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Durability assessment and re-design of massive concrete structures in sea-linking projects
Q.K. Su, K.F. Li, Q.W. Li & Z.H. Fan

Keynote Lectures
Digital transformation of bridges inspection, monitoring and maintenance processes
T.N. Bittencourt, M.M. Futai, A.P. da Conceição Neto & D.M. Ribeiro

How to design, construct, and maintain highly-durable concrete bridges in cold and local regions
I. Iwaki

Development of the requirements to major infrastructure projects
E.S. Larsen, M.S. Lagergaard, A. Jørgensen, B. MacAulay & J. Laursen

Some lessons of more than 20 years of inspection, maintenance and rehabilitation of bridges in Spain
F.M. Mato & I.P. Sánchez

Rising to the challenge of managing bridges in Australia
N.G. Powers

Rib-to-floor beam connections of orthotropic steel decks for bridge deck replacement applications
R. Sause, Y. Chen, J. Saunders, I. Hodgson & J. Marks

Energy-efficient autonomous framework for monitoring railroad bridges in the USA using wireless smart sensors
B.F. Spencer, T. Hoang & K.A. Mechitov

Why do they call Chongqing the bridge capital of China?
M.C. Tang

Applications of AI, BIM, and sensing to bridge maintenance
N. Yabuki
Mini Symposia

**MS01: Novel techniques regarding the assessment and monitoring of bridges**

*Organizers: A. Strauss & D.M. Frangopol*

Overview on the prestress loss evaluation in concrete beams
*M. Bonopera, K.C. Chang & Y.C. Ou*

Crack identification and measurement of bridges by using CNN models
*H. Qin, F. Huang & B. Cheng*

Non-destructive detection of damages in concrete with thermal imaging
*L. Mold, M. Auer, A. Strauss, M. Hoffmann & B. Täubling*

Application of wireless sensor technology in load testing of large-span cable-supported bridges
*Z. Xu, X. Zhang & J. Wang*

Effectiveness and durability of repair measures on corroding steel in concrete columns
*F. Binder & S.L. Burtscher*

Research on long-term health monitoring and operation evaluation system for long-span self-anchored suspension bridge
*X. Liu, X. Chen, J. Zhou & X. Li*

Unmanned aerial vehicle (UAV)-enabled bridge inspection framework
*B.J. Perry, Y. Guo, R. Atadero & J.W. van de Lindt*

Structural parameter identification from image-based acquired information
*M. Helmrich & G. Morgenthal*

A machine learning approach to damage detection of bridges
*R.C. George*

Inverse response surface method for prestressed concrete bridge design
*D. Lehký, M. Šomodíková, M. Lipowczan & D. Novák*

Comparison of different low-cost sensors for structural health monitoring
*S. Komarizadehasl, J. Turmo, B. Mobaraki & J.A. Lozano-Galant*

Gaussian curvature as an indicator used for damage detection of bridge structures

Statistical modal analysis for bridges under ambient excitation by using improved random decrement technique and wavelet transform
*J. Liu & Q. Zhang*

Contactless deformation detection for bridge monitoring: First application of Sentinel-1 radar data in Austria
*A. Vorwagner, M. Schlögl, B. Widhalm, M. Avian, D. Prammer, P. Leopold & C. Honeger*

Estimation of cable tension force based on digital image correlation
*B. Yan, W. Chen, D. Li & J. Yu*

Probabilistic analysis and safety formats approaches applied for Czech bridge structures under the ATCZ190 SAFEBRIDGE project

Monitoring systems for masonry tunnels
*A. Strauss, H. Neuner, C. Harmening, C. Seywald, M. Österreicher & E. Pistone*

Improved assessment of concrete bridges
*M. Hauser, M. Rigler, E. Apostolidi, A. Strauss, T. Zimmermann & D.M. Frangopol*

**MS02: Recent trends in AI/IoT technologies for bridge maintenance and safety**

*Organizers: T. Kitahara, H. Furuta, P. Chen & M. Beer*
A new reliability model of bridge fatigue based on mind evolutionary algorithm
J. Wu, B.F. Liu, K. Dong & M. Yang

Automated infrastructure inspection based on digital twins and machine learning
P. Furtner, E. Forstner & A. Karlusch

Development of the bridge inspection experience system with MR head-mounted display
Y. Baba, H. Emoto, S. Tanikawa, H. Nakamura & K. Kawamura

Bridge damage cropping-and-stitching segmentation using fully convolutional network based on images from UAVs
J. Shi, J. Dang & R. Zuo

A crack detection method based on deep transfer learning
Y.G. Shen, Z.W. Yu & Z.L. Wen

Measuring traffic-induced loads and 3D bridge displacements with UAVs
B.J. Perry & Y. Guo

Tracking bridge condition over time using recurrent UAV-based inspection
B.J. Perry, Y. Guo, R. Atadero & J.W. van de Lindt

Estimating bridge characteristics with only situation characteristics using Bayesian networks
V. Panopoulos, A. Bougas, B. Garcia de Soto & B.T. Adey

Time series forecasting to jointly model bridge responses
O. Bahrami, R. Hou, W. Wang & J.P. Lynch

Mixed training of deep convolutional neural network for bridge deterioration detection with UAV and inspection report sourced images
J. Dang & P. Chun

Fatigue stress spectra modeling of steel bridge decks using traffic monitoring data
N. Lu, Y. Liu & Y. Luo

Infrared image-analysis-based concrete inspection using machine learning
S. Hayashi, K. Kawanishi, T. Yamane, S. Izumi, I. Ujike & P. Chun

Reliability-based risk analysis for Maryland sign structures assessment
X. Liu, Y. Ye, C. Xu, Y. Zhu & C.C. Fu

A framework for addressing the uncertainty of factors influencing the overall deterioration of existing concrete structures
P. Miao, Y. Zhang & H. Yokota

Applying fully convolutional neural networks for corrosion semantic segmentation for steel bridges: The use of U-Net

Application of virtual reality technology to cultivate skill for visual inspection of bridge
K. Ishibashi, H. Furuta, Y. Nomura, K. Nakatsu & K. Takahashi

Variability-based method for balancing structural optimization and reliability
K.J. Haas

**MS03: Bridge health monitoring conjunction with smart cities**

*Organizers: A. Miyamoto, A. Yabe, P. Hradil & K. Koski*

Development of a practical social big data collecting system for the bridge using by a large vehicle
A. Yabe

Development of a remote monitoring system for road condition assessment and application
A. Miyamoto

Heavy vehicle-based bridge health monitoring system
K. Koski, L. Fülöp, T. Tirkkonen, A. Yabe & A. Miyamoto
Monitoring of a suspension bridge
L.L. Lai

State of play and challenges for the successful implementation of indirect structural health monitoring (iSHM) for bridges
K. Gkoumas, F. Bono, M.C. Galassi, K. Gkoktsi & D. Tirelli

Monitoring stability of high-speed rail tracks: A feasibility study
A.A. Mosavi & D. Torres

Health monitoring of stress-laminated timber bridges
P. Hradil, S. Fortino, K. Koski & L. Fülöp

MS04: Bridge loading – Measurement and modelling
Organizers: C. Caprani, A. Nowak, E. O’Brien & X. Ruan

Calculation method of transverse load distribution in box girder bridge
Z.N. Yu, X.Z. Yang, Z.H. Yuan & X.L. Guo

Analysis of bridge-traffic system using agent-based cellular automaton traffic model
J. Wu, R.R. Liu, M. Yang & D. Kai

Multi-lane traffic load model of widening bridges considering lane load disparity

Influence of monitoring duration on measured traffic action effects on road bridges
B. Sawicki & E. Brühwiler

Traffic load spectra for multi-span cable-stayed bridge
X.J. Wang & X. Ruan

Experimental analysis of the dynamic amplification factor under traffic load
D. Hekić, J. Kalin, A. Anžlin, M. Kreslin, A. Žnidarič & G. Türk

