

# 10<sup>TH</sup> NEW YORK CITY BRIDGE CONFERENCE

## PROGRAM DETAILS



**MONDAY, AUGUST 26, 2019**

7:00 am

### REGISTRATION

7:50 am-

#### Chairman's Welcome and Keynote Session

08:00 am

BRIDGE ENGINEERING ASSOCIATION

CHAIRMAN'S WELCOME

Dr. Khaled M. Mahmoud, PE, Chief Bridge Engineer

BTC, New York City, USA

8:00 am-

#### KEYNOTE SESSION (I)

10:00 am

Management of NYCDOT Long Span Bridge Assets

Robert O. Collyer, PE, Deputy Commissioner, Chief Bridge Officer, New York City Department of Transportation, USA

Recent Developments in Health Monitoring of Bridges

Michael C. Forde, Carillion Professor, School of Engineering, The University of Edinburgh, Scotland, UK

10:00 am-

#### SESSION 1A: BRIDGE AERODYNAMICS & EXTREME EVENTS

12:00 pm

Peculiar Aerodynamic Advantages And Problems Of Twin-Box Girder Decks For Long Span Crossings A. Zasso, T. Argentini, S. Omarini & D. Rocchi, Dept. of Mechanical Engineering, Politecnico di Milano, Italy and O. Øiseth, Norwegian University of Science and Technology, Norway

Aerodynamic Problems of Parallel-Deck Cable Stayed Bridges S. Stoyanoff, Pierre-Olivier Dalaire, Z. Taylor, and G. Larose, RWDI, Canada

Advanced Nonlinear Seismic Analysis and Design of an Irregular Complex Bridge for California High Speed Rail Requirements E. Honarvar, M. Senhaji, and A. Ranasinghe, Jacobs, USA

Effect of Climate Change on Flexural Reliability of Highway Continuous Girder Bridges Under Wind Load Y. Wang, J. Gong, and J. Zheng, Beijing Jiaotong University, Beijing, PR China

The Failure of the Tacoma Narrows Bridge K. Gandhi, Gandhi Engineering, Inc., New York City, USA

Structural Vulnerability of Coastal Bridges under Extreme Hurricane Conditions R. Nasouri, A. Matamoros, A. Montoya, F. Y. Testik, University of Texas at San Antonio, USA

10:00 am-

#### SESSION 1B: BRIDGE PRESERVATION & REHABILITATION

12:00 pm

Duplex Zinc Coatings For Corrosion Protection Of Steel Bridges M. Gagné, M. van Leeuwen, F. E. Goodwin, International Zinc Association

The Rehabilitation of the McIlraith Bridge in Ottawa, Canada L. Gong, City of Ottawa, Canada

Noise from Bridge Expansion Joints – Evaluation Considerations and Possible Reduction Measures D. Della Ca, S. Hoffmann, F. Kovach, Mageba, USA

Assessment and Strengthening Experience in Germany W. Eilzer, B. Kratzke, Leonhardt, Andrä und Partner Beratende Ingenieure VBI AG, Germany

Small-movement expansion joints for bridges and other structures – Types and selection criteria T. Destefani, D. Della Ca, J. Bilotti, Mageba, USA

Rehabilitation of the Rocker Bent at Pulaski Skyway Span 97 J. Strafaci, G. Ricks, X. Li, and R. Schaefer, HNTB, USA

Construction Management at Risk for the Curtis Creek Bridge Rehabilitation D. Marinelli, Hardesty & Hanover, LLC, Annapolis, MD, USA

12:00 pm-

#### LUNCH

1:15 pm

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## PROGRAM DETAILS



1:30 pm-  
3:30 pm

### SESSION 2A: BRIDGE DESIGN, FABRICATION & CONSTRUCTION

Creative Solutions for a Tightly Constrained Urban Interchange Reconfiguration in New Jersey M. Sidani, J. Romano, R. Dunne, L. Yin, Michael Baker International, USA

A New and Complete Belt for Brooklyn D. Hom, New York City Department of Transportation (NYCDOT), W. Ferdinandsen, Greenman Pedersen, Inc., and P. Dombrowski, AECOM

Reconstruction of Harlem River Drive over East 127<sup>th</sup> Street - NYCDOT Bridge S. A. Garcia, Hardesty & Hanover, USA

Gotriangle Durham-Orange Light Rail Transit Project Overview of Structural Design Criteria and Design Challenges L. Weber and H. Al-Khateeb, Jacobs, USA

