

# THIRD NEW YORK CITY BRIDGE CONFERENCE



The Bridge Engineering Association is a not-for-profit organization whose mission is to promote the state-of-the-art in bridge engineering technology through the publications of the latest in bridge engineering technology and the organization of conferences, seminars and forums on various themes of interest to the bridge engineering community.



September 12th - 13th, 2005  
at the New York Marriott East Side, 525 Lexington Ave.

conference program  
& event schedule

## Conference Scientific Committee:

Khaled Mahmoud, PhD, PE, Chairman  
President, Bridge Technology Consulting & Engineering, USA

Michael Abrahams, PE  
Technical Director, Parsons Brinkerhoff, USA

Nicholas Altebrando, PE  
Director of Bridges, STV Inc., USA

Thomas Bach, PE  
Director, Vice President, Chief Engineer  
MTA Bridges & Tunnels, USA

Harry Capers Jr., PE  
Office of Transportation Security, New Jersey Department  
of Transportation, USA

George Christian, PE  
Deputy Chief Engineer, New York State Department of  
Transportation, USA

Subimal Chakraborti, PE  
Regional Director, Region 10, New York State  
Department of Transportation, USA

Douglas Currey, PE  
Regional Director, Region 11, New York State Department  
of Transportation, USA

Phillip Eng, PE, Deputy Regional Director, Region 11  
New York State Department of Transportation

Gerard Fox, PE  
Consulting Engineer, USA

Malcolm Kerley, PE  
Chief Engineer for Project Development, Virginia  
Department of Transportation

John Kulicki, PhD, PE  
President & CEO, Modjeski & Masters, USA

Dennis Mertz, PhD, PE  
Professor, University of Delaware, USA

Charles Minervino, PE  
Principal, Lichtenstein Consulting Engineers, Inc., New  
Jersey, USA

William Moreau, PE  
Chief Engineer, New York State Bridge Authority, USA

Henry Perahia, PE  
Deputy Commissioner and Chief Bridge Officer, New York  
City Department of Transportation, USA

Richard Sause, PhD, PE  
Professor, Lehigh University, USA

Michel Virlogeux,  
Consulting Engineer and Designer, France

Bojidar Yanev, PhD, PE  
Director of Bridge Inspection/Bridge Management, New  
York City Department of Transportation, USA

## Chairman's Welcome

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On behalf of the Bridge Engineering Association (BEA), I would like to welcome you to the Third New York City Bridge Conference and to the great City of New York. Following a tradition of presenting the latest in bridge engineering technology, the conference has assembled



many leaders of the bridge engineering industry. The Bridge Engineering Association has organized and sponsored this conference with a distinguished group of renowned bridge engineers from all over the world. Throughout September 12-13, 2005, engineers from Belgium, Brazil, Canada, Croatia, Denmark, England, France, Ireland, Germany, Italy, Japan, Russia, Spain, Taiwan and the United States, will present on the state-of-the-art in bridge engineering practice. Their contributions will make the conference notable for its international impact and reference quality. The conference has two sets of proceedings. The bound proceedings are published in a special issue of the *Journal of Bridge Structures* (Vol. 1, Number 3, Sept. 2005), which contains a select number of original papers that will be presented at the conference, while other papers are published in a CD-ROM format.

I would like to take this opportunity to express sincere thanks to all the organizations that provided generous financial support to the conference to make it possible. A special note of gratitude is due to the authors and reviewers of the papers. The quality of the conference proceedings is a result of the sacrifice of time and effort, dedication and collective wisdom of this body of technical experts in authoring and reviewing the papers. I acknowledge with appreciation their contributions.

Finally, I would like to thank my staff at the Bridge Engineering Association and at Bridge Technology Consulting & Engineering (BTC) for the tremendous support they provided throughout the process of organizing this event.