Live loads for assessment of bridges on heavy haul rail freight lines
M. Kabani & P. Moyo

Dynamic amplification of live loads on heavy-haul freight rail lines using monitoring data
M. Kabani & P. Moyo

A time domain approach for reconstruction of moving loads acting on bridges from dynamic response data
A. Firus, J. Schneider & R. Kemmler

Challenges in assessing and load rating of old railway viaducts for traction and braking forces
R. Salamy

Effect of local roughness damage and traffic flow on bridge dynamic responses
H. Ho & M. Nishio

Energy dissipating characteristics of Y-type shear connectors based on the number of ribs
D.Y. Kim, S.H. Kim, O. Han, T. Batbold & S.H.A. Shah

Measuring traffic load on Forth Road Suspension Bridge using Weigh-In-Motion and image data

Bridge Weigh-In-Motion using wireless accelerometers on a continuous girder bridge
T. Nagayama, S. Kato, D. Su & H. Wang

The influence of orthotropic steel bridge deck stiffness on the stress amplitude of roof
F.W. Wu, J. Dai, Z.D. Wu & Y.J. Wen

Stochastic traffic load models on road bridges for applying to finite element analysis
T. Kouta & C. Bucher
Development of LRFR provisions for emergency vehicles
B. Sivakumar, M. Ghosn & E. Senturk

Effect of operating temperature on the dynamic properties of a pultruded GFRP footbridge
J.W. Ngan, C.C. Caprani & S.H. Zhang

Use of structural health monitoring for assessing historical bridges under heavy loads
S. Zhang, C. Caprani, M.M. Melhem, A. Ng & N. Hodgins

Bridge safety assessment beyond deterministic methods: An Australian perspective
M.M. Melhem, C. Caprani, M.G. Stewart & A. Ng

Using structural reliability to decide on extreme loads accessing historical bridges
M.M. Melhem, C. Caprani, S. Zhang, A. Ng & N. Hodgins

Alternating iterative method for moving force identification
H.L. Liu, C. Li & L. Yu

Research on temperature load model of a modular cable-stayed bridge
J. Song, K. Hu, X.F. Shi & C.A. Yin

**MS05: Prolonging the life of steel and steel composite bridges**
Organizers: A. Pipinato, P. Collin & C. Rebelo

Experimental study on stability of compression-bending members strengthened under load
Q. Su, S. Wang, X. Jiang, L. Chen & W. Zhou

A methodology for assessment and retrofitting by TIG dressing of existing pre-fatigued welded steel joints
A. Manai, F. Von Bock und Polach & J. Hedegård

UHPFRC strengthening strategies on existing steel and steel-concrete bridges
A. Pipinato, R. Geier, S. Ivanov, C. Rebelo, P. Collin & R. Hallmark

Extending the fatigue life of existing truss bridges
A. Pipinato & C. Rebelo

Enhancement of riveted steel bridges by adding a trough in UHPFRC acting in composite action
E. Briühwiler

Effect of concrete cracks on the corrosion of stud shear connectors

Fatigue analysis of rib-to-deck double-sided welded joints in steel bridges
Y. Liu, F.H. Chen & N.W. Lu

Research and application of uncoated weathering steel bridge in China mainland
C.S. Wang, C.X. Tan, J.W. Zhang, L. Duan & X.L. Zhai

Shear behavior study for high strength I girders considering residual stress
C.S. Wang, H. Cao, L. Duan & Q. Wang

Analysis on the long-term performance of a curved composite girder bridge
S.G. Chen, C. Liang, Y.Q. Liu, B. Lei & C.J. Zhao

An innovative composite box girder bridge with webs composed of stiffened steel plates and steel tubes
Y. Zhang, S.H. Wang, Y.Q. Liu, X.H. He, Y.Y Chen & Y. Zhang

Research on structural behavior of steel-concrete joint in hybrid girder under long-term loads
X.P. Gao, Z.H. Huang, Y.Q. Liu & B. Ma

Study of mechanical behavior of a new precast steel-concrete composite pier cap
Q. Zhou, Y.J. Li, S.W. Liu & Y.Q. Liu

**MS06: Bridge safety, maintenance and management under natural hazards and climate change**
Organizers: Y. Dong & D.M. Frangopol

Risk assessment of bridge under hurricane with experimental and numerical method
D. Zhu & Y. Dong

Seismic intensity measure selection under multiple criteria and uncertainty
J. Qian & Y. Dong

Risk-based bridge scour management: A survey
M. Pregnolato, L.J. Prendergast, P.J. Vardanega, P.F. Giordano & M.P. Limongelli

Corrosion effect on shear behavior of locally ungrouted PT concrete beams
L. Wang, Z. Hu, Y. Ma & J. Zhang

Fatigue life prediction of corroded RC beams considering bond degradation
J. Zhang, Z. Guo, Y. Ma & L. Wang

Repair loss assessment of seismic-resistant rocking bridges
A.I. Giouvanidis & Y. Dong

Effectiveness of drilling-hole method on mixed model fatigue crack
Z.Y. YuanZhou, L. Fang, B.H. Ji & Z. Ye

Prediction of crack initiation position at rib-to-deck welds using effective notch stress approach
Q.D. Wang, Z. Ye, Y. Yao & B.H. Ji

Research on lateral seismic-constraint systems for cable-stayed bridge
Y.Q. Xu

Study on probability distribution of HPS specimens subjected to spray corrosion
L. Xiao, J. Peng, L. Wang, J. Zhang & C.S. Cai

Earthquake disaster countermeasures for bridges with rocking piers
S. Saito, Y. Ito & R. Hara

MS07: Value of information in bridge monitoring and management
Organizers: S. Ghosh, S. Thöns, C. Caprani & M.G. Limongelli

Application of value of information theory in adaptive metamodelling for reliability assessment
R. Teixeira, A. O’Connor & M. Nogal

Value of structural health monitoring for bridges subjected to severe loads
M.S. Khan, C. Caprani, S. Ghosh & J. Ghosh

Fine measurement and calculation of parallel strand in stay cables based on vibration frequency method
J. Dong, Y. Zhao, N. Ernestine, S. Ma, X. Xiang & D. Liu

Application of bridge construction monitoring management system based on Internet
R. Zhu, X.F. Shi & X.X. Li

Decision theoretic approach for identification of optimal proof load with sparse resistance information
M. Kapoor, J.D. Sørensen, S. Ghosh & S. Thöns

MS08: Research progress on submerged floating tunnels
Organizers: Y.Q. Xiang, H.K. Lee, B. Faggiano & L. Martinelli

Theoretical framework of life cycle design of the submerged floating tunnel
Y.Q. Xiang, B. Bai & Y. Zhao

Advanced concrete technology for submerged floating tunnels

A tube model with two tension legs to investigate the spatial dynamic response of submerged floating tunnel
Z.P. Yi, D.H. Yan & Y.Y. Zeng
Dynamic behavior analysis of high performance fiber concrete submerged floating tunnel tube under collision
Y. Yang, Y.L. He & Y.Q. Xiang

Design of new large structures; Norwegian experience of submerged floating tube bridges
A. Minoretti, X. Xiang & A. Rønnquist

Investigation of rotational deformation of the suction anchor installed in sand from initial to ultimate state
J.S. Bae, Y.H. Jeong, S. Manandhar & D.S. Kim

SFTs under seismic loading: Conceptual design and optimization tools
F. Foti, L. Martinelli & F. Perotti

Simulation of hydrodynamic loads for a submerged floating tunnel using a copula-based model
G.A. Torres, O. Morales-Nápoles & S.N. Jonkman

Investigation of tensile force on mooring line for a submerged floating tunnel
G.-J. Kim & H.-G. Kwak

