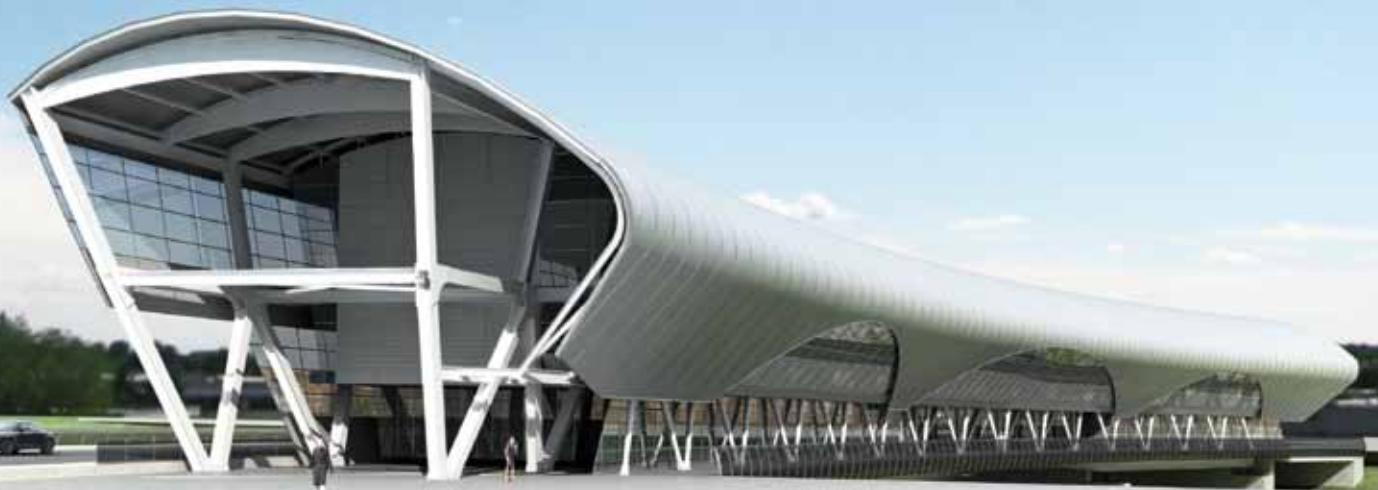


IABMAS 2012

6th International Conference on
Bridge Maintenance, Safety and Management

Stresa, Lake Maggiore, Italy | July 8 - 12, 2012

Final Program



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Association



International Association for
Bridge Maintenance and Safety

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Institution



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Program Overview

Sunday, July 8 th , 2012		Monday, July 9 th , 2012		Tuesday, July 10 th , 2012		Wednesday, July 11 th , 2012		Thursday, July 12 th , 2012	
Sunday, July 8 th , 2012									
15.00 - 19.00 Registration (Palazzo dei Congressi)									
19.00 - 21.00 Welcome Reception (Regina Palace, Garden)									
Monday, July 9th, 2012									
08.15 - 09.00 Opening Ceremony (Auditorium)									
09.00 - 09.30 T.Y. Lin Lecture (Auditorium)									
09.30 - 10.30 Keynotes Lectures (Auditorium)									
Auditorium		Magnolia Room		Orchidea Room		Gardenia Room		Ortensia Room	
TIME	MoM-1	MoM-2		MoM-3		MoM-4		MoM-5	
11.00 - 13.00	SS: Sustainability Assessment of Bridges	SS: Risk-based and Disaster Resilience Analysis of Bridge Systems and Networked Infrastructures under Multiple Hazards		MS: Reliability Analysis of Bridges and Footbridges: Extreme and Every-day Events		MS: Operation and Maintenance of Major Landmark Bridges		MS: Brick and Stone Masonry Bridge Safety and Durability	
TIME	MoA-1	MoA-2		MoA-3		MoA-4		MoA-5	
14.00 - 16.00	MS: Strengthening of Existing Bridges with FRP Composites (1)	MS: SmartEN TN - Smart Management for Sustainable Built Environment including Bridges and Structural Systems (1)		SS: Management and Preservation of Long Span Historic Bridges		MS: Reliability Analysis of Bridge Structures (2)		GS: Bridge Strengthening and Rehabilitation	
TIME	MoE-1	MoE-2		MoE-3		MoE-4		MoE-5	
16.30 - 18.30	MS: Strengthening of Existing Bridges with FRP Composites (2)	MS: SmartEN TN - Smart Management for Sustainable Built Environment including Bridges and Structural Systems (2)		MS: Lifetime Design, Assessment, and Maintenance of Super Long-Span Bridges		SS: Non-Deterministic Schemes for Structural Safety and Reliability of Bridges		GS: Seismic Assessment and Retrofit of Bridges	
Tuesday, July 10th, 2012									
08.30 - 10.30 Keynotes Lectures (Auditorium)									
		Auditorium		Magnolia Room		Orchidea Room		Gardenia Room	
TIME	TuM-1	TuM-2		TuM-3		TuM-4		TuM-5	
11.00 - 13.00	MS: Research and Applications in Bridge Health Monitoring (1)	SS: Advances on Structural Robustness and Redundancy of Bridges		GS: Bridge Maintenance and Management		SS: Advanced Technologies in Standard Bridge Structures – From Research to Implementation		MS: Smart SHM and Application to Bridge Condition Assessment and Maintenance (1)	
TIME	TuA-1	TuA-2		TuA-3		TuA-4		TuA-5	
14.00 - 16.00	MS: Research and Applications in Bridge Health Monitoring (2)	MS: Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (1)		MS: Field Tests for Bridge Assessment		GS: Fatigue Assessment and Design of Bridges		MS: Smart SHM and Application to Bridge Condition Assessment and Maintenance (2)	
TIME	TuE-1	TuE-2		TuE-3		TuE-4		TuE-5	
16.30 - 18.00	MS: Research and Applications in Bridge Health Monitoring (3)	MS: Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (2)		SS: Light Rail Bridges in Chongqing, China		SS: Advances in Engineering, Structure Management in Finland		GS: Highway Bridges and Viaducts	
18.00 - 19.00	General Assembly (Auditorium)							SS: Advances in Nondestructive Evaluation and Monitoring of Concrete Bridge Decks	
20.00 - 23.00	Gala Dinner (Regina Palace, Liberty Hall)								
Wednesday, July 11th, 2012									
08.00 - 09.30 Keynotes Lectures (Auditorium)									
09.30 - 11.00 T.Y. Lin's Hundreth Birthday Special Session (Auditorium)									
		Auditorium		Magnolia Room		Orchidea Room		Gardenia Room	
TIME	WeM-1	WeM-2		WeM-3		WeM-4		WeM-5	
11.30 - 13.00	MS: Research and Applications in Bridge Health Monitoring (4)	SS: Integral Bridges: Design and Technological Issues		SS: Extreme Events of Long Span Bridges Design, Assessment and Management		SS: Lessons Learnt from the Canterbury Earthquakes: Assessment, Testing and Analysis of New Zealand Bridges		SS: Many Bridges Aren't Straight - Investigations of Curved and Skewed Structures	
TIME	WeA-1	WeA-2		WeA-3		WeA-4		WeA-5	
14.00 - 16.00	MS: Risk-Based Bridge Management (1)	GS: Residual Capacity and Service Life Assessment of Bridges		GS: Damage Identification and Bridge Assessment		SS: Vulnerability of Bridges to Fire and Explosion		GS: Bridge Joints and Seismic Protection Devices	
TIME	WeE-1	WeE-2		WeE-3		WeE-4		WeE-5	
16.30 - 18.00	MS: Risk-Based Bridge Management (2)	SS: Artificial Intelligence Methods in Bridge Analysis and Design		GS: Design and Seismic Analysis of Long Span Bridges – Case Studies		GS: Composite Bridge Structures		GS: Bridge Modeling and Simulation	
18.00 - 18.30	Closing Ceremony (Auditorium)								
20.30 - 23.30 Borromean Islands by Night									
Thursday, July 12th, 2012									
09.00 - 19.00 Boat Tours on Lake Maggiore									
12.00 - 14.00 Farewell Cocktail (Grand Hotel Dino, Garden)									

SS: TEAM: A Marie Curie Training Network on Bridge Management
 MoM-7: Recent Advances in Bridge Health Monitoring
 MoM-8: Camellia Room
 MoM-9: Mimosa Room
 MoM-10: Camellia Room
 MoA-8: SS: Bridges for High-Speed Railways
 MoA-9: MS: Monitoring and Assessment of Bridges using Novel Techniques (1)
 MoA-10: MS: Monitoring and Assessment of Bridges using Novel Techniques (2)
 TuM-7: MS: Steel Bridge Rehabilitation (1)
 TuM-8: GS: Bridge Assessment and Design (1)
 TuA-7: GS: Steel Bridge Rehabilitation (2)
 TuA-8: MS: Steel Bridge Rehabilitation (2)
 TuE-7: GS: Wind Effects on Bridges
 TuE-8: SS: New Developments on the Bridge Safety, Maintenance and Management in Mexico

WeA-7: GS: Extending Bridge life Through Industry Academic Partnerships
 WeM-7: GS: Bridge Management and Life-Cycle Cost
 WeE-7: GS: Gussel Plates in Steel Truss Bridges; Testing, Analysis and Monitoring

WeA-8: SS: Optical Monitoring Techniques for Bridge Maintenance and Safety
 WeM-8: GS: Corrosion Detection in Cables and Concrete Bridges by Magnetic Methods

WeE-8: SS: Analysis, Design and Testing of Road Timber Bridges

Welcome to IABMAS 2012

The number of deteriorating bridges is increasing worldwide. Costs of maintenance, repair and rehabilitation of these bridges far exceed available budgets. Maintaining the safety and serviceability of existing bridges by making better use of available resources is a major concern for bridge management. Internationally, the bridge engineering profession continues to take positive steps towards developing more comprehensive bridge management systems. It was therefore considered appropriate to keep the tradition of the IABMAS conferences and bring together all of the very best work that has been done in the field of bridge maintenance, safety, management, resilience and sustainability at the Sixth International Conference on Bridge Maintenance, Safety and Management (IABMAS 2012), held in Stresa, Lake Maggiore, Italy, from July 8 to 12, 2012 (<http://www.iabmas2012.org>). The First (IABMAS'02), Second (IABMAS'04), Third (IABMAS'06), Fourth (IABMAS'08), and Fifth (IABMAS 2010) International Conference on Bridge Maintenance, Safety and Management were held in Barcelona, Spain, July 14–17, 2002, Kyoto, Japan, October 18–22, 2004, Porto, Portugal, July 16–19, 2006, Seoul, Korea, July 13–17, 2008, and Philadelphia, PA, USA, July 11–15, 2010, respectively.

IABMAS 2012 has been organized on behalf of the International Association for Bridge Maintenance and Safety (IABMAS) under the auspices of Politecnico di Milano. IABMAS encompasses all aspects of bridge maintenance, safety and management. Specifically, it deals with: health monitoring and inspection of bridges; bridge repair and rehabilitation issues; bridge management systems; needs of bridge owners, financial planning, whole life costing and investment for the future; bridge safety and risk related issues, including economic and other implications. The objective of IABMAS is to promote international cooperation in the fields of bridge maintenance, safety, management, life-cycle performance and cost for the purpose of enhancing the welfare of society (<http://www.iabmas.org>).

The interest of the international bridge engineering community in the fields covered by IABMAS has been confirmed by the significant response to the IABMAS 2012 call for papers. In fact, over 800 abstracts from about 50 countries were received by the Conference Secretariat, and approximately 70% of them were selected for final publication as technical papers and presentation at the Conference within mini-symposia, special sessions, and general sessions. Compared to IABMAS 2010 the number of papers scheduled for presentation at IABMAS 2012 has increased from 511 to 555.

Contributions presented at IABMAS 2012 deal with the state of the art as well as emerging concepts and innovative applications related to all main aspects of bridge maintenance, safety, management, resilience and sustainability. Major topics covered include: advanced materials, ageing of bridges, assessment and evaluation, bridge codes, bridge diagnostics, bridge management systems, composites, damage identification, design for durability, deterioration modeling, earthquake and accidental loadings, emerging technologies, fatigue, field testing, financial planning, health monitoring, high performance materials, inspection, life-cycle performance and cost, load models, maintenance strategies, non-destructive testing, optimization strategies, prediction of future traffic demands, rehabilitation, reliability and risk management, repair, replacement, residual service life, resilience, robustness, safety and serviceability, service life prediction, strengthening, structural integrity, and sustainability, among others.

Bridge Maintenance, Safety, Management, Resilience and Sustainability contains the lectures and papers presented at IABMAS 2012. It consists of a book of extended abstracts and a DVD of full papers of 555 contributions, including the T.Y. Lin Lecture, nine Keynote Lectures, and 545 technical papers from 40 countries. This volume provides both an up-to-date overview of the field of bridge engineering and significant contributions to the process of making more rational decisions in bridge maintenance, safety, serviceability, resilience, sustainability, monitoring, risk-based management, and life-cycle performance using traditional and emerging technologies for the purpose of enhancing the welfare of society.

On behalf of IABMAS and Politecnico di Milano, the chairs of the Conference would like to express their sincere thanks to the authors, the organizers of mini-symposia and special sessions, and all the participants for their contributions; to the Conference Honorary Chair, Professor Pier Giorgio Malerba; to the members of the International Scientific Committee and the National Advisory Committee for their role in ensuring the highest scientific level of the Conference; and to the members of the National Organizing Committee for the time and efforts dedicated to make IABMAS 2012 a successful event. Finally, the chairs of the Conference would like to thank all organizations, institutions, and authorities that offered their sponsorship to IABMAS 2012.

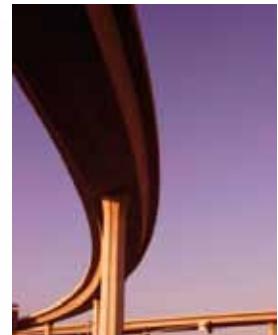


Dan M. Frangopol
Lehigh University
Bethlehem, PA, USA
Chair, IABMAS 2012



IABMAS 2012

6th International Conference on
Bridge Maintenance, Safety and Management



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ASCE

American Society of Civil Engineers, USA

ASCP

The Portuguese Group of IABMAS, Portugal

ATLSS

Center for Advanced Technology for Large Structural Systems, USA

CERIC

Civil Engineering Research Information Center, Korea

CNI

Consiglio Nazionale degli Ingegneri, Italy

COSEIK

Computational Structural Engineering Institute of Korea, Korea

CTE

Collegio dei Tecnici della Industrializzazione Edilizia, Italy

FHWA

Federal Highway Administration, US Dept. of Transportation, USA

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IALCCE

International Association for Life-Cycle Civil Engineering

IASSAR

International Association for Structural Safety and Reliability

IBRACON

Brazilian Concrete Institute, Brazil

ISISE

Institute for Sustainability and Innovation in Structural Engineering, Portugal

JABMAS

Japanese Association for Bridge Maintenance And Safety, Japan

JRC

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JSCE

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JSMS

Japanese Society of Materials Science, Japan

KAIST

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KBRC

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KCI

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KSSC

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KU

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Tongji University

China

TRB

Transportation Research Board of the National Academies, USA

T.Y. Lin International, USA

UPC

Technical University of Catalonia, Spain

UM

University of Minho, Portugal



Conference Organization

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International Association for Bridge Maintenance and Safety
<http://www.iabmas.org>

ORGANIZING INSTITUTION

POLIMI

Politecnico di Milano, Milan, Italy <http://www.polimi.it>

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Francesca Lanata, Ecole Supérieure du Bois, Nantes, France
Sauro Manenti, University of Pavia
Alessandra Marchiondelli, SPEA Ingegneria Europea, Milan
Claudio Mazzotti, University of Bologna
Andrea Nero, Tecnomare, Milan
Alessandro Palmeri, Loughborough University, Loughborough, UK
Fabrizio Palmisano, Politecnico di Bari
Livia Pardi, Autostrade per l'Italia, Rome
Carlo Pellegrino, University of Padua
Francesco Petrini, Sapienza University of Rome
Lorenza Petrini, Politecnico di Milano
Virginio Quaglini, Politecnico di Milano
Luca Romano, Albenga, Savona
Luca Sgambi, Politecnico di Milano
André J. Torii, Universidade Federal do Paraná, Curitiba, Brazil
Filippo Ubertini, University of Perugia
Marco Valente, Politecnico di Milano

CONFERENCE SCIENTIFIC SECRETARIAT

Elena Camnasio & Andrea Titi
Department of Structural Engineering
Politecnico di Milano
Piazza Leonardo da Vinci, 32 – 20133 Milan, Italy
papers@iabmas2012.org

CONFERENCE ORGANIZING SECRETARIAT

**Stella Pennini, Laura Manenti,
Marta Padovan & Miriam Zanelli**
Incentives e Congressi, Brescia
Via Crocifissa di Rosa, 15 – 25128 Brescia, Italy
secretariat@iabmas2012.org

CONFERENCE WEBSITE

<http://www.iabmas2012.org>

Conference Information

VENUE

PALAZZO DEI CONGRESSI DI STRESA
Piazzale Europa, 3
28838 Stresa (VB), Italy

and

REGINA PALACE HOTEL
Corso Umberto I, 33
28838 Stresa (VB), Italy

SECRETARIAT OFFICE

The Secretariat Office of IABMAS 2012 will be operated from the Registration Desk located at Level 0 of Palazzo dei Congressi.

Registration Desk opening hours:

Sunday, 8 th July	15.00 – 19.00
Monday, 9 th July	07.00 – 18.30
Tuesday, 10 th July	07.00 – 18.30
Wednesday, 11 th July	07.00 – 13.00

During the opening hours, all regularly registered participants can collect the Conference material and Proceedings. The Conference staff will be pleased to help you with all your enquiries.

SLIDE CENTER & PRESENTATION GUIDELINES

Speakers will be NOT allowed to use their personal laptop computers for Presentations. Presentations saved on a USB memory or CD/DVD-ROM have to be brought to the Slide Center and uploaded in the conference room network at least 24 hours prior to the start of the Session. The Slide Center is located at the Level -1 of Palazzo dei Congressi. Speakers are kindly required to carefully check their Presentation at the Slide Center at least 30 minutes before the Session will start. Technicians will assist Speakers to preview their Presentations to ensure that they display well on the screens. Speakers are also required to fill out the "Speaker Information Form" and deliver it to the Session Chairs at least 15 minutes before the session starts.

WI-FI & INTERNET POINT

WI-FI internet access is available inside the Palazzo dei Congressi. An internet point is also available at the Level 0. User ID and passwords required for internet access are available to all registered participants.

ONSITE REGISTRATIONS

Registration on site will be possible during the entire Conference within the opening hours of the registration desk. A surcharge of 10% of processing fee will be applied to on-site registrations.

Conference Registration Fees (°)

Delegate - IABMAS Member ^(a)	€ 800
Delegate - IABMAS Non Member ^(b)	€ 875
Student ^(c)	€ 450
Accompanying Person ^(d)	€ 225
Extra copy of Proceedings	€ 150
Extra ticket for Welcome Reception	€ 60
Extra ticket for Gala Dinner	€ 120
Extra ticket for Boat Tours and Farewell cocktail	€ 80

(a), (b) Conference attendance, Proceedings (Book+DVD), Conference Bag, Welcome Reception, Lunches, Coffee Breaks, Gala Dinner, Boat Tours and Farewell Cocktail.

(c) Conference attendance, Proceedings (Book+DVD), Conference Bag, Welcome Reception, Lunches, Coffee Breaks, Gala Dinner, Boat Tours and Farewell Cocktail. Students must provide a proof of their status to complete the registration.

(d) Welcome Reception, Lunches, Coffee Breaks, Gala Dinner, Boat Tours and Farewell Cocktail.

(°) 21% VAT is not included in the fees. According to Art. 10 c. 20 DPR 633/72 of the Italian Law, VAT is due in all cases except public universities, public institutions and public companies (European and Worldwide). Participants affiliated with such a public university, institution, and company do not have to pay VAT. Other institutions and companies subjected to VAT-exemption policies are not charged VAT provided that they can prove their VAT-exempt status.



Conference Information

IABMAS 2012
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CONFERENCE BADGE

The participants are kindly requested to wear the Conference badge at all times during the Conference.

PERSONAL PROPERTY

The participants are invited to take good care of their personal belongings, and to do not leave them unattended. Neither the Conference organizers nor their staff will be responsible for any loss or damage of the personal property of the participants.

LUNCHES

Daily lunch will be served at the Hotel Regina Palace, Liberty Hall, on Monday 9th, Tuesday 10th, Wednesday 11th, from 13.00 to 14.00. Lunch tickets are provided to all registered participants. Please make sure to bring the tickets with you and deliver them at the conference staff when required.

COFFEE BREAKS

Coffee breaks will be offered to all participants twice a day, in the morning and in the afternoon, and they will be served in the Garden of the Hotel Regina Palace.

OPENING CEREMONY

The Opening Ceremony will be held on Monday July 9th, from 08.15 to 09.00 in the Auditorium of Palazzo dei Congressi.

GENERAL ASSEMBLY OF IABMAS

The General Assembly of IABMAS will be held on Tuesday July 10th, from 18.00 to 19.00 in the Auditorium of Palazzo dei Congressi.