Khaled M Mahmoud, PhD, PE  
Chairman of Bridge Engineering Association  
President of Bridge Technology Consulting & Engineering  
New York, New York, USA  
September 2005

MONDAY, SEPTEMBER 12, 2005

7:00am

**REGISTRATION: Crest Room, 1st Fl.**

8:00-9:45am

*Welcome and Keynote Session located in Morgan Room on the 2nd Floor.*

8:00-8:10am

**BRIDGE ENGINEERING ASSOCIATION  
CHAIRMAN'S WELCOME:**

**Dr. Khaled Mahmoud, President**  
**Bridge Technology Consulting & Engineering**

8:10-9:45am

**KEYNOTE SESSION (I)**

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**Specifications and Guidelines for the Design of Curved Steel Girder Bridges** John Kulicki, President & CEO, Modjeski and Masters

**An Architect's Perspective on Bridge Design**  
Poul Ove Jensen, Architect, Dissing & Weitling, Denmark

**Success and Failure in Bridge Design**  
Henry Petroski, A. S. Vesic, Duke University

9:45-10:15am

**COFFEE BREAK: Crest Room, 1st Fl.**

10:20-12:05pm

*O'Keeffe RM  
Lower Level*

**SESSION 1A: LONG SPAN BRIDGES**

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**Session Chair: Thomas Bach, PE, Chief Engineer,  
MTA Bridges & Tunnels**

**Seismic Study and Marathon Analysis of the Verrazano-Narrows Bridge** M. J. Abrahams, Parsons Brinckerhoff Quade & Douglas, Inc., T. Ingham, T. Y. Lin International, J. Bryson, J. Wang, Parsons Brinckerhoff Quade & Douglas, Inc., J. Chang, B. Silberfarb, T. Paskova, Triborough Bridge and Tunnel Authority

**Panama Canal Second Crossing Paraiso, Panama** R. Manzanarez, A. Sanjines, R. Donikian, J. Duxbury, J. Lopez-Jara, Dr. Man-Chung Tang, T.Y. Lin International

**Design and Construction of a Long-Span, Curved Steel Box Girder Bridge** B. N. Robson, Palmer Engineering, S. Waddle, Kentucky Transportation Cabinet, and J. Burchett, Jr., Bush & Burchett, Inc.

**Suspender Testing and Replacement Study for George Washington Bridge** S. Sloan, H. Patel, Port Authority of NY&NJ and D. Khazem, Parsons

10:20-12:05pm

*Astor Room  
Lower Level*

**SESSION 1B: SEISMIC ANALYSIS & DESIGN (I)**

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**Session Chair: Malcolm Kerley, PE, Chief Engineer for Project Development, Virginia Department of Transportation**

**Geographic Information Systems for Ground Motion Evaluation in Seismic Bridge Analysis** S. Nikolaou, Mueser Rutledge Consulting Engineers and M. P. Gaus, Gaus Association

10:20-12:05pm  
Astor Room  
Lower Level

**Effectiveness of Commercial Oil Pressure Seismic Devices for Bridges**  
M. Merli, S. Bergonzoni, T. Trombetti, and G. Gasparini, University of Bologna, Italy

**Seismic Response and Retrofit Design Recommendations for Braced Steel Bridge Piers** J. W. Berman and M. Bruneau, State University of New York at Buffalo

**Seismic Retrofitting Manual for Highway Structures: Retaining Structures, Slopes, Tunnels, Culverts and Roadways** G. Smith, Federal Highway Administration

**SESSION 1C: BRIDGE SCOUR**  
**Session Chair: George Christian, PE, Deputy Chief Engineer, New York State Department of Transportation**

**Impact of the Federal Highway Administration's Scour Evaluation Program on Highway Bridges in the United States** J. Pagan-Ortiz, Federal Highway Administration

**Bridge Health Scour Monitoring**  
B. E. Hunt, Hardesty & Hanover, LLP

**Treating Channel Instability at Bridges**  
P. Johnson, Penn State University

**Case Study: Tidal Hydraulic and Scour Analysis for Two NYC Bridges**  
S. Mahmutoglu, and R. Edison, Earth Tech Inc.

12:15-12:55pm  
12:55-1:50pm

**AWARD CEREMONY: Morgan RM, 2nd Fl.**  
**LUNCH: Morgan Room, 2nd Fl.**

2:00-3:45pm  
O'Keefe RM  
Lower Level

**SESSION 2A: BRIDGE AESTHETICS**  
**Session Chair: Henry D. Perahia, PE, Deputy Commissioner, New York City Department of Transportation**

**Bridge Aesthetics Cuckoo's Eggs- A Treatise on Context** K. Brownlie, Wilkinson Eyre Architects, England

**The True Goals of Bridge Aesthetics**  
F. Gottemoeller, R. Arch., Bridgescape, LLC

**Bridge Design as Structural Architecture**  
J. J. Arenas, Arenas & Asociados, Spain

**The Sauvie Island Bridge: Achieving Public Consensus on Design Issues** J. Fox, RA, T. Piotrowski, AIA, SARP, H2L2 Architects / Planners, LLP

