

Porous asphalt mixtures enriched with bamboo fibers as a new approach for future sustainable construction

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ABSTRACT

Porous Asphalt (PA) is a highly permeable asphalt surface used to create and maintain permeable pavements for storm water management and runoff reduction. Under the impacts of repetitive vehicle loads, warm weather, and heavily rainfall, the structure was vulnerable to deterioration from cracking, rutting, stripping, and quick ageing. This research aims to examine the role of bamboo fiber in improving the physical and mechanical properties and overcome the issue related to PA. Among the tests involve are Cantabro loss, permeability, binder draindown, stability and resilient modulus. Two types of PA gradation involved with four different proportion of bamboo fiber (0.2%, 0.3%, 0.4%, 0.5%). From the findings, it could be conducted that the existence of bamboo fiber can significantly improve the PA performance for both gradations. From this study, the utilization of natural fiber as an additive is also promoted and provide significant contribution to the exploration to alternative pavement material.

KEYWORDS

Bamboo fiber, Porous asphalt, Morphological properties, Mechanical properties, Sustainability, Green construction

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