Target reliability for submerged floating tunnels
C.M.P. ‘t Hart, D.J. Peters, O. Morales-Nápoles & S.N. Jonkman

Experimental design on corrosion behavior of steel in submerged floating tunnels
J.C. Park, S.L. Cha & H.J. Jung

VFIFE based hybrid simulation for submerged floating tunnel research
Y. Fang, Y.F. Duan, Y.Q. Xiang & H. Lin

**MS09: Structural health monitoring of bridges based on modern sensor technologies and novel methodologies**

*Organizers: C. Kim, F. Zhang, N.F. Catbas & Á. Cunha*

Numerical study of damage detection of a truss bridge using pseudo local flexibility method
T.Y. Hsu, M.C. Lu, S.Y. Shiao, K.C. Chang & C.W. Kim

IoT bridge components – specialized smart monitoring solutions to address user-specific needs
M. Imam, P. Savioz & C. O’Sullivan

Damage detection in a real truss bridge using Hilbert-Huang Transform of transient vibrations
R.M. Delgadillo & J.R. Casas

A study on the stress ratio around welding lines of ribs in orthotropic steel decks
S. Kakizaki, H. Onishi, S. Ubagami, K. Hoshikawa & A. Horiai

The impact vibration test using a portable FWD system
Y. Kimura, H. Onishi, D. Yaegashi, R. Ishikawa & A. Takahashi

Observations of the behavior of the classic steel railway bridge structure
W. Amigacz, D. Beben & J. Kwiatkowski

Construction monitoring and load test for a 3×35m continuous steel-concrete composite girder bridge
S.G. Cao, H. Hong, P. Ye, H. Tian, H.H. Han, S.G. Cao & A.R. Chen

Bridge management systems - a review of the state of the art and recommendations for future practice
H. Habenzu, P.J. McGetrick, D. Hester & S.E. Taylor

Bayesian system identification of a reinforced concrete beam subject to temperature variations based on static response data
P. Simon, R. Schneider & M. Baessler

Viability assessment of a mixed steel-concrete bridge structure
M.C. Scutaru, N. Tăranu, D. Ungureanu, C.C. Comisu & G. Boacă
A novel laser and video-based displacement transducer for structural monitoring of long span bridges and tall structures
M.A. Vicente, J. Minguez, D.C. González, N. Brown & T. Schumacher

Embedded distributed optical fiber sensors for health monitoring of concrete bridges
M.F. Bado, J.R. Casas & G. Kaklauskas

A long-term monitoring system for maintenance and management of extradosed bridges

Tensile force monitoring for construction of FCM bridges using EEM sensors
J. Kim & H.S. Kim

Remote microtremor monitoring for scour assessment of railway bridge
C.W. Kim, Y. Yoshitome, S. Kitagawa, M. Shinoda, H. Yao & Y. Hamada

Time-domain modal identification of bridges based on uncertainty quantification
Y. Goi & C.W. Kim

On-site stress measurement for steel reinforcement using a portable X-ray diffraction system

**MS10: Life-cycle performance assessment of existing bridges in an aggressive environment**
Organizers: M. Akiyama, D.M. Frangopol & H. Matsuzaki

Performance of self-healing concrete applied to tunnel engineering
X.F. Wang, Y.J. Huang, W.L. Wang, J. Liu & F. Xing

Simulation method of PC member with corrosion crack and breaking of PC tendon
H. Nakamura, Y. Watanabe, T.A. Badmayev, T. Miura & Y. Yamamoto

Probability distribution of ultimate strain for aging deteriorated rubber bearings by Bayesian estimation
J. Dang, A. Igarashi & K. Hayashi

Optimum bridge life-cycle management with updating based on inspected fatigue crack under uncertainty
S. Kim, B. Ge & D.M. Frangopol

Analysis of typical environmental effects on the surface of prestressed concrete members of bridges
Q.L. Xu

Applicability of 2D ultrasonic phased array nondestructive test for fatigue crack of orthotropic steel deck
H. Shirahata

Seismic performance assessment of bridges with deteriorated isolators
H. Matsuzaki

Application of observational data in reliability estimation of aging RC bridge structures considering spatial steel corrosion distribution
S. Srivaranun, K. Masuda, S. Lim, M. Akiyama, D.M. Frangopol & O. Maruyama

Reliability assessment of RC bridge girders with non-uniform steel corrosion using probabilistic analysis and finite element method
M. Zhang, S. Lim, M. Akiyama & D.M. Frangopol

Effects of non-uniform steel corrosion on the structural behavior of RC beams
S. Lim, M. Zhang & M. Akiyama

Life-cycle cost analysis for rebar type selection in RC bridges located in coastal regions
M.A. Hasan, S. Lim, M. Akiyama & D.M. Frangopol

Study on resistivity characteristics of embedded cement-based sensor
Benefit-cost ratio analysis of retrofit strategies for bridges considering the resilience effect
C. Chiu

Life-cycle performance assessment of existing bridges based on artificial neural networks
S. Bianchi, C. Manni & F. Biondini

Model updating for bridge structures based on the Kriging meta-model enhanced with DE algorithm and analytic hierarchy process
L. Mei, X.Y. Xia, J.H. Chen & W.L. Wang

Time-dependent reliability of aging bridges exposed to imprecise deterioration information
C. Wang

**MS11: Design, construction, maintenance, and management to realize highly-durable concrete structures under harsh environments**

*Organizers: I. Iwaki, T. Ishida & H. Yokota*

Improving the fatigue resistance of existing reinforced concrete bridge deck using high penetration bonding agent
K. Kaba, Y. Nagata, T. Maeshima & I. Iwaki

Long term expansions and deformations of real scale RC deck on steel girders caused by ASR
Y. Takahashi, T. Maeshima, I. Iwaki & K. Maekawa

Development of an AI-aided hammering test system
Y. Kubota, Y. Nozoe, S. Takatsu, Y. Nagata, K. Tsuno, M. Iwata, Y. Kasai, J. Ye, T. Okuma & M. Murakawa

Practical improvement of deicing salt scaling resistance on RC bridge slab in the Tohoku region of Japan
M. Zhang, M. Awa, Y. Sakoi, Y. Tsukinaga, Y.H. Kuang, S. Wabiko & M. Kasita

Empirical research on performance evaluation of highly durable RC road bridge deck at construction process
N. Sakakibara, Y. Tanaka, I. Iwaki, Y. Koda, K. Sato & T. Ishida

Salt damage simulation on each part and member of concrete bridge superstructure
J. Tomiyama, Y. Suda, T. Yamaguchi, Y. Kato & K. Arai

Numerical evaluation of remaining fatigue life of road bridge deck with data assimilation approach
Y. Tanaka, E. Fathalla & K. Maekawa

Evaluation of soundness of PC road bridge in severe chloride environment
T. Iidoi, H. Ueda, Y. Koda & I. Iwaki

Overturning mechanisms and evaluation strategy of box girder bridges under extreme vehicle load
Z.J. Zhou, H.Y. Wu, X.F. Shi & H.Y. Ma

The difference of behaviors between RC deck and AFRP-RC deck in punching shear test
S. Tashima, H. Onishi, M. Moriai, N. Amano & S. Matsubara

Repairing effect of latex modified rapid hardening concrete on RC road bridge decks deteriorated due to ASR and fatigue
R. Kishira, T. Maeshima, Y. Koda & I. Iwaki

Effect of fly ash in Southeast Asia on the properties of mortar
T.T. Win, R. Wattanapornprom & W. Pansuk

Evaluating early age thermal cracking risk of RC slabs on girder bridges
A.I. Zerin & A. Hosoda

Data driven maintenance cycle focusing on deterioration mechanism of road bridge RC decks
T. Ishida, J. Fang, E. Fathalla & T. Furukawa