2:00-3:45pm  
Astor Room  
Lower Level

**SESSION 2B: BRIDGE SEISMIC RETROFIT**  
**Session Chair: Richard Sause, PhD, PE, Director, Professor of Civil Engineering, ATLSS, Lehigh University**

**Seismic Retrofit of a Historic Arch Rib Bridge** S. Morcos, B. Reznikov, HDR Engineering, Inc., R. Mardirosian, City of Pasadena, California

2:00-3:45pm  
Astor Room  
Lower Level

**FHWA'S 2005 Seismic Retrofitting Manual, Part 1-Bridges** P. Yen, J. O'Fallon, Federal Highway Administration, J. O'Connor, MCEER, University at Buffalo

**Detailed Seismic Evaluation and Retrofit Studies of Goethals Bridge Main Spans**

B. Sivakumar, A. Wolek, A. Yazdani, Lichtenstein Consulting Engineers, Inc., and S. Sloan, The Port Authority of NY & NJ

**Seismic Vulnerability Evaluation and Retrofit of Kosciuszko Bridge** C. Fan, F. Lin, A. C. Shroff, Edwards & Kelcey, and R. Adams, New York State DOT

2:00-3:45pm  
Vanderbilt RM  
2nd Floor

**SESSION 2C: MOVABLE BRIDGES**

**Session Chair: Nicholas Altebrando, PE, Director of Bridges, STV Inc.**

**A Case Study of the Resolution of Design/Construction Issues for the Stutson Street Bridge** P. J. Davis, Bergmann Associates

**Advancements in the Field of Wire Rope Design and Manufacturing for Movable Bridge Applications** T. W. Klein, Wire Rope Corporation of America

**Proper Maintenance of Movable Bridges**

J. W. Newman, and D. M. Barrett, Modjeski and Masters

**Knapp Street Towerless Vertical Lift Bridge**

W. E. Nickoley, HNTB Corporation

3:45-4:10pm

**COFFEE BREAK: Crest Room, 1st Fl.**

4:15-6:30pm  
O'Keefe RM  
Lower Level

**SESSION 3A: BRIDGE SECURITY**

**Session Chair: Harry A. Capers, Jr., PE, Manager, Office of Transportation Security, New Jersey Department of Transportation, and Mohammed Ettouney, PhD, PE, Principal, Weidlinger Associates**

**The Challenge of Economically Balancing Security and Mobility Needs of New Jersey's Bridge Infrastructure** H. Capers, New Jersey DOT

