

Civil Engineering and Sustainable Development

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Article history:

Received
1 February 2021

Revised
7 February 2021

Accepted
15 February 2021

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Abstract

The field of civil engineering cannot be separated from the daily life of the people. The skyscrapers that can be seen everywhere, the thriving road traffic, the beautiful bridges and dams like sturdy fortresses, and tunnels and subsurface structures are an indispensable part of our lives. The global trend of sustainable development, Civil Engineering must eliminate or reduce environmental problems that may arise in the project. Starting from large-scale economic construction, so that development can provide benefits to mankind and make the environment get sustainable development and improvement. Therefore, the sustainable development of Civil Engineering is very worthy of discussion and study

Key words: Civil Engineering, Development, Sustainable

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Assalamu'alaikum Wr. Wb.

Sustainable Civil Engineering

The growth of a country is often characterized by massive infrastructure development. Civil engineering has an important role in development, from planning, design, implementation, and operation and maintenance. The field of civil engineering cannot be separated from the daily life of the people. The skyscrapers that can be seen everywhere, the thriving road traffic, the beautiful bridges and dams like sturdy fortresses, and tunnels and subsurface structures are an indispensable part of our lives. After entering the new century, in an environment of rapid economic development, we will usher in an explosion of new infrastructure construction. The influence of civil engineering on national economic development and people's lives is clear. As the most popular topic of concern in the 21st century worldwide, sustainable development affects all areas of everyday life.

The rapid development of the economic structure is like a double-edged sword. This situation gives us great wealth but also causes ecological damage to the environment. The fast pace of the economy is based on large-scale energy consumption at the expense of large portions of cleared grasslands and arable land, large portions of forest cleared, limited reserves of oil, coal and other natural resources mined, and so on. on, triggering soil erosion in major river basins, and loss of endangered species, severe weather anomalies and air pollution, a shortage of mineral resources and a series of serious problems.

The global trend of sustainable development, Civil Engineering must eliminate or reduce environmental problems that may arise in the project, such as reduction of water resources, degradation of water quality, land subsidence, soil erosion, landslides, liquefaction of residential buildings, cracks. and many other disasters, ranging from large-scale economic construction, so that these developments can benefit mankind and make the environment a sustainable development and improvement. Therefore, the sustainable development of Civil Engineering is very worthy of discussion and study.

Research in Civil Engineering

It is a great pleasure to present the first edition of "Bulletin of Civil Engineering" (BCE). This 6-monthly journal is supported by Universitas Muhammadiyah Yogyakarta. BCE welcomes articles in the form of original articles, technical design, review articles, book review, and discussion. Selected papers in BCE are dedicated to developments of technology in civil engineering, to achieve sustainable solutions and environment-friendly construction. It is intended as an international forum to share and discuss matters of major interest, including new developments in civil regulations. The inauguration volume includes 8 articles comprising 4 original articles and 4 technical designs.

The original articles provide topics related to innovation in civil engineering and how it performs. Farhan et al. discovered an alternative cement substitute material for vibration damping, namely tire rubber powder. The results proved reduction ratio of damping force is in accordance with concentration of tire rubber powder. This research contributes to development of eco-friendly construction materials. Emil and Fatimah modified pavement structure with chemical admixture, namely Plastocrete and Sikament-NN. Plastocrete can adjust curing time for concrete, while Sikament-NN can increase the initial compressive strenght. This research applied ABAQUS software to analyze performance of the pavement characteristics. Kharoza et al. investigated the behavior of expansive soil due to the application of SiCC column. SiCC column is one of the soil stabilization technology. In this paper, Kharoza et al focused on the shear strength of the soil surrounding the SiCC column instead of the implementation of SiCC column. Maulana and Syarif's article is concerned with the failure of the settlements due to debris flow in volcanic area. It predicts the structural resistance of houses subjected to hydrostatic force were analyzed by means of numerical simulation.

Other articles classified in technical design. Gentur and Harsanto analysed stability of the Kamijoro weir toward pipping, sliding, and falling. Heri and Wilana' article focused on the identification of safety and risk management. Several potential risks that might occur in high-rise building construction were identified to achieve the successful of construction projects. Wulandari and Muchlisin evaluated performance of the signalized intersection using PTV VISSIM. This research provides recommendation to the transportation management based on the simulation results. Rahmawati et al. design pavement structure using two different methods, namely Austroads and Component Analysis method. To know performance of pavement structure, those two methods were evaluated using Kenpave program.

Wassalamu'alaikum Wr. Wb.



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