Alkaline Reclaimed Water on Workability and Compressive Strength of Concrete<br>Dongchan Kim, Hoon Moon, Indong Jang, Gi–Joon Park, Se–Hee Hong, Jung–Jun Park, and Namkon Lee |
| 4:30 to 4:50 pm | Application and Prospects of Auxetic Materials and Structures in Bridge Engineering<br>Yang Pan and Bin Yan |

| **Parallel Session A-6**<br>**(Performance Evaluation I)** | Location: Victoria |
|---|---|
| *Chair*: **Takashi Yamane**, Kyokuto Kowa Corp, Japan | |
| 3:30 to 3:50 pm | Bridge Management-Use of Load Rating Factors and Load Scaling Factors for Section Shear of Concrete Bridges Calculated Using MCFT-Based Strength<br>Koon Wan Wong and Vanissorn Vimonsatit |
| 3:50 to 4:10 pm | Structural Design Innovation for Elevated MRT Station Using Precast Prestressed Segmental Box Girder and Balanced Cantilever Construction<br>Kok Siong Wong, Fred Ka Wing Lee, Andy Kuang Yong Teng, Simon Wee, Kok Chuang Lok, and Rahul Revu |
| 4:10 to 4:30 pm | Field Evaluation and Mitigation Strategies for Alkali Silica Reaction in Concrete Foundations: A Singapore Case Study<br>Novilia Silman, Jemmy Nathanael Patras, Eng Ming Lee, and Namita Dhavale |
| 4:30 to 4:50 pm | Field Application of a Shape-Reconfigurable Swath-Type Unmanned Surface Vehicle for Civil Infrastructure Inspection and Monitoring<br>Rupesh Machamasi, Subhash Kumar Sah, and Hotoku Ota, and Masayuki Shobuzako |

| **General** | Invitation only |
|---|---|
| 6:30 to 8:30 pm | BEI Meeting |

## Wednesday, July 22

| **General** | Location: Pacific 1 |
|---|---|
| 8:30 to 9:15 am | Plenary Speech III: **Shozo Nakamura**, Nagasaki University, Japan<br>Moderated by **Hiroshi Mutsuyoshi**, Saitama University, Japan |
| 9:15 to 10:00 am | Plenary Speech IV: **See Chee Tan**, SC Consulting, Singapore<br>Moderated by **Takashi Yamane**, Kyokuto Kowa Corp, Japan |

| **Break** | Location: Pacific 2 |
|---|---|
| 10:00 to 10:30 pm | Coffee Break |

| **Parallel Session B-1**<br>**(Wind, Vibration, and Aerodynamics)** | Location: Pacific 1 |
|---|---|
| *Chair*: **Shozo Nakamura**, Nagasaki University, Japan | |
| 10:30 to 10:50 am | Joint Distribution of Wind Speed, Wind Direction, and Temperature at the Bridge Site Using the Pair-Copula Method<br>Dong Lin and Zhiwen Zhu |
| 10:50 to 11:10 am | Vibration Transmission Characteristics and Damage Identification of Embedded Rail Track Structures Based on Drop-Weight Impact Tests<br>Ning Feng, Zhi-ping Zeng, and Xincai Hu |
| 11:10 to 11:30 am | Assessment and Enhancement of Tornado Resistance of High-speed Railway Walkway Slab<br>P. Deng, Huan Li, Xuhui He, Zhuole Shu, Ziyang Zhao, and Yongming Huang |
| 11:30 to 11:50 am | Wind Tunnel Test Study on the Vortex-Induced Performance of Double-sided I-beam Main Girder with web Openings<br>Qin Tang and Zhu Zhiwen |