CLOSING CEREMONY

The Closing Ceremony is scheduled on Wednesday July 11th from 18:00 to 18:30 in the Auditorium of Palazzo dei Congressi.

T.Y. LIN MEDAL AND IABMAS AWARDS

The T.Y. Lin Medal and the IABMAS Awards will be presented at the Gala Dinner on Tuesday, July 10th, 2012, Regina Palace, Liberty Hall.

T.Y. LIN MEDAL

The T.Y. Lin Medal will be presented at IABMAS 2012. This award was established by T.Y. Lin International to honor T.Y. Lin for his outstanding contributions to bridge engineering. The T.Y. Lin Medal is awarded to a member of the International Association of Bridge Maintenance and Safety (IABMAS) who, through contributions in bridge maintenance, safety and life-cycle cost, has helped substantially to strengthen the scientific base of bridge engineering: these contributions having been made in the form of journal or conference papers, or other written presentations.

IABMAS AWARDS

IABMAS Awards will be presented at IABMAS 2012. The awards will be for distinguished achievements in the areas of Bridge Maintenance, Safety, Management, Assessment, or Life-Cycle Cost. Selections will be based on past achievements. The IABMAS Awards Committee is chaired by Dr. Man-Chung Tang, T.Y. Lin International, San Francisco, CA, USA.

IABMAS MEETINGS

IABMAS Bridge Management Committee
Monday July 9th, 2012 | 14:30-16:00 (Regina Palace)

IABMAS - Italy Group
Monday July 9th, 2012 | 16:00-17:30 (Regina Palace)

IABMAS Bridge Health Monitoring Committee
Monday July 9th, 2012 | 17:30-19:30 (Regina Palace)

IABMAS - China Group
Wednesday July 11th, 2012 | 14:30-16:00 (Palazzo dei Congressi)

Conference Overview

TIME		JULY 8th (SUN)	JULY 9th (MON)	JULY 10th (TUE)	JULY 11th (WED)	JULY 12th (THU)
7.00	8.00		Registration		Registration	Registration
8.00	8.30		Opening Ceremony			
8.30	9.00		T.Y. Lin Lectures		Keynote Lectures	
9.00	9.30		Keynote Lectures	Keynote Lectures		
9.30	10.00		Coffee Break	Coffee Break		
10.00	10.30				T.Y. Lin Special Session	Boat Tours
10.30	11.00				Coffee Break	
11.00	11.30		MoM Sessions	TuM Sessions	WeM Sessions	
11.30	12.00		Lunch	Lunch	Lunch	Farewell Cocktail
12.00	12.30					
12.30	13.00					
13.00	14.00					
14.00	14.30					
14.30	15.00					
15.00	15.30	Registration	MoA Sessions	TuA Sessions	WeA Sessions	
15.30	16.00		Coffee Break		Coffee Break	Boat Tours
16.00	16.30					
16.30	17.00					
17.00	17.30		MoE Sessions	TuE Sessions	WeE Sessions	
17.30	18.00					
18.00	18.30			General Assembly	Closing Ceremony	
18.30	19.00	Welcome Reception				
19.00	19.30					
19.30	20.00					
20.00	21.00			Gala Dinner		
21.00	22.00				Borromean Islands by Night	
22.00	23.00					
23.00	23.30					



Scientific Program

IABMAS 2012
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T.Y. LIN LECTURE

Frieder Seible

Precast segmental bridge construction in seismic zones
(Monday, July 9th, Auditorium)

KEYNOTE LECTURES

Man-Chung Tang

The art of arches
(Monday, July 9th, Auditorium)

Giorgio Diana

Wind tunnel: a fundamental tool for long span bridges design
(Monday, July 9th, Auditorium)

Masanobu Shinozuka

Remote monitoring: concept and pilot study
(Tuesday, July 10th, Auditorium)

Kai-Yuen Wong

System design and implementation of structural health monitoring system and maintenance management system for marine viaduct bridges
(Tuesday, July 10th, Auditorium)

Claudio Modena

Assessment and retrofitting of existing bridges
(Tuesday, July 10th, Auditorium)

Túlio Bittencourt

Renewal and rehabilitation of the Brazilian railway bridge infrastructure
(Tuesday, July 10th, Auditorium)

Bruno Godart

Pathology, appraisal, repair and management of old prestressed beam and slab bridges
(Wednesday, July 11th, Auditorium)

Richard Sause

Innovative steel bridge girders with tubular flanges
(Wednesday, July 11th, Auditorium)

James Brownjohn

Operational deformations in long span bridges
(Wednesday, July 11th, Auditorium)

T.Y. LIN'S HUNDREDTH BIRTHDAY SPECIAL SESSION

(Wednesday, July 11th, Auditorium)

Chuck Seim

The legacy of T.Y. Lin, his vision of bridge engineering

Jiri Straski

Power of prestressing

Marwan Nader

Design of the San Francisco Oakland Bay Bridge

Man-Chung Tang

Conceptualization of a bridge across the Taiwan Strait

MINI-SYMPOSIA

MoM-4 & MoA-4

Reliability Analysis of Bridge Structures

Organized by:

Franck Schoefs, University of Nantes

Francesca Lanata, Ecole Supérieur du Bois

MoM-6

Brick and Stone Masonry Bridge Safety and Durability

Organized by:

Andrea Benedetti, University of Bologna

Lorenzo Jurina, Politecnico di Milano

MoA-1 & MoE-1

Strengthening of Existing Bridges with FRP Composites

Organized by:

Carlo Pellegrino, University of Padua

MoA-2 & MoE-2

SmartEN ITN - Smart Management for Sustainable Built Environment including Bridges and Structural Systems

Organized by:

Toula Onoufriou, Cyprus University of Technology

Rosemarie Helmerich, Federal Institute for Materials Research and Testing

MoA-7 & MoE-7

Monitoring and Assessment of Bridges using Novel Techniques

Organized by:

Alfred Strauss, University of Natural Resources and Life Sciences, Vienna

Dan M. Frangopol, Lehigh University

MoE-3

Lifetime Design, Assessment, and Maintenance of Super Long-Span Bridges

Organized by:

Hyun-Moo Koh, Seoul National University
Soobong Shin, Inha University, Incheon
Ho-Kyung Kim, Seoul National University
Nam-Sik Kim, Pusan National University

TuM-1, TuA-1, TuE-1 & WeM-1

Research and Applications in Bridge Health Monitoring

Organized by:

Necati Catbas, University of Central Florida
Joan Casas, Technical University of Catalonia
Hitoshi Furuta, Kansai University
Dan M. Frangopol, Lehigh University

TuM-5 & TuA-5

Smart SHM and Application to Bridge Condition Assessment and Maintenance

Organized by:

Yunfeng Zhang, University of Maryland
Hoon Sohn, KAIST
Chunsheng Wang, Chang'an University
Daniele Zonta, University of Trento

TuM-8 & TuA-8

Steel Bridge Rehabilitation

Organized by:

Masahiro Sakano, Kansai University

TuA-2 & TuE-2

Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards

Organized by:

Fabio Biondini, Politecnico di Milano
Dan M. Frangopol, Lehigh University
Jamie Padgett, Rice University
Alessandro Palermo, University of Canterbury

TuA-3

Field Tests for Bridge Assessment

Organized by:

Ayaho Miyamoto, Yamaguchi University
Ilkka Hakola, VTT Technical Research Centre

WeA-1 & WeE-1

Risk Based Bridge Management

Organized by:

Leo Klatter, PublicWorks & Water Management, Utrecht, The Netherlands

SPECIAL SESSIONS

MoM-1

Sustainability Assessment of Bridges

Organized by:

Ulrike Kuhlmann, University of Stuttgart

MoM-2

Risk-based and Disaster Resilience Analysis of Bridge Systems and Networked Infrastructures under Multiple Hazards

Organized by:

Gian Paolo Cimellaro, Politecnico di Torino
Leonardo Dueñas-Osorio, Rice University

MoM-3

Structural Control of Bridges and Footbridges: Extreme and Every-day Events

Organized by:

Luca Martinelli, Politecnico di Milano
Marco Domaneschi, Politecnico di Milano

MoM-5

Operation and Maintenance of Major Landmark Bridges

Organized by:

Jens Sandager Jensen, COWI A/S

MoM-7

Recent Advances in Bridge Health Monitoring

Organized by:

Christian F. Cremona, MEEDTL
André D. Orcesi, IFSTTAR – LCPC

MoM-8

TEAM: A Marie Curie Training Network on Bridge Management

Organized by:

Ciaran McNally, University College Dublin

MoA-3

Management and Preservation of Long Span Historic Bridges

Organized by:

Emin Aktan, Pennoni Associates
Franklin Moon, Pennoni Associates
David S. Lowdermilk, Pennoni Associates

MoA-6

Advances in Modeling and Analysis for Performance-Based Design of Bridge Structures subjected to Multiple Hazards

Organized by:

Francesco Petrini, Sapienza University of Rome
Alessandro Palmeri, Loughborough University



MoA-8

Bridges for High-Speed Railways

Organized by:

Rui Calçada, FEUP – DEC

MoE-4

Non Deterministic Schemes for Structural Safety and Reliability of Bridges

Organized by:

Stefania Arangio, Sapienza University of Rome

MoE-6

Hybrid Composite Bridge System

Organized by:

Hitoshi Furuta, Kansai University

Sang-Hyo Kim, Yonsei University

TuM-2

Advances on Structural Robustness and Redundancy of Bridges

Organized by:

Fabio Biondini, Politecnico di Milano

Dan M. Frangopol, Lehigh University

TuM-4

Advanced Technologies in Standard Bridge Structures – From Research to Implementation

Organized by:

M. Saiid Saiedi, University of Nevada

TuM6

Numerical Simulation of Durability of Concrete Bridges

Organized by:

Airong Chen, Tongji University

TuE-3

Light Rail Bridges in Chongqing, China

Organized by:

Man-Chung. Tang, T.Y. Lin International

TuE-4

Advances in Engineering Structure Management in Finland

Organized by:

Marja-Kaarina Söderqvist, Finnish Transport Agency

TuE-6

Advances in Nondestructive Evaluation and Monitoring of Concrete Bridge Decks

Organized by:

Nenad Gucunsky, Rutgers University

TuE-8

New Developments on the Bridge Safety, Maintenance and Management in Mexico

Organized by:

David De León, Autonomous University of Mexico State

WeM-2

Integral Bridges: Design and Technological Issues

Organized by:

Pier Giorgio Malerba, Politecnico di Milano

Vladimir Kristek, Czech Technical University

WeM-3

Extreme Events of Long Span Bridges: Design, Assessment and Management

Organized by:

Airong Chen, Tongji University

WeM-4

Lessons Learnt from the Canterbury Earthquakes: Assessment, Testing and Analysis of New Zealand Bridges

Organized by:

Alessandro Palermo, University of Canterbury

Liam Wotherspoon, University of Auckland

WeM-5

Energy Harvesting in Bridges and Transportation Infrastructure Networks

Organized by:

Konstantinos Gkoumas, Sapienza University of Rome

WeM-6

Many Bridges Aren't Straight - Investigations of Curved and Skewed Structures

Organized by:

Daniel Linzell, Penn State University

WeM-7

Corrosion Detection in Cables and Concrete Bridges by Magnetic Methods

Organized by:

Al Ghurbanpoor, University of Wisconsin

Bernd Hillemeier, Technische Universität Berlin

WeA-4

Vulnerability of Bridges to Fire and Explosion

Organized by:

Luisa Giuliani, Technical University of Denmark

WeA-7

Optical Monitoring Techniques for Bridge Maintenance and Safety

Organized by:

Paul Sumitro, Smart Structures LLC

Hiroshi Matsuda, Nagasaki University

WeA-8

Extending Bridge Life Through Industry Academic Partnerships

Organized by:

Eugene J O'Brien, Roughan O'Donovan Innovative Solutions

WeE-2

Artificial Intelligence Methods in Bridge Analysis and Design

Organized by:

Elsa Garavaglia, Politecnico di Milano

Luca Sgambi, Politecnico di Milano

WeE-3

Design and Seismic Analysis of Long Span Bridges – Case Studies

Organized by:

Ayaz Malik, Albany, NY, USA

WeE-5

Understanding and Enhancing Bridge Performance

Organized by:

John Hooks, J M Hooks & Associates

WeE-7

Analysis, Design and Testing of Road Timber Bridges

Organized by:

Alessandro Palermo, University of Canterbury

Keith Crews, University of Technology

Robert Kliger, Chalmers University of Technology

WeE-8

Gusset Plates in Steel Truss Bridges: Testing, Analysis and Monitoring

Organized by:

Dat Duthinh, National Institute of Standards and Technology (NIST)

GENERAL SESSIONS

MoA-5

Bridge Strengthening and Rehabilitation

MoE-5

Seismic Assessment and Retrofit of Bridges

MoE-8

Bridge Traffic Loading

TuM-3

Bridge Maintenance and Management

TuM-7 & TuA-7

Bridge Assessment and Design

TuA-4

Fatigue Assessment and Design of Bridges

TuA-6

Material Properties and Durability of Bridges

TuE-5

Highway Bridges and Viaducts

TuE-7

Wind Effects on Bridges

WeM-8

Bridge Management and Life-Cycle Cost

WeA-2

Residual Capacity and Service Life Assessment of Bridges

WeA-3

Damage Identification and Bridge Assessment

WeA-5

Monitoring and Inspection of Bridges

WeA-6

Bridge Joints and Seismic Protection Devices

WeE-4

Composite Bridge Structures

WeE-6

Bridge Modeling and Simulation



Program Overview

Monday, July 9th, 2012

08:15 - 09:00	Opening Ceremony (Auditorium)	
	Welcome Speeches from Authorities	
09:00 - 09:30	T.Y. Lin Lecture (Auditorium)	
	Frieder SEIBLE: <i>Precast segmental bridge construction in seismic zones</i>	
09:30 - 10:30	Keynote Lectures (Auditorium)	
	Man-Chung TANG: <i>The art of arches</i>	
	Giorgio DIANA: <i>Wind tunnel: a fundamental tool for long span bridges design</i>	
10:30 - 11:00	Coffee Break (Regina Palace Garden)	
11:00 - 13:00	Concurrent Technical Sessions	
	MoM-1 (Auditorium)	Sustainability Assessment of Bridges
	MoM-2 (Magnolia)	Risk-based and Disaster Resilience Analysis of Bridge Systems and Networked Infrastructures under Multiple Hazards
	MoM-3 (Azalea)	Structural Control of Bridges and Footbridges: Extreme and Every-day Events
	MoM-4 (Orchidea)	Reliability Analysis of Bridge Structures (1)
	MoM-5 (Gardenia)	Operation and Maintenance of Major Landmark Bridges
	MoM-6 (Ortensia)	Brick and Stone Masonry Bridge Safety and Durability
	MoM-7 (Mimosa)	Recent Advances in Bridge Health Monitoring
	MoM-8 (Camelia)	TEAM: A Marie Curie Training Network on Bridge Management
		Sustainability Assessment of Bridges
13:00 - 14:00	Lunch (Regina Palace Liberty Hall)	
14:00 - 16:00	Concurrent Technical Sessions	
	MoA-1 (Auditorium)	Strengthening of Existing Bridges with FRP Composites (1)
	MoA-2 (Magnolia)	SmartEN ITN - Smart Management for Sustainable Built Environment including Bridges and Structural Systems (1)
	MoA-3 (Azalea)	Management and Preservation of Long Span Historic Bridges
	MoA-4 (Orchidea)	Reliability Analysis of Bridge Structures (2)
	MoA-5 (Gardenia)	Bridge Strengthening and Rehabilitation
	MoA-6 (Ortensia)	Advances in Modeling and Analysis for Performance-Based Design of Bridge Structures subjected to Multiple Hazards
	MoA-7 (Mimosa)	Monitoring and Assessment of Bridges using Novel Techniques (1)
	MoA-8 (Camelia)	Bridges for High-Speed Railways
16:00 - 16:30	Coffee Break (Regina Palace Garden)	
16:30 - 18:30	Concurrent Technical Sessions	
	MoE-1 (Auditorium)	Strengthening of Existing Bridges with FRP Composites (2)
	MoE-2 (Magnolia)	SmartEN ITN - Smart Management for Sustainable Built Environment Including Bridges and Structural Systems (2)
	MoE-3 (Azalea)	Lifetime Design, Assessment, and Maintenance of Super Long-Span Bridges
	MoE-4 (Orchidea)	Non Deterministic Schemes for Structural Safety and Reliability of Bridges
	MoE-5 (Gardenia)	Seismic Assessment and Retrofit of Bridges
	MoE-6 (Ortensia)	Hybrid Composite Bridge System
	MoE-7 (Mimosa)	Monitoring and Assessment of Bridges using Novel Techniques (2)
	MoE-8 (Camelia)	Bridge Traffic Loading

Opening Ceremony T.Y. Lin & Keynote Lectures

08:15 - 09:00

Opening Ceremony

Welcome Speeches from Authorities

09:00 - 09:30

T.Y. Lin Lecture (Auditorium)

Chairs: Man-Chung Tang



Precast segmental bridge construction in seismic zones

Frieder SEIBLE

University of California
San Diego, La Jolla, CA, USA

09:30 - 10:30

Keynote Lectures (Auditorium)

Chairs: Masanobu Shinozuka & Yozo Fujino



The art of arches

Man-Chung TANG

T.Y. Lin International
San Francisco, CA, USA



Wind tunnel: a fundamental tool for long span bridges design

Giorgio DIANA

Politecnico di Milano
Milan, Italy

IABMAS 2012

6th International Conference on
Bridge Maintenance, Safety and Management



POLITECNICO
DI MILANO

Concurrent Technical Sessions (MoM-1 to MoM-4)

Concurrent Technical Sessions (MoM-1 to MoM-4)				11:00-13:00 Monday Morning, July 9 th , 2012			
MoM-1 Auditorium	MoM-2 Magnolia Room	MoM-3 Azalea Room	MoM-4 Orchidea Room	MoM-1 Auditorium	MoM-2 Magnolia Room	MoM-3 Azalea Room	MoM-4 Orchidea Room
Special Session: Sustainability Assessment of Bridges	Special Session: Risk-based and Disaster Resilience Analysis of Bridge Systems and Networked Infrastructures under Multiple Hazards	Special Session: Structural Control of Bridges and Footbridges: Extreme and Every-day Events	Mini-Symposium: Reliability Analysis of Bridge Structures (1)	Chairs: Ulrike Kuhlmann & Philippa Maier	Chairs: Gian Paolo Cimellaro & Leonardo Dueñas-Osorio	Chairs: Luca Martinelli & Marco Domaneschi	Chairs: Franck Schoefs & Francesca Lanata
Quantification of sustainability principles in bridge projects C. Hendy & R. Petty	Road network's disaster resilience assessment methodology V. Aridiacono, G.P. Cimellaro, A. Infuso & A.M. Reinhard	Seismic protection of the ASCE updated cable-stayed bridge benchmark with RNC passive devices G. Carusone, M. Domaneschi, L. Martinelli, M. Ismail & J. Rodellar	Updating the reliability of existing PC bridge girders by incorporating spatial variations M. Akiyama, D.M. Frangopol & I. Yoshida	Chairs: T. Beck, M. Fischer & M. Pfaffinger	Probabilistic functionality recovery model for resilience analysis P. Bocchini, A. Decò & D.M. Frangopol	Seismic performance of a wind designed control strategy on a suspension bridge M. Domaneschi & L. Martinelli	Estimating the remaining service life of a historical railway bridge P. Bassi, S. Casciati & L. Faravelli
German approach to a holistic assessment of steel and composite bridges P. Maier, U. Kuhlmann, H. Friedrich, J. Krieger, M. Pfaffinger & M. Mensinger	Seismic vulnerability of shallow buried rectangular structures E. Debiashi, A. Gajo & D. Zonta	Structural control of a wind excited suspension bridge model accounting for motion induced wind forces M. Domaneschi & L. Martinelli	Segmentation and condition rating of concrete bridge decks using NDE for more objective inspection and rehabilitation planning N. Guicunski, A. Maher, H. Ghasemi & F.S. Ibrahim	Life cycle assessment for representative steel and composite bridges T. Beck, M. Fischer & M. Pfaffinger	Accounting for bridge condition and correlation estimates in the seismic reliability analysis of aging transportation networks J. Ghosh, K. Roknuddin, J.E. Padgett & L. Dueñas-Osorio	Detailed numerical and experimental dynamic analysis of long-span footbridges to optimize structural control measures C. Meinhardt	Effect of ASR on steel-concrete bond behavior in the lap-splice region of bridge columns Q. Huang, P. Gardoni, A. Pagnotta & D. Trejo
The social dimension of bridge sustainability – Impacts on users and the public T. Zinke, T. Ummenhofer, M. Pfaffinger & M. Mensinger	Lifetime risk assessment of bridges affected by multiple hazards A. Decò & D.M. Frangopol	Elaboration of the vibration comfort criteria for footbridges during vibrations induced by pedestrians M. Pantak	A probabilistic approach for the quantification of structural robustness N. Kagho, A. Orcesi & C. Cremona	Steel-composite bridges – Holistic approach applied to European case studies P. Maier, U. Kuhlmann, Y. Tardivel, N. Robert, J. Raoul, V. Perdigão, N. Martins, P. Barros, H. Friedrich & J. Krieger	The broad impact of disaster risk mitigation based on IT solutions G.M. Atanasiu & F. Leon	Spectral analysis of dynamic response of footbridges to random pedestrian loads M. Gladysz & W. Zielichowski-Haber	Reliability analysis of highway bridge structures considering ultimate load effects L.A. McCarthy & C.C. Caprani
Life cycle analysis of highway composite bridges H. Genvásio, L. Simões da Silva, V. Perdigão, P. Barros, A. Orcesi & K. Nielsen	Optimizing bridge design by improved deterioration models through fatigue tests P. Maier, U. Kuhlmann, N. Popa & R. Wilms	Stochastic model of continuously measured vertical pedestrian loads V. Racic, J.M.W. Brownjohn & A. Pavic	Reliability-based analysis of the progressive collapse of bridges F. Miao & M. Ghosn	Experimental and analytical studies on fatigue strength of corroded bridge wires S. Nakamura & K. Suzumura	Dynamic response analyses for human-induced lateral vibration on footbridges M. Yoneda	Reliability assessment of concrete bridges D. Novák, B. Teplý, R. Pukl & A. Strauss	

