



August 28th-29th, 2006
5th International Cable-Supported
Bridge Operators' Conference
and LRFD Workshop on Bridge Design & Evaluation

Organized and sponsored by the Bridge Engineering Association

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LRFD WORKSHOP

THE PAST, PRESENT AND FUTURE OF AASHTO LRFD (TEXT)
THE PAST, PRESENT AND FUTURE OF AASHTO LRFD (POWERPOINT SLIDES)
SUMMARY OF LOADS AND LOAD COMBINATION
SPECIFICATIONS AND GUIDELINES FOR THE DESIGN OF CURVED STEEL GIRDER BRIDGES
HORIZONTALLY CURVED STEEL BRIDGE DESIGN EXAMPLE
LRFD CONCRETE BRIDGE DESIGN EXAMPLE
INTRODUCTION TO LOAD AND RESISTANCE FACTOR RATING (LRFR)

Please Note: Only abstracts of papers included in the printed conference proceeding are available on this CD-ROM. Printed Proceedings are published in a special issue of the *Journal of Bridge Structures*, Vol. 2, Number 2, June 2006, and *Advances in Cable-Supported Bridges*, edited by K.M. Mahmoud. Copyright 2006 Taylor & Francis, London. www.tandf.co.uk.

KEYNOTE SESSIONS

Chair: Khaled Mahmoud, PhD, PE, President, Bridge Technology Consulting & Engineering

Forth Road Bridge - maintenance challenges

A. A. S. Andrew, and B. R. Colford, Forth Estuary Transport Authority, Scotland, UK

Repainting of Seto-Ohashi Bridge for increase of durability

K. Kawaguchi, Y. Nagao, and T. Sugimoto,
Honshu-Shikoku Bridge Expressway Co., Ltd, Japan

Rehabilitation of the lower roadway of the Manhattan Bridge

H. D. Perahia, J. Patel, H. Ahmed, and A. Razzaq,
New York City Department of Transportation, USA

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SESSION 1: PLANNING STUDIES & STRENGTH EVALUATION

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

Planning and engineering for the future: capacity increase and cable replacement at the Bronx-Whitestone Bridge J. Lorentzson, TBTA, P. Nietzschmann, Parsons Brinckerhoff Quade & Douglas, Inc., G. Fanjiang, Weidlinger Associates, and C. Gagnon, Ammann & Whitney, USA

Planning and design of Jeokgeum Grand Bridge S. Y. Park, M. J. Lee, Yooshin Engineering Corp., and J. H. Kim, DAELIM Industrial Co. Ltd., South Korea

Evaluation of the remaining strength of bridge cables
K. Mahmoud, Bridge Technology Consulting, USA

SESSION 2: CABLE REINFORCEMENT & DURABILITY

Session Chair: Gerard Fox, PE, Consulting Engineer, New York, USA

Bear Mountain Bridge cable reinforcement W. J. Moreau, New York State Bridge Authority Highland, R. Dragan, and P. Sluszka, Ammann & Whitney, USA

A conceptual model of bridge service life J. Chang, MTA Bridges and Tunnels and M. J. Garvin, Virginia Polytechnic and State University, USA

10 Years of experience with CFRP stay cables
U. Meier, EMPA Swiss Federal Laboratories for Materials Research, Switzerland

SESSION 3: BRIDGE DESIGN & CONSTRUCTION

Session Chair: Paul Crist, PE, Program Director, Port Authority of NY & NJ, USA

A construction solution for self anchored suspension bridges
R. A. Lawrie and H. Huang, Lawrie & Associates, LLC, USA

Second bridge over the Orinoco - design, construction and operation
K. J. Humpf, Leonhardt, Andrä und Partner GmbH, Germany

Efficient deck systems for cable stayed bridges Sena Kumarasena, HNTB, USA

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SESSION 4: FRACTURE BEHAVIOR OF BRIDGE WIRE

Session Chair: Barry Silberfarb, PE, Director of Engineering and Deputy Chief Engineer, MTA Bridges & Tunnels, New York, USA

Wire fractures in locked coil cables K. Gjerding-Smith, Consulting Engineers Haug og Blom-Bakke AS, R. Johnsen, NTNU, H. I. Lange, SINTEF, B. H. Leinum, Det Norske Veritas, G. Gundersen, B. Isaksen and G. Nærum, Norwegian Public Roads Administration, Oslo, Norway

Evaluation of the Fracture Toughness of the Mid-Hudson Bridge cable wire

K. Mahmoud, Bridge Technology Consulting, and W. J. Moreau, New York State Bridge Authority, USA

Fracture Toughness and hydrogen embrittlement of galvanized high strength bridge wire S. Hobson, W. J. Rudd, Corus RD&T, M. Bechtold, C. O'Connor, Bridon International Limited, UK

SESSION 5A: INSTRUMENTATION, TESTING & MONITORING

Session Chair: Martin Kendall, PE, Vice President, Edwards & Kelcey, New York, USA

