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BUILDCON2023

**COMPILATION OF PROJECT INNOVATION IDEAS
SEMESTER MARCH – AUGUST 2023**

EMBRACING SMART CONSTRUCTION TRANSFORMATION

BUILDERS' CONVENTION DAY 2023

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

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

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CONCRETE BRICK WITH WASTE SOLAR GLASS PANELS

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Concrete Brick With Waste Solar Glass Panels

Innovation Idea:

Bricks are one of the primary materials required for building constructions. This material is widely used due to its advantages such as high durability, energy-efficient, low maintenance, and energy cost savings. The main goal of this innovation is to study the possibility of using waste solar glass panels to replace a part of the natural sand used in the production of concrete bricks. Brick specimens were prepared using sand, cement, and water, in which they were then replaced with waste solar glass panels at the percentage levels of 2% and 4%. Several series of tests were carried out to study the effect of the use of waste solar glass panels on the physical and mechanical properties of bricks. These tests include density, compressive strength, water absorption, and Ultrasonic Pulse Velocity (UPV) tests. The findings revealed that the bricks containing the waste solar glass panels share similar favourable characteristics in terms of physical and mechanical properties with bricks. The replacement of sand by waste solar glass panels at the percentage level of 2% exhibited the highest compression test results and water absorption compared to other percentages and control specimens. However, if the replacement is set to be higher than 2%, the brick's strength decreases for compression and water absorption, respectively. Curing took place on days 7 and 28. The bricks were produced according to the Malaysian standards. The size of the bricks used is 215mm x 102.5mm x 65mm. The ratio of cement to sand in this study is 1:4. Based on the results it shows that the sand-cement bricks with 2% waste glass solar panel replacement has an optimal value of 18.5MPa. Therefore, the results show that the strength of the bricks meets the Malaysian standards.

Surat kami : 700-KPK (PRP.UP.1/20/1)

Tarikh : 20 Januari 2023

Prof. Madya Dr. Nur Hisham Ibrahim
Rektor
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