Time-dependent change of bending performance of aramid short-fiber reinforced concrete exposed in water or air with different temperature
A. Hokura, S. Miyazato, S. Okamura, D. Yoshimoto & H. Kurakata

Key technology on improving the durability of long-span bridges
J.H. Zhan

A basic study on characteristics of RC beam using ESCON
T. Nozawa, Y. Kobayashi, Y. Sonoda & H. Tamai

Experiments and structure performance of fabricated box channel
Z.Q. Liu, K. Hu & X.F. Shi

**MS12: Advances in experimental and computational simulation for extreme load performance assessment of bridges**

*Organizers: J. Hashemi, R. Al-Mahaidi & A.S. Whittaker*

Hydrodynamic demands on coastal bridges due to wave impact
R. Nasouri, A. Shahrar, A. Majlesi, A. Matamoros, A. Montoya & F. Testik

Multi-hazard events for bridges: State of play and numerical modeling of chained impact and fire scenarios
F. Petrini, C. Rossi, K. Gkoumas & F. Bontempi

An integrated impact analysis for riverine bridges subjected to high river flows
M. Pregnolato, P. Bates, A. Winter, A.D. Sem, D. Mascarenas & M.R. Motley

Numerical simulations of collapse tests on RC beams
M. Domaneschi, G.P. Cimellaro, G.C. Marano, M. Morgese, C. Pellecchia & A.A. Khalil

Fragility analysis of FRP strengthened bridges under extreme wave-induced forces
I.M.I. Qeshta, R. Gravina, S. Setunge & M.J. Hashemi

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*Organizers: S. Miyazato, H. Matsuda & K. Kinoshita*

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S. Miyazato & D. Hanaoka

Discussion of maintenance strategies for a self-anchored suspension bridge’s main cable
X.H. Luo, Q.E. Deng & J.M. Xiao

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K. Okabe, H. Onishi, R. Yamazaki & Y. Shimamoto

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K. Yamaguchi, S. Toyofuku & H. Matsuda

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MS14: Bridge safety evaluation and risk assessment: Code requirements vs. practical considerations
Organizers: D. Su, M. Liu & H. Nassif

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Risk-based decision tools for managing bridge assets
G. Fiorillo & H. Nassif

Experimental study on acoustic emission characteristics of different bonding interfaces in steel-concrete composite beams
W. Lu, H. Si & D. Su

The joint effect of concrete strength and loss of longitudinal steel on the reliability of existing RC columns
L.C.R. Castro & S.M.C. Diniz

Dynamic effects of central green belt on a 3-span continuous concrete girder bridge
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Characterization of superload traffic for bridge safety evaluation
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Organizers: A. Al-Mosawe, R. Al-Mahaidi, X. Zhao & E. Ghafoori

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Strengthening steel bridges under fatigue loading: State-of-the-art review
T.P. Nguyen, A. Al-Mosawe & R. Al-Mahaidi

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Quick strengthening technique of corroded steel pipe by thermosetting prepreg sheets of biaxial carbon fiber
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MS16: Innovative methods in strengthening of concrete bridges
Organizers: R. Kalfat, R. Al-Mahaidi & A. Al-Mosawe

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K. Al-Ghery, R. Kalfat, A. Al-Mosawe, R. Al-Mahaidi & N. Oukaili

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B.S. Muoi, H. Ando, M. Kunieda, S.C. Lim & S. Terada

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M.A. Valenzuela, H. Pinto, M. Marquez & J.L. Seguel

Rehabilitation of bridges after heavy vehicle impacts with the parapet
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*Organizers: J. Lynch, D. Ozevin, L. Cao & T. Attard*

Non-destructive evaluation by permanent magnet type Magnetic Main Flux Method
H. Itoi, S. Shiiki, T. Moriya, K. Tsukada & S.K. Lee

Non-destructive inspection of corroded steel bars in concrete structures
K. Suzuki & H. Hirata

Simulation of Radio Frequency Inductive Testing (RFIT) for deep sub-surface defects in concrete
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*Organizers: H. Wang, X. He & T. Tao*

Monitoring of wind characteristics of tropical storms: A non-stationary perspective
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Short-term wind speed forecasting of downburst based on improved VARX model
P. Shi, H. Wang & T.Y. Tao

Inverse estimation wind-induced responses in bridges from acceleration and wind data
O.W. Petersen & O. Øiseth

Exploitation of local wind measurement data in long-span bridge design
A. Fenerci, T.M. Lystad, D.R.F. Castellon & O. Øiseth

Experimental determination of bridge deck aeroelastic derivatives by stochastic subspace technique
X.Q. Liu, L. Yan & X.H. He

Flutter derivatives identification of bridge decks from free decay tests using an improved Artificial Bee Colony algorithm
Y. Lin, Z. Feng, X. Hua & Z. Chen

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Organizers: M.G. Limongelli, Y. Fujino & N.F. Catbas

Bridge scour identification based on time-frequency analysis of superstructures
W. Xiong, C.S. Cai, X.T. Hou & X.Y. Gao

Localisation and quantification of stiffness loss based on the forced vibration of a beam traversed by a quarter-car
K. Feng, A. González & M. Casero

Accuracy of instantaneous frequencies predicted by the Hilbert-Huang transform for a bridge subjected to a moving vehicle
M. Casero, A. González & E. Covian

Bridge damage detection using acceleration influence line calibrated without access to a pre-weighed vehicle
E.J. O'Brien, D.P. McCrum & M.A. Khan

SMU – an open-source MATLAB package for structural model updating
Y. Otsuki, D. Li, X. Dong & Y. Wang

Operational modal analysis of light pole-viaduct system from video measurements using phase-based motion magnification
T.J. Saravanan, D.M. Siringoringo, Y. Fujino & S. Wangchuk

Structural model updating based on l2 and l∞ norm regularizations
Z.W. Luo & L. Yu

Uncertainty quantification: Data assimilation of numerical model of the Arade river cable-stayed bridge
I.C. Santos, D.M. Frangopol, J.L.V. Brito & E.S. Caetano

SS02: Cracking simulation and measurement of concrete structures
Organizers: H. Nakamura & H. Naito

Embedded fiber-optic sensors in reinforced concrete elements of bridge structures
M. Domaneschi, G.P. Cimellaro, F. Ansari, M. Morgese & D. Inaudi

Evaluation of internal cracks in RC beams using vibration testing and wave propagation analysis
H. Naito & J.E. Bolander

Detection method of corrosion area of rebar and corrosion induced internal crack by using electromagnetic wave radar
Y. Tada, T. Miura & H. Nakamura

Effect of corrosion distribution along rebar length on concrete surface crack development
D. Qiao, N. Kiyama, Z. Amalia, H. Nakamura & T. Miura

SS03: Steel bridge rehabilitation
Organizer: M. Sakano

Research on non-damage repair technology for fatigue crack of steel box girder bridge
J. Zhou & Z. Xu

Verification of effectiveness of fatigue retrofit for rib-to-crossbeam connections in orthotropic deck bridges
L.H. Ichinose, S. Kunitoshi & M. Sakano

Rapid rehabilitation of deteriorated beam ends with ultra-high performance concrete
K.F. McMullen & A.E. Zaghi
Study on tightening torque of thread forming screws
H. Suzuki

Fatigue strength improvement for weld root of sole plate by filling resin
J. Tamari, T. Ishikawa, M. Hirohata & S. Tsutsumi

Development of retrofitting method for steel bridges under service
S. Maeda, T. Kawahigashi & T. Kasugai

Analytical evaluation of fatigue retrofit for trough-rib to transverse-rib welded joints in orthotropic steel decks
A. Tanabe, R. Matsumoto, S. Kunitoshi & M. Sakano

Produce of root cracks in transverse fillet welds between sole plate and bottom flange
T. Hirai, L.H. Ichinose & M. Sakano