New FHWA Bridge Welding Manual R. D. Medlock, High Steel Structures, H. Gilmer, and D. Miller, Lincoln Electric company

Longest Simple Span Steel Plate Girder Bridges in Florida – I-75 Over SR50 Twin Bridges L. E. Rodriguez and H. C. Sinson, Hardesty & Hanover, LLC, USA

Design and Construction of Unionport Bridge D. Biegel, NYCDOT and W. Nyman, Hardesty & Hanover, LLC, USA

1:30 pm-  
3:30 pm

### SESSION 2B: BRIDGE BEARINGS AND FOUNDATIONS

The Benefits of Using Isolation Bearing and Seismic Analysis on a 4-Span Continuous Steel Girder Bridge (MA-14) with Site Class F Soil V. Liang, B. McFadden and H. Lee, GPI, USA

Selection and Use of Bridge Bearings A. Kutumbale, J. Bilotti, T. Destefani, Mageba, USA

High Profile Applications of Multi-Rotational Disk Bearings in the New York City Area R. J. Watson and K. M. Billanti, RJ Watson, USA

Finite Element Analysis to Evaluate the Performance of a Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS) under Working Stress Loading M. Abu-Farsakh, Louisiana Transportation Research Center and A. Ardah, G. Voyiadjis, Department of Civil & Environmental Engineering, Louisiana State University, Baton Rouge, LA, USA

Retrofit of Corroded Steel Bridge H-pile Columns using Confined Encased Concrete with CFRP having Shear Connectors M. Abdulazeez; and M. ElGawady, Missouri University of Science and Technology, Rolla, MO, USA

Evaluation and Case Studies of As-Built Drilled Shafts A. Ramakrishna and R. Mankbadi, Hardesty & Hanover, LLC, USA

Numerical and Experimental Seismic Evaluation of Older Highway Bridges Using Steel Mechanical Bearings Approaching Design Life X. Fan, Arup, New York City, and J. McCormick, University of Michigan, Ann Arbor, MI, USA

1:30 pm-  
3:30 pm

### SESSION 2C: CABLE-SUPPORTED BRIDGES

The Bayonne Bridge: From Renderings to Reality J. LoBuono, HDR, USA

New Cable Stayed Bridge Across Storstrømmen in Denmark B. MacAulay & E. Stoklund Larsen, Danish Road Directorate, Hedehusene, Denmark

Optimizing Main Cable Dehumidification Systems M. L. Bloomstine, J. Fredrik Melén, COWI A/S, Denmark

Risk-Based Evaluation of Suspension Bridge Cables – Example from the Forth Road Bridge in Scotland K. Mahmoud, BTC, New York City, USA, & C. Gair and H. McDonald, Transport Scotland, Glasgow, Scotland, UK

Design and Construction of the New Frederick Douglass Memorial Bridge, Washington, D.C. K. V. Butler, and N. M. Porter, AECOM, USA

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3:55 pm-  
5:55 pm

### SESSION 3A: RELIABILITY-BASED ANALYSIS OF BRIDGES

Quality Specifications for Roadway Bridges: Standardization at a European Level J.R. Casas UPC-BarcelonaTech, Barcelona, Spain and J.C. Matos, University of Minho, Guimaraes, Portugal

Performance-Based Engineering of Bridges for Extreme Events S. Marjanishvili, and F. Fayad, Hinman Consulting Engineers, Inc., USA

Multi-Hazard Financial Risk Assessment of a Bridge-Roadway-Levee System A. Nikellis, K. Sett, T. Wu, and A.S. Whittaker, University at Buffalo, The State University of New York, USA

Reliability of AASHTO LRFD Parameters in Multilane Reinforced Concrete Slab Bridges A. Mahmood, University of Portsmouth, UK, S. Najjar, M. Mabsout, American University of Beirut, Lebanon and K. Tarhini, U.S. Coast Guard Academy, USA

A Convolutional Cost-Sensitive Crack Localization Algorithm for Automated and Reliable RC Bridge Inspection S. Omid Sajedi, X. Liang, University at Buffalo, New York, USA

3:55 pm-  
5:55 pm

### SESSION 3B: BRIDGE PERFORMANCE

Lateral anti-impact performance of reinforced concrete pier in a drying-wetting cycles and corrosion environment Fang CQ, Yang S, Dong W.Y. Shanghai Jiaotong University, Shanghai, China

Corrosion Protection of Bridge Expansion Joints – The Case For Hot Dip Galvanizing S. Hoffmann, T. Destefani, D. Della Ca, Mageba, USA

