



# International Conference on Sustainable Infrastructure 2017

## METHODOLOGY

Proceedings of the International Conference  
on Sustainable Infrastructure 2017

> New York, New York  
> October 26–28, 2017

EDITED BY

Lucio Soibelman, Ph.D.  
Feniosky Peña-Mora, Sc.D.

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**ASCE**

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SPONSORED BY  
Committee on Sustainability of the American Society of Civil Engineers

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# Preface

## THE CHALLENGE

The 2017 International Conference on Sustainable Infrastructure focused on developing roadmaps to address the UN Sustainability Goals of developing Sustainable cities and building resilient infrastructure as well as the NAE Grand Challenge to "restore and improve urban infrastructure," all while supporting the ASCE Grand Challenge of "how we can work together towards the shared goal of reducing life cycle costs by 50% by 2025 and foster the optimization of infrastructure for society."

## THE ASCE

The American Society of Civil Engineers (ASCE) is respected worldwide for bringing to the forefront new ideas and critical concepts and technical knowledge on subjects of importance to the civil engineering professions and the public and private clients that civil engineers serve. Specialty conferences of the ASCE, such as ICSI2017, bring together, educate and inform the diverse civil engineering community, including practitioners, public and private infrastructure owners, policy makers, researchers, graduates and engineering students. The workshops, keynote lectures, panel discussions and tours broadened our understanding of research underway and best practices in the field.

## THE CONFERENCE

The International Conference on Sustainable Infrastructure for an Uncertain World addressed what we know about an uncertain future, and probed the edges of what we do not know. Uncertainty prods engineers to go deeper, seek higher, and initiate research collaborations to assure that the best efforts can be brought together to combat the impact of climate change and energy unpredictability.

## THE GOALS

These proceedings fulfill a primary purpose of the ICSI2017 conference: to assemble, deliver and disseminate a cogent and comprehensive assessment of the current state of sustainable infrastructure in an uncertain world. Local and global decision-making on energy policy, infrastructure maintenance, enhancement and replacement and investments in hydrology and transit were discussed and debated by experts from around the world. Those working to maintain and improve infrastructure performance in a rapidly changing operating environment face difficult and unprecedented challenges pertaining to lack of predictability, both fiscal and political. Civil engineers and allied professionals working for progressive public and private clients are able to take the long view in regards to the systems and public space that helps define the success of world class cities, from New



York to Paris, and Shenzhen to Montreal. To constructively provide infrastructure solutions to emerging needs, and responses that transcend electoral vicissitudes or geographic determinants, a broad, more long-ranging perspective becomes the cornerstone of the civil engineering profession's values and value.

### THE SPEAKERS

This conference began with an emphasis on the role of cities and metropolitan areas, with keynote speakers that included some of the most distinguished luminaries from the civil engineering academic and professional communities. They were complemented by two strong and pragmatic voices for grand visions and reinventing the possible: New York City's First Deputy Mayor Anthony Shorris and Paris Deputy Mayor Jean-Louis Missika.

### THE TECHNICAL SESSIONS

The technical sessions address issues of methodology, technology, finance, policy and education while describing case studies, projects, research and lessons learned about sustainability, resilience and social equity.

### THE PUBLICATION

This publication includes all papers presented by the authors in the plenaries, the technical sessions and concurrent poster sessions. The technical papers range from five to twelve pages and describe in significant detail the results and findings from both research and practice-oriented projects of broad interest to the civil engineering community. Case studies are also included. Each of the papers accepted for podium or poster presentation received a detailed review and evaluation by members of the Steering and Advisory Committees. The papers published in this proceeding are organized on 3 main areas: (1) Technology, (2) Policy, Finance, and Education, and (3) Methodology.

## Acknowledgments

The editors of this publication, on behalf of the American Society of Civil Engineers and the ICSI2017 Steering Committee, Advisory Committee and Technical Committee, wish to acknowledge and thank all those who presented from the conference podium or at the poster session. The editors also thank those who served on the conference committees, including those at the NYC Metropolitan Chapter of the ASCE. Reviewing papers, moderating and introducing panel discussions and organizing site visits and tours are often thankless tasks which individually and collectively made this conference possible and these Proceedings a reality.

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