Fatigue behavior of lower flanges in riveted girders removed from Amarube bridge
Y. Shiraishi, M. Sakano & K. Matsumoto

SS04: Bridge design-maintenance and monitoring practices around the world
Organizers: N.M. Apaydin, A. Chen & N.F. Catbas

Research in bridge maintenance, safety and management: An overview and outlook for Europe
K. Gkoumas, F.L.M. dos Santos & F. Pekar

The design and application of a wheel-moving fatigue test machine

A review of the durability of joints in concrete structures
Z. Ai, S. Yang, F. Ruan, Y. Shen & G. Li

Long-term monitoring of the Humber Bridge Hessle anchorage chamber
P.R.A. Fidler, P.J. Vardanega, N.A. Hoult & C.R. Middleton

Investigation of magnetic performance of bridge cables for damage detection
Q.W. Zhang, Y.C. Ni & R.Y. Xin

Structure and maintenance design for Lanzhou Chaijiaxia Yellow River Bridge

SS05: Soil-steel composite bridges and culverts: Testing and numerical analysis
Organizers: D. Beben, J. Vaslestad, H. Sezen & T. Maleska

Behaviour of the soil-steel bridge with different soil cover height under seismic excitations
T. Maleska & D. Beben

Testing of the longest span soil-steel bridge in Europe – new quality in measurements
M. Miśkiewicz, B. Sobczyk & P. Tysiąc

Analysis of soil-steel bridge with EPS geofoam under static loads
J. Nowacka, D. Beben & T. Maleska

Monitoring of soil-steel structures during construction and exploitation
Cz. Machelski, L. Jamas, A. Wadi & P. Tomala

Estimation of live load deflections for soil-steel composite bridges
A. Wadi & R. Karoumi

Field testing of a corrugated steel culvert at a shallow cover depth
Y. Liu, N.A. Hoult & I.D. Moore
SS06: Numerical simulation technique in life-cycle design and maintenance of bridge

Organizers: Z. Pan & Y. Dong

On the fatigue assessment based on probabilistic fracture mechanics for the rib-to-deck welded joint of orthotropic steel decks
B. Wang & A. Chen

Continuum damage mechanics-based corrosion-fatigue analysis of high-strength steel wires
C. Cui, R. Ma & A. Chen

Reliability-informed probabilistic analysis of corroded RC structure
H. Guo & Y. Dong

A review of numerical simulation technique in durability issues of cementitious materials
Z. Pan & A. Chen

Performance-based method for the impact-resistant design of reinforced concrete bridge members
Y. Liu, R. Ma, A. Chen & X. Zhou

Seismic performance of deteriorating concrete bridges
M. Domaneschi, J.R. Casas, A. De Gaetano & G.P. Cimellaro

The mechanical performance analysis of self-anchored suspension bridge with ultra-wide and double-sided steel box girder under vehicle loads
F.W. Wu, Y.J. Wen, J.F. Luo & J. Dai

Analysis of the service life of reinforced concrete bridges structures under the action of chloride ions using computational software

SS07: Approaches to bridge management / Bridge management systems from around the world

Organizers: R.M. Ellis, RD. Thompson & R. Hajdin

Implementation of bridge management in the Kingdom of Saudi Arabia
R.M. Ellis, K. Galal & A. Almonbhi

Application of bridge maintenance and management system with BIM technology
Z.H. Li & M. Dong

Approach for management of bridge structures in a heterogeneous railway
L.F. Masini, M. Botelli, R. Queiroz, J. Junqueira, V. Barichello & J.F. Rodrigues

Experiences of the new management system of engineering structures in Finland
J. Wuorenjuuri

Decision support framework for terrestrial transportation infrastructure – Resilience approach
N. Tanasić & R. Hajdin

Bayesian updating of deterioration models and forecasting capabilities of the bridge management system in the Province of Prince Edward Island
D.J. Evans & R.M. Ellis

Bridge decommissioning and its impact on bridge management
B.A. Bektas & A.J.M. Albughdadi

Advanced asset management tool for bridges and culverts
H.D. Tran, S. Setunge, E. Amiri, Y.C. Koay & M.I. Alam

Risk management of expressway bridge projects in Vietnam: Current status and future researches
L.D. Dao, A.D. Le & T.D. Nguyen

Census, diagnosis, supervision, securing and management of bridges
SS08: Standardization of quality specifications for highway bridges
Organizers: J.R. Casas & J.C. Matos

Proposed Bridge Management System and Quality Control plan in Chile
M.A. Marquez, M.A. Valenzuela, L. Acuña & P. Valenzuela

Quality specifications for roadway bridges in Europe: Overview of COST action TU1406
J.R. Casas & J.C. Matos

Performance indicators for European bridge management
A. Strauss, F. Sattler, M. Hoffmann, E. Apostolidi, S. Fernandes & J. Matos

Inspection of roadway bridges: A comparison at the European level
Z.I. Turksezer, P.F. Giordano, M.P. Limongelli & C. Iacovino

SS09: Sustainable marine structures
Organizers: M. Iwanami, E. Kato, Y. Kawabata & N.T. Trung

Application of life cycle cost analysis for a maintenance strategy of reinforcement concrete pile-type wharf in Viet Nam
N.D. Dinh & N.T. Trung

Nanoparticles for nanocomposite coatings for civil infrastructure systems
X. Wang, Z. Lin, F. Tang, Q. Cao & X. Qi

Effects of marine growth on jacket structures for the Vietnamese continental shelf condition
C.Q. Dinh & A.T. Bui

An estimation of total fatigue life of jack-up leg structures induced by wave loading
C.D. Quang & V.D. Chinh

Replaceable superstructure system in open-type wharf for reliable maintenance of port concrete structures

Research on shear performance of innovative demountable steel-concrete bolt connectors
W. Xue, J. Chen & Y. Xin

Effect of stirrups on concrete crack propagation induced by steel bar corrosion
X.Y. Xu, YX. Zhao & J. Xia

Research on overview of structure, evaluation and maintenance solutions for ports in Hai Phong fairways, Viet Nam
D.T. Nguyen & H.D. Nguyen

Effect of rebar corrosion in concrete on interaction zone under tensile load
A. Kunawisarat, M. Iwanami, N. Chijiwa & K. Nakayama

Proposal of pile connection method for precast superstructure of port pier
K. Ikeno, Y. Kawabata, E. Kato & M. Iwanami

SS10: Life-cycle redundancy, robustness and resilience of bridges and infrastructure networks under multiple hazards
Organizers: F. Biondini & D.M. Frangopol

Resilience-based seismic risk assessment of aging bridge networks under climate change
L. Capacci & F. Biondini

Risk-based life-cycle analysis of highway bridge networks
G. Fiorillo & M. Ghosn

A procedure for estimating the risk and resilience of bridge networks under both seismic and tsunami hazards
Interdependency models for resilience analysis of transportation networks

W. Sun, P. Bocchini & B.D. Davison

Exploring the connectivity reliability of large-scale bridge networks based on multilevel k-way graph partition

J. Wang & S. Li

Probabilistic model for resilience assessment of the Belgian road network

L. Sgambi, T. Jacquin, N. Basso & E. Garavaglia

Bayes method for bridge robustness assessment based on monitoring data


Structural analysis and robustness assessment of cable-stayed bridges under cable corrosion

L. Rossi & F. Biondini

SS11: Application of vehicle-bridge interaction to bridge maintenance and safety

Organizers: X. Kong, L. Deng, C.S. Cai & Y. Li

Foundation scour detection method based on dynamic responses of bridge due to vehicle braking

T. Yang, Y. Li & X. Lin

Study of the influence of track and wagon defects on the safety of railway bridge structures

J.F. Rodrigues, L.F. Masini, M. Botelli, J. Junqueira, V. Barichello, A. Sisdelli, A. Merheb & L. Valente

