International Journal of Bridge Engineering (IJBE), Special Issue 2017

Special Issue on

EXPERIMENTAL AND ANALYTICAL INVESTIGATIONS WITH EMERGING BRIDGE DESIGN METHODS

Editor

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PREFACE

The main trust of bridge engineering research has traditionally been on analytical simulations that may or not combine with experimental studies of bridge elements, connections, or systems. The physical models occasionally have included actual bridges. Although analytical and experimental studies of bridges have been of immense value in improving the understanding of conventional bridges and development of novel bridges, often the studies fall short of translating the research results into, at least, preliminary design frameworks or methods. The theme of this special issue was selected in an attempt to address this gap. Potential authors were advised to ensure that their article includes the missing next step in research - that is, methods that could assist designers in adopting the design that emerge as a result of the study.

Although the invited authors were not required to emphasis earthquake engineering topics, another common theme among the paper was realized making the primary focus of the papers in this special issue design under seismic loading.

The papers in this special issue encompass several novel bridge column details as varied as hollow columns to columns with buckling restrained longitudinal bars in plastic hinges. Design of novel connection details for prefabricated bridge components facilitating accelerated bridge construction is the focus of some of the other papers. An important issue related post-earthquake serviceability of bridge columns is repair of damaged columns. One paper addresses design of carbon fiber reinforced polymers to repair bridges columns with different level of damage. Some of the papers address actual bridges. The application of a seismic design method to the isolators in an actual viaduct is discussed in one paper. Yet another paper emphasizes design of temporary bridges that can be constructed rapidly to facilitate post-disaster operation. The novel concept of design for reusability is also discussed in this article.

In summary, readers of this special issue will find a highly varied collection of very interesting articles with a common theme of bridge seismic design with methods that could form the basis of implementation of novel details and components in practice.

ACKNOWLEDGMENTS

The editor wishes to thank Prof. George T. Michaltsos, Editor-in-Chief, for providing the opportunity to publish this special issue and all the authors for their contribution.

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