**Theory of Multihazards for Bridge Structures**

M. Ettouney, Weidlinger Associates, and S. Alampalli, New York State DOT, A. Agrawal, City College of New York

**Behavior of Bridges: A Security Outlook**

A. Agrawal, City College of New York

**Techniques for Quantifying Security Risk for Bridges** S. King, Weidlinger Associates

4:15-6:30pm  
Astor Room  
Lower Level

**SESSION 3B: BRIDGE ANALYSIS & DESIGN (I)**

**Session Chair: Michael Abrahams, PE, Technical Director, Parsons Brinckerhoff**

**Efficiency of Closed Stiffener Orthotropic Deck Panels for Railway Bridges** W. De Corte,

P. Van Bogaert, H. De Backer, Ghent University, Belgium

4:15-6:30pm  
Astor Room  
Lower Level

**Tension Field Action Behavior in the Hybrid Steel Girders For Ohio Approach Spans of Blennerhassett Island Bridge**

F. Ahmad, and N. Zoubi, E.L. Robinson Engineering Co.

**Redundancy Issues of Steel Bridges**

S. Kumarasena, and R. McCabe HNTB Corp.

**Twin Arch Bridge or Not, New County Road Over Main & Bergen Lines, New Jersey Transit**

T. Roberson Edwards, NJ Transit, C. J. Bhoraniya, Medina Consultants

**Finite Element Analysis of Bridge Approach Slabs Considering Soil-Structure Interaction**

Y. A. Khodair and H. Nassif, Rutgers University

4:15-6:30pm  
Vanderbilt RM  
2nd Floor

**SESSION 3C: SEGMENTAL & POST-TENTIONED BRIDGES**

**Session Chair: Subi Chakraborti, PE, Regional Director, New York State Department of Transportation R-10**

**Advancing Segmental Construction**

R. A. Lawrie, and C. Redfield, Lawrie & Associates, LLC

**Structural Form of the Route 52 Causeway Segmental Concrete Bridge**

W. Gottshall, Michael Baker Jr. Inc., D. Lambert, and N. Kasbekar, New Jersey DOT

**Sensitivity Studies of Grout Defects in Post-tensioned Bridges Using Impact Echo Scanning Technique**

Y. Tinkey, L. Olson, and A. Gibson, Olson Engineering, Inc.

**Mitigation of Alkali-Silica Reaction Damage Using Post-Tensioning**

W. Wassef, M. Smith, Modjeski and Masters, Inc., C. Bognacki, and S. Sloan, Port Authority of NY & NJ

6:30-7:30pm

**REFRESHMENTS AT THE DISPLAY HALL, CREST ROOM 1ST FL.**

TUESDAY, SEPTEMBER 13, 2005

8:00-9:30am  
Morgan Room  
Second Floor

**KEYNOTE SESSION (II)**

**Load Rating by Load and Resistance Factor Evaluation Method**

Dennis Mertz, Professor, University of Delaware

**City Island Cable-Stayed Bridge in New York City**

Henry Perahia, Deputy Commissioner & Chief Bridge Officer, New York City DOT

**State-of-the-art in Cable Vibrations of Cable-Stayed Bridges**

Michel Virlogeux, Consulting Engineer, France

9:30-9:55am

**COFFEE BREAK: Crest Room, 1st Fl.**

10:00-12:35pm  
O'Keeffe RM  
Lower Level

**SESSION 4A: BRIDGE ANALYSIS & DESIGN (II)**  
**Session Chair: Barney T. Martin, PhD, PE, Vice President, Modjeski & Masters, Inc**

**Design Development: Bridge Across Ohio River and Blennerhassett Island**

G. Wollmann, K. Meyer, J. Francisco, Michael Baker Jr., Inc., T. Zoli, HNTB Corporation, J. Shook, West Virginia DOT, Division of Highways

**Experimental Influence Lines for Bridge Evaluation**

M. Chajes, University of Delaware

**Evaluation of Live-Load Distribution Factors for a three-span Continuous Girder Bridge**

N. Suksawang and H. Nassif, Rutgers University

**Analysis Techniques for Curved and Skewed Steel Girder Bridges**

D. Coletti, and J. Yadlosky, HDR Engineering

**A General Method for Nonlinear Analysis of Bridge Structures**

M. Arici, Universita di Palermo, Dipartimento di Ingegneria Strutturale e Geotecnica, Italy

10:00-12:35pm  
Astor Room  
Lower Level

**SESSION 4B: BRIDGE INSTRUMENTATION, MONITORING AND MAINTENANCE**

**Session Chair: Russell Holcomb, PE, Deputy Chief Engineer, New York City Department of Transportation**

**Maintaining Safety and Serviceability of Concrete Bridges in Croatia**

J. Radic, University of Zagreb, J. Bleiziffer, Croatian Institute for Bridge and Structural Engineering, and D. Tkalcic, Civil Engineering Institute of Croatia, Croatia

**Structural Health Monitoring for Bridge Maintenance**

S. Alampalli, New York State DOT, M. Ettouney, Weidlinger Associates, Inc. and A. Agrawal, City College of New York

**Life Cycle Cost of RC Slab Deteriorated by Anti-Freezing Agent**

Y. Mimura, I. Yoshitake, K. Tsuji, and S. Hamada, Yamaguchi University, Japan

**Evaluation and Validation of Ground Penetrating Radar for Bridge Deck Condition Assessment**

D. A. Grivas, Institute for Infrastructure Asset Management, F. A. Romero, WaveTech-GEOVision Geophysical Services, and R. L. Roberts, Geophysical Survey Systems, Inc.

