

THE EFFECT OF ELAPSED TIME AFTER  
MIXING ON THE PROPERTIES OF  
MODIFIED LATERITE

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## DECLARATION

I hereby declare that this thesis has been composed by myself and that it is a record of my own research. It has not been accepted in any previous application for a higher degree.

All quotations and their sources of information are specifically acknowledged by means of references.



OBEAHON, S.O.

1993.

CERTIFICATION

This thesis entitled "THE EFFECT OF ELAPSED TIME AFTER MIXING ON THE PROPERTIES OF MODIFIED LATERITE" by OBEAHON SUNDAY OSEAREMEN meets the regulations governing the award of the degree of Master of Science (GEOTECHNICS) of Ahmadu Bello University and is approved for its contribution to knowledge and literary presentation.



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DEDICATION

This work is dedicated to four men who have contributed financially and morally to my success :

Mr. F. Obeahon

Prince J. Momodu

Mr. F. Omcaka

Mr. Iyamabo.

AND

To my junior brother and his wife :

Mr. & Mrs. E. O. Obeahon

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"THE LORD IS MY SHEPHERD

I

SHALL NOT WANT"  
(Psalm 23 vs. 1)

Hence, my utmost thanks to the Almighty God and my saviour Jesus Christ.

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**ABSTRACT**

This study is an investigation into the effect of elapsed time after mixing on the properties of modified laterite. The modifiers used are portland cement and hydrated lime.

The laterite was modified with 1, 2 and 3 percent of portland cement and hydrated lime. The elapsed time used for this study ranges from 0 to 3 hours, with tests conducted at 1.0 hour intervals.

Details of test methods and evaluation criteria are given.

Preliminary results presented show that the laterite is classified as an A-6 soil, whose properties are such that they are not economically stabilizable or usable in their natural state for pavement works.

Detail results presented show that with increased elapsed time after mixing, optimum moisture content, maximum dry density, liquid limit, plasticity index, cohesion and angle of internal friction decreased while the grain size and plastic limit increased.

Based on the grain-size and plasticity criteria of the Highway Research Board (HRB) limits for soils that can be stabilized with portland cement, and the Millard and O'Reilly free-flow criteria, the soil can be modified with 2% lime and 3% cement.

Also, considering the effect of elapsed time after mixing on the modified laterite, acceptable modification is achieved at 2.0 hours for 1% lime and cement using the Highway Research Board criteria and 1.0 hour for 1% lime and 3.0 hours for 1% cement using the Millard and O'Reilly criteria.

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