Dynamic stress analysis of steel bridge decks using coupled train-track-bridge system model

H.L. Li & L. Zhang

The passenger comfort of human-bus-road coupled vibration due to different sitting positions

J. Zhang, X. Kong & G. Wang

Influence of vehicle-bridge interaction on the accuracy of moving force identification

Z. Chen, Z. Wang & L. Deng

Modal parameter identification for regular bridges using vehicle sensing technique: Simulation and experiment

X. Jian, L. Sun & Y. Xia

Multiple presence factor for live loads on road-rail bridges

B.R. Dai, Q. Li & D.J. Wu

SS12: Deterioration modelling and structural reliability analysis of bridges

Organizers: M. Mahmoodian & C. Li

Statistical analysis of corrosion-induced area loss of steel bar in concrete

F. Tang, L. Zhao, H. Cui, H.N. Li, H. Wang, X. Wang, Z. Lin & H. Pan

An integrated data-driven approach for deterioration modelling of flexural cracking in concrete bridges

E. Amiri, S. Setunge, M. Mahmoodian & H.D. Tran

Assessment of cracked concrete bridge girders

H.D. Tran, S. Setunge & M. Mahmoodian

System reliability analysis of girders considering the spatial randomness of corrosion

L. Li, C.Q. Li & M. Mahmoodian

SS13: Constructability difficulties of bridges and solutions

Organizers: U. Attanayake, H. Aktan & M. LaViolette

Effect of temporary bracing system on the overhang deflection in skewed bridges during deck slab construction

F. Hraib, L. Hui, R. Hindi & M. Vicente
Replacement of Fresh Pond Bridge  
A.P. Ranasinghe, M. Feteha & L.N. Weber

Eliminating deck overhang issues during deck placement on steel I-girder bridges  
A. Inceefe, U. Attanayake & H. Aktan

Systematic evaluation of steel I-girder bridge constructability  
A. Inceefe, U. Attanayake & H. Aktan

**SS14: Bridge structural health monitoring for infrastructure management**  
*Organizers: T. Yi & J. Li*

Live-load strain evaluation of the concrete box-girder bridges using deep learning  
K. Yang, H.W. Zhao, Y.L. Ding & C.F. Wan

Analysis using modal information in SSI by dynamic observability method  
T. Peng, J.R. Casas & J. Turmo

Fast bridge damage detection based on portable sensing equipment  
C.Y. Liu, Y. Xu & K.X. Wang

Deformation features of a long-span arch bridge based on long-term monitoring data  
G.D. Zhou & D.K. Liu

Study on the decrement factors in tension behavior of fractured stay cables with grout-filled protective tubes  
K. Ono, K. Osada, M. Hattori & S. Nojima

Structural damage detection based on swarm intelligence technique and hybrid objective function  
Z.H. Ding, J. Li & H. Hao

Damage localization of bridge based on moving sensing-filtering integrated system  
Z.H. Nie, Y.K. Xie, Z.F. Shen & H.W. Ma

Time-varying analysis of structural displacement of cable-stayed bridge subjected to thermal effects  
D.H. Yang, T.H. Yi & H.N. Li

Spatial thermal effects for steel bridge girders subjected to time varying ambient temperature  
T.H. Yi & G.D. Zhou

A two-stage approach for structural damage detection using MSE and ALO-INM  
C.B. Chen, Z.W. Luo & L. Yu

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J.Y. Lei, L.F. Hu & Q.S. Xiao

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G. Fan, J. Li & H. Hao

**SS15: Monitoring techniques and their interpretation for the integrity assessment of bridges**  
*Organizers: T. Shiotani, Y. Yang & E. Lantsoght*

Monitoring structural responses during proof load testing of reinforced concrete bridges: A review  
G.I. Zarate Garnica, F. Zhang, Y. Yang, C. van der Veen, E.O.L. Lantsoght, M. Naaktgeboren & S.A.A.M. Fennis

A study on fabrications and vibration characteristics of steel finger joints simulating damage stages  
H. Iwabuki, A. Yabe, S. Ono & S. Tanaka

Smart Bridge: The duraBASt test bridge equipped with RFID-based sensors
C. Strangfeld, I. Hindersmann & E. Niederleithinger

The application of interferometric radar for measuring lateral vibration of bridges
P. Olaszek

Monitoring techniques for deterioration of concrete bridges due to chloride attack
K. Matsuyama, K. Nakatsu, T. Sonoda, T. Kouchi & M. Nakano

Improved SIBIE procedure with multi sensor array for 3D visualization of damage in RC slab
K. Hashimoto, T. Shiotani & M. Ohtsu

Monitoring method for the distribution of prestressing force by optical fiber

Evaluation of influence of prestressing on ASR-damaged concrete using NDT
A. Sagradyan & N. Ogura

Acoustic Emission-based crack tracking for existing concrete structures: Influence of number of load cycles and loading speed
F. Zhang, Y. Yang & M.A.N. Hendriks

Evaluation of concrete strength and defects in concrete by elastic wave methods
T. Watanabe, A. Nouchi, S. Fujimoto & C. Hashimoto

Reliability of a damaged RC slab structure using Model Code 2010 safety formats for NLFEA
A. De Boer, E.O.L. Lantsoght & Y. Yang

A study on monitoring multi-scale concrete members with coda-wave interferometry using embedded transducers
C. Kevinly, F. Zhang, Y. Yang, D. Draganov & C. Weemstra

SS16: Application of UHPC for bridge structures
Organizers: M. Hosotani, C. Shi, T.B. Viet & H. Yokota

Experimental study on the shear performance of the stiffened web of UHPC box girder
R.S. Pan, C.X. Li & X.D. Shao

The modification of UHPC composite deck at a bridge with orthotropic steel deck
J.J. Shua

Long-term durability of railway structures using ultra high strength fiber reinforced concrete
T. Kawaguchi, K. Sakashita, H. Musha & H. Yoshimoto

Time-dependent strength gain of a nonproprietary ultrahigh-performance concrete
M.P. Manning, T.S. Alahmari & B.D. Weldon

The study to stress regularities of UHPC prestressed T-beam’s upper plate
Q.L. Xu

The features of various UFC bridges and its durability investigation in Japan
H. Musha, T. Watanabe, O. Hashimoto, Y. Ishii & M. Ikeda

Roadmap for autogenous shrinkage control of UHPC
L. Yang, C. Shi & Z. Wu

Experimental study on precast deck connection using ultra-high-performance concrete
K. Sasaki

SS17: Innovations and advances of composite techniques in bridge maintenance and rehabilitation
Organizers: W. Lin & C. Xu
Application of a composite strengthening technique in steel bridge rehabilitation
W. Lin, N. Taniguchi & T. Yoda

Multi-parameters decision-making algorithms for project level bridge maintenance

Shear performance of demountable perforated steel-tube connector for accelerated assembly bridge construction
J. He, C. Li, G. Vasdravellis, E. Feidaki, S. Wang & Y. Liu

Effects of bonding between RC slab and steel upper flange on the elasto-plastic behavior of steel-concrete composite girders
C. Fang, K. Ono, T. Miyashita, W. Lin, M. Shirato, Y. Sato & H. Tachibana

Four-point bending test of composite girders for limit state design in Japan
Y. Sato, H. Tachibana, T. Miyashita, K. Ono & M. Shirato

SS18: Advances in SHM of bridges and critical infrastructures
Organizers: F. Ansari, N.F. Catbas, G.P. Cimellaro, M. Domaneschi & R. Greco

Investigation of the structural system conversion under transverse wind load based on the long-term monitoring lateral response of Sutong Bridge
C.X. Ge

Ultrasonic coda wave monitoring of concrete structures: First experiences with large-scale experiments and real structures

