Developing of Pavement Management System (PMS) for EMU Campus Pavement in GIS Environment

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ABSTRACT

Systematic processes such as a pavement management system (PMS) are commonly utilized for assisting the decision making process in terms of finding a proper maintenance and rehabilitation (M&R) treatment for the pavement network. This kind of process usually can make sure of the effectiveness for funds that allocated for the treatment action. In this study PMS has been established for Eastern Mediterranean University (EMU) campus pavement network for both roadways and parking lots, which can be considered as a first step that carried out to establish this system for the campus. In this research, pavement evaluation study was undertaken in the context of phase a pavement condition survey producing pavement condition index (PCI) according to ASTM D6433 standard. PCI has been determined for every campus pavement section according to the existing pavement distress type, severity and quantity. MicroPAVER PMS software was utilized for computing PCI and for demonstrating when and which section of pavement network required (M&R) action. A total of 79 sections of the campus network were inspected and assessed in June 2012, it can be remarked that 37sections are in Excellent condition, 15 sections are classed as Very Good, 21 are classed as Good, 4 of sections are in Fair condition and 2 sections are classed as Poor. Moreover, there is no section observed in Very Poor or Failed condition, and also the average PCI for the whole pavement network is 79. Therefore, the entire campus pavement health can be classified as Very Good.

The proposed plan was conducted for the coming 5 years which starts from 2013 to 2017. Additionally, the determined analytical results in PMS have been stored and displayed in Geographic Information System (GIS). This system is one of the latest

techniques followed by using computers to save huge amount of data with large areas of the maps that cannot be saved properly on a paper. In this research ArcGIS10 was integrated with EMU campus PMS, GIS was utilized to assist in the preparation of a suitable database for the campus pavement network. For this reason a shapefile was created and an attribute table has been established. This table includes collected and computed pavement data such as: inventory, present and future condition, suggested treatments alongside costs for each individual section that required a treatment action. Finally, several reports, charts and thematic maps are produced.

Keywords: Pavement Management System, Campus Pavement Network, Pavement Condition Index, Pavement Distress, MicroPAVER, Geographic Information System.

ÖZ

Sistemli işlemler kategorisinde olan üstyapı yöneticilik sistemi (ÜYS) yol üstyapı ağının bakım, onarım seçiminde ve karar verme işleminde sık sık kullanılmaktadır. Bu tür işlemler üst yapı bakımında bütçenin etkin kullanımını sağlamaktadır.

Bu çalışmada ÜYS Doğu Akdenız Üniversitesi (DAÜ) kampüsü üstyapı ağında bulunan yol ve otoparklar için oluşturuldu.ASTM D6433 standardında belirtilen PCI değeri için üstypı durum gözlemi yapılmıştır. Her üstyapı kısmındaki üstyapı sorun türü miktar ve şiddetti belirlenecek kısmın PCI değeri hesaplandı.Bu hesaplama ve üstyapı kısımlarının bakım ve onarım ihtiyaçlarınıntespitiMicroPAVER yazılımı ile yapıldı.

Haziran 2012'de toplam 79 üstyapı kısmı incelendi ve değerlendirildi. Bu kısımlardan 37 tanesi mükemmel, 15 tanesi çok iyi, 21 tanesi iyi, 4 tanesi zayıf ve 2 tanesi de kötü olarak sınıflandırılmıştır.Ayrıca hiç bir kısım çök kötü veya yetersiz olarak belirlenmiştir. Bu nedenle, tüm kampüs üstyapı durumu çok iyi olarak sınıflandırılabilir.

