

IABSE Conference 2018

Engineering the Developing World

IABSE Symposium Report Volume 110

Kuala Lumpur, Malaysia
25 - 27 April 2018

Volume 1 of 2

ISBN: 978-1-5108-6425-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by International Association for Bridge and Structural Engineering (IABSE)
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact International Association for Bridge and Structural Engineering (IABSE) at the address below.

International Association for Bridge and Structural Engineering (IABSE)
c/o ETH Zurich
Honggerberg HIL E 21.3
Stefano-Francini-Platz 5
8093 Zurich
Switzerland

Phone: +41-44-633 2647

Fax: +41-44-633 1241

secretariat@iabse.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com



Table of Contents

<i>Malaysian Highways Infrastructure – Vision 2050 & Challenges Ahead in Coming Decades</i>	
ISMAIL MD SALLEH	1
<i>Do Structural Codes Stifle Creativity?</i>	
NETHERCOT, David A	9
<i>The Second Penang Bridge Project: Planning, Design, Construction and Maintenance</i>	
ISMAIL, Mohamed Taib	19
<i>Case Study on Comparison between Chinese and American Design of High-Rise RC Frame-Core-Tube Structure</i>	
XIAO, Congzhen	29
<i>Bridge Design for India - from Kolkata to New Delhi</i>	
SCHLAICH, Mike; BURKHARDT, Uwe	39
<i>Brunei Temburong Link</i>	
HUSSAIN, Naeem; YIP, Sammy; TO, Murphy; CHIN, Kok Kong; DING, Lee Sing; YAT, Kheong Cheng	47
<i>Technical Risks to Major Infrastructure Development</i>	
ANCICH, Eric; CHIRGWIN, Gordon	54
<i>Mega Challenge for Mega Project: Stakeholder's Perspective</i>	
ALSANAD, Shaikha	68
<i>System of Combined Foundation as Base For Mega-Structures</i>	
REBIELAK, Janusz	75
<i>Structure and Performance Characteristics of Curved Box Girders with Corrugated Steel Webs</i>	
WANG, Kangjian; ZHANG, Peiwei; CHEN, Jinxiang; ZHOU, Man	81
<i>Experimental Study on Shear Behavior of Curved Box Girders with Corrugated Steel Webs</i>	
LIU, Sumei	88
<i>The All-Composite Road Bridge – A Proposal for Rapid Urbanisation</i>	
SIWOWSKI, Tomasz; KOZŁOWSKI, Aleksander ; ZIEMIAŃSKI, Leonard; RAJCHEL, Mateusz; KALETA, Damian	95
<i>Study on Steel-Concrete Composite Beams under Pure Negative Bending and Combined Negative Bending and Torsion</i>	
LIN, Weiwei	103
<i>Behaviour of Metallic Anchorage Plates for Prestressing CFRP Laminates Under Room and Elevated Temperatures</i>	
SENA-CRUZ, José; CORREIA, Luís; BARRIS, Cristina	111



<i>Seismic Behavior of Skew RC Bridges with CFRP piers</i>	
SHIRAVAND, Mahmoud Reza; MAHBOUBI, Shima	119
<i>Fully Stress Laminated Timber Bridge</i>	
FELICIANGELI, Dario; MIERZWA, Krzysztof; ANTUNES, Mariana	127
<i>Experimental Study on Hybrid Masonry Structure with RC Frame under Lateral Reversed Cyclic Loading</i>	
ZHANG, Fei; MA, Jianxun	135
<i>Research on The Automatic Tension Control and Management Integrated System of Railway Prestressed Concrete Beam</i>	
ZHUO, Yi	143
<i>Economy and Elegance in Bridge Design: The Beauty of Practical Objects that do their Job Well</i>	
GAUVREAU, Paul	151
<i>Architecture of Roman Catholic Cathedrals and Basilicas in the Developing Countries</i>	
VERTATOVA, Eva	159
<i>Structural, Technological and Aesthetical Considerations for the Detailing of Steel Tubular Joints</i>	
GEORGIEV, Vasil Georgiev; DAKOV, Dimitar; MIHOV, Yavor	167
<i>Beauty Create the World</i>	
HUI, Iuo	175
<i>Pro Value of State of the Art Bridge Bearings and Expansion Joint Solutions</i>	
GUENTHER, Peter; ROOS, Rainer	183
<i>Performance of Modular Expansion Joints under Strong Ground Motions</i>	
SAVIOZ, Pascal; IMAM, Moustafa	191
<i>Advanced Bridge Pot Bearing Technologies with a Special Focus on Railway Applications</i>	
SAVIOZ, Pascal; BRUENINGHOLD, Max	199
<i>Replacement of Bridge Expansion Joints: Challenges and Solutions</i>	
SAVIOZ, Pascal; MENG, Niculin	201
<i>Construction of 90m multi-span Viaducts with Span by Span Construction Method - A New Possibility in Bridge Engineering</i>	
PACHECO, Pedro; COELHO, Hugo; BORGES, Pedro; CARVALHO, Diogo	203
<i>Hybrid Launching Gantry for the Construction of Span by Span Precast Segmental Bridge</i>	
OOI, Shu Tat	211
<i>Challenges in Design & Construction of Elevated Grade Separators with Wide Deck & Single Central Pier, in Urban Areas</i>	
BHOWMICK, Alok; JAIN, Sanjay	219