Concurrent Technical Sessions (MoM-5 to MoM-8)

MoM-5 Gardenia Room		MoM-6 Ortensia Room		MoM-7 Mimosa Room		MoM-8 Camelia Room	
Special Session: Operation and Maintenance of Major Landmark Bridges	Mini-Symposium: Brick and Stone Masonry Bridge Safety and Durability	Special Session: Recent Advances in Bridge Health Monitoring		Special Session: TEAM: A Marie Curie Training Network on Bridge Management		Special Session: TEAM: A Marie Curie Training Network on Bridge Management	Special Session: TEAM: A Marie Curie Training Network on Bridge Management
Chairs: Jens Sandager Jensen & David Mackenzie	Chairs: A. Benedetti & F. Dall'Aglio	Chairs: Christian Cremona & André Orcesi		Chairs: Ciaran McNally & Eugen Brühwiler		Chairs: Ciaran McNally & Eugen Brühwiler	Chairs: Ciaran McNally & Eugen Brühwiler
Optimal maintenance of major bridges M.L. Bloomstine	Patch loading of longitudinally stiffened webs A. Benedetti & F. Dall'Aglio	Perturbation based stochastic model updating methods for the evaluation of structural modifications R. Bioghe, D. Clair & M. Fogli		Prediction of moment redistribution and influence of rotation capacity in reinforced concrete beams N. Bagge, C. Pedersen & A. O'Connor		Load effect of multi-lane traffic simulations on long-span bridges C.C. Caprani, A. Lipari & E.J. O'Brien	
Maintenance of bridge cable systems J. Laigaard, O. Sørensen & N. Bitsch	Masonry bridges: static and dynamic response through reduced scale models A. Brencich	Supervised learning algorithms for damage detection and long term bridge monitoring C. Cremona, A. Cury & A. Orcesi		Bridge characterization and structural health monitoring: a suspension bridge case study A. Houel, A. Orcesi & R. Leconte		DynaMo – software for vibration based structural health monitoring E. Magalhães, S. Amador, Á. Cunha & E. Caetano	Comparison of electromagnetic non-destructive evaluation techniques for the monitoring of chloride ingress in cover concrete R. du Plooy, S. Palma Lopes, G. Villain, X. Dérobert, B. Thauvin & C. Lestréhan
Reliability based inspection and reliability centered maintenance P. Linneberg, M. Zinck & K.V. Christensen	Strengthening effectiveness of ancient masonry bridge N. Gattesco, R. Franceschini, V. Kristek, A. Kravtsov & J. Rimal						TEAM – a Marie Curie approach to bridge management C. McNally
Maintenance of long span bridges D.K. MacKenzie & B. Colford	Strengthening of arch masonry bridges with "RAM" – Reinforced Arch Method L. Jurina			Structural monitoring of the Tacony-Palmyra Bridge using video and sensor integration for enhanced data interpretation M.T. Yamold, F.L. Moon, A.E. Aktan & B. Glisic			Estimation of lifetime maximum distributions of bridge traffic load effects E.J. O'Brien, D. Hajializadeh, E. Sheils & B. Enright
A structural health monitoring systems for long span bridges D.K. MacKenzie, N. Apaydin & O. Akkol	Remedial works and repairs of Prague's historical Charles Bridge V. Krížek, V. Kristek & J. Rímal (J. Broukalová)			Cameras as displacement sensors to get the dynamic motion of a bridge: performance evaluation against traditional approaches G. Busca, A. Cigada, P. Mazzoleni, E. Zappa & M. Franzì			Fatigue assessment of bridges using realistic train models A. Ottosson, C. Pedersen & A. O'Connor
Humber Bridge A-frame refurbishment / replacement S.R. Hornby, J.H. Collins, P.G. Hill & J.R. Cooper	Structural assessment of the railway masonry arch bridge crossing the Reno river in Bologna C. Mazzotti, S. de Miranda, G. Castellazzi & F. Carrea						A monitoring system for determination of real deck slab behaviour in prestressed box girder bridges M.A. Treacy & E. Brühwiler
Control of traffic loads on Great Belt Bridge J. Laigaard, N. Bitsch, H. Gjelstrup & K.A. Nielsen	Investigation and upgrading of a historical multispan arch masonry bridge A. Paeglis & A. Paeglis			Use of structural monitoring in simulation of train-bridge interaction R. Kiviluoma & H. Yli-Vilamo			Extrapolation of traffic data for development of traffic load models: assessment of methods used during background works of the Eurocode X.Y. Zhou, F. Schmidt & B. Jacob
Variability in dynamic characteristics of the Sutong cable-stayed bridge under routine traffic conditions J. Liu & Q. Zhang	Static and seismic retrofit of masonry arch bridges: case studies G. Tecchio, F. Da Porto, P. Zampieri, C. Modena & C. Bettio						

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Concurrent Technical Sessions (MoA-1 to MoA-4)

Concurrent Technical Sessions (MoA-1 to MoA-4)				14:00-16:00 Monday Afternoon, July 9 th , 2012			
MoA-1 Auditorium	MoA-2 Magnolia Room	MoA-3 Azalea Room	MoA-4 Orchidea Room	MoA-1 Auditorium	MoA-2 Magnolia Room	MoA-3 Azalea Room	MoA-4 Orchidea Room
Mini-Symposium: Strengthening of Existing Bridges with FRP Composites (1)	Mini-Symposium: SmartEN ITN - Smart Management for Sustainable Built Environment including Bridges and Structural Systems (1)	Special Session: Management and Preservation of Long Span Historic Bridges	Mini-Symposium: Reliability Analysis of Bridge Structures (2)	Chairs: Carlo Pellegrino & Maurizio Guadagnini	Chairs: Rosemarie Helmreich & Marios Kyriakides	Chairs: Emin Aktan & Ivan Bartoli	Chairs: Franck Schoefs & Francesca Lanata
Open issues in design procedures for FRP strengthening of reinforced concrete bridges C. Pellegrino	SmartEN – Smart management for sustainable built environment including bridges, structures and infrastructure systems T. Onoufriou, M.A. Kyriakides, K. Berberidis, M. Chryssanthopoulos & A. Kalis	Preservation and management of historic landmark bridges that remain essential as critical infrastructure elements I. Bartoli & A.E. Aktan	Probabilistic load-modelling and reliability-based load-rating for existing bridges S.G. Reid & N. Yiaroou	Bond of FRP strengthening systems for concrete structures: a round Robin test M. Guadagnini, A. Serbescu, A. Palmieri, S. Matthes, A. Bilotta, E. Nigro, C. Mazzotti, G. Sas, B. Talister, F. Ceroni, C. Czaderki, S. Olia, Z. Szabo, G. Balazs, J. Barros, I. Costa & V. Tamuzs	Power-efficient wireless sensor reachback for SHM D. Ampeliotis, N. Bogdanovic, K. Berberidis, F. Casciati & R. Al-Saleh	Knowledge management for aging infrastructure E. Jackson, E. Richter, P.L. Gurian, A. Pradhan, E. Aktan & F. Moon (l. Bartoli)	Reliability of bridge deck subject to random vehicular and seismic loads through subset simulation D. Sen, B. Bhattacharya & C.S. Manohar
Bond behavior and failure mechanisms of EFR made of UHM carbon fibers F. Jesse, W. Stremmel & M. Curbach	Structural diagnostic via compressive sensing E. Casciati, L. Faravelli, R. Al-Saleh & K. Hinc	Maintaining and preserving long span signature structures D.S. Lowdermilk, G. Nyikita & J. Jeffers	Extreme value distribution model of vehicle loads incorporating de-correlated tail fitting and stationary gamma process L. Shunlong, L. Hui, Z. Fujian, G. Yiming & Z. Guo	Influence of the axial stiffness of the reinforcement on the FRP-concrete interface's fracture energy C. Mazzotti	Towards a SHM-based methodology for updating fatigue reliability of orthotropic steel decks I.F. Alcover, J.E. Andersen, M.K. Chryssanthopoulos & M.I. Rafiq	iCOMPASS: an integrated approach in performance-based management of infrastructures E. Minale, M. DePrest, N. Dubbs, F.L. Moon, A.E. Aktan, P. Adams & S. Ozalis	Probabilistic performance assessment of concrete structures subjected to corrosion process A. Strauss, R. Wendner, K. Bergmeister, B. Teply
Flexural tests on GFRP RC slabs: experimental results and numerical simulations E. Nigro, A. Bilotta, G. Cefarelli, G. Manfredi & E. Cosenza	Low cost wireless sensor networks for continuous bridge monitoring B. Han, A. Kalis, P. Tragas, R.H. Nielsen & R. Prasad	Evaluation of a long-span steel tied arch bridge using temperature-based structural identification M.T. Yamold, F.L. Moon, N.C. Dubbs & A.E. Aktan	Detailed comparison between ASR/LFR and LFR for reinforced concrete highway bridges H. Toutanji, D. Wang & R. Vuddandam	Stress analysis method for steel plate multilayered CFRP under uniaxial loading T. Miyashita & M. Nagai	The reconstruction of the Williamsburg Bridge in New York City R.D. Csogi	Structural reliability analysis of deteriorating RC bridges considering spatial variability T.V. Tran, E. Bastidas-Arteaga, F. Schoefs, S. Bonnet, A.J. O'Connor & F. Lanata	Probabilistic seismic response of a bridge-soil-foundation system under the combined effect of vertical and horizontal ground motions Z. Wang, J.E. Padgett & L. Dueñas-Osorio
Design of externally plated RC beams in bridging applications S. Aliamiri & M. Raoof	Performance indicators based on structural health monitoring for management of bridges A.D. Orcesi & D.M. Frangopol	Contribution of the FBG based monitoring to the rehabilitation of a centenary steel bridge C. Rodrigues, F. Cavadas, C. Félix & J. Figueiras	Reliable damage detection and localization using direct strain sensing Y. Yao & B. Gliscic	NDT-based monitoring of accelerated steel corrosion in concrete S.-X. Hong, W.L. Lai, R. Hellmerich & B. Millmann	Renovation of a heritage protected suspension bridge with replacement of key components and protection of seismic protection T. Spuler & G. Moor	Bayesian networks for post-earthquake assessment of bridges Y.C. Yue, M. Pozzi, D. Zonta & R. Zandomini	

Concurrent Technical Sessions (MoA-5 to MoA-8)

Concurrent Technical Sessions (MoA-5 to MoA-8)				14:00-16:00 Monday Afternoon, July 9 th , 2012			
MoA-5 Gardenia Room	MoA-6 Ortensia Room	MoA-7 Mimosa Room	MoA-8 Camelia Room	MoA-5 Gardenia Room	MoA-6 Ortensia Room	MoA-7 Mimosa Room	MoA-8 Camelia Room
General Session: Bridge Strengthening and Rehabilitation	Special Session: Advances in Modeling and Analysis for Performance-Based Design of Bridge Structures subjected to Multiple Hazards	Mini-Symposium: Monitoring and Assessment of Bridges using Novel Techniques (1)	Special Session: Bridges for High-Speed Railways				
Chairs: Raffaele Landolfo & Dario Coronelli	Chairs: Francesco Petrini & Alessandro Palmeri	Chairs: Luc Taerwe & Alfred Strauss	Chairs: Rui Calçada & José Maria Goicolea				
Structural assessment of Bullona 1929 railway bridge station to double span by external post-tensioning <u>C.Beltramini, C.Silvestri & G.Pedrazzi</u>	Performance-based design of bridge structures subjected to multiple hazards: a review <u>F.Petrini & A.Palmeri</u>	Experimental study on bridge scour monitoring system <u>C.C.Chen, S.C.Wong, K.C.Chang & C.Y.Lin</u>	Analysis of lateral dynamics of railway vehicles on viaducts with coupled models <u>J.M.Goicolea, P.Antolín & J.Oliva</u>				
Reinforcement of structural elements by the use of composite materials and external prestressing <u>E.De Angelis, F.Incelli, B.Rinaldi & S.Mancini</u>	Numerical simulation of bridges remodelling <u>A.Mari, J.Bairián, R.Moreno, E.Oller & J.J.Alvarez</u>	Subsequent anchorage of transverse prestressing cables in bridge decks <u>Ch.Fust, P.Mark & M.Wolff</u>	Dynamic interaction between rails and structure in a composite bridge of 120 m length <u>C.Jurado</u>				
Bridge strengthening by network arch: structural performance and design criteria <u>M.A.Valenzuela & J.R.Casas</u>	Structural response of bridges to fire after explosion <u>C.Crosti, P.Olmati & F.Gentili</u>	Bridge management system: challenges of adopting a bridge management system appropriate to the needs of a local authority. Example from the United Kingdom <u>B.Kamya</u>	Investigation of major dynamic responses in the high-speed railway bridges for KTX <u>B.S.Kim, W.J.Chiu, E.S.Chiu & J.W.Kwark</u>				
Strengthening of box girders using adaptive "tube-in-tube" concepts <u>M.Empelmann, D.Busse, S.Hamm, M.Girmscheid & T.Zedler</u>	The performance-based evaluation of kinematic pile response due to lateral spread at an historic bridge in Costa Rica <u>K.W.Franke & K.M.Rollins</u>	Optimized monitoring concepts for arch bridges <u>A.Krawitschuk, A.Strauss, K.Bergmeister & R.Wendner</u>	The vertical acceleration on a bridge deck for riding stability of high-speed train <u>J.W.Kwark, H.J.Yoon, W.J.Chiu & B.S.Kim</u>				
Executive extremely urgent project for the rehabilitation of vehicular and pedestrian traffic of the bridge over Corace river in Gimigliano municipality <u>E.Siviero & A.Stocco (A.Totaro)</u>	Finite element analysis of innovative solutions of precast concrete beam-column ductile connections <u>A.Saviotti, P.Olmati & F.Bontempi</u>	Advantages of radar interferometry for assessment of dynamic deformation of bridge <u>P.Kuras, T.Owerko, L.Ortyl, R.Kocierz, O.Sukta & S.Pradelok</u>	Train-bridge interaction effects on the dynamic response of a small span high-speed railway bridge <u>J.Rocha, A.A.Henriques & R.Calçada</u>				
Lessons learned from the Little Lake Harris Bridge settlement restoration project 736 <u>M.Hassan, A.Sallam & D.Thompson</u>	Reliability analysis and in-field investigation of a r.c. bridge over river Adige in Verona, Italy <u>F.Carturan, K.Islami, C.Pellegrino & C.Modena (M.A.Zanini)</u>	Combined use of ground penetrating radar and laser scanner for bridge health assessment <u>S.Oppioni, G.Lommori & M.Marelli</u>	Fatigue analysis of precast girder webs in railway bridge deck <u>C.Sousa, J.Rocha, R.Calçada & A.S.Neves</u>				
Assessment procedures and strengthening of an existing metal bridge <u>A.Pipinato</u>	Prediction of service performance for RC bridge by considering the coupling effect of load-environment in service cycle <u>T.Guobin, X.Yiqiang & W.Qiangqiang</u>	Monitoring based assessment of a jointless bridge <u>A.Strauss, A.Krawitschuk, R.Wendner, D.M.Frangopol & K.Bergmeister</u>	Bridge/train interaction analysis of a suspension bridge subjected to seismic loads <u>K.Sungil & K.Jongwon</u>				
Probabilistic modeling of reinforced concrete bridge repair/deterioration in marine environments <u>P.C.Ryan & A.O'Connor (T.Reale)</u>	Innovative numerical modeling to investigate local scouring problems induced by fluvial structures <u>R.Guandalini, G.Agate, S.Manenti, S.Sibilla & M.Galati</u>	Laser vibrometry for bridge post-repair investigation <u>M.Schmideler, A.Taylor-Noonan, R.Heere & S.E.Chen</u>	Inspection and evaluation of steel bridges from a high-speed railway network <u>Ph.Van Bogert</u>				
		Rapid non-contact tension force measurements on stay cables <u>M.Schmideler, A.Taylor-Noonan & R.Heere</u>	Great marquee for high-speed trains in the new railway station of Málaga <u>C.Jurado</u>				

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Concurrent Technical Sessions (MoE-1 to MoE-4)

MoE-1 Auditorium	MoE-2 Magnolia Room	MoE-3 Azalea Room	MoE-4 Orchidea Room
Mini-Symposium: Strengthening of Existing Bridges with FRP Composites (2)	Mini-Symposium: SmartEN ITN - Smart Management for Sustainable Built Environment Including Bridges and Structural Systems (2)	Mini-Symposium: Lifetime Design, Assessment, and Maintenance of Super Long-Span Bridges	Special Session: Non Deterministic Schemes for Structural Safety and Reliability of Bridges
Chairs: Carlo Pellegrino & Julien Michels	Chairs: Glauco Feltrin & Rosemarie Helmerich	Chairs: Soobong Shin & Ho-Kyung Kim	Chairs: Stefania Arangio & Yang Liu
Finite element modelling of beams strengthened with FRP sheets during short and long-term loads <u>G. Mazzucco</u> , V.A. Salomoni, C. Majorana & C. Pellegrino	Wisepot, a novel approach for wireless localization of damages in bridges <u>A. Kounouides</u> , M. Milis, T. Onoufriou, R. Votsis, A. Kalis, P. Tragas & A.G. Constantinides	Modeling of truck traffic for long span bridges <u>E.-S. Hwang</u> , K.-T. Lee & D.-Y. Kim	Redundancy of highway bridge decks <u>G. Anitori</u> , J.R. Casas & M. Ghosn
Effect of FRP retrofit interventions on seismic vulnerability of existing bridges <u>R. Morbin</u> , E. Casadei, C. Pellegrino & C. Modena (<u>M.A. Zanini</u>)	Physical characterization of reinforcing bar corrosion in concrete <u>L. Llano</u> , M.I. Rafiq & M.K. Chrysanthopoulos	Analytical prediction of lateral-torsional buckling of long-span suspension bridge <u>H. Katsuchi</u> , H. Yamada & K. Hasegawa	Bayesian neural networks for damage identification of a cable-stayed bridge <u>S. Arangio</u> & F. Bontempi
Ultimate limit state of MF-FRP beams <u>F. Nardone</u> , <u>G.P. Lignola</u> , A. Prota, G. Manfredi & A. Nanni	Physical layer network coding for bridge wireless monitoring <u>A.M. Mejjati</u> , G.R. Rekaya & J-C.B. Belfiore	Application of vision-based monitoring system to stay cables <u>S.W. Kim</u> , N.S. Kim & Y.M. Kim	Dynamic load allowance for capacity/rating of prestressed concrete girder bridges based on reliability studies <u>L. Deng</u> , C.S. Cai & M. Barbato
Strength and behavior of anchoring devices of CFRP rods for steel girder strengthening <u>K. Nozaka</u> , A. Tsukiyama, M. Matsumura, N. Ochi, T. Ishikawa & N. Hisabe	Bi-objective layout optimization of a wireless sensor network for footbridge monitoring <u>K. Jalsan</u> , K. Flouri & G. Feltrin	Field loading test for evaluation of load bearing capacity of a cable-stayed bridge <u>Y.-M. Kim</u> , S.-H. Shim, J. Lee & J.-H. Jang	Strength and reliability of FRP-reinforced concrete beams <u>S.E.C. Ribeiro</u> & <u>S.M.C. Diniz</u>
Strengthening of bridges with pretensioned FRP laminates: experimental investigation and a case study <u>C. Pellegrino</u> & <u>G. Giacomini</u>	Monitoring of bridge using a wireless sensor network based on network coding <u>J. Skulic</u> & K.K. Leung	A vision-based damage detection of cable exterior in cable-stayed bridges <u>J.-J. Lee</u> , K.-D. Kim & H.-N. Ho	Back analysis for earthquake damaged bridges. Part I : general procedure <u>P.E. Sebastiani</u> , <u>P. Franchini</u> , <u>F. Petriti</u> & <u>F. Bontempi</u>
A new composite section for strengthening orthotropic steel decks <u>R. Sarkerhosh</u> , A. Romeijn, C.Q. Klap & R. Sterkman	Optimization of wireless sensor locations for SHM based on application demands and networking limitations <u>R.N. Soman</u> , T. Onoufriou, R.A. Votsis, C.Z. Chrysostomou, M.A. Kyriakides	Long-term monitoring for dynamic properties on a suspension bridge under wind-induced vibration <u>D.U. Park</u> , N.S. Kim, J.H. Cheung & H.K. Kim	Back analysis for earthquake damaged bridges. Part II : application to a viaduct damaged in the April 6th, 2009 L'Aquila earthquake <u>P.E. Sebastiani</u> , <u>P. Franchini</u> , <u>F. Petriti</u> & <u>F. Bontempi</u>
Prediction of the interfacial shear stress with critical stress state criterion for externally bonded FRP-to-concrete substrate <u>H. Toustanji</u> , S. Ueno & R. Vuidandam	Estimation of Markovian deterioration models for bridge management <u>T. Liu</u> & <u>J. Weissmann</u>	Real-time steel cable NDE for corrosion defects using E/M sensors installed in a cable climbing robot <u>S. Park</u> , J.-W. Kim, M.-J. Nam, J.-J. Lee & H.N. Ho	Comparisons of four time-dependent reliability approaches for safety assessment of deteriorated concrete bridges <u>D.G. Lu</u> , X.P. Fan & W. Jiang
Strengthening of multi-storey parking by bridge engineering means <u>G. Lagoda</u> , M. Lagoda & J. Ciesla	Bridge maintenance planning using cross-entropy and non-stationary Markov chains <u>T.M. Reale</u> & <u>A.J. O'Connor</u>	Buffeting responses of a cable-stayed bridge during the typhoon Kompasu <u>J. Park</u> , H.-K. Kim, H.S. Lee, H.-M. Koh & S. Cho	Practical aspects of imposed autocorrelation and probabilistic nonlinear modeling <u>J. Podrouzek</u> & <u>A. Strauss</u>
		Vibration-based BHMS for long-span bridges considering environmental actions <u>S. Shin</u> , H. Kim, Y. Kim & J.C. Park	

