



UNIVERSITI
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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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COMPILATION OF PROJECT INNOVATION IDEAS
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Organised by
Department of Built Environment Studies and Technology
College of Built Environment
Universiti Teknologi MARA Perak Branch
Malaysia

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Perpustakaan Negara Malaysia

Cataloguing in Publication Data

No e- ISBN: 978-967-2776-24-6

Cover Design: Muhammad Naim Mahyuddin

Typesetting : Siti Akhtar Mahayuddin

e ISBN 978-967-2776-24-6



SMART ECO DRAIN COVER

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Smart Eco Drain Cover

Innovation Idea:

Urban areas are particularly vulnerable to flash floods, and traditional metal drain covers play a crucial role in controlling stormwater runoff. Unfortunately, the rising incidents of drain cover thefts, driven by the desire to obtain their precious metal content, have caused grave worries. This not only results in financial losses for towns but also poses significant dangers to pedestrians and drivers. As such, this study suggests a novel approach to address this problem: replacing metal drain covers with ones made from concrete and coconut husk. This initiative aims to prevent theft and lessen accidents in the event of flash floods. The study looks on the viability and efficiency of using coconut husk as a more environmentally friendly alternative material for drain covers. Coconut husk fibre is an excellent choice for concrete mix reinforcement due to its high tensile strength and endurance. The goal of the study is to produce a sturdy and resilient drain cover that can endure high traffic volumes and adverse weather conditions by optimising the mix ratio. Laboratory tests were conducted to evaluate the mechanical characteristics and structural soundness of the concrete-coconut husk drain covers. To ensure increased security, the research assesses their resistance to theft efforts such as cutting and prying. Additionally, the drain covers undergo tests to verify their compliance with safety and functionality standards, including assessments of skid resistance and water drainage capacities. The findings show that the non-metallic properties of the concrete-coconut husk drain covers successfully discourage theft attempts. These innovative drain covers also show sufficient toughness and endurance to withstand typical traffic loads while preserving effective water drainage during flash floods. The addition of coconut husk in the concrete mixture also promotes environmentally friendly waste management.

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

Tarikh : 20 Januari 2023

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