<i>Efficient and Economical Structural System in the form of Inverted-T Pier Crosshead and Deck Slab Continuity for Beam and Slab Bridges As Adopted in DUKE 2 Project in Malaysia</i>	
ANBARASAN, G. Irusan	227
<i>Helping Gasiza have a Bridge for Generations to Come</i>	
DEAN, Sean	232
<i>Appropriate Approaches to Health, Safety And Welfare during Footbridge Construction in Developing Countries</i>	
WHITTAM, Johannes; LUDIN, Matthias	234
<i>B2P Rutaka Footbridge – Improving Safety Using Innovative Deck Pull Method</i>	
TOWLER, Ian; MILLS, Ben; LOFTS, Matthew; MILLS, Brandon; BENSON, William	242
<i>Integrated Engagement for Considered Infrastructure: Harmonising New with Old</i>	
STROYMAN, Molly	250
<i>Bridges to Prosperity Llapallapani Suspension Pedestrian Bridge, Llapallapani, Bolivia</i>	
COOPER, Thomas; MONTENEGRO, Juan Diego; TILLEMANN, Kirsten	252
<i>Planning, Design and Construction of Elevated Guideway of Kelana Jaya (KLJ LRT) Extension Project and Challenges & Lessons Learnt</i>	
BISWAS, Pradip Kumar; GANENDRA, Dennis; EMBI, Azmar Bin	259
<i>Design of Segmental Precast Portal Frame for Red Line Mass Transit System in Bangkok, Thailand</i>	
WIROJJANAPIROM, Puvanai; RITDUMRONGKUL, Sapon; IMSOMBAT, Sittisak; NIELSEN, Knut H.	267
<i>The Kenyan Dream : Developing Concept of Nairobi MRTS</i>	
ROY, BC; WANJAU, George P G; BHATTACHARJEE, Satyaki	275
<i>Precast Segmental Aerial Guideway for Honolulu Rail Transit Corridor Project</i>	
LEE, Hohsing	283
<i>Design of the Viaducts for the Line 3 of the Riyadh Metro LRT in Saudi Arabia</i>	
DURAND, Paul-Emile; WISE, Lucas; JOY, Emmanuel; ROSSETTO, Alain	291
<i>Mumbai Metro Line 2A – Challenges in Design and Construction</i>	
SHAIKH, Mohammed Adil; SAWANT, Mangesh; TANK, Ajay; MODY, Nirav; PANDEY, Amit	299
<i>Digitally Enabling Design for Manufacture, Assembly and Maintenance of Bridges</i>	
FARMER, Neil Stephen; BRILAKIS, Ioannis; MCGOVERN, Scott	307
<i>A Rational Approach to Life Cycle Design of Infrastructure Developments in Malaysia</i>	
GURUSAMY NAIDU, Kribanandan	315
<i>Human Errors and Corresponding Risks in Reinforced Concrete Bridges</i>	
PEREIRA, Neryvaldo Galvão; MATOS, José; OLIVEIRA, Daniel; FERNANDES, João	323