16:30-18:30 | Monday Evening, July 9th, 2012

Concurrent Technical Sessions (MoE-5 to MoE-8)

MoE-5 Gardenia Room				MoE-6 Ortensia Room				MoE-7 Mimosa Room				MoE-8 Camelia Room																			
General Session: Seismic Assessment and Retrofit of Bridges		Special Session: Hybrid Composite Bridge System		Mini-Symposium: Monitoring and Assessment of Bridges using Novel Techniques (2)		General Session: Bridge Traffic Loading		General Session: Bridge Traffic Loading		Truck weight limits on concrete bridges regarding ultimate limit bending moment using reliability theory		Lane changing control to reduce traffic load effect on long-span bridges C.C. Caprani, B. Enright, & C. Carey		Newest development of concrete safety barriers for bridges and the need to harmonize national collision force regulations		A comparative study of bridge traffic load effect using micro-simulation and Eurocode load models		Extreme value statistics for the life-cycle assessment of masonry arch bridges		Evaluation of Eurocode damage equivalent factor based on traffic simulation		A practical overweight permit analysis system in Seoul A.H.M. Park, B.J.K. Lim, C.Y.M. Chon & D.S.H. Kim		Direct and probabilistic interrelationships between half-cell potential and resistivity test results for durability ranking		Noncontact bridge deformation monitoring using laser tracking technology		Monitoring of bridges – Detection of traffic loads		Structural diagnosis of bridges using traffic-induced vibration measurements	
Chairs: Fabrizio Palmisano & Lorenza Petrini	Chair: Hitoshi Furuta & Sang-Hyo Kim	Chair: Alfred Strauss & Paolo Gandoni	Chair: James Brownjohn & Colin Caprani	Displacement fragility curves for bridges with medium length B.A. Olmos, J.M. Jara & M. Jara	Partial interaction analyses of composite steel-concrete girders subjected to combined bending and shear P. Ansourian, G. Ranzi & A. Zona	Modeling and structural health monitoring of a geriatric signature movable bridge E. Minaie, F.L. Moon & A.E. Aktan (<u>L. Bartoli</u>)	L.M. Ferreira, M.K. El Debs & A.L.H.C. El Debs	Study on crack inspection of in-service steel structure by EDDM K.H. Chang, D.N.V. Vuong, S.H. Hyun, C.H. Lee, M. Hirohata & Y.C. Kim	Advanced methods for estimating the natural frequency and the damping from monitoring data of structures M. Österreicher, A. Strauss & K. Bergmeister	Stress measurement and material defect detection in steel strands by magneto elastic effect. Comparison with other non-destructive measurement techniques A.M. Sarmento, A. Lage, E. Caetano & J. Figueiras	A. Lipari, E.J. O'Brien & C.C. Caprani	Seismic performance evaluations of bridge-pier system with uncertainty T. Iida, D. Lira & K. Kawano	Linearity assumptions in design: soil-structure interaction R. Wendner, A. Strauss & T. Zimmermann	N. Maddah & A. Nussbaumer	Fatigue crack detection of steel truss bridge by using mechanoluminescent sensor N. Terasaki, C.-N. Xu, C. Li, L. Zhang, Y. Sakata, N. Ueno, C.-N. Xu, K. Yasuda, L.H. Ichinose	N.H. El-Ashkar, M.I.S. Elmasy & M.F.A. Alasadi	Uncertainty evaluation of the behavior of a composite beam J.C. Matos, I.B. Valente, P.J.S. Cruz & L.C. Neves	Using internal electrical resistivity measurements as a tool for structural health monitoring N.I.H. El-Ashkar, M.I.S. Elmasy & M.F.A. Alasadi	Expected seismic performance of irregular isolated bridges J.M. Jara, M. Jara, B.A. Olmos, D. Villanueva & H. Vanum	Y. Pakrashi, J. Kelly & A. O'Connor	Effects of superstructures on seismic behavior of steel bridge frame piers with circular columns K. Kinoshita	A live load control procedure for long-span bridges N.S. Rennehan & C.C. Caprani	Structural vulnerability and retrofitting of "Gioeni bridge" in Catania using innovative materials L. Anania, A. Badalà, S. Costa & G. D'Agata	C.W. Kim, R. Isemoto, K. Suguri & M. Kawatani	Negative moment region composite action of steel-concrete girders with grouped studs I.-S. Ahn, S.S. Chen, A.J. Arif, J.A. Carpenter & M. Chiewanichakorn	I.B. Attanayake, A. Servi & H.M. Aktan	Noncontact bridge deformation monitoring using laser tracking technology	C. von der Haar, S. Marx & M. Hansen	Monitoring of bridges – Detection of traffic loads	C. von der Haar, S. Marx & M. Hansen	



<h1>Program Overview</h1>																	
Tuesday, July 10 th , 2012																	
08:30 - 10:30	Keynote Lectures (Auditorium) <p>Masanobu SHINOZUKA: Remote monitoring: concept and pilot study Kai-Yuen WONG: System design and implementation of structural health monitoring system and maintenance management system for marine viaduct bridges Claudio MODENA: Assessment and retrofitting of existing bridges Túlio BITTENCOURT: Renewal and rehabilitation of the Brazilian railway bridge infrastructure</p>																
10:30 - 11:00	Coffee Break (Regina Palace Garden)																
11:00 - 13:00	Concurrent Technical Sessions <table> <tbody> <tr> <td>TuM-1 (Auditorium)</td><td>Research and Applications in Bridge Health Monitoring (1)</td></tr> <tr> <td>TuM-2 (Magnolia)</td><td>Advances on Structural Robustness and Redundancy of Bridges</td></tr> <tr> <td>TuM-3 (Azalea)</td><td>Bridge Maintenance and Management</td></tr> <tr> <td>TuM-4 (Orchidea)</td><td>Advanced Technologies in Standard Bridge Structures – From Research to Implementation</td></tr> <tr> <td>TuM-5 (Gardenia)</td><td>Smart SHM and Application to Bridge Condition Assessment and Maintenance (1)</td></tr> <tr> <td>TuM-6 (Ortensia)</td><td>Numerical Simulation of Durability of Concrete Bridges</td></tr> <tr> <td>TuM-7 (Mimosa)</td><td>Bridge Assessment and Design (1)</td></tr> <tr> <td>TuM-8 (Camelia)</td><td>Steel Bridge Rehabilitation (1)</td></tr> </tbody> </table>	TuM-1 (Auditorium)	Research and Applications in Bridge Health Monitoring (1)	TuM-2 (Magnolia)	Advances on Structural Robustness and Redundancy of Bridges	TuM-3 (Azalea)	Bridge Maintenance and Management	TuM-4 (Orchidea)	Advanced Technologies in Standard Bridge Structures – From Research to Implementation	TuM-5 (Gardenia)	Smart SHM and Application to Bridge Condition Assessment and Maintenance (1)	TuM-6 (Ortensia)	Numerical Simulation of Durability of Concrete Bridges	TuM-7 (Mimosa)	Bridge Assessment and Design (1)	TuM-8 (Camelia)	Steel Bridge Rehabilitation (1)
TuM-1 (Auditorium)	Research and Applications in Bridge Health Monitoring (1)																
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TuM-7 (Mimosa)	Bridge Assessment and Design (1)																
TuM-8 (Camelia)	Steel Bridge Rehabilitation (1)																
13:00 - 14:00	Lunch (Regina Palace Liberty Hall)																
14:00 - 16:00	Concurrent Technical Sessions <table> <tbody> <tr> <td>TuA-1 (Auditorium)</td><td>Research and Applications in Bridge Health Monitoring (2)</td></tr> <tr> <td>TuA-2 (Magnolia)</td><td>Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (1)</td></tr> <tr> <td>TuA-3 (Azalea)</td><td>Field Tests for Bridge Assessment</td></tr> <tr> <td>TuA-4 (Orchidea)</td><td>Fatigue Assessment and Design of Bridges</td></tr> <tr> <td>TuA-5 (Gardenia)</td><td>Smart SHM and Application to Bridge Condition Assessment and Maintenance (2)</td></tr> <tr> <td>TuA-6 (Ortensia)</td><td>Material Properties and Durability of Bridges</td></tr> <tr> <td>TuA-7 (Mimosa)</td><td>Bridge Assessment and Design (2)</td></tr> <tr> <td>TuA-8 (Camelia)</td><td>Steel Bridge Rehabilitation (2)</td></tr> </tbody> </table>	TuA-1 (Auditorium)	Research and Applications in Bridge Health Monitoring (2)	TuA-2 (Magnolia)	Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (1)	TuA-3 (Azalea)	Field Tests for Bridge Assessment	TuA-4 (Orchidea)	Fatigue Assessment and Design of Bridges	TuA-5 (Gardenia)	Smart SHM and Application to Bridge Condition Assessment and Maintenance (2)	TuA-6 (Ortensia)	Material Properties and Durability of Bridges	TuA-7 (Mimosa)	Bridge Assessment and Design (2)	TuA-8 (Camelia)	Steel Bridge Rehabilitation (2)
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TuA-7 (Mimosa)	Bridge Assessment and Design (2)																
TuA-8 (Camelia)	Steel Bridge Rehabilitation (2)																
16:00 - 16:30	Coffee Break (Regina Palace Garden)																
16:30 - 18:00	Concurrent Technical Sessions <table> <tbody> <tr> <td>TuE-1 (Auditorium)</td><td>Research and Applications in Bridge Health Monitoring (3)</td></tr> <tr> <td>TuE-2 (Magnolia)</td><td>Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (2)</td></tr> <tr> <td>TuE-3 (Azalea)</td><td>Light Rail Bridges in Chongqing, China</td></tr> <tr> <td>TuE-4 (Orchidea)</td><td>Advances in Engineering Structure Management in Finland</td></tr> <tr> <td>TuE-5 (Gardenia)</td><td>Highway Bridges and Viaducts</td></tr> <tr> <td>TuE-6 (Ortensia)</td><td>Advances in Nondestructive Evaluation and Monitoring of Concrete Bridge Decks</td></tr> <tr> <td>TuE-7 (Mimosa)</td><td>Wind Effects on Bridges</td></tr> <tr> <td>TuE-8 (Camelia)</td><td>New Developments on the Bridge Safety, Maintenance and Management in Mexico</td></tr> </tbody> </table>	TuE-1 (Auditorium)	Research and Applications in Bridge Health Monitoring (3)	TuE-2 (Magnolia)	Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (2)	TuE-3 (Azalea)	Light Rail Bridges in Chongqing, China	TuE-4 (Orchidea)	Advances in Engineering Structure Management in Finland	TuE-5 (Gardenia)	Highway Bridges and Viaducts	TuE-6 (Ortensia)	Advances in Nondestructive Evaluation and Monitoring of Concrete Bridge Decks	TuE-7 (Mimosa)	Wind Effects on Bridges	TuE-8 (Camelia)	New Developments on the Bridge Safety, Maintenance and Management in Mexico
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TuE-8 (Camelia)	New Developments on the Bridge Safety, Maintenance and Management in Mexico																
18:00 - 19:00	General Assembly (Auditorium)																

Keynote Lectures

08:30 - 10:30

Keynote Lectures (Auditorium)

Chairs: Pier Giorgio Malerba & Man-Chung Tang



Remote monitoring: concept and pilot study

Masanobu SHINOZUKA

University of California
Irvine, CA, USA



System design and implementation of structural health monitoring system and maintenance management system for marine viaduct bridges

Kai-Yuen WONG

The Government of the Hong Kong Administrative Region
Hong Kong, P.R.C.



Assessment and retrofitting of existing bridges

Claudio MODENA

University of Padua
Padua, Italy



Renewal and rehabilitation of the Brazilian railway bridge infrastructure

Túlio BITTENCOURT

University of São Paulo
São Paulo, Brazil

IABMAS 2012

6th International Conference on
Bridge Maintenance, Safety and Management



POLITECNICO
DI MILANO

Concurrent Technical Sessions (TuM-1 to TuM-4)

TuM-1 Auditorium	TuM-2 Magnolia Room	TuM-3 Azalea Room	TuM-4 Orchidea Room
Miri-Symposium: Research and Applications in Bridge Health Monitoring (1)	Special Session: Advances on Structural Robustness and Redundancy of Bridges		
Chairs: Necati Catbas & Joan Casas	Chairs: Fabio Biondini & Mitsuysoshi Akiyama	Chairs: Andrea Del Grosso & Giuseppe Pasqualato	Chairs: M. Saïdi Saïdi & Sara Casciati
Experimental load rating of a steel girder bridge using structural health monitoring and modeling <u>E.S. Bell</u> , <u>P.J. Lefebvre</u> , <u>M. Sanayeji</u> , <u>J.D. Sipple</u> , <u>M. Iplikcioglu</u> & <u>B.R. Brenner</u>	Evaluation of bridge redundancy under lateral loads <u>G. Anitori</u> , <u>J.R. Casas</u> & <u>M. Ghosn</u>	A BMS development project with an integrated inspection program <u>E. Akgül</u>	Application of shape memory alloys (SMAs), for prevention of bridge deck unseating during hurricane wave and surge loading <u>N. Ataei</u> , <u>E. McCarthy</u> & <u>J.E. Padgett</u>
Bridge condition assessment using digital image correlation and structural modeling <u>E.S. Bell</u> , <u>J.T. Peddle</u> & <u>A. Goudreau</u>	Enhancement of bridge redundancy to lateral loads by FRP strengthening <u>G. Anitori</u> , <u>J.R. Casas</u> , <u>M. Ghosn</u> & <u>S. Jurado</u>	"The Maintenance Manual" in important infrastructural project, from the design up to the implementation after construction <u>E. Frugolletti</u> , <u>G. Pasqualato</u> & <u>R. Sagula</u>	Assessment of a historical railway bridge toward traffic regulation requirements <u>N. Boumechra</u> , <u>F. Casciati</u> & <u>S. Casciati</u>
Implementation of Robust Regression Algorithm (RRA) to detect structural change using Fiber Bragg Grating (FBG) data <u>F.N. Catbas</u> , <u>M. Malekzadeh</u> & <u>I.-B. Kwon</u>	Assessment of the levels of load-path redundancy in short span steel truss bridges <u>K.E. Barth</u> , <u>G.K. Michaelson</u> , <u>J.M. Stains</u> , & <u>K.P. Mertens</u>	Minnesota Department of Transportation system new structure information management system <u>J. Zink</u> , <u>J.K. Shaffer</u> , <u>M.C. Schellhase</u> & <u>B.D. Witter</u>	Research and application of precast segmental concrete bridge columns in regions of high seismicity <u>K.-C. Chang</u> , <u>M.-S. Tsai</u> , <u>Y.-C. Ou</u> , <u>P.-H. Wang</u> & <u>G.C. Lee</u>
Indirect structural health monitoring in bridges: scale experiments <u>F. Cerdà</u> , <u>J. Garrett</u> , <u>J. Bielak</u> , <u>J. Barrera</u> , <u>Z. Zhuang</u> , <u>S. Chen</u> , <u>M. McCann</u> , <u>J. Kovacevic</u> & <u>P. Rizzo</u>	Lifetime structural robustness of concrete bridge piers in aggressive environment <u>E. Biondini</u> & <u>D.M. Frangopol</u>	Bridge management system implementation in Italy, Pontis® and other BMS application in Italy <u>E. Frugolletti</u> , <u>G. Pasqualato</u> & <u>E. Spallafarossa</u>	Damping system for stay cables <u>P. Egger</u> & <u>J. Kollegger</u>
Bridge pier scouring: a new approach for monitoring. A case in northern Italy <u>A. Cigada</u> , <u>S. Manzoni</u> , <u>F. Ballio</u> , <u>G. Crotti</u> , <u>G. Rossi</u> & <u>C. Someda</u>	Robustness assessment of a corroded RC bridge deck <u>E.S. Cavaco</u> , <u>L.A.C. Neves</u> & <u>J.R. Casas</u>	The implementation of a bridge management system in Portugal <u>C.S. Horta</u> & <u>E.C. Lopes</u>	Shake table testing of a quarter-scale 4-span bridge with composite piers <u>F. Kavianipour</u> & <u>M. Saïdi</u>
On the static monitoring of bridges and bridge-like structures <u>A.E. Del Grosso</u>	Imperfection sensitivity of hanger of a suspension bridge for different hanger arrangements <u>M. Inoue</u>	Approach for the life-cycle management of structures including durability analysis and maintenance planning <u>P. Furtner</u> & <u>R. Veit-Egerer</u>	Fatigue behaviour of bridge deck slab elements strengthened with reinforced UHPFRC <u>T. Makita</u> & <u>E. Brühwiler</u>
Reliability prediction based on family of models <u>H.B. Gokce</u> , <u>F.N. Catbas</u> & <u>D.M. Frangopol</u>	Robustness assessment of suspension bridges <u>M. Haberland</u> , <u>S. Haß</u> & <u>U. Starossek</u>	Seismic risk assessment and retrofit design of existing concrete bridges for the Italian highway Savona-Ventimiglia <u>C. Bafaro</u> , <u>G. Massone</u> , <u>G. Pasqualato</u> , <u>G. Massa</u> & <u>F. Lentì</u>	Gradient anchorage method for prestressed CFRP strips – Principle and application <u>J. Michels</u> , <u>C. Czaderski</u> , <u>R. Brönnimann</u> & <u>M. Motavalli</u>
Automaton of concrete bridge deck condition assessment and rehabilitation <u>N. Gucunski</u> , <u>J. Yi</u> & <u>F. Moon</u>	Exploring system interdependences via a multi-disciplinary modeling approach: application to bridge management <u>E. Andrijevic</u> , <u>S. Chase</u> , <u>Z. Guo</u> & <u>S. Hwang</u>		
Effectiveness of multiple unseating prevention devices for bridges under extreme earthquakes <u>T.Y. Lee</u> , <u>D.W. Chang</u> & <u>D.C. Dzeng</u>	Development of an advanced orthotropic steel deck system for long span bridge <u>C.K. Oh</u> , <u>K.J. Hong</u> & <u>D. Bae</u>		

Special Session:
Advanced Technologies in Standard Bridge Structures – From Research to Implementation

Application of shape memory alloys (SMAs), for prevention of bridge deck unseating during hurricane wave and surge loading
N. Ataei, E. McCarthy & J.E. Padgett

Assessment of a historical railway bridge toward traffic regulation requirements
N. Boumechra, F. Casciati & S. Casciati

Research and application of precast segmental concrete bridge columns in regions of high seismicity
K.-C. Chang, M.-S. Tsai, Y.-C. Ou, P.-H. Wang & G.C. Lee

Research and application of stay cables
P. Egger & J. Kollegger

Shake table testing of a quarter-scale 4-span bridge with composite piers
F. Kavianipour & M. Saïdi

Fatigue behaviour of bridge deck slab elements strengthened with reinforced UHPFRC
T. Makita & E. Brühwiler

Gradient anchorage method for prestressed CFRP strips – Principle and application
J. Michels, C. Czaderski, R. Brönnimann & M. Motavalli

Development of an advanced orthotropic steel deck system for long span bridge
C.K. Oh, K.J. Hong & D. Bae