Structures Performance of Continuous Slab-on-Steel Girders Bridge Subjected to Extreme Climate Loads B. Kadhon, National Research Council Canada

Development and Application of Titanium Alloy Bars for Shear and Flexural Strengthening Reinforced Concrete Bridges C. Higgins, Oregon State University, USA

Performance-Based Design Framework for Bridge Piers Subjected to Truck Collision R. Cao, A. K. Agrawal, The City College of New York, S. El-Tawil, X. Xu, University of Michigan and W. Wong, FHWA, USA

3:55 pm-  
5:55 pm

### SESSION 3C: BRIDGE DECK DESIGN & RESTORATION

Staging the Installation of an Orthotropic Deck for the Throgs Neck Bridge C. Clark, S. Summerville, Thornton Tomasetti, E. Knightly, Y. Chen, MTA Bridges & Tunnels, New York City, USA

Performance Characteristics of Epoxy Asphalt Paving Material for Thin Orthotropic Bridge Decks C. Chen and J. Bors, ChemCo Systems Inc., USA

Research on Assembly Deviation of the Longitudinal Rib of Orthotropic Steel Bridge Deck Structure L. Zhang and H. Gao, School of transportation of science and engineering, Harbin Institute of technology, Harbin City, China

A Cost-Effective, Rapid and Durable Full Depth Precast Deck System E. He, AccelBridge, USA

Rapid Bridge Deck Restoration with Fast Track Hydrodemolition P. Martens, Bridge Preservation and Inspection Services

6:00 pm-  
7:00 pm

### PANEL DISCUSSION ON BRIDGE FAILURES

# 10<sup>TH</sup> NEW YORK CITY BRIDGE CONFERENCE

## PROGRAM DETAILS



**TUESDAY, AUGUST 27, 2019**

7:00 am

### REGISTRATION

8:00 am-

### KEYNOTE SESSION (II)

10:00 am

Chairman: Dr. Khaled M. Mahmoud, PE, Chief Bridge Engineer  
BTC, New York City, USA

Risk-Based Assessment of Highway Bridge Systems Michel Ghosn, Professor, The City College of New York, USA

Inspection and Maintenance of Bridges in France, Comparison with European Countries Jean-Marc Tanis, Consultant, France

10:00 am-

### SESSION 4A: FORENSIC ANALYSIS

12:00 am

### & MONITORING TECHNOLOGY

Foreseeing the Unpredictable in Bridge Management Systems by use of Recent Bridge Failures in Turkey A. Caner, Middle East University, Turkey

Numerical Study on the Collapse of the Morandi Bridge, Italy D. Malomo, University of Pavia, N. Scattarreggia, Istituto Universitario di Studi Superiori (IUSS), Pavia, Rui Pinho, Modelling and Structural Analysis Consulting (Mosayk Ltd), Pavia, Italy, M. Moratti, Studio Calvi Ltd, Pavia, and G. Calvi, European Centre for Training and Research in Earthquake Engineering (Eucentre), Pavia, Italy

Multi-Sensor Measurement of Dynamic Deflections and Structural Health Monitoring of Flexible and Stiff Bridges S. Stiros, Patras University, Greece, P. Psimoulis, Nottingham University, UK, F. Moschas, V. Saltogianni, GFZ, Potsdam, Germany P. Triantafyllides, I. Fradelos, E. Tsantopoulos, Patras University, Greece

The Two Collapses of the Ontario & Western Railway's Three-Span Bridge at Fish's Eddy D. Mazurek, U.S. Coast Guard Academy, USA

Managing Big Data in a Comprehensive Structural Health Monitoring System O. Celik, R. Nyren, K. Armstrong and T. Weinmann, VP, Geocomp Corporation, USA

Fracture Detection in Steel Girder Bridges Using Self-Powered Wireless Sensors M. Abedin, S. Farhangdoust, and A. Mehrabi, Florida International University, USA

10:00 am-

### SESSION 4B: BRIDGE HISTORY & AESTHETICS

12:00 pm

Florianopolis Australis - The Walter Taylor Bridge: David B Steinman's Australian Legacy S. Rothwell, Stuart Rothwell & Associates, Brisbane, Australia

The Determination of Aesthetical Fundamentals of the Bridge Design in Turkey M. Serkan Yatağan, Istanbul Technical University, Turkey

Replacement of the historic Crane Road Bridge in New York C. Wiederholz, Stantec, New York, USA

