UTILISATION OF WASTE PAPER SLUDGE ASH (WPSA) AND RECYCLED CONCRETE AGGREGATE (RCA) IN PRODUCING CONTROLLED LOW-STRENGTH MATERIAL (CLSM)

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Overflowing of landfills with waste paper, tested concrete cubes, and construction and demolition waste have become a major problem nowadays since Malaysia is a developing country. Hence, in this study, both waste paper and tested concrete cube were recycled as partially cement and fully sand replacement in the production of a new design of control low- strength material (CLSM) sample, respectively. The flowability, drying shrinkage percentage, compressive strength, triaxial shear strength, permeability, and bearing strength test were conducted following the standards. All harden samples were cured in the air before the test. It was found that the percentages of cement replacement and water to cementitious material (w/cm) bring a major impact on the results of the experiments. The strength obtained from the experimental was found in the range of normal CLSM of below 8.3 MPa. Hence, as the strength of the tested sample is under the CLSM's requirement, the newly designed mix of CLSM using waste paper sludge ash (WPSA) and recycled concrete aggregate (RCA) is suitable to be used as a sub-base in the infrastructure application.

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