Önerilen plan 2013 ile 2017 arasındaki beş yıl için uygulanmıştır. Ayrıca ÜYS'de yapılan analiz sonuçları Coğrafi Bilgi Sisteminde (CBS) depolanmış ve görüntülenmiştir. Bu yöntem yüksek miktarda verilerin depolanması için kullanılan bir tekniktir.Bu araştırımda kampüs üstyapı ağına uygun bir veritabanı oluşturulmasında CBS kullanmak için ArcGIS 10 DAÜ ÜYS ile birleştirilmiştir. Bu nedenle shapefile ve ilgili öznitelikler tablosu ile oluşturulmuştur.Bu tablo hep üstyapı kısmı için envanter, güncel ve gelecek durumlar, tavsiye edilen iyileştirmeler

ve ilgili maliyetleri içermektedir.Son olarak, çeşitli rapolar, tablolar ve tematik haritalar üretilmiştir.

Anahtar kelimeler: Üstaypı Yönetim Sistemi, Kampüs Üstaypı Ağı, Üstaypı Durumu dizini, Üstaypı Sorunları, MicroPAVER, Coğrafi Bilgi Sistemi.

To the person who shaped my future (my dear father)

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I owe my greatest gratitude to God for his mercy and replying my prayers and also great thanks to my family for their continuous support and wish them all the best.

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LIST OF ABBREVIATIONS

AC	Asphalt Concrete
APWA	American Public Works Association
ASTM	American Society for Testing and Materials
DOTD	Louisiana Department of Transportation and Development
DV	Deduct Values
EMU	Eastern Mediterranean University
ESRI	Environmental Systems Research Institute
GIS	Geographic Information System
ID	Identification
LB	Limited Budget
M&R	Maintenance and Rehabilitation
PCI	Pavement Condition Index
PMS	Pavement Management System
SQL	Structural Query Language
TxDOT	Texas Department of Transportation
UB	Unlimited Budget
US	United States
USA	United States of America

Chapter 1

INTRODUCTION

1.1 General

Nobody denies that pavement network is one of the crucial infrastructure assets for community. It acts as a life-blood of a healthy community. Maintenance and preservation of these important transportation assets will be helpful to achieve more safety, comfort and economy in the transportation field for public. Therefore, their correct maintenance management is essential for community.

Pavement Management System (PMS) is a tool or systematic method that can provide an inclusive inventory for pavement network and organize the work with saving time and effort. The system also provides the data that refer to the current condition of the pavement network with the ability to store the historical data which helps to predict the future pavement condition. In addition, the system can evaluate the pavements and find out a desirable maintenance needs with priorities under the available funds (Shahin, 2005a).

Geographic Information System (GIS) is the scientific tool which assists in the planning, implementation and managing PMS. GIS within PMS are used for storing, analyzing and displaying the pavement data in a color-coding like thematic maps.

There are rare studies on integrating GIS with PMS for University campus roadway and parking lots. Implementing successful PMS for University campus pavement network needs a closer method to this method that is used for small cities and towns.

This research is about developing of pavement management system for Eastern Mediterranean University campus by utilizing GIS and MicroPAVER software. In this study, MicroPAVER was used as pavement management software by entering the pavement condition data that visually collected in the campus for both asphalt roadway and parking lots, ArcGIS is also used for spatial analyzing, demonstrating pavement data and displaying forecasting maintenance work for campus pavement network. The available or limited budget may not be enough to maintain campus pavements. Thus, GIS based PMS becomes a competent and an ideal solution for this situation.

1.2 Needs for the Study

1.2.1 About Eastern Mediterranean University

Eastern Mediterranean University (EMU) is one of the best Universities in the Mediterranean region. It is established in 1979.It has a cosmopolitan environment as students are from 68 countries, and a highly-educated eligible staff from 35 different nations.

EMU campus is located in the Famagusta city in North Cyprus, it was built on an area of 2200 acre. Campus physical infrastructure has been finished; roadway and parking lots can be counted as valuable assets of campus infrastructure which are about 9 km long roadway and 20 parking lots. According to the records of EMU Transportation Unit, the University has 10 mini buses (capacity 35 person) and 4 big

buses (capacity 80 person). The campus has well-founded educational services contain contemporary classrooms, conference rooms, library, computer laboratories, and dormitories (Eastern Mediterranean University, 2012).