Preserving the Historic Arlington Memorial Bridge for Future Generations K.V. Butler, S. A. Matty, AECOM, D. Marcic, Hardesty & Hanover, J. Fabis, R. Satasiya, G. Choubah, Federal Highway Administration, USA

41<sup>st</sup> Street Steel Arch Pedestrian Bridge, Chicago, IL D. Vimawala, AECOM, USA

Footbridge in Cannes des Maures – French Riviera M. Allafort, BG Ingénieurs Conseils SAS, Lyon, France

Gusset Plate Evaluations in Historical Truss Bridges: A Case Study – The Marine Parkway Lift Bridge E. Senturk, C. P. Quaglia, A. J. Rock, K. Shah, and T.P. Zoli, HNTB, USA

12:00 pm-

### LUNCH

1:15 pm

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1:30 pm-  
3:30 pm

### SESSION 5A: ASSET MANAGEMENT OF BRIDGES

Implementation of a Bridge Management System in the Ukraine L. Bodnar, M.P. Shulgin State Road Research Institute State Enterprise, Kyiv, Ukraine and M. Koval, Scientific-industrial enterprise "Triada" Ltd., Co, Lviv, Ukraine

A Bridge Asset Management Strategy For Hydraulic Vulnerability G. M. Shields, New York City College of Technology – CUNY, USA  
Bridge Health Index and Asset Management of Bridge Inventories M. Loureiro, Jacobs, USA

Application of Heat Straightening Repair of Impacted Highway Steel Bridge Girders W. Zatar, and H. Nguyen, Marshall University, West Virginia, USA

Blatnik Bridge Asset Management Strategies A. Foden, L. Amundson, WSP USA, N. Haltvick, and K. Molnau, Minnesota DOT, USA

Asset Management of Honshu-Shikoku Bridges Based on Preventive Maintenance R. Uchino and N. Toyama, Honshu-Shikoku Bridge Expressway Co., Ltd., Kobe, JAPAN

Asset Management through Combined UAS & Rope Access J. A. Zuleger & A. McConnell, Michael Baker International, USA

1:30 pm-  
3:30 pm

### SESSION 5B: BRIDGE MAINTENANCE & REPLACEMENT

Replacement Strategies of Existing Highway Bridges in Germany M. Schumm, Leonhardt, Andrä und Partner Beratende Ingenieure VBI AG, Germany

NYS DOT's Route 32 over Route 17 Bridge Replacement: Integral Pier Solution P. D'Ambrosio, G. Decorges, HNTB, USA

Effect of Railing Deterioration on Load Carrying Capacity of One-Lane and Two-Lane Concrete Slab Bridges F. Darwich, K. Tarhini, and M. Mabsout, American University of Beirut, Lebanon

Superstructure Replacement of Route 676 Bridges over North Branch of Newton Creek Utilizing Accelerated Bridge Construction M. L. Alboum, Dewberry Engineers Inc., USA

Replacement of Palisades Interstate Parkway Helix Ramp A. Rogers, Port Authority of NY&NJ, W. McMenamin, Greenman-Pedersen, Inc., USA

A New Protection System Against Falling Rocks or Avalanches M. Allafort, BG Ingénieurs Conseils SAS, Lyon, France

Swing Span Swap-Out of CSX's Bayou Sara Bridge D. Knickerbocker and T. Strickland, HDR; USA

1:30 pm-  
3:30 pm

### SESSION 5C: BRIDGE ANALYSIS & STRENGTH EVALUATION

Lessons from a Forgotten Aluminum Bridge C. Birnstiel, Consultant, Pennsylvania, USA

Analysis of Metamaterial Bi-stable Elements as Energy Dissipation Systems Y. Darwish, M. A. ElGawady, Missouri University of Science and Technology, Rolla, Mo, USA

Estimation of transitory changes in bending stiffness using the Hilbert-Huang transform A. González & H. Aied, School of Civil Engineering, University College Dublin, Dublin, Ireland

Risk-based evaluation of main suspension cables of the Forth Road Bridge in Scotland K. Mahmoud, BTC, New York City, USA, & C. Gair and H. McDonald, Transport Scotland, Glasgow, Scotland, UK

Influence of The Calcium Content of The Fly Ash on the Workability and Compressive Strength of the Alkali Activated Mortar E. Gomaa, A. Ghenni, and M. ElGawady, Missouri University of Science and Technology, USA

Effect of Thermal Loading on the Performance of Horizontally Curved I-Girder Bridges G.W. William, AECOM, Morgantown, West Virginia, S.N. Shoukry and K.C. McBride, West Virginia University, Morgantown, West Virginia, USA