<i>Towards Nonlinear Reliability Assessment of Concrete Transport Structures</i> PUKL, Radomír; LEHKÝ, David; NOVÁK, Drahomír	330
<i>Viaduct in the Highway Siervo de la Nación</i> SANTOS, Carlos; MATOS, José; BARBOSA, José Luís; LEITE, Ricardo	338
<i>Effects of Structural Deterioration and Infrastructure Upgrading on the Life-cycle Seismic Resilience of Bridge Networks</i> CAPACCI, Luca; BIONDINI, Fabio	340
<i>Carbon Reinforced Concrete in Construction Practice</i> SCHLADITZ, Frank; TIETZE, Matthias; LIEBOLDT, Matthias; SCHUMANN, Alexander; GARIBALDI, Maria Patricia; CURBACH, Manfred	348
<i>Future Applications in Carbon Reinforced Concrete</i> TIETZE, Matthias Rolf; SCHLADITZ, Frank; CURBACH, Manfred; KAHNT, Alexander; ZOBEL, Robert ...	356
<i>Crack Width Calculation Methods for Large-Scale Concrete Structures for the Ferry-Free E39</i> TAN, Reignard; KANSTAD, Terje; GEIKER, Mette R; HENDRIKS, Max A N	358
<i>Strength Properties and Microscopic Observations of Concrete with Plastic Wastes as Partial Aggregate Substitute</i> ORETA, Andres Winston C; CUARTERO, Maejann E; VILLANUEVA, Nikko Paolo P	360
<i>Behavior of Reinforced Concrete Beams with 700 MPa High-Strength Reinforcement - Flexure and Serviceability</i> LEE, Joo-Hyung; CHO, Jae-Yeol	368
<i>Review of the Most Common Repair Techniques for Reinforced Concrete Structures in Coastal Areas</i> ANCICH, Eric; RASHIDI, Maria; BUCKLEY, Peter; GHODRAT, Maryam	370
<i>Challenges and Innovation in Large-Scale Infrastructure Projects – the WHSD Project</i> PEDERSEN, Nikolaj Rask; JACOBSEN, Jonas Sejersbøl; LAUSTEN, Søren	378
<i>The Harbor Passage Bridge in Hamburg</i> REINTJES, Karl-Heinz	386
<i>Configuration Design of Viaduct Pier in Urban Highway</i> JIN, Yanjun; XIAO, Keli; LI, Lin; ZOU, Aijia; DUAN, Xinglong; HE, Wei; YUAN, Chongwei	393
<i>Standardized Manufacturable Steel Orthotropic Decks for Urban Bridges</i> SOUGATA, Roy	401
<i>Experimental Investigation of the Punching Shear Behaviour of RC Slab-Column Connections Under Seismic Loading</i> ABDELKHALIK, Amr; ELAFANDY, Tamer; ABDELRAHMAN, Amr; SHERIF, Alaa	403
<i>Seismic Behaviour of Six-Storeyed RC Residential Structure with Existing LLRS</i> PURUSHOTHAMA, Chaithra; BAI, H Sharada; G, Ambrish	411