| **Parallel Session B-2**<br>**(Modeling and Advanced Analysis II)** | Location: Victoria |
|---|---|
| *Chair*: **Hiroshi Mutsuyoshi**, Saitama University, Japan | |
| 10:30 to 10:50 am | An Automated Computational Framework for the Seismic Retrofit of Bridge Piers using UHPC<br>Zih-Chi Wu, Yu-Ping Yuen, and Chung-Chan Hung |
| 10:50 to 11:10 am | BD-DeepLabv3+: An Efficient Architecture Integrating Multi-Scale Fusion and Hybrid Convolutions for Precision Concrete Bridge Defect Segmentation<br>Xiang Li, Wenyuan Xu, and Yongcheng Ji |
| 11:10 to 11:30 am | Damage Detection using machine learning and Kalman filtering under varying environmental and operational conditions<br>Jiezhong Huang, Hui Chen and Dongsheng Li |
| 11:30 to 11:50 am | Structural Assessment and Reliability Evaluation of Steel-Retrofitted Timber Bridges<br>Jun Wang, Yail J. Kim, and Yongcheng Ji |

| **Lunch** | Location: On your own |
|---|---|
| 12:00 to 1:20 pm | Lunch |

| **Parallel Session B-3**<br>**(Materials and Performance II)** | Location: Pacific 1 |
|---|---|
| *Chair*: **Atsushi Teramoto**, Kyoto University, Japan | |
| 1:20 to 1:40 pm | Development and Validation of Semiconductor-Based Sensors for Internal pH Measurement in Cementitious Materials<br>Atsushi Teramoto, Hayato Taniguchi, Tomoya Nishiwaki, and Yuanyuan Guo |
| 1:40 to 2:00 pm | Electrical Conductivity as an Indicator of the Performance of Silane-Treated Concrete<br>Ahmed Ghazal and Mohamed Elgawady |
| 2:00 to 2:20 pm | Investigation of the Mechanical Properties of Calcium-Activated Slag Concrete Using Non-Destructive Evaluation<br>Young Cheol Choi and Byoungsun Park |
| 2:20 to 2:40 pm | Service Life Evaluation of Latex-Modified Concrete Bridge Deck Overlay after Next Generation Concrete Surface (NGCS)<br>Kyong Ku Yun, Joon Mo Lee, and Tae Ho Ha |
| 2:40 to 3:00 pm | Functionally graded concrete in cold regions: material design, synergistic mechanisms, and interface damage modeling<br>Shuangshuang Liang and Yongcheng Ji |

| **Parallel Session B-4**<br>**(Repair and FRP Composites I)** | Location: Victoria |
|---|---|
| *Chair*: **Yongcheng Ji**, Northeast Forestry University, China | |
| 1:20 to 1:40 pm | FRP-Reinforced Concrete Degradation under Chemical Freeze-Thaw: Mechanisms and Comparisons<br>Wei Li, Yongcheng Ji, and Wenyuan Xu |
| 1:40 to 2:00 pm | Localization of SUPER Concrete Technology for Sustainable Repair and Rapid Rehabilitation of Aging Bridges in the ASEAN Region<br>Kihyon Kwon, Sung-Yong Park, Jae-Yoon Kang, Gum-Sung Ryu, and Gi-Hong An |
| 2:00 to 2:20 pm | Field Application of an FBG-Embedded CFRP Cable System to a Pedestrian Suspension Bridge<br>Woo-Tai Jung, Jong-Eok Lee, Sung-Jin Lee, and Sung-Tae Kim |
| 2:20 to 2:40 pm | Bridge Deck Repair Work in Japan with Minimal Impact on Traffic<br>Toshitaka Sakamoto |
| 2:40 to 3:00 pm | Flexural Capacity Recovery in Prestressed Concrete Girders Using Mechanical Strand Splice<br>Francis Ashun, Haitham AbdelMalek, and Mohamed ElGawady |