Concurrent Technical Sessions (TuM-5 to TuM-8)				11:00-13:00 Tuesday Morning, July 10 th , 2012			
TuM-5 Gardenia Room	TuM-6 Ortensia Room	TuM-7 Mimosa Room	TuM-8 Camelia Room				
Mini-Symposium: Smart SHM and Application to Bridge Condition Assessment and Maintenance (1)	Special Session: Numerical Simulation of Durability of Concrete Bridges	General Session: Bridge Assessment and Design (1)					Mini-Symposium: Steel Bridge Rehabilitation (1)
Chairs: Yunfeng Zhang & Matteo Pozzi	Chairs: Airong Chen & Tobias Zordan	Chairs: Paulo Cruz & Alessio Pipitone		Chairs: Masahiro Sakano & Kab-Soo Kyung			
Damage detection for local components of long suspension bridges using influence lines <u>Z.W. Chen, S. Zhu, Y.L. Xu & Q. Li</u>	Modeling corrosion-induced longitudinal crack width and its effect on corrosion rate <u>C. Cao, B. Y.B. Chan & M.M.S. Cheung</u>	Analysis and verification of existing bridge structures <u>C. Unger & M. Empelmann</u>		Bearing replacement and strengthening of Forth Road Bridge approach viaducts, UK <u>B. Colford, M. Chiarello, C. Hendy & J. Sandberg</u>			
Filtering environmental load effects to enhance novelty detection on cable-supported bridge performance <u>E.J. Cross, K. Worden, K.Y. Koo & J.M.W. Brownjohn</u>	Bond-slip model for generalized excitation <u>E. Mazzarolo, T. Zordan & B. Briseghella</u>	Pre-assessment of existing road bridges – New procedure for a rough but quick estimation of the capacity of existing road bridges <u>M. Hofmann, B. Kühn, H. Frießem, B. Winkler & M. Hoffmann</u>		Study on performance evaluation and maintenance management system of weathering steel bridge <u>J.-H. He, Y.Q. Liu, A.R. Chen & T. Yoda</u>			
System identification using wirelessly acquired vehicle-bridge interaction data from a highway bridge excited by a moving vehicle <u>J. Kim & J.P. Lynch (Sean O'Connoll)</u>	Optimization of maintenance planning for deteriorating RC bridges. I: Theory <u>H. Tian, D.M. Frangopol & A. Chen</u>	Live load factors for serviceability limit state of prestressed concrete girder stresses <u>E.-S. Hwang, S.-M. Kim & S.H. Nguyen</u>		Development of fatigue test method and improvement of fatigue life by new functional steel plates for welding of trough rib and deck plate of orthotropic decks <u>N. Konda, K. Arimoto, M. Nishio, M. Ichimiya, T. Kasugai & S. Kiyokawa</u>			
Sensor driven prognosis scheme based on moment estimator <u>Z. Li & Y. Zhang</u>	Optimization of maintenance planning for deteriorating RC bridges. II: Application <u>H. Tian, D.M. Frangopol & A. Chen</u>	Partial safety factors for existing reinforced concrete structures <u>T. Moser, A. Strauss & K. Bergmeister</u>		The analysis on the characteristic of fatigue crack in railway plate girder bridge and its retrofit method <u>S.J. Lee, K.S. Kyung, H.H. Lee & J.C. Jeon</u>			
Develop on-line parameter estimation methods for bridges under changing environment <u>C.-H. Loh, M.-C. Chen, S.-H. Chao, C.-H. Li</u>	Diffusion process and life-cycle analysis of concrete structures <u>X. Tu & A. Chen</u>	A study on temperature variation of steel box girder for construction of key-segment closure of partially earth-anchored cable-stayed bridges <u>S.-J. Park, Y.-G. Kim & S.-H. Kim</u>		Fatigue crack repair using drilled holes and externally bonded CFRP strips <u>F. Lin, J.G. Sun, H. Nakamura & K. Maeda</u>			
Long-term monitoring of composite girders using optical fiber sensor <u>Y. Oshima & M. Kado</u>	Numerical durability analysis of reinforced concrete bridges with focus on hygro-thermal behavior <u>F. Cramer, U. Kowalsky & D. Dinkler</u>	Structural analysis of bridges with time-variant modulus of elasticity under moving loads <u>H. Aied & A. Gonzalez</u>		Performance and durability verification tests on rationalized joint of precast steel-concrete composite deck for replacement of deteriorated highway bridge slab <u>H. Mizuno, H. Kaido, S. Matsui & T. Sugiyama</u>			
Assessing the value of alternative bridge health monitoring systems <u>M. Pozzi & A. Der Kiureghian</u>	Further study of chloride penetration in a RC slab sustaining in-service loads <u>A. Deif, B. Martin-Pérez & B. Cousin</u>	Reliability analysis of footbridge serviceability considering crowd loading <u>J. Keogh, C.C. Caprani, P. Archbold & P. Fanning</u>		Steel plate pre-stressing reinforcement for coped steel girder ends <u>Y. Nagao, K. Matsumoto, H. Namiki & M. Sakano</u>			
Low cost dynamic structural identification system for extensive bridge monitoring <u>J. García-Palacios, A. Araujo, O. Nieto-Taladriz, A. Samartín, E. Reynders & G. de Roeck</u>	Estimation of diffusion coefficient of chloride ions for concrete durability design <u>B.S. Park, J.W. Seok, J.M. Park, J.-Y. Cho & J.Y. Kim</u>	The study on stability of bridge on which heavy military vehicle passes <u>A. Do Kyoun Kim, B. Jae Uk Lee & C. Young Gu Kang</u>		Experimental study on high strength one-side bolted joints <u>K. Nakajima, H. Suzuki, Y. Kawabe & K. Fujii</u>			

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Concurrent Technical Sessions (TuA-1 to TuA-4)

TuA-1 Auditorium	TuA-2 Magnolia Room	TuA-3 Azalea Room	TuA-4 Orchidea Room
Mini-Symposium: Research and Applications in Bridge Health Monitoring (2) Chair(s): Hitoshi Furuta & Daniele Inaudi	Mini-Symposium: Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (1) Chair(s): Fabio Bondoni & Jamie Padgett	Mini-Symposium: Field Tests for Bridge Assessment Chair(s): Ayaho Miyamoto & Ilkka Hakola	General Session: Fatigue Assessment and Design of Bridges Chair(s): Joan Casas & Michel Ghosn
Structural health monitoring and damage detection using AdaBoost technique H. Hattori, M. Gul , F. N. Catbas & H. Furuta	Damage modeling and nonlinear analysis of concrete bridges under corrosion F. Bondoni & M. Vergani	Bridge testing, monitoring and condition assessment in Finland I. Hakola, P. Hradil & M. Halonen	Fatigue reliability analysis of steel bridge details based on field-monitored data and linear elastic fracture mechanics T. Guo & Y.W. Chen
A bridge damage detection approach using vehicle-bridge interaction analysis and neural network technique H. Hattori, X. He, F.N. Catbas, H. Furuta & M. Kawatani	Life-cycle analysis of bridges considering historic seismic damage and aging J. Ghosh, J.E. Padgett & M. Sánchez-Silva	Field tests for remaining life and load carrying capacity assessment of concrete bridges A. Miyamoto	Fatigue design of plated structures using structural hot spot stress approach M. Heshmati & M. Al-Emani (R. Kliger)
Development of a bridge damage detection approach using vehicle-bridge interaction analysis and soft computing methods X. He, F. N. Catbas, H. Hattori, H. Furuta, M. Kawatani, T. Hayashikawa & T. Matsumoto	Structural modeling of corroded reinforced concrete bridge columns A.S. Rao, M.D. Lepach & A.S. Kiremidjian	Development of a damage detection system for expansion joints of highway bridges applying acoustic method Y. Nishikawa, K. Taniguchi, L.H. Ichinose, S. Tsukamoto & T. Yamagami	Fatigue assessment of railway bridge detail using dynamic analysis and probabilistic fracture mechanics B.M. Imam & G. Kaliyaperumal
Distributed sensing for damage localization D. Inaudi, R. Belli & D. Poserato	Ductility behavior of deteriorating reinforced concrete members A.N. Kallias & M.I. Rafiq	Smart system of bridge strain monitoring during construction and service P. Olazek	Rate of convergence of measured stress range spectra J. Leander & R. Karoumi
A novel image-based approach for structural displacement measurement Y.F. Ji & Q.W. Zhang	Impact of corrosion on the seismic vulnerability of multi-span integral concrete bridges M. Ni Choisne, A. O'Connor & J.E. Padgett	Investigation of displacements of roadbridges under test loads using radar interferometry – Case study T. Owreko, L. Ortyl, R. Kocierz, P. Kuras & M. Salamak	Fatigue damage assessment of railway steel bridges based on short-term monitoring data L.C. Meneghetti, R.M. Teixeira, R. Oliveira, T.N. Bittencourt & A.P. Conceição Neto
Testing and long term monitoring of a pre-cast pre-stressed concrete girder bridge N.R. Johnson, S.M. Petroff, M.W. Halling & P.J. Barr	Probabilistic estimation of the initial time of corrosion of reinforced concrete components situated in a marine environment R.A. Oliveira & T.N. Bittencourt	Bridge condition assessment for short and medium span bridges by vibration responses of city bus A. Yabe & A. Miyamoto	Prediction of fatigue life of reinforced concrete bridges using fracture mechanics M. Rocha & E. Brühwiler
Modal parameters identification under multi-operational grades and its application to cable-stayed bridge Y. Liu & H. Li	Effect of corrosion of reinforcement on the coupled shear and bending behaviour of reinforced concrete beam W.J. Zhu, R. François & D. Coronelli	Rule-type knowledge discovery from field inspection data for highway bridges based on advanced data mining technique H. Yagi, A. Miyamoto & N. Tsukamoto	Fatigue life time assessment of structural steels by use of ductility parameters I. Schendel & U. Peil
A model-free data-interpretation approach for long-term monitoring of bridges I. Laony, T.N. Trinh & I.F.C. Smith	Life cycle assessment of existing steel bridges considering corrosion and fatigue coupled problems A. Pipitone, C. Pellegrino & C. Modena	Application of electromagnetic testing to orthotropic steel deck T. Yamada, A. Shirashi, M. Okuno, H. Sugiyama, N. Kanjo, S. Tsukamoto & T. Yamagami	Determination of the mean fatigue limit of a French railway bridge pylon iron by self-heating measurements under cyclic loadings S. Sire, C. Doudard & S. Calloch
			Localized bending fatigue behavior of high-strength steel monostrands J. Winkler, G. Fischer & C.T. Georgakis

14:00-16:00 | Tuesday Afternoon, July 10th, 2012

Concurrent Technical Sessions (TuA-5 to TuA-8)

Concurrent Technical Sessions (TuA-5 to TuA-8)				14:00-16:00 Tuesday Afternoon, July 10 th , 2012			
TuA-5 Gardenia Room	TuA-6 Ortensia Room	TuA-7 Mimosa Room	TuA-8 Camelia Room	TuA-5 Gardenia Room	TuA-6 Ortensia Room	TuA-7 Mimosa Room	TuA-8 Camelia Room
Mini-Symposium Smart SHM and Application to Bridge Condition Assessment and Maintenance (2)	General Session: Material Properties and Durability of Bridges	General Session: Bridge Assessment and Design (2)	Mini-Symposium: Steel Bridge Rehabilitation (2)	Chairs: Chunsheng Wang & Daniele Zonta	Chairs: Claudio Mazzotti & Tullio Bittencourt	Chairs: Haluk M. Aktan & Robert A.P. Sweeney	Chairs: Hiroyuki Suzuki & Hitoshi Nakamura
Streicher Bridge: a two-year monitoring overview <u>D.H. Sigurdardottir, J.P.S. Afonso, D.L.K. Hubbell & B. Glisic</u>	Improvement in tensile performance of steel fiber reinforced high strength concrete: influence of fiber shape and sand to aggregate ratio <u>S.T. Kang, H.W. Cho, J.H. Lee & D.J. Kim</u>	Structural assessment for high concrete pier with a vertical construction error and suggestion of the improvement measurement <u>J. Sim, K. Lee, H. Kim, A. Hanif, G. Kim, H. Ju & M. Ju</u>	Rehabilitation of steel expressway bridge with repeatedly developed fatigue cracks <u>H. Nakata, Y. Takamura, K. Adachi & M. Sakano</u>	Decentralized damage diagnosis for beam-like truss structure considering modeling error <u>Z. Sun & B. Zhou</u>	Analysis of normative approaches to service life design for carbonation induced reinforcement depassivation: fib MC-SLD, by50 and LNEC E465 <u>R.M. Ferreira & E. Vesikari</u>	Ultimate strength interaction of unstiffened steel box members subjected to bending and torsion <u>K. Kim</u>	Health monitoring via horizontal displacement at the end of steel bridge girders <u>H. Namiki, T. Kamizono, Y. Otsuka & S. Takahashi</u>
Fatigue cracking monitoring and evaluation using smart sensors for steel bridge decks <u>C. Wang, L. Tian, B. Fu & Y. Zhang</u>	Estimation of elastic modulus of reinforcement corrosion products using inverse analysis of digital image correlation measurements for input in corrosion-induced cracking model <u>B.J. Pease, A. Michel, A.E.A. Thybo & H. Stang</u>	Controlled demolition of damaged bridge decks <u>L. Della Sala</u>	Analysis on deck replacement plans of tied arch bridge with composite girder <u>S. Qing-Tian, Z. Ming-gen, W. Chong & D. Bin</u>	Steel bridge fatigue crack monitoring with broadband thin-film acoustic emission sensor <u>C. Zhou & Y. Zhang</u>	Anchorage capacity of naturally corroded reinforcement in an existing bridge <u>F. Berg, D. Johansson, K. Lundgren, M. Plos & K.Z. Hanjari</u>	Probability-based design of spun concrete bridge piers <u>R. Kliukas, R. Vadluga & A. Kudzys</u>	Investigation of the fracture surface of a cast iron finger joint <u>K. Sakiya, Y. Takamura, T. Yamagami & M. Yamamoto</u>
Structural health monitoring-based finite element model of Stonecutters Bridge <u>S.Zhu, Y.L. Xu, Y. Chen, Z.W. Chen, K.Y. Wong & S.L. Li</u>	Research on bond between non-metallic reinforcement bars and concrete for bridge applications <u>P. Mossakowski & W. Radomski</u>	Simplified and detailed calculations of long-term stress redistributions in continuous precast bridge decks <u>C. Sousa, M. Fonseca, R. Calçada & A.S. Neves</u>	Rapid emergency replacement of fire-damaged composite bridges using precast decks <u>C.S. Shim, C.H. Chung, I.K. Kim & Y.J. Kim</u>	Combination of sensing techniques to estimate tension and elongation in bridge cable-stays <u>D. Zonta, P. Esposito, M. Pozzi, R. Zandomini, M. Wang, Y. Zhao, D. Inaudi & D. Posenato</u>	Durability of corrosion protecting materials under sleepers of railway steel bridges <u>H. Higashiyama, T. Nakayama, M. Kimura, T. Sakamoto & S. Matsui</u>	Effect of soil-structure-interaction on the reliable seismic retrofit design of an existing highway bridge <u>S.R. Kharavati, M. Hosseini, M. Taghipour, E. Davoodi, M. Zohrehvandi, A. Esmaeilifar & S. Tahmasebiard</u>	Study of the hybrid structures changed from the steel bridges for railroad which considered construction <u>N. Taniguchi, M. Hansaka, N. Koide, K. Ohgaki, F. Ohkubo S. Satake & Y. Sugino</u>
Fatigue safety assessment of existing railway steel bridges based on in-situ monitoring data <u>C. Wang, S. Yan & L. Hao</u>	MMA polymer concrete materials for aging bridge rehabilitation and sustainability <u>A.M. Dinitz & M.S. Stenko</u>	Conflicting policies with CWR on open deck bridges <u>R.A.P. Sweeney</u>	Repair of fatigue cracks on steel plate deck in highway bridges with heavy traffic <u>K. Tokumasu, M. Kawamura & T. Nishioka</u>	Wireless crack sensing using an RFID-based folded patch antenna <u>X. Yi, Y. Wang, R.T. Leon, J. Cooper, M.M. Tentzeris</u>	Life-cycle cost estimation of a new metal spraying system for steel bridges <u>T. Kondo & S. Okuno</u>	Application of risk analysis for the preservation of post-tensioned girder bridge decks <u>C. Cremona, G. Lacoste, P. Corfdir, S. Neiers, C. Aubagnac, E. Delahaye, C. Marcotte & P. Paillouseau</u>	Development of the hot-spot stress sensor and application to orthotropic steel deck <u>T. Uesugi, S. Fujita, S. Tsukamoto, T. Yamagami & M. Sakano</u>
Piezoelectric-based crack detection techniques of concrete structures: experimental study <u>J.S. Zhu, C.E. Gao & L.K. He</u>	Basic creep study and formulation of a new model <u>M. Zeineddine, W. Raphael & A. Chateauneuf</u>	Jacking of bridge girders for bearing replacement <u>A.P. Ranasinghe & W.L. Gottshall</u>	Princess Margaret Bridge rehabilitation <u>A.R. Zaki & A. FM Girgis</u>	29 LABMAS 2012			

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Concurrent Technical Sessions (TuE-1 to TuE-4)

TuE-1 Auditorium	TuE-2 Magnolia Room	TuE-3 Azalea Room	TuE-4 Orchidea Room
Mini-Symposium: Research and Applications in Bridge Health Monitoring (3)	Mini-Symposium: Life-Cycle Design & Assessment of Bridges exposed to Corrosion and other Hazards (2)	Special Session: Light Rail Bridges in Chongqing, China	Special Session: Advances in Engineering Structure Management in Finland
Chairs: Mustafa Gul & Michel Ghosn	Chairs: Alessandro Palermo & Jamie Padgett	Chairs: Man-Chung Tang & Chuck Seim	Chairs: Marija-Kaarina Söderqvist & Risto Kiviluoma
Theoretical testing of an empirical mode decomposition damage detection approach using a spatial vehicle-bridge interaction model <i>J. Meredith & A. González</i>	Maintenance optimization of suspender ropes of suspension bridges <i>K. Sakai, S. Kusuhara, A. Moriyama & K. Ogihara</i>	Design of CaiJia rail bridge over JiaLing river in CongQing <i>B. Liu, Y. Qi & L. Lin</i>	Guidelines for calculating the life cycle costs <i>R. Kiviluoma & P. Korhonen</i>
Investigation of structural health of timber piles supporting aged bridge <i>T. Nishikawa, Y. Komatsu, S. Yumoto, T. Yamaguchi, T. Mino & T. Matsumoto</i>	Multi-objective cost analysis for bridges considering disasters, bridge form and driving comfort <i>Y.Q. Wang, A.R. Chen, X. Ruan & Y. Li</i>	Design of the Chongqing Caiyuanba Yangtze river bridge for dual highway and rail traffic <i>A.-S. Liu & Z.-G. Jiang (T. Ma)</i>	Management of inspection data quality of the Transport Agency's structures <i>M.-K. Söderqvist</i>
Baseline-less structural health monitoring system based on recurrence quantification analysis <i>Y. Nomura, T. Kusaka, D. Morimoto & H. Furuta</i>	Life-cycle seismic evaluation of existing reinforced concrete bridges considering corrosion of steel reinforcement <i>Y.-C. Ou, A.B. Delima & L. Cuite</i>	Wind-resistant study on Chongqing Chaotianmen Yangtze Bridge – The longest arch bridge in the world <i>C. Wang, Z. Li & P. Deng</i>	The new management system of engineering structures in Finland <i>M.-K. Söderqvist & M. Veijola</i>
One year monitoring of bridge eigenfrequency and vehicle weight for SHM <i>Y. Oshima, S. Heng & H. Kawano</i>	Effect of varying surface ageing on frost-salt scaling <i>H. Kuosa, M. Leivo, E. Holt & R.M. Ferreira</i>	Development of rail transit in mountainous city of Chongqing, China <i>J.-H. Zhong (T. Ma)</i>	Bridge life cycle optimisation, the Nordic ETSI project <i>M. Torkkeli & M. Piispainen</i>
Monitoring applications providing long-term benefits to owners <i>T. Spuler, G. Moor & R. Berger</i>	Modelling synergistic effects of carbonation/ chloride penetration and frost attack for service life design of concrete bridges <i>E. Yésikari, H. Kuosa, J. Piironen & R.M. Ferreira</i>		Guidelines and policy for maintaining and managing all engineering structures of the Traffic Agency <i>M. Torkkeli & J. Lämsä</i>
First year data mining for vibration based condition monitoring of a cable stayed bridge <i>Z. Sun & T. Yan</i>			Multi-objective optimization of engineering structures <i>P. Virtala, P.D. Thompson & R. Ellis</i>