<i>Transitioning to Seismic Design</i>	
TIONG, Timothy	419
<i>The Seismic Performance Evaluation of RC High-Rise Buildings Designed to Various Building Codes</i>	
HASSAN, Waqar ; ANWAR, Naveed; NORACHAN, Pramin; NAJAM, Fawad A	427
<i>Innovative Upgrading of Heritage Buildings: Structural Case Studies</i>	
GURUSAMY NAIDU, Kribanandan	435
<i>Rebuilding of Tokyo's SUITENGU Shrine</i>	
IIDA, Tomohiro; NAKANE, Kazutomi; ASO, Naoki	443
<i>Reinforcement of Old Masonry by New Structure</i>	
YAMAZAKI, Ryohei	451
<i>Structural Feasibility of ISO Shipping Containers for Core-dwelling Housing</i>	
TAN, Cher Siang; NUSSBAUMER, Alain	459
<i>Shear Resistance Mechanisms on High-Panelized Steel Sheet Walls with Burring Holes</i>	
KAWAI, Yoshimichi; FUJIHASHI, Kazunori; TOHNAI, Shigeaki; SATO, Atsushi; ONO, Tetsuro	466
<i>Deformation Capacity of Web Perforated H-shaped beams</i>	
INABA, Toru; USAMI, Tetsu; YAMAZAKI, Kenji; USHIWATA, Fumi; ODAJIMA, Nobuyuki; JUN, Okamoto	474
<i>Development of Retrofitting Method against Fatigue Cracks in Orthotropic Steel Deck Stiffened by Trough Ribs</i>	
SHINNO, Takahiro; MIZOKAMI, Yoshiaki ; MORIYAMA, Akir; KISHI, Yuki ; SAKANO, Masahiro	482
<i>Proposal for New Beam-End Connection with Rib Plates inside Steel Panel zone of Beam-to-Column Joints</i>	
YAMAZAKI, Kenji; INABA, Toru; USAMI, Tetsu; TAKUMA, Kawakami; SABURI, Kazuhiro	489
<i>Design and Development of the Msikaba and Mtentu River Gorge Bridges</i>	
ANDERSON, John Robert Beveridge	497
<i>Design and Construction of Beipanjiang Bridge</i>	
LIU, Bo; PENG, Yundong; HOUMAN, ; ZHOU, Daqing	505
<i>Partial cable-stayed bridge in the application of heavy haul railway</i>	
LI, Guilin; SHI, Di; ZHANG, Xiaojiang	513
<i>Design of Sea-Crossing High-Speed Railway Steel-Concrete Composite Box Girder Cable-Stayed Bridge</i>	
ZENG, Jiahua; WEN, Wangqing; YAN, Aiguo	521
<i>Effects of High Speed Trains on Bridges</i>	
CALATOZZO, Erica; LEMAIRE, Arnaud; MONTENS, Serge	526
<i>Innovation Design of a Ballastless Cable-Stayed Bridge with Main Span of 300m in High-Speed Railway</i>	
DIPING, Li	534



<i>Key Techniques Introduction to Maputo Bridge Steel Box Girders Construction</i>	
QIANG, Yaofeng; GUO, Changrui; ZHAO, Congming	542
<i>Study on Correction of Linear and Internal Force of Steel Box Girder Bridge Based on Zero Moment Method</i>	
TIAN, Wei; WENG, Fangwen; HUANG, Can	550
<i>Thermal Simulation on the Flat Steel Box Girder of the Maputo Bridge under Solar Radiation</i>	
LIU, Cheng; FAN, JianSheng; ZHUANG, LiangDong; GAO, JinYang	555
<i>Construction and Engineering Challenges of the Entrance Building Roof for the Hong Kong West Kowloon Terminus Station</i>	
CHONG, Alocs K. T.; TAPLEY, Mike; BESSODES, Mathieu; HAU, C C	563
<i>5 Martin Place Sydney</i>	
WEBB, John; LAVORATO, Tony	571
<i>The New Large Space Frame - Tama-Sudare</i>	
YAMADA, Tatsuya	579
<i>Double Layer Space Frame for Setia SPICE Convention Centre</i>	
CHOONG, Kok Keong; SAW, Hin Cheong; WONG, Sik Kwang; CHEW, Khai Seng; TANG, Song Teik	587
<i>Structural Robustness of Long-Span Cable-Supported Bridges Segmented by Zipper-Stoppers to Prevent Progressive Collapse</i>	
SHOGHIJAVAN, Mohammad; STAROSSEK, Uwe	593
<i>Fast Tracking the Pulau Poh Cable-stayed Bridge</i>	
VOON, Chet Chie; GOH, Hiang Miang; KOO, Chuan Seng	601
<i>Brunei Temburong Link – Design of Cable Stayed Bridges Against Extreme Loading Conditions</i>	
YIP, Sammy; KITE, Steve; LEUNG, William; CARLUCCI, Alberto; GAINEY, Catherine; HOOTON, Martin	609
<i>Seismic Pounding Mitigation of an Existing Cable Stayed Bridge using Metallic Dampers</i>	
JAVANMARDI, Ahad; GHAEDI, Khaled; IBRAHIM, Zainah; MUTHU, Karupiah Udayar	617
<i>Loading Steps in Analyzing the Interaction Between the Tied Arch Continuous Bridge and Multiple Tracks</i>	
YAN, Bin; HAN, zhongshu; ZHOU, Min	624
<i>Application Status and Developing Foreground of CRTS III Ballastless Track</i>	
JING-YUAN, Bai; YAN, Bin	632
<i>Experimental Study on the Dynamic Deformation of Simply Supported Beam in Chinese High-speed Railway</i>	
WANG, Meng	637
<i>Design & Construction of Setiawangsa – Pantai Expressway (SPE-DUKE Phase 3) – Section 3 from Pandan to Setiawangsa in Kuala Lumpur</i>	
PUVVADA, Srinivas Rama Krishna Satya; BENG CHOY, Tham	644