1.2.2 The Current status

Nowadays, The EMU campus is developing rapidly. Roadway and parking lots on the campus play an effective role in safety, efficient travel of people and goods on campus, which they were constructed about 20-25 years ago and some of the streets are being resurfaced about 10 years ago. EMU campus can be categorized as a town because of the population and area. Pavement deteriorates over time as a result of loading traffic, environment and aging so it requires proper and timely maintenance. When timely maintenance is not carried out distress severity increases. For instance, cracks may progress to become a small pothole and small pothole quickly becomes a large pothole. Presently paved roadway and parking lots on the EMU campus faced with some problems. These problems can be caused by the following factors:

- Shortcomings in current maintenance practice.
- Pavement deterioration increase.
- Increasing traffic with increasing campus population.
- Lack of documentation and pavement history data(indirect cause).
- Lack of using a database for storing and managing (indirect cause).
- Drainage problem in some pavement sections.
- Mismanagement during maintenance projects.
- Relying only on personal judgment and experience for maintenance decisions.
- There is no systematic approach for producing future maintenance work plan.

Figures 1.1 to 1.6 show EMU campus pavement maintenance process in 12/ 06/ 2012 at section ACA 05 and S 08.

Figure 1.1:Excavating base of selected area.

Figure 1.2: Alligator cracks not maintained. Figure 1.3: Cutting deteriorated area.

Figure 1.4: Patching work.

Figure 1.5: Compacting asphalt concrete patch.

Figure 1.6: Compacting base.

1.3 Goals and Objectives of the Study

The primary goal of this research is to develop a PMS for EMU campus pavement in GIS environment which gives a systematic approach of maintaining, enhancing and controlling campus pavements as well as to fulfill one of the University proposed

plans towards enhancing and developing campus infrastructure as mentioned in the EMU strategic plan in (2012-2015). In order to accomplish these aims, it is necessary to find the pursuing objectives:

- Establishing an inventory for campus pavement (roadway and parking lots).
- Creating georeferenced GIS shapefile with a suitable database capable of updating.
- Choosing an evaluation approach for analyzing campus pavements.
- Integrating pavement management software such as MicroPAVER with ArcGIS software to display, explicate and assess the data for assisting decision making.
- Suggesting maintenance treatment selections and estimating the future maintenance works with prioritization.
- Determining local maintenance costs for each pavement segments and calculating a total budget required for the whole pavement network.
- Evaluating the effect of the different budget programs on the campus pavement performance.
- Documenting and reporting the analytical results with presenting different graphs, charts and thematic maps.

1.4 Research Organization

The flowchart in Figure 1.7 describes the research organization presented in this thesis.