| **Break** | Location: Pacific 2 |
|---|---|
| 3:00 to 3:30 pm | Coffee Break |

| **Parallel Session B-5 (Monitoring II)** | Location: Pacific 1 |
|---|---|
| *Chair*: **Zhiwen Zhu**, Shantou University, China | |
| 3:30 to 3:50 pm | Utilization of a Modular Crawler Robot for Civil Infrastructure Inspection and Monitoring<br>Subhash Kumar Sah, Rupesh Machamasi, and Masayuki Shobuzako |
| 3:50 to 4:10 pm | Non-Contact Measurement of Crack Width Increment Based on Phase-Based Video Motion Amplification<br>Zhiqian Li, Pengru Deng, and Xuhui He |
| 4:10 to 4:30 pm | Practical Applicability of Improved Grout-filling Evaluation by Wide-range Ultrasonic Testing (WUT)<br>Ryushin Hironiwa, Yuki Kurihara, Hana Kurata, Kohei Ishikubo, and Isamu Yoshitake |
| 4:30 to 4:50 pm | Assessment and Maintenance of Aging Bearings in Singapore's MRT Viaducts.<br>Novilia Silman and Namita Dhavale |

| **Parallel Session B-6 (Performance Evaluation II)** | Location: Victoria |
|---|---|
| *Chair*: **Masahide Matsumura**, Kumamoto University, Japan | |
| 3:30 to 3:50 pm | Long-Term Mechanical Performance and Strength Prediction of UHPC Considering Curing Conditions<br>Kwangmo Lim, Gihong An, Kyungtaek Koh, and Gumsung Ryu |
| 3:50 to 4:10 pm | Investigation of Water Leakage at a Pretensioned PC I-Girder Bridge<br>Hajime Nomura and Isamu Yoshitake |
| 4:10 to 4:30 pm | Impact Shear Mechanism and UHPC Strengthening Design of Bridge Piers under Heavy Truck Collisions<br>Wenbiao Sun, Wei Fan, Anatoly Alekseytsev, and Hengyu Liu |
| 4:30 to 4:50 pm | Factors Affecting Bridge Construction Costs: Evidence from 257 Highway Bridge Projects in Türkiye<br>Gökhan Macit, Leyla Ünal, and Neşe Özdek |

| **Dinner** | Location: Pacific 2 |
|---|---|
| 6:00 to 8:00 pm | BEI Dinner (Presentation: BEI-Shantou by Zhiwen Zhu) |

## Thursday, July 23

**Parallel Session C-1**
**(Repair and FRP Composites II)**
Location: Pacific 1

*Chair*: **Isamu Yoshitake**, Yamaguchi University, Japan

| | |
|---|---|
| 8:40 to 9:00 am | Experiment and Analysis of Three-Point Bending Behavior of GFRP–Rigid Polyurethane Foam Sandwich Panels<br>Kyohei Kawakuchi, Sumitaka Inoue, and Masahide Matsumura |
| 9:00 to 9:20 am | Flexural Performance of Concrete-Filled CFRP Tube Piles as an Alternative to Steel Pipe Piles<br>Jongeok Lee, Woo-Tai Jung, and Sung-Jin Lee, and Sung-Tae Kim, and Jeong-Hoi Kim |
| 9:20 to 9:40 am | Rapid Prediction of Fiber-Reinforced Polymer (FRP) Cables Using the Bundle-Based Shear-Lag Spring Model<br>Zhe-Qi Peng1, Peng-Ru Deng, and Xu-Hui He |
| 9:40 to 10:00 am | Study on the Applicability of Repairing Rubber Bearing Covers by Full-Surface Re-vulcanization in the Field<br>Hikaru Morikawa, Michihiro Koyama, Kenichi Miyanaga, and Takashi Imai |
| 10:00 to 10:20 am | NSM CFRP Cable Strengthening for Arched Concrete Members<br>Ryo Kodama, Ryusho Nagafuchi, Masaki Ono, Futoshi Matsushima, and Isamu Yoshitake |

