



UNIVERSITY OF NAIROBI

COLLEGE OF ARCHITECTURE AND ENGINEERING

DEPARTMENT OF CIVIL AND CONSTRUCTION

ENGINEERING

FCE 590: FINAL YEAR PROJECT

TITLE: INVESTIGATION OF THE PERFORMANCE OF WOOD

ASH AS A PARTIAL REPLACEMENT OF CEMENT IN

CONCRETE

BY:

GATHIGA DAVID NJENGA

F16/38557/2011

2016.

ABSTRACT

I intend to investigate the performance of wood ash as partial replacement of cement in concrete with a view of achieving the target compressive strength specified in the concrete mix design.

Particular emphasis being put on using Pozzolanic cement with wood ash obtained from burning of saw dust sourced from the wooden shavings from a carpentry location.

Wood ash has been used in agriculture as fertilizer since it contains valuable nutrients to plants such as potash, phosphate, iron, manganese, boron, copper and zinc. It also contains other compounds such as calcium carbonate in larger proportion about 15% and alumina in small proportion about 1.6%, which give the wood ash its Pozzolanic property, but it has never been used in any concrete application works. But in most homesteads, this ash is considered as waste and therefore dumped in pits.

Considering therefore the potential use of wood ash in concrete, and furthermore, considering the price of a 50kg bag of cement being over 700ksh currently, hence rendering it unaffordable to the common citizens, the author intends to increase the bulk of cement using wood ash which is readily available as wastes in homesteads, with several standardized checks to be put in place to safeguard the concrete quality and performance. Therefore generally expecting the cost of constructing low cost housing to reduce as a result of reduced bags of cement required to finish a similar construction work.