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FACULTY OF ENGINEERING
DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING
WATER RESOURCES ENGINEERING PROGRAMME
FINAL YEAR PROJECT REPORT

PROJECT TITLE

**INVESTIGATING THE EFFECTIVENESS OF USING GLASS WASTE POWDER A
PARTIAL FOR CEMENT IN CONCRETE PAVERS.**

BY

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A final year project report submitted to the Department of Water Resources and Mining Engineering as a partial fulfillment of the requirements for the award of a Bachelor of Science in Water Resources Engineering

DECLARATION

I KABONGE IVAN, hereby declare to the best of my knowledge, that this project proposal is an outcome of my efforts and that it has not been presented to any institution of learning for an academic award.

Signature:

Date:/...../.....

APPROVAL

This final research report has been submitted to the Faculty of Engineering for examination with approval of my supervisor.

MR. LUBAALE SOLOMON AZARIUS

Signature.....

Date...../...../.....

ABSTRACT

There is a tremendous increase in the use of glass in Uganda due to its durability, bright surface and resistance to abrasion among others that has led to an increase in generation of glass waste which is non-biodegradable waste. Also, the increasing need for construction especially in developing countries has led to an increase in production of cement which is one of its raw materials. Cement production is associated with release of greenhouse gases. This has led to a need to research about glass as a pozzolan to replace cement in concrete pavers without altering their properties.

When glass waste is crushed down to micro size particles, it's expected to undergo pozzolanic reactions with cement hydrants. In this research, properties of both colored and non-colored glass were evaluated. Chemical analysis of glass and cement samples was determined using SEM technique and found out minor differences between colored and non-colored glasses. Compressive and water absorption tests were carried out on various percentages at which cement was replaced by glass waste powder in pavers. The compressive strength decreased with increasing glass waste powder yet water absorption increased in both colored and non-colored. A 20% replacement was of cement with glass waste powder was found convincing considering cost ad environment.

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LIST OF ACRONYMS

GWP – Glass Waste Powder

IS – Indian Standard

BS – British Standard

ACI – American Concrete Institute

EDTA – Ethylenediaminetetraacetic Acid

OPC – Ordinary Portland Cement