**Damage detection in bending beams through Brillouin distributed optic-fiber sensor**

R. Bernini, National Research Council, M. Fraldi, A. Minardo, V. Minutolo, F. Carannante, L. Nunziante, and L. Zeni, University of Napoli "Federico II", Italy

**Instrumentation and Health Monitoring of Star City Bridge, WV**

S. Shoukry, M. Riad and G. William, West Virginia University

10:00-12:35pm  
Vanderbilt RM  
2nd Floor

#### **SESSION 4C: BRIDGE PERFORMANCE AND REHABILITATION**

**Session Chair: Richard E. Miras, PE, Program Manager, MTA New York City Transit, Capital Program Management**

##### **Rehabilitation of the New Hope-Lambertville Toll Supported Truss Bridge**

W. Gottshall, Michael Baker Jr. Inc., A.P. Ranasinghe, McCormick Taylor, Inc., and C. Harney, Delaware River Joint Toll Bridge Commission

##### **Rehabilitation of Novoarbatsky Bridge in Moscow**

Y. Ponomarev, Gidromost, Russia, and G. Brodski, AGA Group, USA

##### **Use of Prefabricated Bridge Deck Panels on Rapid Reconstruction Projects**

M. Kaczinski, The D.S. Brown Company and R. Bettigole, Consultant

##### **Lessons from the Kinzua**

T. G. Leech, J. McHugh, Gannett Fleming, and G. Dicarlantonio, Pennsylvania Department of Conservation and Natural Resources

##### **Replacement of Route 9W Viaduct over Washington Street**

S. W. Smith, P. Bousader, and W. S. Najjar, Chas. H. Sells, Inc., Consulting Engineers

##### **Performance Design of a Shear-Key System of High Speed Railroad Bridges**

E. H. Wang, M. Hsin, University of Science and Technology, Taiwan, and Forrest H S Wu, Li-Joe Engineering Consultant

12:35-1:45pm

**LUNCH: Morgan Room, 2nd Fl.**

2:00-3:45pm  
O'Keefe RM  
Lower Level

#### **SESSION 5A: CABLE-SUPPORTED BRIDGES**

**Session Chair: William J. Moreau, PE, Chief Engineer, New York State Bridge Authority**

##### **State-of-the-Art Main Cable Corrosion Protection by Dehumidification**

M. L. Bloomstine, Ove Sørensen, COWI, Denmark

##### **Puente Centenario Crossing the Panama Canal**

K. Humpf, Leonhardt und Partner Gmbtt, Germany

##### **Ironton Russell Single Tower Cable-Stayed Bridge Configuration - Optimization for Client Engineering Constraints**

R. W. Bondi, T. J. Tiberio, M. Baker Jr., Inc., A. Schemmann, Buckland & Taylor Ltd, and J. E. Salvadori, Michael Baker Jr., Inc.

##### **Interactive Horizontal Load Model for Pedestrians Crossing Footbridges**

P. Archbold, P. Fanning, University College Dublin, Ireland, A. Pavic, University of Sheffield, United Kingdom

2:00-3:45pm  
Astor Room  
Lower Level

**SESSION 5B: INNOVATIVE BRIDGE TECHNOLOGY**

**Session Chair: Phillip Eng, PE, Deputy Regional Director, Region 11, New York State Department of Transportation**

**Lessons For Rapid Urban Bridge Construction From The International Scan of Prefabricated Bridge Elements and Systems in Japan and Europe** H. A. Capers, Jr., New Jersey DOT, M. L. Ralls, Ralls Newman, LLC and B. Tang, PE, Federal Highway Administration, US Dept. of Transportation

**Numerical Analysis of Shear Debonding at FRP-Concrete Interface for Girders Strengthening Applications** M. Ali-Ahmad, K. Subramaniam, and M. Ghosn, City College of New York

**Innovative Floor Beam Replacement Procedures for the Chicago Skyway Bridge** M. B. Civelek, Edwards and Kelcey, S. McNally, McNally Design & Construction, LLC, and R. Schickel, Edwards & Kelcey

**Stay Cable Technology Applied to Suspension Bridges** A. Micklus, Freyssinet LLC, USA, B. Lecinq, S. Petit, I. Zivanovic, Freyssinet International, Vélizy, France

**SESSION 5C: SEISMIC ANALYSIS & DESIGN (II)**  
**Session Chair: Douglas Currey, PE, Regional Director, New York State Department of Transportation**

**Seismic Hazard Analysis for New York City Bridges** R. McGuire, G. Toro, Risk Engineering Inc, K. Kishore, J. Patel, A. Razzaq, S. Jain, New York City DOT, G. Fanjiang and R. Gajer, Weidlinger Associates Inc.

