

Forewords **Chairman of the Organizing Committee**

First of all let's pray and say thanks to God for giving us His mercy and blessings.

The development of technology nowadays is growing up so fast. It aims to meet the necessary of the community to get a better life. Technological innovation which needed to develop technology products that can help people in improving their lives. Therefore the academics are not only required to implement the learning process, but also have to do research and community service to produce innovative scientific research.

Indonesian academics today are eager to involve in research activities. Therefore we required a scientific forum for mutual discussion, exchange information about the research that has been carried out especially related to Urban Engineering.

Faculty of Engineering, University of Tarumanagara conducts the first international conference to bring the academics, researchers to develop their knowledge and exchange ideas so that the researchers can improve the results of research that has been done. The conference called the International Conference on Engineering Tarumanagara, 2013, which is held on the Auditorium at the 8th floor of M Building, Campus I, University of Tarumanagara from 2 to 3 October 2013. The ICET 2013 conference theme is Urban Engineering for Future Generations. Future generations as the frontier of national development should be prepared from now on, along with the necessary infrastructure. The role of technology is to support the enhancement of the ability of future generations. This event includes to the presentation of scientific papers by keynote speakers, parallel sessions presenting papers of academics and research poster exhibition.

The more extensive the information obtained, the more knowledge that we gained. Some papers submitted by researchers and academics from different countries such as United Kingdom, Germany, Taiwan, Singapore, Iran, Malaysia, Sri Lanka, and Japan, will enrich the science and technological development.

This conference proceedings contain the full text of all papers presented International Conference on Engineering of Tarumanagara 2013. Papers are categorized based on Engineering disciplines set by the organizing committee. Then, the presentation is divided into parallel sessions.

On this occasion I would like to thank to: Foundation of Tarumanagara, Rector of Tarumanagara University, Dean of Faculty of Engineering Tarumanagara University and Sponsors of ICET 2013, for the support and help that has been given. I also would like to thank the authors for their contributions.

Finally I would like to apologize if there are deficiencies in the activity.
Thank you for all the attention.

Dr. M. Sobron Yamin Lubis
Chairman of the Organizing Committee

Forewords
Dean of Faculty of Engineering

I would like to warmly welcome all participants of the International Conference on Engineering of Tarumanagara (ICET 2013). This conference is organized by Faculty of Engineering, Tarumanagara University. The main aim of this conference was to respond the problem related to urban engineering for future generation. As this conference was designed to gather scientists, engineers, practitioners, and industries in engineering related disciplines, I expect intense discussion will happen among them so that some brilliant ideas to be used to improve the quality of human life can be produced.

I hope this conference will create an international networking and collaborating, especially in engineering research and publication.

I would like to congratulate the organizing committee of ICET 2013, for their outstanding efforts. I would also like to express my gratitude to the sponsors for their contributions in making this conference a resounding success.

I wish the International Conference on Engineering of Tarumanagara (ICET 2013) a very useful and fruitful occasion.

Thank you for your attention and contribution.

Dr. Agustinus Purna Irawan
Dean of Faculty of Engineering

Forewords **Rector of Tarumanagara University**

Distinguished Guests, Ladies and Gentlemen,

I am delighted to have the opportunity to give a welcoming speech on this International conference where the issues of Urban Engineering for Future Generation will be addressed. And I believe these issues are crucial and important not only for our future generation but also for our planet where we live.

The progressive development in technology particularly in the 21-st century has brought the impact to human life. The way we communicate and the way we live have changed along with the development of the technology. In order to cater these needs, the natural resources are explored, buildings and industries have been built. As results of this development, the echo system is affected. In one hand, we have been successful to build our planet to cater our needs and on the other hands, gradually the stability our planet has been ruined. The question is; who is responsible or who is to be blamed on this ordeal. Despite all problems we might encounter as we go with this life, we have to protect our only planet.

In order to find the solution to these problems, many conferences and seminars have been conducted on the issues of Urban and Sustainability. Most of the time, people conceive of the programs in the last 10-15 years and anticipate for the future. Since the Kyoto Protocol in 1997 in Tokyo until the World Sustainable Building Conferences (SB11) in Helsinki in 2011, thousands of papers have been published. Many aspects of the future of the world for our future generation have been discussed. Many rating systems have been developed and yet many issues still need the attention of the scientists.

In broad, the issues can be categorized in three aspects i.e., social aspects, ecological aspects and, environmental aspects. The deterioration of these aspects can be minimized from the technical dimension. However, there is one aspect that is less discussed and considered i.e., cultural aspect. The culture and the way of life in each country might be different. For instance, those who live in the sub-tropical countries might be different from those in the tropical countries. Eventhough they are interrelated, but each of them has to be explored.

Today, we meet in this conference to exchange the knowledge and the information in many aspects of the sustainability and technology. I hope in this conference, the participants not only can share but also can learn on the sustainable issues.

Thank you.

Prof. Ir. Roesdiman Soegiarso, M.Sc., Ph.D.
Rector of Tarumanagara University

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Dr. Najid	Tarumanagara University

Organizing Committee

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Vice Chairman	Priyendiswara A.B., M.Com
Conference Secretariat	Dr. Harto Tanujaya Regina Suryadjaja, M.T. Mekarsari, M.Sc. Dewi Linggasari, M.T.

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