**Parallel Session C-2**
**(Performance Evaluation III)**
Location: Victoria

*Chair*: **Vanissorn Vimonsatit**, Macquarie University, Australia

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|---|---|
| 8:40 to 9:00 am | Evaluating the Use of Movable Bridges to Increase Flood Resilience against Climate Change Impacts<br>Leyla Ünal, Hediye Tuydes-Yaman, and Yakup Betus |
| 9:00 to 9:20 am | Research on Performance Prediction and Multi-Objective Mix Proportion Optimization of Recycled Aggregate Concrete<br>Dayang Wang, Yongcheng Ji, and Chenxuan Lu |
| 9:20 to 9:40 am | Corrosion Performance of Concrete Reinforcement<br>Trent Woolard and Abheetha Peiris |
| 9:40 to 10:00 am | Feasibility of Magnetic Barkhausen Noise Measurements for Tendon Stress Assessment in Cable-Supported Bridges<br>Kwang-Yeun Park, Joo-Hyung Lee, Changbin Joh, Ji-Young Choi, and Imjong Kwahk |

**Parallel Session C-3**
**(Experimental Techniques)**
Location: Pacific 1

*Chair*: **Abheetha Peiris**, University of Kentucky, USA

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|---|---|
| 10:20 to 10:40 am | Modular Timber–UHPC Composite Bridge System: Experimental Validation of Flexural, Shear, and Dynamic Stiffness Behavior<br>Benjamin Turgeon, Paul Gauvreau, and Luca Sorelli |

| **Parallel Session C-3 (Experimental Techniques)** | Location: Pacific 1 |
|---|---|
| 10:40 to 11:00 am | Pull-Out Performance of Adhesive-Anchored Fasteners in Concrete Based on Experimental Tests and Meso-Scale Modeling<br>Zhuole Shu, Pengru Deng, and Xuhui He |
| 11:00 to 11:20 am | Experimental Evaluation of Bond Strength of Reinforced Concrete Beams Strengthened with Near-Surface-Mounted Titanium Alloy Straight Bars<br>Md. Aminul Islam, Jack Flowers, Kadir Sener, and Anton Schindler |
| 11:20 to 11:40 am | Study on Flexural Behavior of Reconstituted Bamboo-UHPC Composite Beam<br>Hongxi Qin, Hong Zhang, Wenshuo Liu, Ang Li, and Xuhui He |

| **Parallel Session C-4 (Railway Bridges and Seismic II)** | Location: Victoria |
|---|---|
| *Chair*: **Wei Li**, East University of Heilongjiang, China | |
| 10:00 to 10:20 am | A Review on Seismic Running Safety of Train-Track-Bridge Systems<br>Haoran Jin and Ping Lou |
| 10:20 to 10:40 am | Review of the Latest Research on Random Vibration Responses of Bridge-Ballastless Track<br>Zhongyv Luo, Bin Yan, and Yipeng Chen |
| 10:40 to 11:00 am | A Review and Outlook on Reliability Assessment Approaches to Mechanical Performances in Existing Railway Bridges<br>Xuruili Lou, Bin Yan and Ying Zhang |
| 11:00 to 11:20 am | Stress Behaviors and Fatigue Performance of ALSCC-Reinforced Orthotropic Steel Deck Based on FEM Analysis<br>Ruixu Zhu and Zhiwen Zhu |
| 11:20 to 11:40 am | Influence and Mechanism of Near-Fault Pulse Horizontal Directivity Effects on Seismic Response of Single-Tower Partially Gravity -Anchored Cable-Stayed Bridge<br>Zhuoyue Shen and Zhiwen Zhu |

| **General** | Location: Pacific 1 |
|---|---|
| 11:45 to 12:00 pm | Closing Ceremony<br>Moderated by **Isamu Yoshitake**, Yamaguchi University, Japan |

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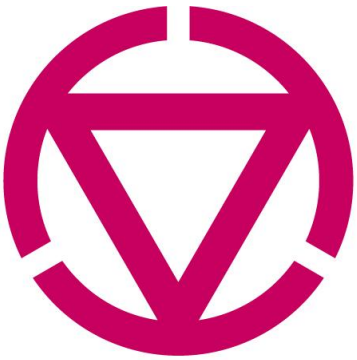

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