DEDICATION:

First of all, I would like to thank God, the greatest, for everything I am granted, I am really so much grateful.

Then I would like to dedicate this thesis to my dear mother, the greatest woman in my life who taught me how to cope and fight for my goals.

To my precious father who taught me patience and forgiveness. I wish them all pleasure, God bless them.

Also, I want to mention my dear sisters, all of them. And my brother whom I miss so much, wishing him all happiness and success.

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ABSTRACT:

This research is about the mechanical treatment of base course material.

The base course in Khartoum state is facing a problem of scarcity. Nowadays, it is hard to find base course materials comply with the specifications for constructing roads. Therefore, some of the materials supplied from quarries to constructional locations need to be treated. There are several ways and methods of soil treatment and stabilization but in this research, the soil treated by the mechanical stabilization.

The purpose of treatment is for improving of soil properties. This method is so simple and easy as well as the good results obtained. Moreover, it is not costly, comparing to other soil tre**a**tment methods such as the chemical stabilization.

In the research, three samples were collected from materials supplied to construction locations from quarries.

For treating the samples, percentages of sand, natural gravels and crushed stone were added in many trials, so as to improve the engineering properties of the material and to conform to the requirements.

The results were magnificent and base course materials conformed to the specifications were obtained which could be used in roads construction as base materials.

From the research, it is obvious that the subbase material could be treated to act as base course materials.

مستخلص:

تعانى ولاية الخرطوم من ندرة مواد الاساس و بالتالى صعوبة الحصول على مواد اساس مطابقة للمواصفات تصلح لتشيد الطرق. و عليه، بعض مواد الاساس التى يتم توريدها للموقع قد تحتاج للمعالجة حيث هنالك العديد من الطرق المستخدمة لمعالجة التربة. و هذا البحث يتناول معالجة مواد طبقة الاساس ميكانيكيا.

معالجة التربة ميكانيكيا من اسهل و ابسط طرق المعالجة و ارخصها مقارنة مع المعالجات الاخرى كالمعالجة باستخدام المواد الكيميائية مثل الاسمنت. كما ان معالجة التربة ميكانيكيا تعطى نتائج جيد بحيث يمكن الحصول على مواد اساس وفقا للمواصفات.

فى هذا البحث، استخدامت ثلاثة عينات، اخذت من مواقع تشييد من مقالع مختلفة بولاية الخرطوم حيث تم اختبارها معمليا لتحديد مواصفات تلك العينات.

تمت المعالجة باضافة نسب مختلفة من الرمل، الخرسانة الطبيعية أو الحجر المكسور فى عدة محاولات و ذلك لتحسين الخواص الهندسية لها و الحصول على مواد اساس وفقا للمواصفات المطلوبة.

من النتائج المعملية، تم الحصول على مواد اساس مطابقة للمواصفات بعد معالجتها ميكانيكيا، صالحة الاستخدام فى تشييد الطرق.

الدراسة توصلت الى امكانية معالجة مواد الاساس المساعد ميكانيكيا لاستخدامها كمواد لطبقة الاساس.

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ABBREVIATIONS:

N.G.L.	Natural Ground Level
CBR	California Bearing Ratio
M.D.D.	Maximum dry Density
O.M.C.	Optimum Moisture Content
PI	Plasticity Index
PL	Plastic Limits
LL	Liquid Limit
PM	Maximum Plasticity Modulus
TFV	Ten Percent Fines Value
U.C.S.	Unconfined Compressive Strength
h.p.	Horsepower
psi	Pound per square inch
F	Fahrenheit
mm	Millimeter
dm	Decimeter
km	Kilometer
kg	Kilogram
KN	Kilo Newton
T1, T2, …	Traffic Categories
GBI,A	Granular roadbase, fresh, crushed rock
GB1,B	Granular roadbase, crushed rock, gravel or boulders
GB2,A	Granular roadbase, dry-bound Macadam
GB2,B	Granular roadbase, water-bound Macadam
GB3	Granular roadbase, natural coarsely graded granular material including processed and modified gravels
GS	Granular subbase, natural gravel
GC	Granular capping layer, gravel or gravel soil
AASHTO	American Associated States of Highway and Transportation Official
BS	British Standard
TRL	Transport Research Laboratory - Overseas Rote note 31