**Seismic Performance of Bridges of The San Francisco Bay Area Transportation Network Bridges** E.C. Stergiou and A. Kiremidjian, Stanford University

**Determination of Response Modification Factor for Seismic Design** A. Mechakhchekh and M. Ghosn, City College of New York

**Near-Field Effects on Seismically Excited Highway Bridge Equipped with Nonlinear Viscous Dampers** P. Tan, A. K. Agrawal and Y. Pan, City College of New York

3:45-4:10pm

**COFFEE BREAK: Crest Room, 1st Fl.**

4:15-6:30pm  
O'Keefe RM  
Lower Level

**SESSION 6A: BRIDGE ANALYSIS & DESIGN (III)**  
**Session Chair: Charles Minervino, PE, Principal, Lichtenstein Consulting Engineers, Inc.**

**Context Sensitive Design for the Fulton Road Bridge Replacement** J. C. Dietrick, and J. Broadwater, Michael Baker Jr. Inc.

4:15-6:30pm  
O'Keefe RM  
Lower Level

**Evaluation and Retrofit of Floorbeam Cracking on a Tied Arch Bridge** R. J. Connor, I. C. Hodgson, and J. W. Fisher, Lehigh University

**Spatial Tubular Solution for Bridge Design** B. Briseghella, E. Siviero and T. Zordan, Bolina Ingegneria, Italy

**Interactive Seismic Analysis and Design of the Roslyn Viaduct** R. Eslinger, K. Griesing, B. Yin, Hardesty & Hanover, LLP, T. Sung, and M. Novak, New York State DOT

**Evaluation of Highway Bridge Strength Considering Parapets** B. Brenner, M. Sanayei, D. Lattanzi, Tufts University and E.S. Bell, University of New Hampshire

4:15-6:30pm  
Astor Room  
Lower Level

**SESSION 6B: BRIDGE INSPECTION & MANAGEMENT**

**Session Chair: Bojidar Yanev, PhD, PE, Director, Bridge Inspection & Mgmt., New York City Department of Transportation**

**Specific Features of Standard Inspections of Engineering Structures in Major Cities** Y. Yenyutin, V. Fedoseyev, Gormost, Russia, and E. Brodskaya, AGA Group

**New Bridges in Croatia** J. Radic, Z. Savor, University of Zagreb, and J. Bleiziffer, Croatian Institute for Bridge and Struct. Engineering, Croatia

**City of Philadelphia: from Paper to Computers in Bridge Inspection and Management System** J. Shaffer, and M. Schellhase, Inspect Tech

**Improving the Quality and Usability of Bridge Inspection Information**  
T. Le Diouron, Advitam Inc.

4:15-6:30pm  
Vanderbilt RM  
2nd Floor

**SESSION 6C: OPEN SESSION**

**Session Chair: Martin H. Kendall, PE, Vice President, Edwards & Kelcey**

**Rolling the Northeast 8th Street Bridge**  
J. Lem, and L. Kyle, HDR Engineering

**Replacement of I-287 Curved Girder Bridge over Route 119** M. Buonocore, P. Bousader, and W. S. Najjar, Chas. H. Sells, Inc., Consulting Engineers

**Replacement of the Belt Parkway Bridge over Ocean Parkway**  
C. Sklavounakis, New York City DOT, P. Atkins, Granite Halmar Construction Co., C. Norrish, III, Gannett Fleming, and J. Liebowitz, HAKS Engineering

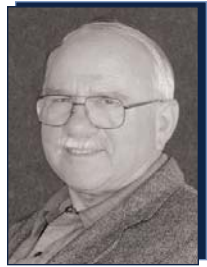
**Norway Bridges Utilizing Lightweight Concrete** K. S. Harmon, Carolina Stalite Co.

**Alternative Waterproof System & Wearing Course for Bridge Decks that Resist Rutting/Shoving** D. Zuberer, Chase Specialty Coatings

## Engineering Achievement Awards

### Bridge Engineering Research Award

#### THEODORE V. GALAMBOS



Professor Theodore V. Galambos was born on April 17, 1929 in Budapest, Hungary, and he immigrated to the United States in 1948. He earned his Bachelor's and Master's degrees from the University of North Dakota, in the United States, in 1953 and 1954. He received his Ph.D. from Lehigh University, in the United States, in 1959. His academic research and teaching career started at Lehigh University in 1959. He taught at Washington University in Saint Louis and at the University of Minnesota.