<i>The Realisation of the 6.2km Long Padma Multipurpose Road and Rail Bridge in Bangladesh</i> JONES, V; HALLIDAY, R; KING, M; ISLAM, Shafiquel	652
<i>Opportunities and Challenges of Traffic Dispersal Structures in KL and the Periphery</i> BASKARAN, S; ONN, ChanSooi	661
<i>Doha New Orbital Highway Project, Junction 7 Existing Bridge Widening</i> BANCE, Andrew; CLUETT, Joseph; SAITO, Daisuke; DAOUTIS, George	669
<i>Design & Construction of Duta – Ulu Kelang Expressway (Phase 2) – Tun Razak Link (TRL) in Kuala Lumpur</i> PUVVADA, Srinivas Rama Krishna Satya; BENG CHOY, Tham	677
<i>Large Scale Infrastructure Project Implementation in Malaysia. A Case Study - Metropolitan Highways in Klang Valley: Damansara-Shah Alam Elevated Highway (DASH)(DASH)</i> EUSOFE, Zarulazam; HARUN, Sazali	685
<i>Next Generation Flexible Plug Joint Material</i> SAVIOZ, Pascal; GALLAI, Gustav; METTNER, Knut	693
<i>Integration of SHM at an Early Stage in the Design and Construction of Long-Span Bridges</i> ISLAMI, Kleidi; SAVIOZ, Pascal; MALEKZADEH, Masoud	701
<i>Design Guidelines for Bolted Single Support Bar Modular Bridge Joint Systems</i> ROY, Sougata; ARTMONT, Frank A.	709
<i>Bridge Deck Waterproofing on Concrete</i> STOLL, Philippe	717
<i>The durability of Finger Type Expansion Joints for Penang Second Bridge with Comparison Studies based on Expansion Joints for Bridges in Malaysia & Around the World</i> CHONG, Seng Shia	720
<i>Retrofitting and Strengthening Interventions of RC Members Using Ultra High Performance Concrete (UHPC)</i> TEO, Wee; SHIRAI, Kazutaka; HOR, Yin	726
<i>Lateral Behaviour of PT Segmental Bridge Columns with Ultra High Strength Concrete (UHSC)</i> NIKBAKHT, Ehsan; AL-NINI, Ahmed; DAHI, Saleh Mohammed; MAHZABIN, Mst Sadia	732
<i>Cyclic Behavior of Precast Segmental UHPFRC Bridge Columns with Replaceable Damage-Concentrated Elements</i> WANG, Zhen; WANG, Jingquan; ZHU, Junzheng	736
<i>Prefabricated Box Girder with Ultra High Performance Concrete</i> XIAO, Keli; JIN, Yanjun; LI, Lin; HE, Wei; XINLONG, Duan	744
<i>Sustainable Ultra High Performance Cementitious For Rapid Urbanization and Carbon Neutral Mega Construction Projects</i> LAI, Fook Chuan	746



