DEDICATED

TO

My Mother

A strong and gentle soul who taught me to trust in Allah, believe in hard work and that so much could be done with little

My Father

For earning a honest living for us and for supporting and encouraging me to believe in my self

My Beloved Family and Friends

Thanks for all your support and guidance, which made me complete this project

ACKNOWLEDGEMENT

First, at all I thank God to guiding and giving me the faith to complete this master project successfully. Also my thanks to Sudan University for Science and Technology who gave me this opportunity to join and for fill this master project in which, I gained very knowledgeable information in which, I am very confident will benefit me in my future career.

Never ever, forget to my dear project supervisor, Dr.Kamal Masoud Margi and the programmer of this project Dr. Abdullah Bashir, for guiding and teaching me a lot since undergoing this project. They both are hardworking and responsible lectures, which have taught me a lot about this project and guided me to the right path to complete this project.

Finally, I wish to thanks my dear friends, with their comment, support, encouragement, motivation and friendship in order for me to complete this master project.

Thank you

ABSTRACT

Nowadays, road and surface failure has become a critical issue in our country on the flexible pavement shown a bad quality and an error in the design stage. The thickness design of flexible pavement has become crucial elements in the overall efficiency of highway structure system to give a good performance and high serviceability under traffic loading during the expected design period.

The objectives of this study are to develop flexible pavement thickness design software for AASHTO and ROAD NOTE 31 by using Visual Basic DOT NET. This computer software could produce the design thickness of each layer for flexible pavement structure in graphical layout for both design methods. Therefore, the users can easily analyzed the result obtained to select the best design method between AASHTO and ROAD NOTE 31 based on thickness and cost. Thus, performance of this program was successful tested and validated. Therefore, computer software flexible pavement thickness design is very useful tool in highway engineering. By applying the computer program, the design stage can be made in a very short time period of design process and help to minimize the error factor compare to manual calculation or conventional method. Computer software also can give high accuracy and quality of result for pavement thickness design.

تجريد

في الوقت الحاضر أصبح التدهور في الرصف المرن لطبقات الطرق قضية حاسمة في بلادنا والتي تنعكس في قلة الجودة والأخطاء التي تحدث في مرحلة التصميم حيث أصبح تصميم سماكات طبقات الرصف المرن من العناصر الحاسمة في كفاءة نظام إنشاء الطرق لتوفير الأداء الجيد والخدمة العالية تحت حركة المرور أثناء العمر الافتراضي للطريق.

الهدف من هذه الدراسة هو تطوير برامج تصميم سماكات الرصف المرن (AASHTO and ROAD NOTE 31) باستخدام لغة البرمجة Visual Basic . DOT NET

برامج الحاسوب هذه ممكن ان تعطينا سماكة أي طبقة تصميمية من طبقات الرصف المرن بيانيا لكل من طريقتي الـ(AASHTO and ROAD NOTE 31).

وهو بذلك يمكن المستخدمين من سهولة التحليل والاختيار بين الطريقتين على أساس سماكة الطبقات والتكلفة حيث أن النتائج التي يتم الحصول عيها من هذا البرنامج تم اختبارها بنجاح وتم التأكد من صلاحيتها. وتعتبر برامج الحاسوب لتصميم طبقات الرصف المرن أداة مهمة في مجال هندسة الطرق. وبتطبيق تلك البرامج فإن مرحلة التصميم تتم في فترة زمنية قصيرة كما يساعد في تقليل الأخطاء مقارنة بالحسابات اليدوية او الطرق التقليدية كما تعطينا دقة وجودة عالية في تصميم سماكات الرصف.