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BRIDGE ENGINEERING ASSOCIATION

3:55 pm-  
6:15 pm

### SESSION 6A: BRIDGE LOADS & FATIGUE ANALYSIS

Bridge Performance Screening for the Specialized Hauling Vehicles and the Fast Act's Emergency Vehicles in New York State E. Senturk and B. Sivakumar, HNTB, New York

Fatigue Assessment of the Gusset-Less Connection in a Vertical Lift Steel Bridge Using Field Collected Data and Three-Dimensional Multi-Scale Finite Element Model M. Mashayekhizadeh, E. Santini-Bell, University of New Hampshire, Durham, USA

Highway Traffic Loading – AASHTO Compared to Other Codes of Practice S. Rhodes, B. Donoghue, LUSAS UK, and T. Cakebread, LUSAS USA

Hanger Cable Fatigue Life Assessment of a Major Suspension Bridge S. Durukan Accord Bridge Engineering, Istanbul, Turkey, S. Soyöz Bogazici University, Istanbul, Turkey

Impact of Fatigue Damage from Overloads on Bridge Life-Cycle Cost Analysis B. Jang, Sharma & Associates, Inc, Countryside, IL, USA and J. Mohammadi, Illinois Institute of Technology, Chicago, IL, USA

Numerical Studies on Concrete Barriers Subject to MASH Truck Impact R. Cao, The City College of New York; S. El-Tawil, University of Michigan, A. K. Agrawal, The City College of New York, and W. Wong, GHWA, USA

3:55 pm-  
6:15 pm

### SESSION 6B: SEISMIC ANALYSIS & SUBSTRUCTURE

Condition Factor for Seismic Performance of Deteriorated Bridge E. C. Ocak and A. Caner, Middle East Technical University, Ankara, Turkey

Simplified Seismic Vulnerability Assessment of Railway Masonry Arch Bridges P. Morandi, C. Filippo Manzini, B. Borzi, A. Mauro, A. Vecchi, M. Tisalvi, and F. Iacobini, European Centre for Training and Research in Earthquake Engineering, Italy

Comparative Study of Spatially and Non-Spatially Varying Ground Motions in Design-Oriented Seismic Analysis of Bridges R. Botero, A. Taghavi, M. Davidson, G. Consolazio, Engineering School of Sustainable Infrastructure & Environment, University of Florida, USA

Seismic Retrofit of Hollow-Core Composite Bridge Columns having Inner Steel Tube with High Diameter to Thickness Ratio M. Abdulazeez; and M. ElGawady, Missouri University of Science and Technology, Rolla, MO, USA

Seismic Fragility of Bridges Subjected to Corrosion H. Wang, P. Okumus, and R. Ranade, University at Buffalo, State University of New York, USA

Development of a Combined Pile-CPT method for Estimating the Ultimate Axial Capacity of Driven Piles M. Abu-Farsakh, Louisiana Transportation Research Center and M. Amirmojahedi, and G. Voyiadjis, Dept. of Civil & Environmental Engineering, Louisiana State University, Baton Rouge, LA, USA

3:55 pm-  
6:15 pm

### SESSION 6C: BRIDGES FOR RAILWAY & HIGH-SPEED RAIL

Analysis and Design of a Pergola for California High Speed Rail H. Al-Khateeb and A. Ranasinghe, Jacobs, USA

Large-Scale Vulnerability Analysis of Girder Railway Bridges D. Bellotti, A. Famà and B. Borzi, European Centre for Training and Research in Earthquake Engineering, Italy

Nonlinear Analysis of the First Concrete Network Tied Arch Bridge for California High-Speed Rail E. Honarvar, M. Kendall & H. Al-Khateeb, Jacobs, USA

Development of Web-Based Tools for Large-Scale Post-Seismic Emergency Management of Railway Infrastructures D. Bellotti, B. Borzi, A. Famà, D. Quaroni, A. Vecchi, A. Mauro, L. Vergara, M. Tisalvi, and F. Iacobini, European Centre for Training and Research in Earthquake Engineering, Italy

Structural Engineering in the La Paz Cable Car System S. Delgado, Bridge and Structural Consultant, La Paz, Bolivia

Nonlinear rail-structure interaction effects for multi-frame, multi-span curved Light Rail Bridges E. Honarvar and M. Senhaji, Jacobs, USA

6:20 pm –  
6:30 pm

### CONFERENCE CHAIRMAN'S CLOSING REMARKS

06:30 pm

### CONFERENCE ADJOURNS