ASSESSMENT OF STABILISED SOIL BLOCKS TECHNOLOGY AS A LOW COST HOUSING MATERIAL: A STUDY OF ELDORET MUNICIPALITY.

BY

KETER. K. JULIUS

REG NO: EDU/PGT/01/2002

A THESIS

SUBMITTED IN PARTIAL FULFILMENT OF THE AWARD OF THE DEGREE OF MASTER OF PHILOSOPHY IN TECHNOLOGY EDUCATION (BUILDING AND CIVIL ENGINEERING OPTION)
IN THE DEPARTMENT OF TECHNOLOGY EDUCATION

MOI UNIVERSITY

AUGUST 2007

ABSTRACT

Effective Housing materials ought to be, durable, strong and affordable in order to be used in the production of quality-housing units to majority of the poor. One of the materials that meet these criteria is stabilised soil blocks (SSBs).

SSB has received attention recently as a suitable building material for low cost housing in several parts of Kenya. However, little research has been undertaken within Eldoret Municipality concerning the use of SSBs as a low cost walling material. A 3-month study investigating suitability of soils, compressive strength and cost effectiveness of SSBs as building materials was thus undertaken in Eldoret municipality. Soil samples were obtained from 5 zones, Kimumu, Langas, King'ong'o, Munyaka and Rehema estates. Suitability of soils for SSBs was based on Pedological classification, granulation test, (sieve and sedimentation analysis) and atterbergs limit tests.

Compressive strength of SSBs was tested using Dennison hydraulic press machine while cost effectiveness of SSBs as building material was compared to other conventional materials based on a prototype low cost house. Results indicated that laterites of fine to medium texture are dominant. They are found in large proportions in depths ranging from 1-3 feet below the ground level. The particles size distribution of laterites in the research area is 32% fine –coarse sand, 52% fine- medium gravels and 16% silt and clay. The soils have liquid limit of (60.2), plastic limit of (39.6) and plasticity index of (20.6).

The compressive strength of SSBs increased linearly with increase in cement ratio while the specific gravity of SSBs was higher than those of unstabilised blocks. The most cost effective ratio that yielded structurally sound blocks was 6% cement and 2% lime. In conclusion, soils in Eldoret are suitable for SSBs production and are highly recommended for SSBs production.