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BUILDCON2023

COMPILATION OF PROJECT INNOVATION IDEAS
SEMESTER MARCH – AUGUST 2023

EMBRACING SMART CONSTRUCTION TRANSFORMATION

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Department of Built Environment Studies and Technology
College of Built Environment
Universiti Teknologi MARA Perak Branch

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Organised by
Department of Built Environment Studies and Technology
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DEVELOPMENT OF SANSEVIERIA TRIFASCIATA FIBRE (STF) REINFORCED CONCRETE

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Development Of Sansevieria Trifasciata Fibre (Stf) Reinforced Concrete

Innovation Idea:

Environmental issues caused by the industrial pollution of synthetic fibre pose a major challenge in today's world. Synthetic fibres are non-biodegradable, making them hard to disintegrate. To overcome this problem, an alternative material can serve as a viable substitute for synthetic fibres. Simultaneously, cracking is a common issue in concrete. There is a need to develop methods that reduce crack progression. The lack of research on the mechanical performance of concrete with STF prompted this study. The study aims to evaluate the mechanical performance of grade M30 concrete with the addition of STF. The objectives are to determine the best composition of concrete mix with STF, develop the prototype of concrete slab, and identify the marketability potential of the concrete with STF. The compressive test and density test of hardened concrete were conducted to evaluate the concrete performance. A compressive test was conducted at 7 and 28 days on three manipulated samples containing 0.25% STF, 0.5% STF, and 0.75% STF, each with a constant length of 30 millimetres. The sample with 0.25% STF exhibited the highest compressive strength and density. However, the most significant increase in compressive strength from 7 days to 28 days was observed in the concrete with 0.5% STF, showing an increase of 21.11%. Meanwhile, it was also observed that the crack progression decreases with the increasing percentage of STF. Thus, this research was conducted to assess the performance of concrete using STF, explore the potential of STF as a substitute for synthetic fibre, and evaluate its marketability potential.

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