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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. وطّبق على جزء مقدر من شبكة طرق ولاية الخرطوم.(مدينة الخرطوم)

تم فى 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.

ولقد شملت دراسة المسح البصرى حوالى 30 كلم من الطرق المسفلتة بولاية الخرطوم ورتبت الطرق حسب حالتها فى جدول أوليات مبدئى بناءاً على مبدأ الأسوأ (المنهار) أولاً. كما احتوت على اجراء لعدد من اختبارات المخروط الديناميكى DCP على وحدات مسح معينة من الطرق وحللت النتائج باستخدام برنامج حاسوب صادر من معهد بحوث الطرق و النقل البريطانى TRRLوحلّلت نتائج نسبة تحميل كلفورنيا المخروط الديناميكى مع نسبة تحميل كلفورنيا المعملية وحددت درجة الإرتباط وايضا اجري ساختبار لا اتلافي (مقا ومة الانزلاق) وحددت درجة الإرتباط مع دليل حالة الطريق (PCI)

كما استخدام برنامج حاسوب صادر من معهد بحوث الطرق و النقل البريطانى (TRRL) (+ HCS) وب تم تحد يد مستوي الخدمة للطرق

وقد خلصت الدراسة أن هنالك طريقين حالتهما مقبولة وأيضاً بعضهم حالتهم جيدة.

17% مقبولة ، 33% جيد، 25% جيد جداً ، 25% ممتاز ومتوسط الحالة 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

CDV	Correct deduct value
TDV	Total deduct value
PR	Penetration rate
DSN	Number of blows required
CBR	California bearing ratio
ARRB	Australian road research board
TRRL	Transportation research road laboratory
RN	Ride number
PI	Profile index
IRRE	International road roughness experiment
MERLIN	Machine for Evaluating Roughness using Low cost Instrumentation
SDP	Service dynamic profilometer
RTRRM	Response type road roughness meters
KN	Kilo Newton
KG	Kilo Gram
PR	Penetration Rate
LL	Liquid Limit
PL	Plastic limit
PI	Plasticity index
MDD	Maximum dry density
OMC	Optimum moisture content