Ratio-based features for data-driven bridge monitoring and damage detection

Artificial intelligent technology applications for bridge scour

SS19: Sustainability considerations for bridge management
Organizers: K. Sakai, D. Choi & H. Yokota

New requirements to old railway structures challenges engineers in Finland
J. Wuorenjärvi

Status and future of construction industry and road bridges in Japan from the viewpoint of sustainability
T. Matsuka, H. Yokota, N. Takeshita & K. Sakai

Evolution of bridge construction in Japan
A. Kasuga

SS20: Mechanisms of internal swelling reactions and those effects on structural performances

Modeling the effect of fly ash on alkali-silica reaction in concrete considering the reduction of alkali concentration in pore water
R. Taguchi & Y. Takahashi

Performance based design and maintenance strategy with controlling ASR
K. Yamada, T. Yamamoto, Y. Kawabata, Y. Sagawa, N. Ueda, Y. Kubo & S. Ogawa

Effect of aggregate mineralogical composition on DEF in concrete
M. Malbois, F. Benboudjema, J.M. Torrenti, L. Divet & S. Lavaud

Estimation of temperature in the French recommendations for the prevention of disorders due to delayed ettringite formation
J.M. Torrenti

Mechanisms of internal swelling reactions: Recent advances and future research needs
Y. Kawabata, K. Yamada, S. Ogawa & Y. Sagawa

A method keeping total alkali content and maximizing water supply for concrete prism test of potential expansion by ASR
K. Yamada, Y. Kawabata, S. Ogawa & Y. Sagawa

Study of expansion and subsequent damage due to ASR and DEF
T. Sriprasong, T. Okubo, N.R. Joshi & S. Asamoto

Poromechanical models for time-dependent mechanical performance of concrete with ASR
Y. Takahashi

Modeling structural effects of DEF: Lessons learned from real-case studies
J.F. Seignol

A study on ASR expansion behavior of concrete exposed to natural environment for 5 years: Experimental and numerical approaches
T. Kawakami, Y. Sagawa, Y. Kawabata, K. Yamada & S. Ogawa

An experimental discussion on bond strength reduction of ASR damaged concrete
D. Yamamoto, H. Hamada & Y. Sagawa

Research on a new approach assessing ASR of concrete structures for nuclear facilities

Expansion behavior of cement pastes containing additives due to delayed ettringite formation

Identification of iron sulfide minerals in aggregates by accelerated mortar bar test
W. Saengsoy, L. Yongchaitrakul, P. Sinlapasertsakulwong & S. Tangtermsirikul

SS21: Analysis of fatigue members
Organizers: C. Fujiyama, T. Kisaku, T. Hanji & B. Suryanto

Local stress based fatigue assessment of welded joints in steel-concrete composite slab using angle-shape shear connectors

Numerical analysis of RC Gerber bridge girder subjected to fatigue loading
A.I. Quadri & C. Fujiyama

Fatigue life prediction for concrete bridges using Bayesian network
M. Yuan, Y. Liu, D. Yan & L. Huang

Correlation between the fiber content and orientation and the mechanical behaviour of fiber reinforced concrete subjected to static and cyclic three point bending test by the use of CT Scan technology
D.C. González, A. Mena, J. Mínguez & M.A. Vicente

Influence of bond on the fatigue behavior of reinforced concrete beams without stirrups
B. Suryanto & N. Chijiwa

Fatigue crack growth arrester using gourd-shaped-insert-plate for steel bridge deck
T. Murakami, Y. Yamashita, M. Nakatani & Y. Akizuki

SS22: Advances in NDE/NDT for the bridge assessment
Organizers: C.C. Fu, C. Xiang & Y. Gu

Damage identification of simply support beam based on strain energy information entropy
C.S. Xiang, L.Y. Li, C. Dang & Y. Zhou

Damage detection of beam structure using influencing line based on information entropy fusion
Y. Zhou, S.K. Di, Z. Yuan & C.S. Xiang

Dynamic performance assessment on a MDTA overpass steel bridge with newly constructed link slabs
SS23: Life-cycle analysis: Probabilistic modeling of the deterioration and recovery of bridges and transportation infrastructure, and the optimal allocation of resources

Organizers: P. Gardoni, M. Sanchez Silva, M. Pandey & G. Jia

Y. Zhu, K. Hou, C.C. Fu & N. Li

Modelling the interactions between defect mechanisms on metal bridges
G. Calvert, L. Neves, J. Andrews & M. Hamer

Post-event regional seismic risk assessment via vector-IM based record updating
A. Du & J.E. Padgett

A new infrastructure management software for the optimization of road investments
M. Frizzarin & P. Franchetti

Age, state, and environment dependent non-homogeneous stochastic model for improved bridge deterioration prediction
M. Li & G. Jia

Dimension reduction and surrogate based approach for optimal seismic risk mitigation of large-scale transportation network
M. Li, Z. Wang & G. Jia

Bayesian updating the resistance estimate of existing aging bridges with service load history
C. Wang & Q.W. Li

Time-varying fragility functions for bridges subject to main shock-aftershock sequences including damage accumulation during the events and calibration based on available data
L. Iannacone & P. Gardoni

SS24: Rehabilitation and strengthening of concrete and steel structures with UHPFRC

Organizers: T. Matsumoto, E. Brühwiler, A. Miyamoto, K. Rokugo, K. Maruyama & M. Kunieda

Analytical investigation of structural behaviour of an RC void slab bridge improved with UHPFRC
T. Makita, H. Kitagawa, S. Kumagai & H. Tatematsu

Cracking resistance of UHPFRC for repair application
M. Kunieda, K. Asai & K. Sasaki

Applications of UHPFRC for rehabilitation of bridges in severe winter climates
Y. Kosaka, T. Imai, H. Mitamura & T. Matsumoto

Full-scale test for upgrading existing bridges using Aft-UHPFRC
Y. Watanabe, S. Yanai, T. Makita & H. Kitagawa

Bridge enhancement by means of the UHPFRC Technology: Concepts and recent applications
E. Brühwiler

The seismic safety bearing system for existing concrete bridges with J-THIFCOM
K. Ueda, T. Imai, H. Mitamura & Y. Kosaka

Development of UHPFRC overlay method for RC slabs focusing on interface treatment
T. Watanabe, T. Kanou & M. Ishida

Influence of insufficient early-age strength of UHPFRC on rehabilitation of OSDs
P.R. Deng, T. Matsumoto, H. Kaminishi & Y. Gouda

Finite element analysis on strengthening effect of the UHPFRC-steel composite deck
C.H. Ma, P.R. Deng, T. Matsumoto, K. Ueda & H. Mitamura

Applications of UHPFRC to the rehabilitations and strengthenings to bridges
T. Matsumoto, Y. Gouda & H. Mitamura
Wheel-load-running fatigue test of an UHPFRC-steel composite bridge deck
D. Makino, Y. Gouda, H. Mitamura & S. Matsui

SS25: Protective surface treatment for durability enhancement and service life extension of concrete bridges
Organizers: J. Dai, P. Zhang & F.H. Wittmann

A practical method for durability design of marine concrete structures treated with silane
Y. Zeng, D.W. Zhang, J.G. Dai, M.S. Fang, W.L. Jin, S. Li & H. Wang

Influence of water repellent surface impregnation of cracked SHCC on steel corrosion
P. Zhang, F.H. Wittmann & T.J. Zhao

Improvements of carbonation and chloride resistance of concrete treated with nano-modified coatings
C.H. Fan, G. Li & J.C. Zhou

Water penetration into strain hardening cementitious composites before and after water repellent surface impregnation
F. Wittmann, P. Zhang & T. Zhao

Experimental study on fiber reinforced repair material for concrete structure
S. Gao & L. Zhang