16:30-18:00 | Tuesday Evening, July 10th, 2012

Concurrent Technical Sessions (TuE-5 to TuE-8)				16:30-18:00 Tuesday Evening, July 10 th , 2012	
TuE-5 Gardenia Room	TuE-6 Ortensia Room	TuE-7 Mimosa Room	TuE-8 Camelia Room		
General Session: Highway Bridges and Viaducts Chair: Antonio Mari & Lucio Ferretti Torricelli	Special Session: Advances in Nondestructive Evaluation and Monitoring of Concrete Bridge Decks Chair: Ivan Bartoli & Emin Aktan	General Session: Wind Effects on Bridges Chair: Hyun-Moo Koh & Francesco Petruini		Special Session: New Developments on the Bridge Safety, Maintenance and Management in Mexico Chair: David De Leon & Francesca Brando	
Earthquake retrofit campaign for large scale bridges in Istanbul <u>N.M. Apaydin</u>	Verification of advanced electromagnetic measurement techniques for corrosion and fracture detection of bridge tendons <u>A. Holst, H. Budelmann & H.-J. Wichmann</u>	Static and dynamic windproof efficiency evaluation for bridge cross section considered transmission of fairing <u>H. Lee, S. Oh, N. Chun & H.-E. Lee</u>		Time variation of bridges structural reliability due to corrosion in Mexico <u>D. De León, C.A. González-Pérez, S. Díaz, D. Delgado & J.C. Arteaga</u>	
Bridges and viaducts of "Variante di Valico" project <u>L. Ferretti Torricelli & A. Marchiondelli</u>	Damage assessment of reinforced concrete decks due to chloride-induced corrosion of reinforcing bars and fatigue <u>Y. Ishikawa, M. Aoyama, Y. Adachi & M. Nagai</u>	Blow-up oscillating solutions to some nonlinear fourth order differential equations describing oscillations of suspension bridges <u>E. Gazzola & R. Pavani</u>		Parametric study of bridges with substructure irregular conditions <u>M.C. Gómez-Sobrón & D.J. Salas-Mengchún</u>	
The renewal of the Burtscheidt Viaduct in Aachen Germany <u>A. Laubach</u>	Characterization and detection of bridge deck deterioration <u>K.R. Maser, A.J. Carmichael, N.M. Martino & R. Birken</u>	Study on long-term wind data recorded at Sutong Bridge site <u>H. Wang, J. Niu, T. Guo & Z. Zong</u>		Simplified revision of bridge structural types on seismic zones. Specific cases on Oaxaca, Guerrero, Michoacan, Colima and Mexico State <u>H. Hernández-Barrios & D. de León-Escobedo</u>	
Highway A24 in Italy: improvement of seismic performance <u>F. Incelli, B. Rinaldi, E. De Angelis & S. Mancini</u>	Non-destructive highway inspection methods using high definition video and infrared technology <u>M. Matsumoto, M. Sugimoto, K. Hashimoto & K. Mitani</u>	Wind shielding on long span bridges <u>S. Kite, M. Carter & E. Ozkan</u>		Dynamic characterization of highway bridges <u>M.E. Ruiz-Sandoval, G. Martínez, R. Rojas, A.R. Sánchez, E. O Navarro, J.M. Jara, B.A. Olmos & J. de la C. Tejeda</u>	
The maintenance of bridge structures: the case of the Soleri Viaduct in Cuneo <u>G. Pistone, A.D. Cavallo, R. Enrici & S. Nicola</u>	Rapid seismic scanning for bridge deck NDE <u>J.S. Popovics, T. Oh & R.W. Arnal</u>			Monitoring integrity and corrosion damage on cable stayed bridge "Jaime Dovall"; Mexico <u>R. Soto-Espitia, J.R. Vazquez Gonzalez & L. Martínez-Gómez</u>	
Efficient solution for bridge reconstruction <u>V. Popa</u>					



Program Overview

Wednesday, July 11th, 2012

08:00 - 09:30	Keynote Lectures (Auditorium)	
	Bruno GODART: Pathology, appraisal, repair and management of old prestressed beam and slab bridges	
	Richard SAUSE: Innovative steel bridge girders with tubular flanges	
	James BROWNJOHN: Operational deformations in long span bridges	
09:30 - 11:00	T.Y. Lin's Hundredth Birthday Special Plenary Session (Auditorium)	
	Chuck SEIM: The legacy of T.Y. Lin, his vision of bridge engineering	
	Jiri STRASKI: Power of prestressing	
	Marwan NADER: Design of the San Francisco Oakland Bay Bridge	
	Man-Chung TANG: Conceptualization of a bridge across the Taiwan Strait	
11:00 - 11:30	Coffee Break (Regina Palace Garden)	
11:30 - 13:00	Concurrent Technical Sessions	
	WeM-1 (Auditorium)	Research and Applications in Bridge Health Monitoring (4)
	WeM-2 (Magnolia)	Integral Bridges: Design and Technological Issues
	WeM-3 (Azalea)	Extreme Events of Long Span Bridges: Design, Assessment and Management
	WeM-4 (Orchidea)	Lessons Learnt from the Canterbury Earthquakes: Assessment, Testing and Analysis of New Zealand Bridges
	WeM-5 (Gardenia)	Energy Harvesting in Bridges and Transportation Infrastructure Networks
	WeM-6 (Ortensia)	Many Bridges Aren't Straight - Investigations of Curved and Skewed Structures
	WeM-7 (Mimosa)	Corrosion Detection in Cables and Concrete Bridges by Magnetic Methods
	WeM-8 (Camelia)	Bridge Management and Life-Cycle Cost
13:00 - 14:00	Lunch (Regina Palace Liberty Hall)	
14:00 - 16:00	Concurrent Technical Sessions	
	WeA-1 (Auditorium)	Risk Based Bridge Management (1)
	WeA-2 (Magnolia)	Residual Capacity and Service Life Assessment of Bridges
	WeA-3 (Azalea)	Damage Identification and Bridge Assessment
	WeA-4 (Orchidea)	Vulnerability of Bridges to Fire and Explosion
	WeA-5 (Gardenia)	Monitoring and Inspection of Bridges
	WeA-6 (Ortensia)	Bridge Joints and Seismic Protection Devices
	WeA-7 (Mimosa)	Optical Monitoring Techniques for Bridge Maintenance and Safety
	WeA-8 (Camelia)	Extending Bridge Life Through Industry Academic Partnerships
16:00 - 16:30	Coffee Break (Regina Palace Garden)	
16:30 - 18:00	Concurrent Technical Sessions	
	WeE-1 (Auditorium)	Risk Based Bridge Management (2)
	WeE-2 (Magnolia)	Artificial Intelligence Methods in Bridge Analysis and Design
	WeE-3 (Azalea)	Design and Seismic Analysis of Long Span Bridges – Case Studies
	WeE-4 (Orchidea)	Composite Bridge Structures
	WeE-5 (Gardenia)	Understanding and Enhancing Bridge Performance
	WeE-6 (Ortensia)	Bridge Modeling and Simulation
	WeE-7 (Mimosa)	Analysis, Design and Testing of Road Timber Bridges
	WeE-8 (Camelia)	Gusset Plates in Steel Truss Bridges: Testing, Analysis and Monitoring
18:00 - 19:00	Closing Ceremony	

Keynote Lectures & T.Y. Lin Special Session

08:00 - 09:30

Keynote Lectures (Auditorium)

Chairs: Franco Bontempi & Hyun-Moo Koh



Pathology, appraisal, repair and management of old prestressed beam and slab bridges

Bruno GODART

Université Paris-Est, IFSTTAR
Paris, France



Innovative steel bridge girders with tubular flanges

Richard SAUSE

ATLSS Center, Lehigh University
Bethlehem, PA, USA



Operational deformations in long span bridges

James BROWNJOHN

University of Sheffield
Sheffield, UK

09:30 - 11:00

T.Y. Lin's Hundredth Birthday Special Session (Auditorium)

Chair: Dan M. Frangopol and Frieder Seible

The legacy of T.Y. Lin, his vision of bridge engineering

Chuck SEIM, Consulting Bridge Engineer, El Cerrito, CA, USA

Power of prestressing

Jiri STRASKI, Brno University of Technology, Brno, Czech Republic

Design of the San Francisco Oakland Bay Bridge

Marwan NADER, T.Y. Lin International, San Francisco, CA, USA

Conceptualization of a bridge across the Taiwan Strait

Man-Chung TANG, T.Y. Lin International, San Francisco, CA, USA

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Concurrent Technical Sessions (WeM-1 to WeM-4)

WeM-1 Auditorium	WeM-2 Magnolia Room	WeM-3 Azalea Room	WeM-4 Orchidea Room
Mini-Symposium: Research and Applications in Bridge Health Monitoring (4)	Special Session: Integral Bridges: Design and Technological Issues	Special Session: Extreme Events of Long Span Bridges: Design, Assessment and Management	Special Session: Lessons Learnt from the Canterbury Earthquakes: Assessment, Testing and Analysis of New Zealand Bridges
Chairs: Necati Catbas & Andrea Del Grosso	Chairs: Pier Giorgio Malerba & Vladimir Kristek	Chairs: Airong Chen & Bruno Briseghella	Chairs: Alessandro Palermo & Liam Wotherspoon
Update on AAR bridge testing and monitoring <u>R.A.P. Sweeney & D. Otter</u>	Two integral bridges connecting the runways of the Milano Malpensa Airport <u>P.G. Malerba & G. Comarita</u>	Analysis on applicability of health monitoring techniques on a curved cable stayed bridge <u>B. Briseghella, A. Chen, X. Li, T. Zordan, C. Lan & E. Mazzatorta</u>	Performance of bridges during the 2010 Darfield earthquake <u>L.M. Wotherspoon, L.S. Hogan, A. Palermo, M. Le Heux, M. Bruneau & M. Anagnosopoulou</u>
Ankara-İstanbul railway high speed train project, construction of viaduct V4 of 2400 meters <u>S. Uluöz, S. Düzbasan, M. Camcioglu & E. Yakit</u>	Structure-soil interaction of buried arch bridges <u>M. Fogliari & V. Kristek</u>	Computational approach to predict transporting concrete in long-distance pumping <u>S.D. Jo, S.G. Lee, K.P. Jang, S.H. Kwon, C.K. Park, J.H. Jeong & S.H. Lee</u>	Overview of bridge performance during the 2011 Christchurch earthquake <u>A. Palermo, A. Kivell, L.M. Wotherspoon, L.S. Hogan, M. Yashinsky, M. Bruneau & E. Camnasio</u>
Application of OBR fiber optic technology in the structural health monitoring of the Can Fatjó Viaduct (Cerdanyola del Vallés - Spain) <u>V. Villalba, S. Villalba & J.R. Casas</u>	Integral bridge design solutions for Italian highway overpasses <u>L. Ferretti, Torricelli, A. Marchiondelli, R. Perfano & R. Stucchi</u>	Time-dependent reliability of carbonation process for concrete component with surface coating protection <u>X. Liu, X. Ruan & A.R. Chen</u>	Observed and predicted bridge damage following the recent Canterbury earthquakes: toward the calibration and refinement of damage and loss estimation tools <u>M. Brando, S.L. Lin, S. Giovinazzi & A. Palermo</u>
A comparison of different dynamic characterization methods for a truss bridge <u>T.R. Wank, E.V. Fernstrom & K.A. Grummelsman</u>	Integral bridge: a review on its behaviour under earthquake loads <u>M. Masriayanti & L. Weekes</u>	Risk based management in Minpu Bridge <u>X. Ruan, Z.Y. Yin & Z.G. Yan</u>	Lateral spreading interaction with bridges during the Canterbury earthquakes <u>E. Camnasio, M. Le Heux, A. Palermo & L.M. Wotherspoon</u>
Health monitoring system of bridges network in Romania <u>C.C. Comis, G. Boaca & A. Ianos</u>	The design and construction of bridge structure erected by balanced cantilevers method situated on the Prague bypass <u>M. Šíštek, V. Engler, F. Hanus, R. Lenner & L. Vráblik</u>	The effect of lane changing on long-span highway bridge traffic loading <u>B. Enright, C. Carey, C.C. Caprani & E.J. OBrien</u>	Forced vibration testing of bridge damaged in the 2010 Darfield earthquake <u>L.S. Hogan, L.M. Wotherspoon, S. Besthyroun & J.M. Ingham</u>
Monitoring and conservation system design of historic bridge based on the internet of things <u>Y.Q. Xiang, Q.P. Li, K. Cheng & Q.Q. Wu</u>	Seismic assessment of monolithic vs. pin column top connections in R/C skewed bridges <u>N. Attarchian, A. Kalantari & A.S. Moghadam</u>	Structural reliability of cable stayed bridges based on analysis of deformations <u>V. Straupe & A. Paeglis</u>	An asset management approach to bridge barrier retrofits <u>P.S. McCarten & N. Lloyd</u>

11:30-13:00 | Wednesday Morning, July 11th, 2012

Concurrent Technical Sessions (WeM-5 to WeM-8)				11:30-13:00 Wednesday Morning, July 11 th , 2012			
WeM-5 Gardenia Room	WeM-6 Ortensia Room	WeM-7 Mimosa Room	WeM-8 Camelia Room				
Special Session: Energy Harvesting in Bridges and Transportation Infrastructure Networks	Special Session: Many Bridges Aren't Straight - Investigations of Curved and Skewed Structures	Special Session: Corrosion Detection in Cables and Concrete Bridges by Magnetic Methods	General Session: Bridge Management and Life-Cycle Cost				
Chairs: Konstantinos Gkoumas & Daniele Davino	Chairs: Daniel Linzell & Andy Scanlon	Chairs: Al Ghorbanpoor & Bernd Hillemeier	Chairs: Risto Kiviluoma & Nurdan Apaydin				
Energy harvesting in bridges and transportation infrastructure networks: state of art, recent trends and future developments <u>K. Gkoumas</u>	An evaluation of lateral flange bending in straight and skewed short-span steel bridges <u>K.E. Barth, G.K. Michaelson & N.Y. Galindez</u>	Corrosion detection in tendons of segmental concrete bridges <u>A. Ghorbanpoor & E. Abdel-Salam</u>	Integrated bridge management from 3D-model to network level <u>K. Lukas & A. Borrmann</u>				
Vibration energy harvesting devices based on magnetostrictive materials <u>D. Davino, C. Visone & A. Giustiniani</u>	Behavior of skewed concrete box girder bridge under static and dynamic loading <u>X.-H. He, X.-W. Sheng, A. Scanlon & D.G. Linzell</u>	Magnetic inspection of adjacent box-beam girders <u>B. Fernandes, D.K. Nims & V. Devabhaktuni</u>	Network bridge management with life-cycle cost optimization <u>J.O. Almeida, R.M. Delgado & P.F. Teixeira</u>				
Nonlinear vibration harvesting for extended structures monitoring <u>L. Gammaletti, H. Vocca, I. Neri, F. Ofrei & F. Travasso</u>	Skewed steel bridge cross-frame live load performance <u>S.D. Murphy & D.G. Linzell</u>	Magnetic localization of fractures of broken wires in pre-stressing cables of bridges and parking decks <u>B. Hillemeier & C.-I. Pak</u>	The whole life costing of bridge deck replacement – A case study <u>T.W. Siwowski</u>				
A self-powered vibration monitoring and control system for stay cables: numerical study <u>S. Zhu, W.A. Shen & J. Li</u>	Special considerations in curved segmental post-tensioned bridges <u>A.J. Schokker</u>	Application of line scanner in remanent and active field compared with the big magnet impulse magnetization <u>S. Knapp & B. Hillemeier</u>	Exploiting linear system behaviour to determine structure level costs based on element condition states <u>D. Fernando, B.T. Adey & S. Walbridge</u>				
Design of energy harvesting bridge considering practical traffic conditions <u>M.S. Choi, S.H. Kim & H.E. Youn</u>	Effect of skewness on shear force applied to shear keys in skewed highway bridges <u>A. Kalantari & S.M.J. Foroughi C. Flohrer</u>	Fast and innovative detection of fractures in prestressing tendons on German highway-bridges <u>C. Flohrer</u>	Modelling inspection and fatigue retrofitting by post-weld treatment in bridge management systems <u>S. Walbridge, D. Fernando & B.T. Adey</u>				
		Seismic upgrade of steel curved highway viaducts with isolation bearings and cable restrainers <u>C. Mendez Galindo, G. Moor, R. Berger & T. Hayashikawa</u>	Zambia bridge and culvert inspection and management system <u>M.C. Schellhase, J.K. Shaffer & B.D. Witter</u>				

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Concurrent Technical Sessions (WeA-1 to WeA-4)

WeA-1 Auditorium	WeA-2 Magnolia Room	WeA-3 Azalea Room	WeA-4 Orchidea Room
Mini-Symposium: Risk Based Bridge Management (1) Chairs: Leo Klatter & Jung Sik Kong Bridge risk management: back to basics <u>P.S. McCarten</u>	General Session: Residual Capacity and Service Life Assessment of Bridges Chairs: Sofia Dimiz & Tatjana Isakovic Enhanced analytical method of predicting residual strength capacities of corroded steel bridge plates <u>J.M.R.S. Appiah</u> , M. Ohga, P. Chun, S. Furukawa & P.B.R. Dissanayake	General Session: Damage Identification and Bridge Assessment Chairs: Sara Casciati & Stefania Arangio Application of the operational modal analysis and modal updating methods for the characterization of the longitudinal modulus of an ancient reinforced concrete truss bridge in Almeria (Spain) <u>J.F.J. Alonso & A.S. Pérez</u>	Special Session: Vulnerability of Bridges to Fire and Explosion Chairs: Luisa Giuliani & Christos Georgakis Vulnerability of bridges to fire <u>L. Giuliani</u> , C. Crosti & F. Gentili
Risk Based Inspection (RBI) at Rijkswaterstaat <u>J. Bakker & L. Klatter</u>	Life time extension of prestressed beams using cathodic protection <u>R. Brueckner, C.P. Atkins & P. Lambert</u>	Structural assessment of bridges and health monitoring programs based on dynamical tests <u>F. Benedettini, A. Morassi & F. Vestroni</u>	Evaluation of structural risk for bridges under fire <u>F. Gentili & E. Petriti</u>
Risk based bridge planning in Minnesota <u>P.D. Thompson, H. Rogers & D. Thomas</u>	Service life assessment of steel riveted railway bridges: a case study <u>L. Cascini, M. D'Aniello, F. Portoli & R. Landolfo</u>	Damage detection in a suspension bridge model using the interpolation damage detection method <u>M. Domaneschi, M.P. Limongelli & L. Martinelli</u>	Adapting OpenSees to simulate bridge structures in fire <u>A. Usmani, Y. Jiang, J. Jiang, L. Jiang & S. Welch</u>
Inspection method related to structural safety of RC structures <u>A. de Boer & N. Booij</u>	Residual capacity from aggregate interlock of cracked concrete slab bridge <u>E.O.L. Lantsoght, C. van der Veen & J.C. Walraven</u>	Damage detection in suspension bridges from wind response measurements and automatic mode selection: a feasibility study <u>E. Ubertini & A.L. Materazzi</u>	Evacuation of mixed populations from trains on bridges <u>C. Kindler, J.G. Sørensen & A.S. Dederichs</u>
First results of the German BMS – Influence of data availability and quality <u>R. Holst (T. Neumann)</u>	Shear performance of long-term corroded reinforced concrete beams <u>I. Khan, R. Francois & A. Castel</u>	Dynamic characterization of multiple identical spans of a steel girder bridge <u>R. Maestri, E.V. Fernstrom & K.A. Grimmsman</u>	Experimental testing of blast resistance FRC and RC bridges <u>M. Foglar, M. Kovar & A. Kohoutkova</u>
Consistency of bridge deterioration rates across agencies <u>P.D. Thompson</u>	Strength of corroded steel structure bonded with steel cover plate <u>M. Fukuda, K. Fujii, T. Nakayama & H. Horii</u>	Experimental modal analysis and fatigue assessment on the Lagoscuiro viaduct <u>L. Vincenzi, M. Savoia & W. Salvatore</u>	The real-time alarming technique of ship-collision to long-span bridges based on the displacement data of expansion joints <u>Y.F. Zhang, S.C. Zhu, & L.T. Zhang</u>
Incorporating risk and criticality in bridge management decision making and project prioritization <u>R.M. Ellis & K. Hong</u>	Shear strength for corroded plate girder bridge <u>T. Shimozato, Y. Tamaki, Y. Arizumi, T. Yabuki & S. Ono</u>	Mode shape estimation of a bridge using the responses of passing vehicles <u>Y. Oshima, K. Yamamoto & K. Suguri</u>	Repair and dynamic-based condition assessment of impact damage to a freeway overpass bridge near Mossel Bay, South Africa <u>A.A. Newmark, P. Moyo & E.J. Kruger</u>
The use of MINIP to determine optimal preservation strategies for road links composed of pavement sections and bridges <u>N. Lethanh & B.T. Adey</u>	An approach to evaluating the influences of aging on the system capacity of steel I-girder bridges <u>J. McConnell, G. McCarthy, & D. Wurst</u>	Wireless impedance sensor node for structural health monitoring of cable-anchorage subsystem <u>J.-T. Kim, K.-D. Nguyen & P.-Y. Lee</u>	Consequence-based robustness assessment of bridge structures <u>F. Brando, L. Cao, P. Olmati & K. Gkoumas</u>

14:00-16:00 | Wednesday Afternoon, July 11th, 2012

Concurrent Technical Sessions (WeA-5 to WeA-8)

