Contemporary Problems of Architecture and Construction



Selected, peer reviewed papers from the 13th International Conference on Contemporary Problems of Architecture and Construction, 6-8 October 2021, Yerevan, Republic of Armenia

Urban Development: Problems of Urban Planning and Architecture, Engineering, Construction and Operation of Buildings and Structures, Energy Efficiency of Buildings and Maintenance Systems, intellectualization and Algorithmization of Road Safety Systems Functioning in Large Cities

Edited by **Sargis Tovmasyan**

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- Saint Petersburg State University of Architecture and Civil Engineering
- Moscow State (National Research) University of Civil Engineering (MGSU)
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GREETINGS BY THE NATIONAL UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION OF ARMENIA

FOREWORD

National University of Architecture and Construction of Armenia Rector, Doctor of Technical Sciences, Professor Ye. Vardanyan The 13th International Conference "Contemporary Problems of Architecture and Construction"

Dear Participants of the Conference!

I highly appreciate the opportunity of holding the 13th International Conference on "Contemporary Problems of Architecture and Construction" in these difficult times for us and warmly welcome all participants.

The online reformatting of the last two conferences was caused by Covid-19 pandemic in the world.

I am hopeful that with joint efforts we will be able to overcome the created difficulties and to direct our potential and capabilities to the more effective development of education and science.

I would like to express my deepest gratitude to the Heads and scientists of the co-organizing universities for their great contribution to the organization of the conference:

- National University of Architecture and Construction of Armenia,
- St. Petersburg State University of Architecture and Civil Engineering,
- Moscow State (National Research) University of Civil Engineering,
- Czestochowa University of Technology,
- University of Florence,
- Beijing University of Civil Engineering and Architecture,
- Technical University of Ostrava,
- Rutgers University,
- Batumi Shota Rustaveli State University,
- Georgian Technical University.

I am thrilled to note that this year we celebrate the anniversary of our University and Moscow State (National Research) University of Civil Engineering, and in 2022 - Georgian Technical University.

Taking this opportunity, I extend my sincere congratulations to Professor Pavel Akimov, my colleague, Rector of Moscow State (National Research) University of Civil Engineering, the University academic staff, students and the entire staff.

This year 60 scientific reports of our partner universities and organizations have been submitted, 32 of which are envisaged to be published in the "Key Engineering Materials" periodical, indexed in SCOPUS.

Dear Colleagues, the organization of conferences greatly contributes to the exchange of leading research experience between partner universities and organizations, as well as to the training of highly qualified specialists in the fields of Construction, Architecture, and Building Information Modeling (BIM). Practical orientation and significance of research activities in Master's and Postgraduate studies become mandatory.

I am filled with hope that our cooperation will become more promising and mutually beneficial when, in parallel with organizing and holding conferences, we carry out future-oriented scientific projects and programs in bilateral and multilateral format, as well as coordinated activities directed to the improvement of educational strategy.

Dear Colleagues, once again I express my gratitude for participating in the conference. I wish you good health, productive work, and new success in all your initiatives.

YEGHIAZAR VARDANYAN

Doctor of Technical Sciences, Professor, Rector of the National University of Architecture and Construction of Armenia