Instrumentation and monitoring of critical structural elements unique to suspension bridges G. Hovhanessian and E. Laurent, ADVITAM, France

Non-destructive testing of suspender ropes with magnetostriction

M. S. Higgins, Pure Technologies, USA

Wire test results for three suspension bridge cables

R. M. Mayrbaur, Weidlinger Associates, Inc., USA

Inspection and monitoring of cable stayed structures - design, implementation & performance G. Hovhanessian, ADVITAM, France and J. Stieb, ADVITAM, USA

SESSION 5B: MAINTENANCE & SERVICEABILITY OF CABLE SYSTEMS

Session Chair: Michael Abrahams, PE, Technical Director, Parsons Brinckerhoff Quade & Douglas, Inc., New York, USA

Forth Road Bridge - first internal inspection, strength evaluation, acoustic monitoring and dehumidification of the main cables B. R. Colford, Forth Estuary Transport Authority, Scotland, C. P. E. Cocksedge, Faber Maunsell Consulting Engineers, England

Prevention of main cable corrosion by dehumidification

M. L. Bloomstine and O. Sørensen, COWI A/S, Denmark

Dehumidification of George Washington Bridge anchorage chambers

R. Sansone, Ammann & Whitney, Consulting Engineers, PC, J. R. Jenal, BJLJ Engineers & Architects, PC, A. Minhas and S. Sloan, The Port Authority of NY & NJ, USA

A rational method for determining allowable stress in stay cables

R. McCabe, HNTB, USA

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SESSION 6A: INNOVATIVE BRIDGE TECHNOLOGY

Session Chair: Barney Martin, PhD, PE, Vice President, Modjeski & Masters, New York, USA

Stonecutters Bridge - designing for operations

M. Carter and N. Hussain, Ove Arup & Partners, Hong Kong

Cradle system provides flexibility and durability

W. Denney Pate, FIGG, USA

Innovative cable supported pedestrian bridges

T. Zoli, HNTB, USA

SESSION 6B: FATIGUE & VIBRATION PERFORMANCE

Session Chair: Sreenivas Alampalli, PhD, PE, Director, Bridge Program Evaluation Services Bureau, New York State DOT, USA

A monumental bridge with a problem left by design

A. B. Mehrabi, Bridge Engineering Solutions, Inc., USA

Cable vibrations at Dubrovnik Bridge

Z. Šavor, J. Radic, and G. Hrelja, University of Zagreb, Croatia

Mitigation and monitoring of cable vibrations for cable stayed bridges

D. M. Barrett, Modjeski and Masters, Inc., USA

SESSION 7A: WIRE ROPE & STRAND APPLICATIONS

Session Chair: Nicholas Altebrando, PE, Director of Bridges, STV, Inc., New York, USA

Electromagnetic inspection of wire ropes - vertical lift bridges

D. R. Hall, Acuren Inspection, Inc., USA

Wire rope and strand assemblies in bridge applications

T. W. Klein, Wire Rope Corporation of America, Inc., USA

Epoxy coated & filled prestressing steel strand cables

Y. Shinichi, Sumiden Wire Products Corporation, USA

SESSION 7B: AESTHETIC & HISTORIC BRIDGES

Session Chair: Henry Perahia, PE, Deputy Commissioner and Chief Bridge Officer, New York City DOT, USA

High tech cable stayed bridge with appropriate historic appearance

W. Jay Rohleder, Jr., FIGG, USA

Roebing's railway suspension bridge over Niagara Gorge

K. Gandhi, Gandhi Engineering, Inc., USA

The Quinnipiac / Pearl Harbor Memorial Bridge: aesthetic opportunities for extradosed bridges

T. Piotrowski and J. Fox, H2L2 Architects/Planners, LLP, USA

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LRFD WORKSHOP ON BRIDGE DESIGN & EVALUATION

MORNING SESSION

Session Chair: Kamal Kishore, PE, Deputy Chief Engineer, New York City DOT, USA

The Past, Present and Future of AASHTO LRFD (TEXT)

Dr. John M. Kulicki, Modjeski and Masters, Inc., USA

The Past, Present and Future of AASHTO LRFD (POWERPOINT SLIDES)

Dr. John M. Kulicki, Modjeski and Masters, Inc., USA

Summary of Loads and load Combination

Professor Dennis R. Mertz, University of Delaware, USA

Specifications and Guidelines for the Design of Curved Steel Girder Bridges

Dr. John M. Kulicki, Modjeski and Masters, Inc., USA

Horizontally Curved Steel Bridge Design Example

Dr. Wagdy G. Wassef, Modjeski and Masters, Inc., USA

AFTERNOON SESSION

Session Chair: Subimal Chakraborti, PE, Regional Director, R-10, New York State DOT, USA

LRFD Concrete Bridge Design Example

Professor Dennis R. Mertz, University of Delaware, USA

Introduction to Load and Resistance Factor Rating (LRFR)

Professor Dennis R. Mertz, University of Delaware, USA

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