FACULTY OF ENGINEERING.

DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING.

FINAL YEAR PROJECT RESEARCH REPORT.

INVESTIGATING THE EFFECTIVENESS OF WATER HYACINTH ASH AS A PARTIAL REPLACEMENT OF CEMENT IN INTERLOCKING STABILISED SOIL BLOCKS.

BY

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This report is submitted to the department of water resources and mining engineering as a partial fulfillment for a ward of a bachelor's degree in water resources engineering at Busitema university.

ABSTRACT.

This report gives an overview of the practical application of water hyacinth ash as an admixture or a good pozzolan. The study inspired by a study on its chemical composition and realize it was a good pozzolan. Water hyacinth grows vigorously in ponds and double its population within a period of two weeks. Its high rate of proliferation and high environmental tolerance even when disposed of put surface fresh water environments in danger. It focused to determine the effectiveness of water hyacinth as a partial replacement of cement in interlocking stabilized soil blocks (ISSBs). ISSBs block were opted in this research because they provide an economic construction and easily made.

Different mix ratios were made by varying the cement content and water hyacinth ash; - T_1 control (100% OPC), T_2 (10% WHA), T_3 (20% WHA), T_4 (30% WHA), T_5 (40% WHA), T_6(50% WHA). Each treatment, four blocks were made, three for compressive strength and one for water absorption and left to cure for 14 days.

Basing on the results gathered from the tests performed, it showed that using water hyacinth ash as an admixture affected the compressive strengths and water absorption properties of the samples as finding were compared with a conventional block (100% OPC).

It was therefore concluded that increase in water hyacinth ash leads to a decrease in compressive strength of the block. Water absorption increases with increase in water hyacinth ash which compromises the strength of the block. The tests results were done basing on the minimum compressive strength of an ISSB block required and therefore the cement replacement with WHA should not exceed 20%.

DECLARATION.

I **FLUJENSIO SSERWANJI, BU/UG/2016/94** hereby declare that this project report is completely based on my research work of my hand and had never been presented by any other person or institution for an academic award.

Signature: …….

Date: …….

APPROVAL.

This work has been compiled with the guidance, consultations and supervision from:

Mr. MASERUKA S BENDICTO.

Signature: …….

Date: ……

ACKNOWLEDGEMENT.

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WHA – Water Hyacinth Ash.

XRF – X-Ray Florescence.

MLHUD – Ministry of Land, Housing and Urban Development.

HABRI – Housing and Building Research Institute.

ISSBs – Interlocking Stabilized Soil Blocks.

UNCHS – United Nations Center for Health Settlement.

OPC – Ordinary Portland Cement.

USDA – United States Department for Agriculture.

UN – United Nations.

BIS – Bureau of Indian Standard