<i>Method of Designing a Plate-like Ultra High-rise Building</i>	
OKAMURA, Shoko; MUTO, Kei	757
<i>Mega High Rise Buildings – Strength and E-modulus Limits for High Performance Concrete in Malaysia</i>	
GURUSAMY NAIDU, Kribanandan	765
<i>Descending Order Reversely Constrained Optimal Design Method for Tall Building Structures under Wind Loading and Earthquake action</i>	
ZHAO, Xin; ZHAO, Jianzhe; ZHUANG, Ma	773
<i>High-rise PPVC Building for Rapid Urbanisation</i>	
CHUA, Yie Sue; LIEW, Jat Yuen, Richard	780
<i>Intermediate Seismic Isolation Ultra High-rise Office Building Integrated with Historical Building</i>	
HAMADA, Yuki	783
<i>KVMRT Challenges - Elevated Viaducts and Station Structures</i>	
WONG, ChongLing	791
<i>Utilization of Existing Metro Rail Viaduct for Emergency and Personal Rapid Transit</i>	
RAJA, Prabu; KUMAR, Naresh	799
<i>Klang Valley MRT Viaduct Structural Design Development</i>	
HEWSON, Nigel; TEH, Tzyy Wooi	806
<i>Optimizing and Mitigating Risks for Lead Rubber Bearing Application on Jakarta Light Rail Transit (LRT)</i>	
MAURIS, Georges; WOUTS, Ivan; NISCHIGUTI, Eduardo; TOUAT, Arezki	814
<i>Statistical Investigation of Design Live Load by Applying WIM Data with Different Degree of Compliance with Truck Weight Limit</i>	
PAIK, Inyeol; JEONG, Kilhwan	820
<i>Challenge in Tunnelling for Kolkata East West Metro – Passage of Underground Twin Tunnels in the vicinity of Brabourne Road Flyover</i>	
DEWANJEE, Biswanath	822
<i>Making the World's Longest Subsea Tunnel Sustainable</i>	
SØYLAND, Ketil; WOLDEN, Christer; GARMANN, Christopher; HARRISON, Debbie	830
<i>The Vertical and Horizontal Displacements of Cross-River Twin-Tunnels Surroundings Induced by Tunneling</i>	
WU, Lin; ZHANG, Zhihua; ZHANG, Xiedong; LIN, FaJin	838
<i>The Application of Steel-Concrete-Steel Composite Structures in Immersed Tunnels</i>	
GUO, Yutao; FAN, JianSheng; NIE, Jian-guo; XU, Guo-ping; TANG, Liang; SONG, Shen-you	845
<i>Hong Kong Underground Space Development and its Enlightenment for the Mainland</i>	
ZHANG, Dexiang	853



<i>Precast Industry Contributed toward Green Construction</i>	
LIMSUWAN, Ekasit; JONGVIVATSAKUL, Pticha	861
<i>Bridging the Gap: Enabling Lower Carbon Footprint and Creating Economic Value from Application of Modern High Strength Niobium Steels</i>	
PATEL, Jitendra	867
<i>Photobioreactor Façade Elements - From Concept to Prototype</i>	
AßMUS, Elisabeth; WELLER, Bernhard; WALTER, Frank	875
<i>Way Forward for Construction Industry with active participation in Carbon Footprint Reduction for Sustainable Development using Geosynthetics.</i>	
MARIAPPAN, Saravanan; HOOD, Fauziah Hanis	882
<i>Large Bridges Recently Built in Poland</i>	
TOCZKIEWICZ, Robert; BILISZCZUK, Jan; TEICHGRAEBER, Marco	889
<i>Kampala Flyovers - Structural Technical Review</i>	
WOJNARSKI, Lukasz; RAYAT, Kulvinder	897
<i>A Case Study of Failure of Pile Bore at Bridge Construction Project, Agra-Lucknow Expressway, India</i>	
KADBHANE, Digambar J; MAHENDRKAR, Avinash Y	899
<i>Design & Construction of Prai Swing Bridge</i>	
KUMAR, Sashi	905
<i>Evaluation of the Innovative Bridge Concepts for the Extreme Norwegian Fjord Crossings</i>	
JENA, Parthasarathi; EIDEM, Mathias Egeland; VILLORIA, Bruno	907
<i>The Scheme Design of 'Bi-Speed Bicycle Viaduct' Demonstration Line</i>	
XIAO, Keli; JIN, Yanjun; ZOU, Aijia; LI, Lin; HE, Wei	909
<i>Smart Structures and Materials</i>	
MYSORE SRIRAMA PRASAD, Rakesh	917
<i>Design and Construction of Triple-Span Precast Concrete Open Spandrel Arch Bridge</i>	
ONG, Chong Yong; CHOONG, Kok Keong; ONG, Tai Boon; CHIA, Kenny; KAN, Wong Fook	925
<i>Full Scale Load Test of a 20m Span Precast Concrete Closed Spandrel Arch Bridge System with Corrugated Section</i>	
ONG, Chong Yong; CHOONG, Kok Keong; MA, Wee Lee; TAN, Geem Eng; ONG, Tai Boon	933
<i>Lancang River Arch Bridge with Stiffened Skeleton of Concrete-filled Steel Tubes</i>	
JIN, Fei	940
<i>Corrosion-Resistant Reinforced Concrete Columns</i>	
SHEIKH, Shamim Ahmed; KHARAL, Zahra	946