SS26: Advances in assessment, simulation, and retrofit of corroded bridges

Incremental Modal Pushover Analysis (IMPA) for bridges
A.V. Bergami, D. Lavorato, C. Nuti & G. Fiorentino

Shear strength prediction of TCSWs with artificial pitting based on ANN
X. Wei, Z.Y. Wen, L. Xiao & G. Li

Experimental investigation of corrosion damage on reinforced concrete beams to correlate crack width and mass loss
H. Nasser, C. Van Steen, R. Vrijdaghs, L. Vandewalle & E. Verstrynge

Test method of simulating erosion and fatigue load of prefabricated bridge joints
J. Zhao, F. Li & Y. Fang

Residual flexural capacity of post-tensioned PC beams having ruptured tendons and the effect of re-grouting
H. Mutsuyoshi, I.S.K. Wijayawardane & T. Yokota

SS27: ICT and 3D technology for maintenance and management of large-scale structures
Organizers: S. Kanai, A. Takasu & H. Masuda

Robust extraction of steel materials of large structure from point clouds
I. Yoshiuchi & H. Masuda

Deep learning approach to modeling bridge dynamics using cameras and sensors
T. Kawakatsu, K. Aihara, A. Takasu & J. Adachi

A data management platform for efficient monitoring of infrastructures
K. Aihara, A. Takasu, T. Kawakatsu, A. Kinoshita & J. Adachi

Automated correction of the bridge slab-bending effect using terrestrial laser scanning
M. Nakagawa, K. Sasaki, S. Matsuda, H. Ito, Y. Yamaguchi & K. Kurita

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F. Tanaka, Y. Nakajima, E. Egusa & M. Onosato

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SS28: Risk control, smart operation and effective maintenance of long-span bridges: In conjunction with TC-18, ACECC
Organizers: H. Kim & H. Katsuchi

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T. Hanai, M. Takeguchi & M. Hongo

Asymptotic formulas for vibration-based cable tension identification accounting for uncertain boundary conditions
X.L. Le, H. Katsuchi & H. Yamada

Aerodynamic properties of shape modified cables by illumination cables using Large Eddy Simulation
P.D. Tam, H. Katsuchi & H. Yamada

Seismic response of a cable-stayed bridge subjected to spatially varying orthogonal ground motions
T. Kim, O.-S. Kwon & J. Song

Loading test and development of structural health monitoring for extradosed bridges
Y.C. Sung, H.H. Hung & C.K. Su

SS29: Data informatics for SHM of bridges
Organizers: H. Kim & E. Caetano

Automated operational modal analysis of an end-supported pontoon bridge using covariance-driven stochastic subspace identification and a density-based hierarchical clustering algorithm
K.A. Kvåle & O. Øiseth

Automated long-term damping estimation of the cable-stayed bridge using faulty data in wireless sensor network
S. Kim, B.F. Spencer & H.-K. Kim

Digital twin visualization of beam structure using strain-displacement relationship
M. Han, S. Shin & J.H. Lee

Seismic monitoring of cable-stayed bridge using wireless sensor network
D.M. Siringoringo, Y. Fujino, V. Mehta, Y. Kazui & M. Suzuki

SS30: Latest developments on the seismic response of integral abutment bridges

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B. Briseghella, R.H. Fu, J.Q. Xue, Y.B. Lin, F.Y. Huang & C. Nuti

Research on mechanical behaviors of multi-span jointless bridge with link slabs over piers and abutments
J.Q. Xue, J.H. Lin, B. Briseghella, F.Y. Huang & C. Nuti

Experimental study on SSI of flat buried approach slab in jointless bridge
J.Q. Xue, Y.F. Tang, B. Briseghella, F.Y. Huang, B.C. Chen & C. Nuti

Physical model of an Integral Abutment bridge: Numerical and experimental analyses
G. Fiorentino, D. Lavorato, C. Nuti, F. De Luca, C. Cengiz, A. Sextos, G. Mylonakis & B. Briseghella

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Q.H. Zhao, Q.L. Weng & S. Dong

Critical seismic response analysis of skewed integral abutment bridges
Q.H. Zhao, Q.W. Wang & S. Dong

SS31: Fatigue linked retrofitting, life extension and advanced assessment in metallic bridges
Organizers: K. Kinoshita, A. Nussbaumer, M. Chryssanthopoulos, K. Anami & S. Ono
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H. Al-Karawi, M. Al-Emrani & J. Hedegård

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K. Inoue, S. Ono & S. Tanaka

Fatigue analysis of riveted connections using the theory of critical distances
B. Imam & H. Gorouhi

Giving new life to fatigue life-expired critical details

Numerical investigation of rib-to-crossbeam joint in orthotropic steel decks
H. Fang, N. Iqbal, G Van Staen & H.De Backer

A literature review of pre-fatigued structures treated by TIG dressing
A. Manai

Influence of grid blast on the fatigue strength improvement by peening
Y. Banno, K. Kinoshita, T. Ishikawa & K. Anami

SS32: Performance-based earthquake engineering: Seismic resilience for bridges
Organizers: Q. Wu & Z. Sun

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Y. Liu, Z. Mei, D.G. Lu & F. Paolacci

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Barcelona Material Model
I.J. Drygala & J.M. Dulinska

Dynamic response of a composite bridge to mining tremors from main mining regions in Poland
I.J. Drygala & J.M. Dulinska

SS33: Data-driven asset management – The Scandinavian way
Organizers: L.F. Pedersen, J.S. Jensen & P. Linneberg

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P. Linneberg

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F. Olsson & H. Pétursson

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L.F. Pedersen

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Organizers: E. Hwang, W. Park & U. Starossek

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M.G. Mulas, B. Glisic, M. Domaneschi & F. Venuti

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C. Gomes, A. Vitório, A. Carneiro & R. Oliveira
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SS35: Monitoring strategies for enhancing transport infrastructure resilience
Organizers: S. Mitoulis, D. Achillopoulou, S. Argyroudis & V. Livina

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C. Hoelzl, V. Dertimanis, E. Chatzi, D. Winklehner, S. Züger & A. Oprandi

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M. Domaneschi, G.P. Cimellaro, M. De Iuliiis & G.C. Marano

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S.A. Argyroudis, D.V. Achillopoulou, V. Livina & S.A. Mitoulis

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D.V. Achillopoulou, S.A. Mitoulis & N.K. Stamatakis

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M. Pregolato, G. Gavriel & F.D. Lopane

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T. Ueno, T. Emaru, A.A. Ravankar & Y. Kobayashi

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Organizers: Y. Bao, H. Sun & Z. Chen

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Y.Q. Bao, D.W. Liu & H. Li

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J. Shu, K. Zandi & W. Zhao

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A.C. Neves, I. González, R. Karoumi & J. Leander

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Y. Xu, W.D. Qiao, Y.Q. Bao, H. Li & Y.F. Zhang

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X.E. Wang, H.L. Liu & L. Yu

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Organizers: F. Biondini, S. Manto, C. Beltrami & F. Tondolo

BRIDGE|50 research project: Residual structural performance of a 50-year-old bridge

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Organizers: L. Haixue, R.G. Pillai & C. Xu

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C.F. Xu, D.L. Li, M.Y. Ma, S.Y. Cao & J. Guo

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J.C. Ball

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C.F. Xu, D.L. Li, H. Yan, J.P. Zhang, S.Y. Cao & Z.W. Lu

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Organizers: V. Pakrashi & A. O’Connor

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Q. Li, Y. Wu & Q. Wu

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S. Reyment, A. Rönnquist, O. Ølseth, Ø. Petersen & L. Drugge

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Organizers: C. Modena, P.G. Malerba & F. Bontempi

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Y.P. Zeng, K.J. Chen, J. Dong & G.J. Yang

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J. Dong, G.J. Yang, Y.P. Zeng, L. Pang & L.W. Liu

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