14:00-16:00 Wednesday Afternoon, July 11 th , 2012			
WeA-5 Gardenia Room	WeA-6 Ortensia Room	WeA-7 Mimosa Room	WeA-8 Camelia Room
General Session: Monitoring and Inspection of Bridges	General Session: Bridge Joints and Seismic Protection Devices	Special Session: Optical Monitoring Techniques for Bridge Maintenance and Safety	Special Session: Extending Bridge Life Through Industry Academic Partnerships
Chairs: Alessandro De Stefano & Filippo Ubertini	Chairs: Gianni Moor & Virginio Quaglini	Chairs: Paul Sumitro & Hiroshi Matsuda	Chairs: Eugene O'Brien & John Sorensen
Thermography for the inspection of infrastructures <u>R.W. Arndt & H. Parvardeh</u>	Assessment of bridge expansion joints using long-term displacement measurement under changing environment <u>Y.L. Ding, A.Q. Li & G.D. Zhou</u>	Field loading measurement of post-tension PC girder bridge with line sensor scanner <u>A. Demizu, H. Matsuda, Y. Ito, K. Hida, T. Okamoto, M. Uchino & P. Sumitro</u>	Introduction to the Long Life Bridges project <u>E.J. O'Brien, A.J. O'Connor & J.E. Arrigan (<u>M. Tucker</u>)</u>
Monitoring during large construction projects <u>H. De Backer, A. Outtier, K. Schotte, D. Sael, W. Nagy & Ph. Van Bogaert</u>	Dynamic response of isolated viaduct considering knocking-off effects of displacement restrainers <u>M. Matsumura & M. Yoshida</u>	Application of full-field non-contact measurement technology to clarify mechanism of deterioration mechanism on construction material <u>H. Goda, M. Hilbino, Y. Kawabata, M. Uchino & H. Matsuda</u>	Attenuating resonant behavior of a tied arch railway bridge using increased hanger damping <u>A. Andersson & R. Karoumi</u>
Remote monitoring of suspension bridge cables as calibrated in the laboratory and tested in the field <u>D. Khazem, K. Serzan & R. Bettì</u>	Design and testing of seismic protection devices for bridges according to EN 15129 <u>C. Méndez Galindo, T. Spuler, G. Moor & R. Berger</u>	Existing bridge structural identification by vibration measurements using laser doppler velocimeter <u>K. Makino, C. Morita, H. Matsuda, P.S. Sumitro & S. Yanai</u>	Improved bridge response evaluation based on dynamic testing <u>I. González, R. Karoumi & A. Llorens</u>
Assessing impact-echo test variables for detecting loss of bond in RC bridge columns <u>A. Pagnotta, P. Gardoni, D. Teijo & Q. Huang</u>	High damping curved surface sliding isolators for bridges <u>V. Quaglini</u>	Development of a hybrid camera system for bridge inspection <u>S. Nishimura, K. Kimoto, S. Kusuvara, S. Kawabata, A. Abe & T. Okazawa</u>	Probabilistic approach to fatigue <u>J. Baussartón & T. Yalamas</u>
Low-power wireless monitoring of fracture-critical bridges <u>D.L. Potter, J.D. Fasli, T.A. Helwig, S.L. Wood, V.A. Samaras, A.A. Yousef, K.H. Frank & R.E. Lindenbergh</u>	The improvement of the seismic response of a concrete bridge by using isolation devices <u>I.R. Racanel, D.I. Crețu & M. Contiu</u>	Monitoring of short & long term cable force on a cable stayed bridge using package type FBG sensors <u>D.Y. Park, D.G. Kim, S.H. Kim & S.W. Lee</u>	Reliability-based assessment of fatigue life for bridges <u>H.S. Toft & J.D. Sorensen</u>
Bridge monitoring by fiber optic deformation sensors: a case study <u>G. Uva, D. Raffaele, F. Porco, A. Fiore & G. Porco</u>	Renewal of small movement expansion joints with minimum break-out and time requirements <u>T. Spuler & G. Moor</u>	Strain visualization sticker using Moiré fringe for remote sensing <u>T. Takaki, K. Fujii, I. Ishii, S. Umemoto, H. Ohata, N. Miyamoto & T. Okamoto</u>	Traffic load models for long span bridges <u>A.A. Harapetova, A.J. O'Connor & E.J. O'Brien</u>
Wireless interrogation of passive crack sensor <u>Z. Xu, Y. Jia, R. Valentín & G. Portela</u>	Renewal of bridge expansion joints with minimal disruption to traffic – A solution using modularised sliding finger joints <u>T. Spuler & G. Moor</u>	Strain measurement of bridge members using strain visualization sticker <u>S. Umemoto, H. Ohata, N. Miyamoto, T. Okamoto, T. Takaki, K. Fujii & I. Ishii</u>	Procedures for calibrating Eurocode traffic load Model 1 for national conditions <u>E.J. O'Brien & A.J. O'Connor, J.E. Arrigan</u>
Assisting routine inspection of highway bridges with IFC-based 3D models <u>S.-H. Lee, M.G. Huang & B.-G. Kim</u>	A study on the durability performances for bridge expansion joints <u>D. Wakabayashi, T. Asai & S. Ono</u>	Monitoring of a prestressed high performance concrete bridge from construction through service using an embedded optical fiber sensor system <u>R.L. Idriss</u>	A comprehensive guide for designing bridges for service life <u>A. Azizianamini, E. Power & G. Myers</u>

IABMAS 2012

6th International Conference on
Bridge Maintenance, Safety and Management



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DI MILANO

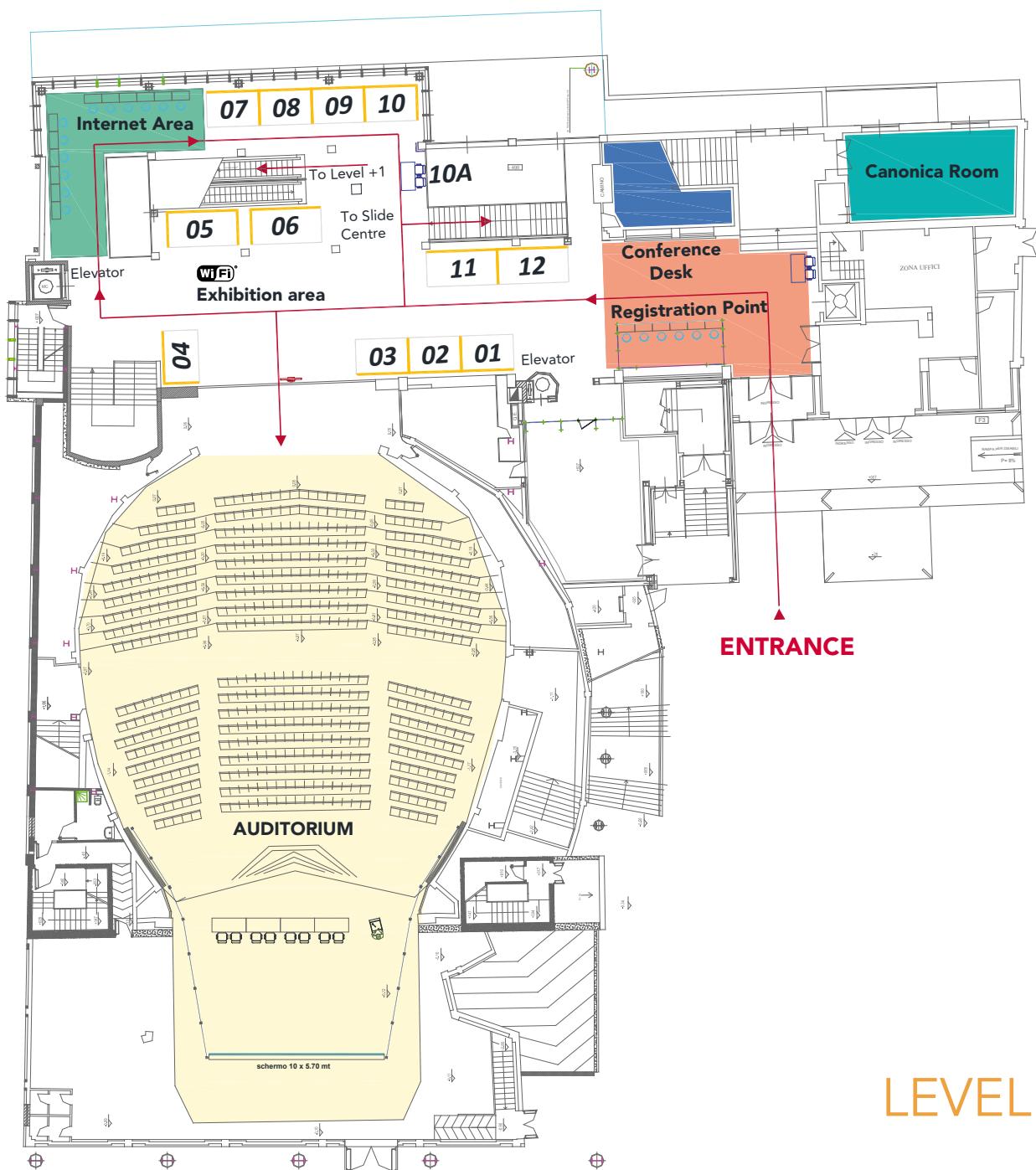
Concurrent Technical Sessions (WeE-1 to WeE-4)

WeE-1 Auditorium	WeE-2 Magnolia Room	WeE-3 Azalea Room	WeE-4 Orchidea Room
Mini-Symposium: Risk Based Bridge Management (2)	Special Session: Artificial Intelligence Methods in Bridge Analysis and Design	Special Session: Design and Seismic Analysis of Long Span Bridges – Case Studies	General Session: Composite Bridge Structures
Chairs: Paul Thompson & Bryan Adey	Chairs: Elsa Garavaglia & Luca Sgambì	Chairs: Ayaz Malik & Atorod Azizinamini	Chairs: Emidio Nigro & Richard Sause
Overview of existing Bridge Management Systems - Report by the IABMAS Bridge Management Committee <u>B.T. Adey</u>	Prestress optimization of hybrid tensile structures A. Albertin, P.G. Malerba, N. Pollini & M. Quagliaroli	Seismic assessment of long curved bridges using modal pushover analysis: a case study M.S. Ahmed & C.C. Fu	Towards a load rating methodology for concrete-encaised pre-stressed steel girder bridges based on US standards U. Barajas-Yáñez, G. Portela-Gauthier, R.N. González, G. Velázquez & W. Varela-Ortiz
Application of bridge management system to determine preservation and improvement budgets, meet condition targets, and manage risk for the City of Hamilton <u>A. Daizel, R. Ellis, G. Moore & R. Andoga</u>	An expert system for bridge inspection <u>S. Becker & N. Gebbeken</u>	Innovative methodology towards the design of long span bridges <u>A.H. Malik</u>	Impact effect statistic investigation of concrete filled steel tube arch bridge under moving vehicles based on the field test and simulation analysis <u>Y. Li, Y. Liu & H. Sun</u>
Updating bridge management system in Korea considering recent subjects in bridge management <u>J.H. Kim, H.-M. Park, J.S. Kong & K.-H. Park</u>	Selective maintenance strategies applied to a bridge deteriorating steel truss <u>E. Garavaglia, L. Sgambì & N. Bassò</u>	Seismic design of the San Francisco – Oakland Bay Bridge self anchored suspension bridge <u>M. Náder & M.C. Tang & B. Maroney</u>	Analytical and experimental study for flexure of composite bridges with CfT girder <u>H.J. Ko, H.E. Lee & J. Moon</u>
Development, implementation and application of bridge management in Prince Edward Island <u>D.J. Evans & R.M. Ellis</u>	Time dependent behaviour of an elementary bridge model in presence of uncertainties P.G. Malerba, M. Quagliaroli, L. Sgambì & P. Baraldi	Structural design and analysis of long span bridges <u>S. Wang & C.C. Fu</u>	Push-out tests of straight shear connectors based on steel-concrete adherence <u>H.J.F. Diógenes, A.L.H.C. El Debs & M.K. El Debs</u>
SmartBMS – Improving bridge inspection accuracy and efficiency using a bridge management system in a Smartphone <u>R.M. Ellis, C. McElhinney & K. Hong</u>	Intelligent bridges – Adaptive systems for information and holistic evaluation in real time <u>T. Neumann & P. Haardt</u>	Rehabilitation of the suspension bridge over Zambezi River in Mozambique <u>A. Reis & C. Baptista</u>	Composite concrete encased steel beam-column design in AASHTO specifications <u>L.L.-Y. Lai</u>
Railway bridge risk assessment in Finland <u>J. Muuronen</u>	High performance computing for damage detection of civil infrastructural systems <u>Z.Y. Wu, T. Mi, J. Zhao & G. Xu</u>	Static and dynamic load tests of a long-span cable-stayed bridge over Odra River in Wrocław <u>M. Kuzawa, J. Bien, P. Rawka, T. Kamiński & J. Zwolski</u>	The construction control practice for a long-span CfST tied arch bridge <u>J.L. Hu, Q.S. Yan, Z. Chen & H.B. Zheng</u>

Concurrent Technical Sessions (WeE-5 to WeE-8)				16:30-18:00 Wednesday Evening, July 11 th , 2012			
WeE-5 Gardenia Room	WeE-6 Ortensia Room	WeE-7 Mimosa Room	WeE-8 Camelia Room				
Special Session: Understanding and Enhancing Bridge Performance	General Session: Bridge Modeling and Simulation	Special Session: Analysis, Design and Testing of Road Timber Bridges	Special Session: Gusset Plates in Steel Truss Bridges: Testing, Analysis and Monitoring				
Chairs: John Hooks & Andrew Foden	Chairs: Yiannis Tsompanakis & Luca Martinelli	Chairs: Alessandro Palermo & Keith Crews	Chairs: Michele Barbato & Chiara Crosti				
Studying, understanding & enhancing the performance of bridges in the United States <i>J.M. Hooks, A. Foden & M.C. Brown</i>	The benefits and use of FE modelling in bridge assessment and design <i>P.J. Ickle & C. Margheriti</i>	Simplified fatigue verification for timber-concrete composite bridges considering notched connections <i>K. Stephan, U. Kuhlmann & P. Aldi</i>	Structural health monitoring of a steel railway bridge on the river Suaçú <i>W.S. Assis, L.M. Trautwein, T.N. Bittencourt & A.P.C. Neto</i>				
Monitoring bridges with wireless sensor networks: a critical assessment <i>G. Feltrin</i>	A Timoshenko-based structural model for the analysis of bridges <i>M. Ferraz, R. Faria & J. Figueiras</i>	Non-linear analysis of a stress-laminated-timber bridge loaded to failure <i>K. Ekholm, I.R. Klijger & R. Crockett</i>	Simplified gusset plate model for failure prediction of truss bridges <i>C. Crosti & D. Dutinh</i>				
Evaluating and forecasting bridge performance under uncertainty <i>D.M. Frangopol & D. Saydam</i>	Finite element modelling of Humber Bridge <i>A.R. Rahbari & B.J.M.W. Brownjohn</i>	Timber bridges in Sweden – On-going research and steadily expanding market <i>I.R. Klijger, K. Ekholm & R. Crockett</i>	Full scale fatigue testing of original truss members and connections <i>R. Helmerich</i>				
Updating existing railway bridges based on monitoring data <i>E. Brühwiler, M. Rocha, M.A. Treacy, T.N. Bittencourt & A.P.C. Neto</i>	3D numerical simulation of soil-structure interaction effect: the Acquasanta, Genoa, Railway Bridge <i>R. Guidotti, I. Mazzieri & M. Stupazzini</i>	Capacity of compression members in heritage timber truss bridge <i>A. Nicholas, W. Ariyaratne & K. Crews</i>	Inspection strategies to prevent fatigue failure on gusset plates in steel truss bridges <i>J. Hertel</i>				
Extracting knowledge from structural response data <i>F.L. Moon, J.S. Weidner & N.C. Dubbs (L. Bartoli)</i>	Computer simulation of concrete bridges <i>R. Pukl, V. Cervenka, J. Cervenka & D. Novák</i>		Quantitative evaluation of digital image correlation as applied to large-scale gusset plate experiments <i>M.A. Iadicola, R.S. Zobel & J.M. Ocel (C. Crosti)</i>				
		Numerical simulations of prestress loss due to creep and shrinkage in singular regions of concrete <i>L. Vrablik, J. Losko & V. Kristek</i>	An in-depth analysis of 135W Bridge collapse <i>S. Hao</i>				

Exhibition

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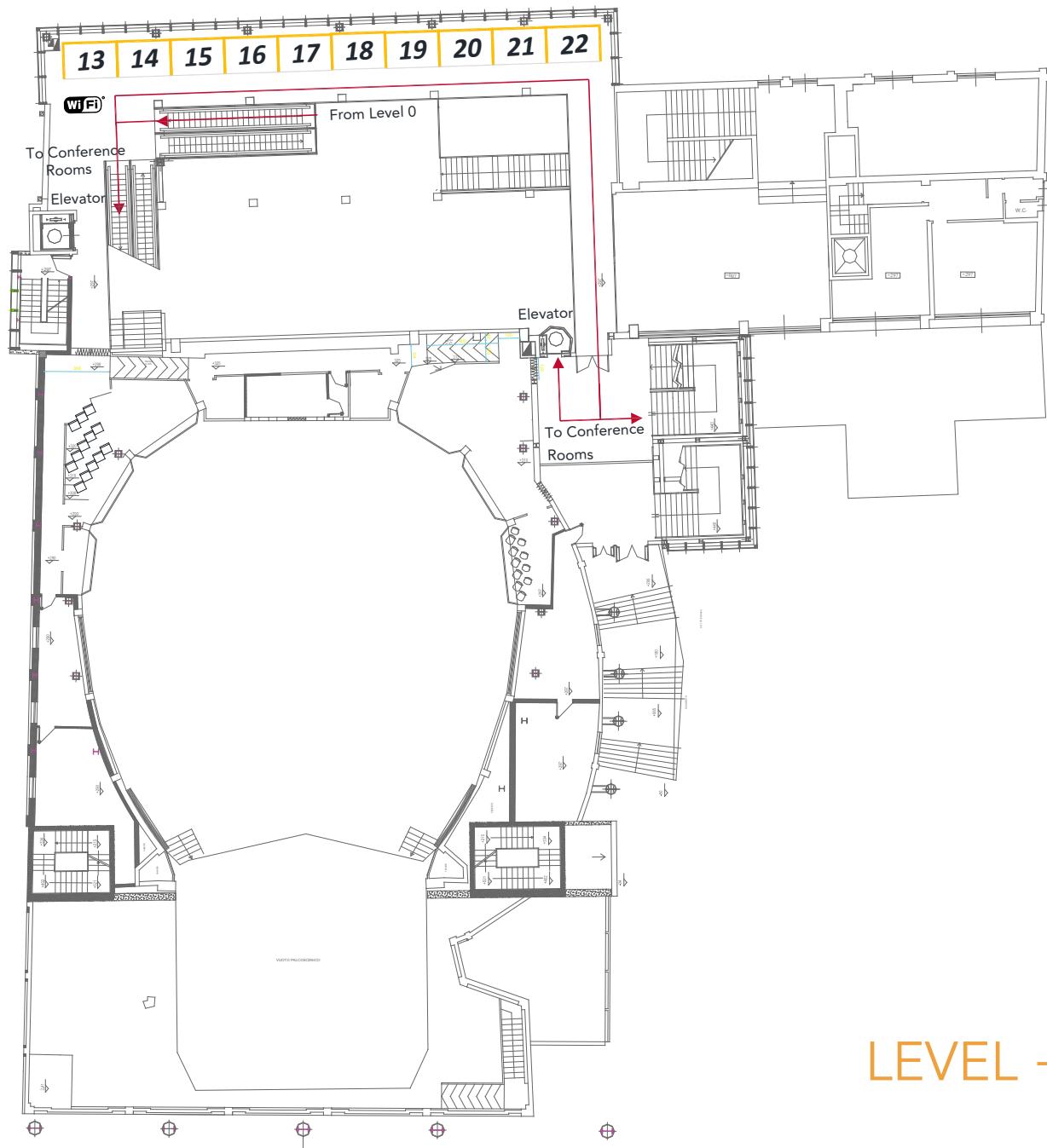
EXHIBITORS:

- 01 - Mistras Group
- 02 - Maurer Söhne
- 03 - LUSAS Bridge Analysis Software
- 04 - MAGEBA
- 05 - CSi Italia
- 06 - Alpin Technik

07 - FIBERSENSING

- 08 - Intercomp
- 09 - SINECO
- 10 - TRANSPO INDUSTRIES, INC.
- 10A - Taylor & Francis
- 11 - BASF Construction Chemicals Italia Spa
- 12 - Kapsch TrafficCom