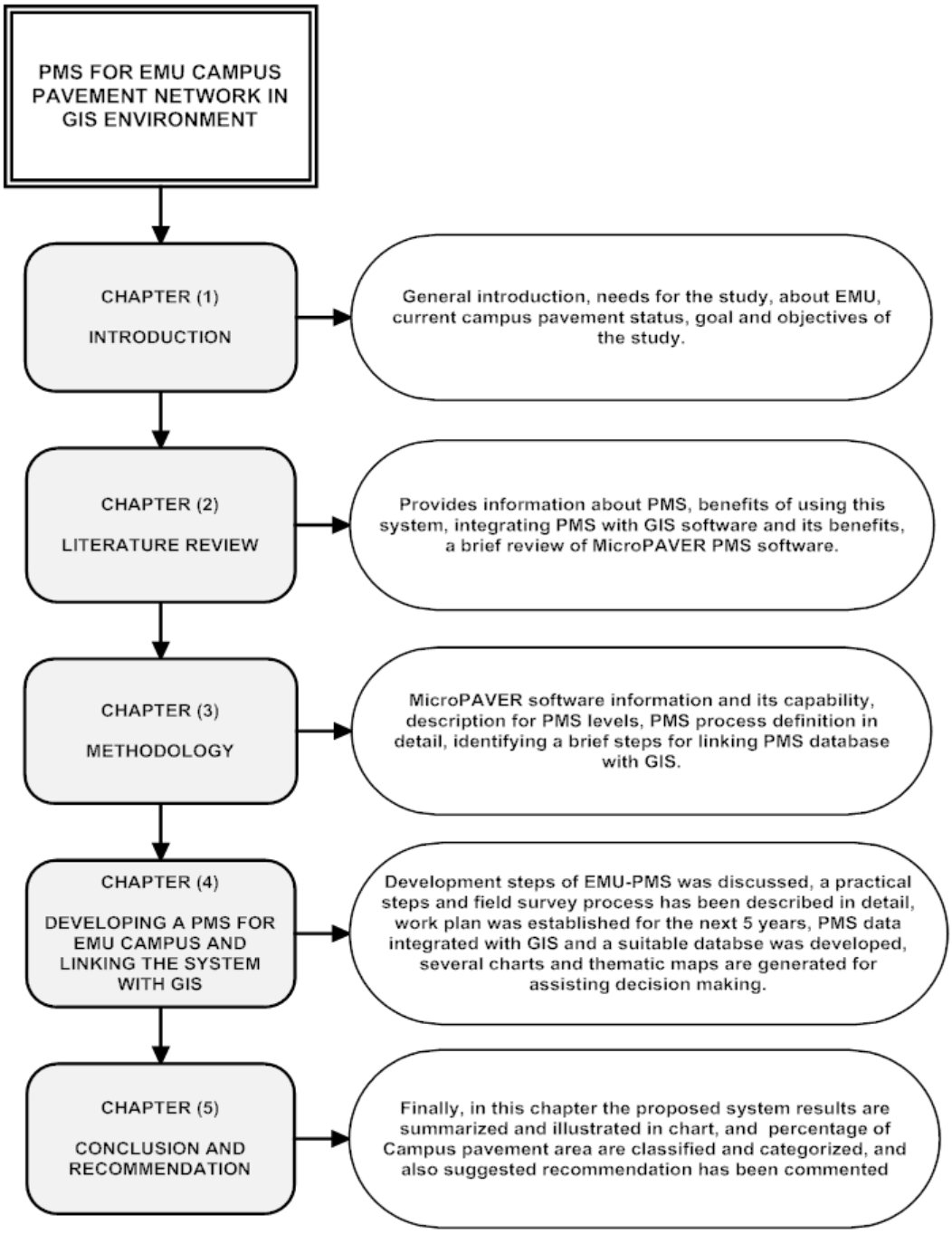


Figure 1.7: Research organization.

Chapter 2

LITERATURE REVIEW

2.1 Pavement Management Systems (PMS)

Pavement management system (PMS) is described as: “a set of tools or methods that can assist decision makers in finding cost-effective strategies for providing, evaluating, and maintaining pavement in a serviceable condition” (AASHTO, 1990).

Based on the above description PMS can address the following questions:

- What maintenance and rehabilitation (M&R) strategies should be the most cost effective?
- Where (which pavement segments) are M&R treatments required?
- When would be the most suitable time (condition) to plan a treatment?

The concept of PMS took root in the USA during the recent period of economic environment. The early PMS model was industrialized by the Washington State Department of Highways in the mid-seventies. This model encompassed a progress of performance forecasting model and a cost model on the basis of a databank of data gathered in the State of Washington over time (6 to 8 years). Later on several state departments of transportation have originated their own PMS procedures desirable to their own needs and necessities (Niju, 2006).

Sims and Zhang (2007) conducted a study and found out that managing the biggest pavement network in the U.S. alongside exceeding 193,000 miles[1] of road under its power, Texas Department of Transportation (TxDOT) was the main champion of the pavement management and has long been looking into the use of PMS for the Texas pavement network. The large size of this network and its corresponding needs have always crafted an incentive for the thought of such systems for extra competent and effective decision making, besides that TxDOT until 2007 paid $2.7 billion annually in M&R actions for pavements.

