FACULTY OF ENGINEERING

DEPARTMENT OF WATER AND MINING ENGINEERING

FINAL YEAR PROJECT REPORT

UTILISATION OF POLYETHYLENE TEREPHALATE (PET) WASTE PLASTICS IN STABLISING SOILS FOR CONSTRUCTION.

BY

TWESIGYE JUSTINE

REGISTRATION NO: BU/UG/2017/98

EMAIL:twesigyejustine70@gmail.com

Tel: 0786148916/0704088270

MAIN SUPERVISOR: DR. NIBIKORA IIDEPHONSE

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

ABSTRACT

This research focused on the potential utilization of PET wastes as a stabilizer to improve the compressive strength of clay soil. .A series of laboratory compaction and CBR tests were carried out. Soil specimens were compacted at maximum dry density with different percentages of plastic waste 2.5%, 5%, 7.5%, and 10% weight of clay soil).

Results indicate that an increasing of PET waste content decreases the maximum dry density And the optimum moisture content (OMC). Soil became non plastic when the addition of PET waste content was equal to or greater than 5% of weight of clay soil. An increasing of PET waste content increased the CBR values of clay soil

This new technique of soil stabilization can be effectively used to meet the challenges of society, to reduce the quantities of waste, producing useful material from non-useful waste materials. Thus using plastic bottles as a soil stabilizer is an economical utilization since there is scarcity of good quality soil for construction. This project involved the detailed study on the possible use of waste plastic bottles for soil stabilization. The analysis was done by conducting Maximum Dry Density and California Bearing Ratio tests after mixing predetermined quantities of soil and plastic strips to attain the various results. The comparison of test results showed that 5.0% plastic strips mixed in the Clay (black cotton) were the most efficient in increasing strength of soil. The optimum percentage of plastic strips in soil was found out by California Bearing Ratio Test.

DECLARATION

I TWESIGYE JUSTINE hereby declare that this project is my original work and that the information contained in this project is out of my hard work and research, except where explicit citation has been made and it has not been presented to any institution of higher learning for any academic award.

Signature …….

Date……....

APPROVAL

This project has been submitted for examination with approval from the following supervisors:

PROJECT SUPERVISOR

Dr. NIBIKORA ILDEPHONSE

Signature: …….

Date: …….

DEDICATION

I dedicate this final year project to my parents; **MR. MUBANGIZI HENLY** and **MRS. TUMWEBAZE ANNET** who has enabled me to see the light of education through thick and thin and my lecturers who have mentored me from first year up to now. May the Almighty God bless you abundantly.

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Finally, I thank all my friends who have always been there for me in all situations.

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