<i>Study on the Corrosion Experiment of Concrete Under Different Stress Conditions</i>	
SHEN, Gang; LI, Hui; WU, Xun	954
<i>Fatigue Performance of Pre-Corroded Bridge Wires</i>	
JIANG, Chao; WU, Chong; JIANG, Xu	962
<i>Bach Dang River Stay Cable Bridge – Underslung Form Traveller Construction</i>	
DUPLEIX, Joakim	969
<i>Structural Topology Optimization of Bridge Girders in Cable Supported Bridges</i>	
BAANDRUP, Mads; SIGMUND, Ole; AAGE, Niels	975
<i>Study on A New Type of Deck Applied to Four-lines Railway Cable-stayed Bridge with Wide Truss Stiffening Girder</i>	
WEN, Wangqing; XIA, Zheng-chun; QU, Guo-zhao; SHI, Zhou	983
<i>Behavior of Reinforced Concrete Panels by Impact of Hard Projectile</i>	
KIM, Chunghyeon; CHO, Jae-Yeol	990
<i>Air-Coupled Nonlinear Ultrasonic Test for Reinforced Concrete Beams</i>	
ONGPENG, Jason Maximino C; GUEVARRA, Kenneth; HIROSE, Sohichi	992
<i>Design & Post Tensioning Application of Cement Silos</i>	
RAPTOPOULOS, Sotos	998
<i>Structural Planning for Tall Damped Building with Irregularly-Shaped Plan and Elevation</i>	
KUSHIMA, Soichiro; MORISHITA, Taisei; YAMASHITA, Yasuhiko; OKUNO, Yuuichirou; NAKAHIRA, Kazuto	1005
<i>3D Non-Linear Model Describing the Behaviour of Peripheral High Capacity Saw-Tooth Connectors Subjected to Compressive Load</i>	
AL-KROOM, Hussein Faisal; SCHMID, Volker; REIMER, Andreas	1013
<i>Structural Response of Skew-Curved Concrete Box Girder Bridges under Eccentric Vehicular Loading</i>	
GUPTA, TANMAY; KUMAR, Manoj	1021
<i>A Semi-Analytical Method For Dynamic Responses of Cantilever Plates Under Moving Loads</i>	
WU, Qi; LI, Qi	1029
<i>A Review on Prestressed Transfer Plate Analysis and Design</i>	
LOW, Hin Foo; KONG, Sih Ying; KONG, Daniel	1037
<i>The Appraisal of Wind-Driven Rain within Open-Air Sport Venues</i>	
STANFIELD, Robin Alan; CAMMELLI, Stefano; HASHIM, Hayati	1045
<i>Application of Aerogel in Building Energy-saving</i>	
HAO, Shuo; YAN, Bin; ZHOU, Min	1052



<i>Managing Wind-driven Rain to Improve the Performance of Outdoor Spaces</i>	
LIM, Yi Shan; KALA, Sudeesh; CHATTEN, Mark	1056
<i>Innovative Ballast-less Track System for Urban Areas</i>	
ACHS, Günther	1062
<i>Application of Synthetic Wood Sleepers on Double Deck Steel Truss Bridge</i>	
ZOBEL, Henryk Ludwik; AL-KHAFAJI, Thakaa; WRÓBEL, Marcin; ŻÓŁTOWSKI, Piotr; PAPIS, Bartłomiej; SULIK, Paweł	1070
<i>Mechanical Behavior of Steel-Concrete Twin I-Girder Bridges</i>	
LIN, Weiwei; LAM, Heang; YODA, Teruhiko	1077
<i>Massive Wood Elements and Modular Housing Technology as Innovative Building Concept of Sustainable Urban Planning</i>	
AVELLAN, Kari Christer; BELOPOTOCANOVA, Erika; GHOBAKHLOU, Mojtaba	1085
<i>Structural Lightweight Aggregate Concrete and Its Applications</i>	
PAYAM, Shafigh	1091

Keynotes (pg 1 - 46), Workshop (pg 1091)