

Preface

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. The Editors hope that these Proceedings will serve as a valuable reference to all concerned with bridge structure and infrastructure systems, including students, researchers and engineers from all sections of bridge engineering.

Fabio Biondini and Dan M. Frangopol
Chairs, IABMAS 2012

Milan and Bethlehem, April 2012