Proceedings

# *ICCESD 2022*

6<sup>th</sup> International Conference on Civil Engineering for Sustainable Development 10-12 February, 2022, Khulna, Bangladesh

# Proceedings ICCESD 2022

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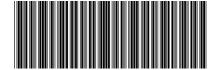
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## *ICCESD 2022*

# 6<sup>th</sup> International Conference on Civil Engineering for Sustainable Development

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#### Preface

The Department of Civil Engineering, Khulna University of Engineering & Technology (KUET) has been successfully organizing the International Conference on Civil Engineering for Sustainable Development (ICCESD) in every even year from 2012. This time we are very pleased to organize the sixth event of ICCESD. This event of the conference is now going to be held during February 10-12, 2022 at KUET campus, Khulna, Bangladesh. KUET is one of the leading public universities of Bangladesh, which is located at the southwestern coastal region. The overall goal of this conference is to create a successful forum where Academicians, Researchers, Scientists, Engineers and Scholars in all area of Civil Engineering will have the opportunity to present their views, ideas and experiences on developments and requirements in Civil Engineering and to contribute in shearing Civil Engineering knowledge.

In ICCESD 2022, 10 keynote lectures will be delivered and 251 research papers will be presented on the broader areas of Civil Engineering. It is anticipated that the conference will open a window of exchanging the scientific and technological information among all the participants from home and abroad. The theme of this conference includes the contributions from Environmental Engineering, Geotechnical Engineering, Structural Engineering, Transportation Engineering, Fire Engineering, Water Resources Engineering and Construction Engineering and Management.

After a two-step review process, a total of 251 technical papers (out of 350 submissions) have been selected to publish in the proceedings. A number of the papers have been lightly edited to even out the style and to revise the contents based on reviewers' comments. However, the final responsibility for the contents, quality and the presentation of the paper is held by each individual author. This preconference Abstract Proceedings contains the abstracts of the accepted papers, and the full papers will be available in the conference website after presenting the papers in the conference. Selected papers will be forwarded to publish in AIP conference proceedings (Scopus Indexed). Moreover, some of the selected papers will be forwarded to publish in the Journal of Engineering Science (JES), KUET.

I would like to acknowledge the enormous efforts of the authors who have contributed by submitting their papers. I would like to express the gratitude to all reviewers for their careful evaluation, constructive comments and suggestions to improve the manuscript. Heartiest thanks to the Editorial Committee of ICCESD 2022. Thanks to Mr. Md. Kamrul Ahsan; Mr. Md. Maruf Molla; Mr Md. Abdur Rakib; Mr. Mehedi Hasan; Mr. Snahashish Paul; Mr. Mohei Menul Islam and Mr. Samsuddin Ahmed who played a significant role in editing the proceedings including composing the text, figures, tables, and photographs, which is really a tedious job. Finally, the professional encouragements and tireless supports of our all colleagues from all committees formed for ICCESD 2022 are gratefully acknowledged.

The sponsoring facilities offered by China Civil Engineering Construction Corporation (CCECC), Advanced Technology Construction LTD, Wahid Construction Ltd, Shamsun International, KSRM Ltd., Poles and Concrete Ltd., Seven Rings Cement and CRTS (Civil) are highly appreciated and acknowledged.

We hope that this initiative will be sustained in the next event of ICCESD.

On behalf of the Organizing Committee,

### Prof. Dr. Md. Shahjahan Ali

Conference Chair, ICCESD 2022 Department of Civil Engineering Khulna University of Engineering & Technology Khulna-9203, Bangladesh