Preface

Bridges are one of the most vital components in a country-wide surface communication infrastructure. However, the geophysical and climatic condition of the country put challenges to implement and maintain a bridge over the service life. In recent days, it is conceived that a bridge can transform from a mere structural element to a social element when resilient property is induced into it from the very beginning of planning, design, construction and maintenance to yield the lowest life cycle cost. The approach can offer an efficient design and open enormous opportunity for Bangladesh to contribute in regional cooperation through participation in the proposed Asian Highway and Trans-Asian Railway network.

Resilience is a property that the systems in nature boast to possess. Resilience imparts perpetuality and also a healing property in the system so that nature attains substantial ability to recover even after encountering an adversity. In an engineered infrastructure, the engineers take the challenge to induce such a property in their projects so that energy consumption is low, durability is high, impact on environment is low and life cycle cost for the service delivered to the society by the project is the lowest. Therefore, in an efficient design, a deep understanding of the natural system and society which will interact with the designed infrastructure is necessary. Such an understanding needs to be translated into a well set of mathematical formulation to reach an engineered solution. Researchers put all their efforts to discover the mathematical harmony that exist in nature and society while engineers and builders apply those to bring a dream project to a reality. Science is transpired into technology. In a bridge project, putting of all intelligence is therefore warranted from the very planning stage to induce the resilience property into the built system. In this context, the Hardinge Bridge, one of the themes of this conference, is celebrating its 100 years of successful service life within which it passed through not only harsh environments but also recovered from a man-made disaster of considerable extent caused during the historic liberation war of Bangladesh in 1971, about forty three year ago from now.

Interdependence in thought, learning and knowledge sharing process is often more beneficial than an independent process. A professional conference facilitates fulfilling such a necessity. To this end, the theme of the Advances in Bridge Engineering-III conference spirited 196 professional engineers and researchers all over the world to make fresh mind searching to all disciplines of Civil Engineering that are related to plan, design, construct and maintain a bridge. This 651 page volume contains five keynote addresses supported by 74 technical papers from Bangladesh, Japan, India, China, Indonesia, Thailand, Korea, Switzerland, United Kingdom, Canada and United States of America. The papers have been grouped into eight broad topics of bridge engineering: History and Planning (9 papers), Materials (7 papers), Geo-environmental Issues (8 papers), Design and Construction (10 papers), Design for Dynamic Forces (11 papers), Administration and Monitoring (9 papers) & Repair, Renovation and Retrofitting (20 papers). A significant number of papers on repair, renovation and retrofitting are directly related to achieving resilience in the structure.

We hope, this conference will further stimulate the interaction between academia and all professional bodies towards building a knowledgebase on Bridge Engineering for achieving resilient surface communication infrastructure not only for Bangladesh but also for the Asian countries.

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