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Finally, I would like to thank my wife for every think, really proud to have each of you for everything you have done to help me to complete my degree.
Abstract:

The thesis is concerned with Pavement Maintenance Management System of road for the Khartoum State Paved Network.

In this study a street classification system is assessed, comprehensive road inventory, Pavement Visual Condition Survey for the Pavement distresses types’ severity, density and prevent an each road were determined.

The study is also includes a complete pavement condition survey and assessment of (30km) from the paved street, the study ranks the project according to its pavement condition index (PCI) to set initial priorities based on “the worst first” concept.

It also includes carrying of dynamic cone penetration (DCP) on selected representative sample units from some section of the roads and a correlation between CBR(DCP) and CBR laboratory was found to be 0.62 and also The DCP data were analyzed by the transport road laboratory (TRL) U.K software version 3.1.

The Non destructive equipment includes the skid resistance device was carried out. Correlated with PCI and also level of service is carried out for paved road was found that only one street has level of service A, and four of them has level of service B and the rest six street are having level of service C, which will need more access and grade separation for the junctions and to some extent some maintenance is needed for some of them.

the study shows that about 17% of the road pavement one in fair condition, 33% of roads are in satisfactory condition, 25% are very good, 25% excellent and the average PCI of all the road was found to be 57%.
المستخلص:

عنى هذا البحث بموضوع نظام إدارة صيانة الرصف. وطبق على جزء مقدر من شبكة طرق ولاية الخرطوم. (مدينة الخرطوم)

تم في هذا البحث تسمية وترقيم جزء من طرق مدينة الخرطوم، اشتمل على مسح شامل لعيوب الطرق المسفلتة حيث حددت درجة عيوبها ومساحتها ونسبة شدتها وكثافتها بكل طريق.

وقد شملت دراسة المسح البصري حوالي 30 كلم من الطرق المسفلتة بولاية الخرطوم وربت الطرق حسب حالتها في جدول أوليات مبنية بناءاً على مبدأ الأسوأ (المنهار) أولاً، كما احتوت على إجراء لعدد من اختبارات المخروط الديناميكى (DCP) على وحدات مسح معينة من الطرق وحللت النتائج باستخدام برنامج حاسوب صادر من معهد بحوث الطرق والنقل البريطاني (TRRL) وحللت نتائج نسبة تحميل كلفورنيا المخروط الديناميكى مع نسبة تحميل كلفورنيا العملية وحدد درجة الإرتباط وإيجاداً اجري ساختبار لا تلافي (مقاومة الانزلاق) وحدد درجة الارتباط مع دليل حالة الطريق (PCI).

كما استخدم برنامج حاسوب صادر من معهد بحوث الطرق ونقل البريطاني (TRRL) وتم تحديد مستوى الخدمة للطرق (HCS +).

وقد خلصت الدراسة أن هناك طريقين حالتهما مقبولة وأيضاً بعضهم حالتهم جيدة، 17% مقبولة، 33% جيد، 25% جيد جداً، 25% ممتاز ومتوسط حالة ومتوسط مؤشر حالة الرصف للطرق كان 57%.
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Abbreviations and symbol

PMMS  Pavement maintenance management system
PMS   Pavement management system
NDT   Non-destructive test
DCP   Dynamic cone pentrometer
PCI   Pavement condition index
LOS   Level of services
SN    Skid number
HCS   Highway capacity software
CAN   Aircraft classification number
PCN   Pavement classification number
MR    Maintenance rating
AASHTO  American Association of State Highway and Transportation Officials
OECD  Organization for economic co-operation and development
NHS   National highway system
US    United state
FWD   Falling weight deflactometer
KN    Kilo Newton
GPR   Ground penetrating radar
GNP   Gross natural product
IRI   International roughness index
PSI   Present serviceability index
RCI   Road condition index
FHWA  Federal Highway Administration
SHRP  Strategic highway research program
PCC   Portland cement concrete
CPR   Concrete pavement restoration
ERL  
HMA   Hot mix asphalt
BMS   Bridge management
CMS   Congestion management
IMMS  Intermeddle management
SMS   Safety management
TMS   Transportation management system
MMS   Maintenance management system
HPMS  Highway performance monitoring system
ISTEA Intermeddle service transportation efficiency act
GIS   Geographical information system
RS    Rapid setting
SS    Slow setting
ASTM  American soil testing material
R     Road
ID    Identification number
AC    Asphalt concrete
M     Medium severity
L     Low severity
H     High severity
DV    Deduct value
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<td>Correct deduct value</td>
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<td>TDV</td>
<td>Total deduct value</td>
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<td>PR</td>
<td>Penetration rate</td>
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<tr>
<td>DSN</td>
<td>Number of blows required</td>
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<td>CBR</td>
<td>California bearing ratio</td>
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<tr>
<td>ARRB</td>
<td>Australian road research board</td>
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<tr>
<td>TRRL</td>
<td>Transportation research road laboratory</td>
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<td>RN</td>
<td>Ride number</td>
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<td>IRRE</td>
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<td>MERLIN</td>
<td>Machine for Evaluating Roughness using Low cost Instrumentation</td>
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<td>SDP</td>
<td>Service dynamic profilometer</td>
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<td>RTRRM</td>
<td>Response type road roughness meters</td>
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<tr>
<td>KN</td>
<td>Kilo Newton</td>
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<td>KG</td>
<td>Kilo Gram</td>
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<td>PR</td>
<td>Penetration Rate</td>
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<td>LL</td>
<td>Liquid Limit</td>
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<td>PI</td>
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<td>MDD</td>
<td>Maximum dry density</td>
</tr>
<tr>
<td>OMC</td>
<td>Optimum moisture content</td>
</tr>
</tbody>
</table>