Exhibition



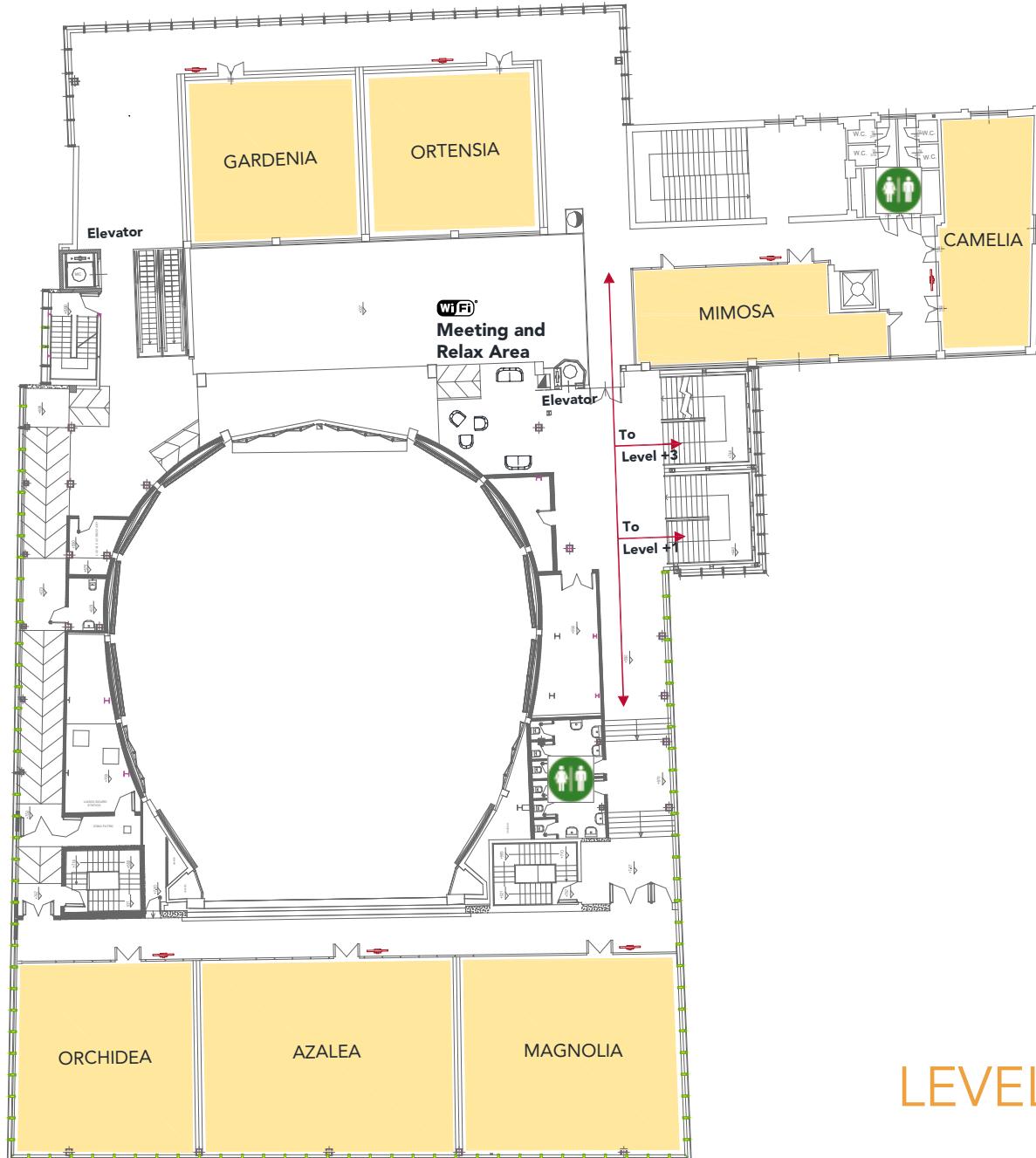
EXHIBITORS:

- 13 - IABMAS
- 14 - NEXCO-Central
- 15 - DMT – Germany
- 16 - IDS Ingegneria dei Sistemi
- 17 - FORCE Technology - Protector AS

- 18 - NATIONAL INSTRUMENTS
- 19 - SOFiSTiK
- 20 - SMARTEC SA
- 21 - DB SYSTEM INTERNATIONAL SRL
- 22 - Pure Technologies Ltd

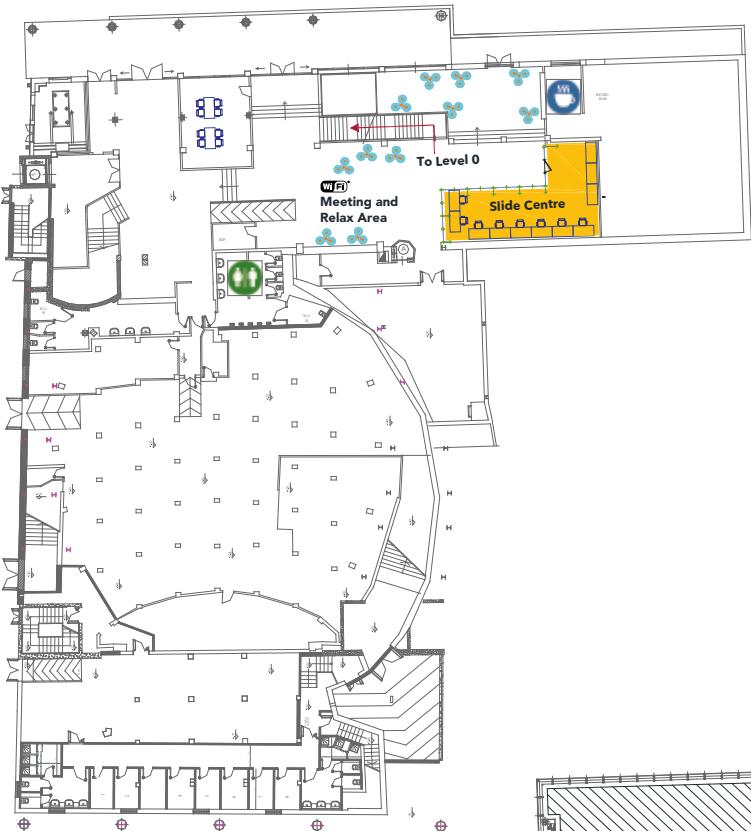
Conference Rooms

IABMAS 2012

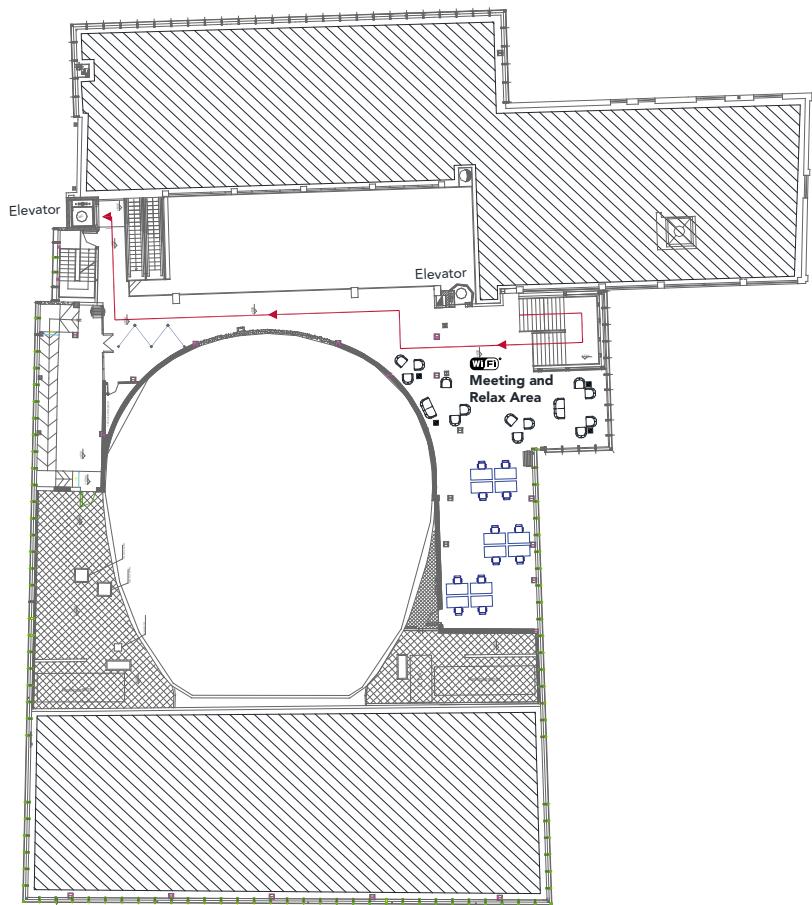


LEVEL +2

Slide Center & Meeting Areas



LEVEL -1



LEVEL +3

IABMAS 2012

Social Program

The Conference Social Program includes a Welcome Reception, a Gala Dinner, Boat Tours on Lake Maggiore and a Farewell Cocktail. These events will be offered to all registered Conference Delegates and Accompanying Persons. An optional Post-Conference Tour for Delegates and Accompanying Persons, as well as a series of optional Tours for Accompanying Persons only, will also be organized.

Welcome Reception

Regina Palace, Garden

Sunday July 8th, 2012 | 19.00 – 21.00

The **Welcome Reception** will be held in the century-old **Garden** of the **Hotel Regina Palace****S**. Regina Palace, opened in 1908, is an Art Nouveau building that still preserves its fin de siècle fascination.



Gala Dinner

Regina Palace, Liberty Hall

Tuesday July 10th, 2012 | 20.00 – 23.00

The **Gala Dinner** will be held in the **Liberty Hall** of the **Hotel Regina Palace****S**. Liberty at Regina Palace is a grand dining hall with enchanting decor and magnificent silver candelabra.

The program of the Gala Dinner will include the IABMAS 2012 Awards Ceremony.



Borromean Islands by Night

Isola Bella & Isola dei Pescatori Boat Tour

Wednesday July 11th, 2012 | 20:30 - 23:30

Departures from Stresa at 20:30 - 21:00 on motorboats for a cruise around Isola Bella to admire the illuminated scenery of the Borromean Palaces and Gardens by night. Transfer to Isola dei Pescatori where to enjoy the small village and a drink "al fresco" overlooking the lake. Departures from Isola dei Pescatori at 22:30 – 23:00 and arrivals in Stresa expected around 23:30.

Social Program

Boat Tours

Navigazione Laghi Ferry Boats Fleet

Thursday July 12th, 2012 | Available Full Day

Boat Tours on Lake Maggiore will be made possible by providing Delegates and Accompanying Persons with a free-circulation full day pass for the Ferry Boats fleet of Navigazione Laghi (<http://www.navigazionelaghi.it>). This way, the conference participants will have the opportunity of freely enjoying Lake Maggiore as they like best and savoring each of the panoramic sceneries this wonderful setting has to offer.

The free-circulation full day pass will allow to travel on the ferry boat service connecting Stresa, Santa Caterina del Sasso, Isola Madre, Isola Bella, Isola dei Pescatori, and Baveno.



SUGGESTED ITINERARIES (based on the Ferry Boats timetable):

- ITINERARY #1 (Morning, 10.20 - 14.50): **Stresa – Isola Bella – Baveno* – Stresa**
- ITINERARY #2a (Morning, 09.25 - 14.30): **Stresa – Santa Caterina – Baveno* – Stresa**
- ITINERARY #2b (Day Trip): **Stresa – Santa Caterina – Baveno* – Isola Dei Pescatori – Isola Bella – Stresa**
- ITINERARY #3a (Morning, 09.30 – 14.50): **Stresa – Isola Bella – Isola Pescatori – Baveno* – Stresa**
- ITINERARY #3b (Day Trip): **Stresa – Isola Bella – Isola Pescatori – Baveno* – Isola Madre – Stresa**

* Farewell Cocktail.



Farewell Cocktail

Grand Hotel Dino, Garden

Thursday July 12th, 2012 | 12.00 – 14.00

Delegates and Accompanying Persons attending the Boat Tours are kindly invited to join together for a **Farewell Cocktail** at the **Grand Hotel Dino****** in BAVENO from 12.00 to 14.00.

The beautiful lakefront garden of the hotel is located just next to the Baveno ferry boat pier. A dedicated special shuttle bus service Stresa - Baveno will also be provided from 11.30 to 14.30.

Confirmation is required to attend the Farewell Cocktail. Admission tickets will be issued only to confirmed participants.



Accompanying Persons

The Social Program for Accompanying Persons includes the attendance of Welcome Reception on July 8th, Gala Dinner on July 10th and Boat Tours on July 12th. In order for all the accompanying persons to enjoy this enchanting area and nearby locations, optional tours are being organized.

The optional tours are managed by the Palazzo dei Congressi and require a separate registration. For bookings and detailed information about the schedule of the tours please refer to:

LAKE MAGGIORE, THE BORROMEOAN ISLANDS AND VILLA TARANTO

Monday July 9th, 2012

The beauty of the enchanting **Villa Taranto's Botanical Gardens** is like a wave of emotions enchanting your senses with its brilliant colors, the persistent scents of flowers and plants and the relaxing sounds of this exceptional natural setting. Their today's appearance is not natural, but the result, moulded during the years, of an arduous elaboration undertaken by Captain McEacharn in 1931. After a relaxing and pleasant visit to the Villa Taranto's Botanical Gardens, the tour will allow to explore the **Borromean Islands**. Situated on the western side of Lake Maggiore, directly opposite Stresa, the three Borromean Islands (It. Isole Borromee) lie in a wide gulf surrounded by mountains. The Borromean Islands, with their **stunning palaces and ornamental gardens**, are an unmissable destination for aesthetes. The islands take their name from the aristocratic Borromeo family, who took ownership of the land in the 16th and 17th centuries. On the **Isola Bella** and Isola there are sumptuous palaces and rare plant gardens where peacocks, parrots and pheasants roam wild against an exotic backdrop reminiscent of faraway lands. In contrast, the **Isola dei Pescatori** is famous for the charming simplicity of its old fishing village, which is considered one of the most picturesque spots on Lake Maggiore.

Palazzo dei Congressi

Piazzale Europa, 3 - 28838 Stresa (VB), Italy
Phone: +39-0323-30389 - Fax: +39-0323-33281
E-mail: segreteria@stresacongressi.it



Accompanying Persons

BELLAGIO AND THE MAGNIFICENT VILLAS OF LAKE COMO

Tuesday July 10th, 2012

The fascination of Lake Como mainly arises from the small characteristic villages and the ancient residences situated along the shores, each one having its own peculiarities. This tour offers the opportunity of discovering two of the most famous locations of Lake Como, the neoclassical residence **Villa Carlotta** and the village of **Bellagio**, called “the pearl of the lake” for its unique position at the top of a flourishing promontory with one of the best view of Lake Como.



MILAN AND THE DUOMO CATHEDRAL

Wednesday July 11th, 2012

While Rome is Italy's political capital, Milan is the country's economic and financial heart. Situated only 90 km away from Lake Maggiore, Milan is the second-largest city in Italy. Its business district hosts the Italian Stock Exchange and the headquarters of the largest national banks and multinational companies. The city is recognized as a major world fashion and design capital. The historical centre offers beautiful treasures: the **Duomo Cathedral**, one of the most famous Gothic constructions of the world; the **La Scala** theatre, one of the world's best known Opera Houses; the **Sforzesco Castle** and its art museums, with unique pieces of art like the Rondanini Pietà by Michelangelo; the Convent of Santa Maria delle Grazie, with the famous Leonardo da Vinci's masterpiece "**The Last Supper**".



Post-Conference Tour

The optional Post-Conference Tour "Centovalli Express and Locarno", with the panoramic Vigezzina train crossing over **80 bridges and viaducts** in the Vigezzo Valley, will be organized for Delegates and Accompanying Persons on Friday, July 13th, 2012.

CENTOVALLI EXPRESS AND LOCARNO

Friday July 13th, 2012

The Centovalli railway connects the Vigezzo Valley to the Lake Maggiore. Departure from Stresa to Domodossola where it is possible to take the panoramic train "the Vigezzina" to go as far as Locarno, a nice town located on the northern shore of lake Maggiore, in Switzerland.

The train journey takes approximately two hours. It is a narrow-gauge mountain railway line, 55 km long, that was opened in 1923. The train passes through lovely villages and woodlands in the mountains of Vigezzo Valley in Italy and Centovalli on the Swiss side and it crosses over **80 bridges and viaducts**.

The scenery is as extraordinary as the train route is amazing, with 83 bridges and 34 tunnels. The Centovalli, a valley offering unspoiled nature, rocky mountains, spectacular waterfalls all framed by wonderful rich vegetation, is enchanting. During the journey we will take you through vineyards, chestnut woods and clearings, all colored in the changing shades of the seasons, and through small villages lost in time.

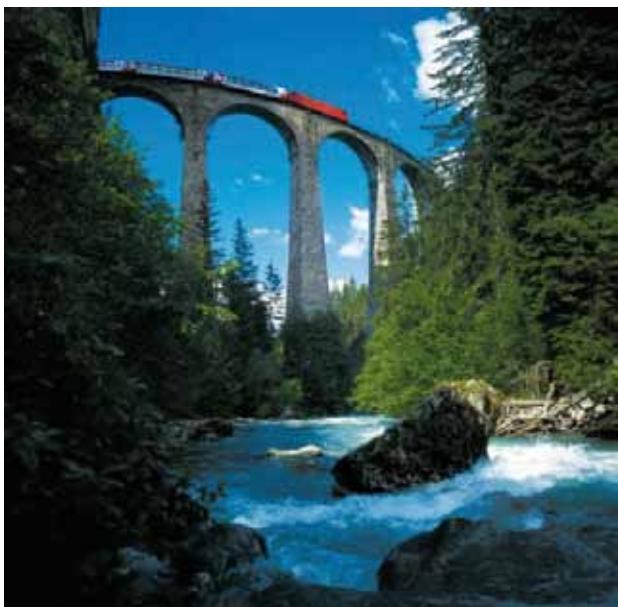
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The optional Post-Conference Tour is managed by the Palazzo dei Congressi and requires a separate registration.

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E-mail: segreteria@stresacongressi.it



Transportation

The Conference venue is situated in Stresa, on the western shore of Lake Maggiore. Stresa is approximately 45 minutes from Malpensa international airport and one hour from the city of Milan.



PRIVATE TRANSFERS FROM/TO THE AIRPORTS

The most convenient transportation service from/to the international airports of Milan Malpensa (MPX), Milan Linate (LIN), or Bergamo Orio al Serio (BGY) is by private transfer. Registered participants who wish to take advantage of a shared shuttle transfer service are required to contact Palazzo dei Congressi:

Palazzo dei Congressi

Piazzale Europa, 3 - 28838 Stresa (VB), Italy
Phone: +39-0323-30389 - Fax: +39-0323-33281
E-mail: segreteria@stresacongressi.it

Private car and mini-van services with driver will also be available upon request. This transfer service can be shared by a maximum of three passengers for private cars, and six passengers for private mini-vans. Prices vary depending on the airport and type of vehicle.

FROM STRESA TO MILAN BY TRAIN (1HOUR 30MIN, €15–25)

Timetable of train service from Stresa to Milan Central railway station and online ticket purchase are available at <http://www.trenitalia.com>. Journey takes approximately 1 hour to 1 hour and 30 min. The cost is 15 to 25 Euros.

Tickets bought online do not need to be validated. Tickets purchased at the sale offices at the station are to be validated in one of the punching machines located at the beginning of the platforms before boarding the train. Tickets purchased on board, or not properly validated, can be subjected to an extra fee up to 50 Euros.

TRANSPORTATION IN STRESA AND LAKE MAGGIORE AREA

By Car

You do not need to have a car in Stresa. The main attractions can be reached by other means. The Borromean Islands are well connected by boat; Mottarone and the Alpinia garden are served by a cableway while Villa Pallavicino can be reached on foot. The other places around Lake Maggiore are connected to each other by boat. A car is useful if you want to explore inland and you can easily hire one at the airports, at Milan Central railway station and at Stresa. If you want to hire a car at Stresa it is advisable to book in advance.

By Boat

Stresa is connected to the major tourist resorts on Lake Maggiore by the public service and by private companies. You can buy single tickets or daily tickets which allow you to make an unlimited number of stops. At Stresa the main landing stage is in Piazza Marconi, attached to the tourist office. You can get to the Borromean Islands from a second landing stage in Lido di Stresa. If you want personalised services (for example for evening trips), a taxi-boat can be hired from either of the two landing stages in Stresa.

By Train

The railway line goes only partly around the lake. However, of noteworthy interest is the Lake Maggiore Express which connects Domodossola with Locarno along a panoramic railway through the mountains.

Taxi Cab Services

Taxi stands can be found in front of the Stresa railway station and the main boat landing stage. A taxi cab can be reserved by calling one of the following numbers:

- Piazzale Stazione – Phone: +39-0323-30394/31226
- Piazza Marconi – Phone: +39-0323-31226



Local Info

HOW TO REACH THE CONFERENCE VENUE

Palazzo dei Congressi is conveniently located next to Regina Palace Hotel and it can be easily reached on foot by all the hotels in Stresa.

Palazzo dei Congressi di Stresa

Piazzale Europa 3 (Via Canonica)
28838 STRESA (VB)
Phone: +39-0323-30389

TIME ZONE

Stresa is one hour ahead of Greenwich Mean Time (GMT).

ELECTRICITY

Electricity in Italy is 220 volts, 50 cycles alternating current (AC). Italian sockets are designed to accept round pins.

WEATHER

July weather in Northern Italy tends to be hot and humid, but the gentle breeze from Lake Maggiore and the surrounding Alps makes it mild and pleasant, sunny and hot though slightly windy. The temperature is about 24-30°C (75-86°F) during the day, and 16-22°C (35-72°F) during the night.

CURRENCY

The currency in Italy is the Euro. You can convert most international currencies to Euros at any bank during your visit to Italy. If you do not want to exchange your currency, you can also use credit or debit cards. MasterCard and Visa are widely accepted by most merchants. A little cash is however needed for small expenses. Coins are available in €2 and €1. Paper notes are available in the same denominations as the US dollar up to the €500 (€5, €10, €20, €50, €100, €200, €500).

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