His bridge engineering research spans over forty years with impressive credentials. In the 1960's he chaired an ASCE Task Committee on the State-of-the-Art of curved girder bridges. In the 1960's and early 1970's he was member of the AISI Committee that developed the draft of the Load Factor Design specification of steel bridges. He was a member of the AASHTO/AISI committee on steel bridges for at least 25 years. He was a member of an ASCE Task Committee that recommended a specification for box-girder bridges. He participated in several bridge studies where measurements of strains and deformations of steel bridges under traffic and under trucks with known weights were performed. In the 1970's he developed the first draft of the Load and Factor Design (LFD) specification for curved girder bridges. In the 1980's he was on the team of the University of Minnesota that performed a study and produced a report on in-elastic bridge rating. At Washington University he supervised research studies on the shakedown of steel bridges.

Professor Galambos is the author of several technical books and of scores of published articles. He is the author of "Guide to Stability Design Criteria for Metal Structures", and the "Structural Members and Frames". He is the co-author of "Basic Steel Design with LRFD", and "Structural Steel Design". He is an honorary member of the American Society of Civil Engineers, and a member of the National Academy of Engineering, the Structural Stability Research Council and the International Association of Bridge and Structural Engineering. He is a registered professional engineer in Minnesota, Missouri and Pennsylvania. He holds honorary doctorates from the Technical University of Budapest, the University of North Dakota and the University of Minnesota. He is one of the 2002 recipients of the ASCE OPAL Award.



## Bridge Design Award

### JOHN M. KULICKI

John M. Kulicki was born on June 3, 1943 in Queens, New York, USA. A graduate of Lafayette College and Lehigh University in the United States,

Dr. Kulicki has over thirty-five years of experience in bridge analysis and design. He is the President/CEO and Chief Engineer of Modjeski and Masters, Inc. Dr. Kulicki has extensive design and rehabilitation experience with suspension, cable-stayed, truss and girder bridges.

Dr. Kulicki led the design of a new Mississippi River crossing at St. Louis, USA. The cable-stayed bridge, with three planes of cables and two single, leaning pylon towers reaching 435 feet above the roadway would be approximately 3,150 feet long with a 2,000-foot long main span and width of 222 feet. He served as the Principal-in-Charge of the design team which analyzed, designed and detailed the award-winning Second Blue Water Bridge in Port Huron, Michigan, USA. The total structure length is over 1860m and features a continuous tied-arch with a main span of 281m and flanking spans of 85m.

He led a 50-Member Team of experts in the development of the probability-based LRFD Bridge Design Specification which was adopted by AASHTO in 1993. Dr. Kulicki was named one of ENR's "Men Who Made Marks" in 1991 and also received the George S. Richardson Medal at the 1996 International Bridge conference for leading the development and approval of the LRFD Specifications. Dr. Kulicki is the author of the AASHTO, "Guide Specifications for Load Factor Design of Trusses", for which he was named one of ENR's "Men Who Made Marks" in 1984. He was profiled in the "Transportation Research News" in 1992 and 1998.

He was named "Engineer of the Year" in 2000 by the Central Pennsylvania Engineers Week Council, and received a "Special Citation" from the National Steel Bridge Alliance for contributions to the art and science of bridge engineering in 2001. In 2002 he received a "Life Time Achievement Award" from the American Institute of Steel Construction and was named "Engineer of the Year" by the Pennsylvania Society of Professional Engineers.

Dr. Kulicki is a co-author of the McGraw-Hill Steel Designer's Handbook published in 1995, and The Bridge Engineering Handbook", published in 1999 by the CRC Press. He has authored and coauthored over 80 technical papers and presentations.

During 2002 and 2003 he served as Vice-Chairman of the AASHTO/FHWA Blue Ribbon Panel on Bridge and Tunnel Security.

Prior to joining the staff of Modjeski and Masters, Dr. Kulicki was a Visiting Faculty Member at Lehigh University and Lafayette College.

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## PHOTO CREDITS

Front Cover

Akashi Kaikyo Bridge, Japan  
Courtesy of the Honshu-Shikoku Bridge Authority, Japan

Back Cover (from top)

JK Bridge, Brasilia, Brazil  
Courtesy of Alexandre Chan, Architect, Rio de Janeiro, Brazil  
Photographer: Rui Faquini

Øresund Bridge between Denmark and Sweden  
Courtesy of Øresundsbro Konsortiet, Denmark  
Photographer: Søren Madsen

Golden Gate Bridge, California, USA  
Courtesy of the Bridge Engineering Association  
New York City, USA

Porta d'Europa Bridge, Barcelona, Spain  
Courtesy of the Port of Barcelona, Spain