In Louisiana Department of Transportation and Development (DOTD) the comprehensive pavement distress data collection system has considerably developed from windshield surveys in the main 1970s to videotaping in 1992 then to the Automatic Road Analyzer in 1995. Up to 2008, the pavement network is surveyed after every two years of applying those methods (Khattaket al., 2008).

Broten (1996) argued that PMS cannot make the final decision the decisions can be made by the engineers or people who are utilizing the data provided by this system. In other words, PMS is acting as a roadmap for assisting the decisions to be made.

2.2 Benefits of utilizing PMS

Under the light of an expression “good roads cost less” over time, associations might save a huge amount of money to go towards upcoming development of the network (Vasquez, 2011). And also Tavakoliet al. (1992) indicated that “without using an effective preventive and routine maintenance program, the average city or county

[1] 1 mile = 1.609344 kilometers

may see the cost of maintaining their transportation system increase in the future to four or five times what it would cost if the proper maintenance were done now".

Shahin et al. (2003) reported some benefits of utilizing PMS after implementing this system by several agencies; these benefits can be listed below:

- Providing a comprehensive database encompassing data associating to inventory data, pavement condition, construction information, traffic, maintenance and rehabilitation (M&R).
- Showing the present condition of the pavement network and ability to predict the future condition over time.
- Defining approximate budgets to maintain a pavement network at specific levels of performance and creating a priority plan for 5 years.
- Acting as a center which contacts groups such as planning, design, construction, and maintenance groups inside an agency.
- Producing a list of M&R projects. This list will assist the system in final undertaking selection (as cited in Shahin, 2005a).

PMS advantages are endless for the community; the above points were just a few of them.

2.3 PMS Integration with Maps

Implementing a successful PMS for a specific pavement network should be clear and updatable. In this situation linking PMS with maps can be helpful to meet these requirements.

There are two basic choices for agencies to show PMS information on maps. The first one is to originate an interface to the pavement database utilizing one of the

mapping software, like AutoCAD. This method is cheap and simple, helps to demonstrate PMS data on a map. However, it cannot provide complete support for analyzing data. Integrating PMS with Geographic Information System (GIS) is the second choice. GIS-based-PMS can display both pavement network map and pavement condition with the ability to analyze the data and create spatial queries (Broten, 1996).

It is highly significant to mention that integrating PMS with GIS requires additional expertise and needs more cost than an automated mapping of AutoCAD. GIS technology and its explanation are detailed below.

2.4 GIS Technology

"A Geographic Information System (GIS) is a computer based tool for the input, storage, management, retrieval and output of information" (Sikder et al., 2003). This information refers to the features of geographic position or specific place. One could also say, GIS will address the inquiries concerning where things are or concerning what is situated in a given location.

A GIS comprises two broad sorting of information, geocoded spatial data and attribute data. Geocoded spatial data delineates objects that have an orientation and connection in two or three-dimensional spaces. Attributes associated alongside road segment could contain its width, number of lanes, pavement condition, construction history and the traffic data. An accident recorded data might include fields for vehicle type, weather condition, time of day and injuries. This attribute data is linked with a topologic object (point, line or polygon) that has position somewhere on the surface of the earth; a well-designed GIS permits the integration of these data. The

sophisticated database in a GIS has the ability to associate and control variable sets of spatially referenced data that has been geocoded to the public referencing system (Jain et al., 2003).

As indicated in Figure 2.1, GIS comprises two kinds of spatial data, raster and vector. A raster data is any kind of digital image, such as an aerial photograph or representation of topography. The data drawn as rows and columns of cells, every single cell has its value. Then, these data cells are utilized in GIS for creating different thematic maps. On the other hand the vector data is the common method data which displayed in GIS. Vectors are denoted as shapefile and constituted of points, lines, and polygons. A point in GIS represents a position of a feature on the geographic control grid, such as bridge location. A line is used to demonstrate linear features such as a road or stream. In addition, a polygon is used to show a two dimensional feature like an area of specific part of the earth or boundaries of countries. Figure 2.1 illustrates both raster and vector data.

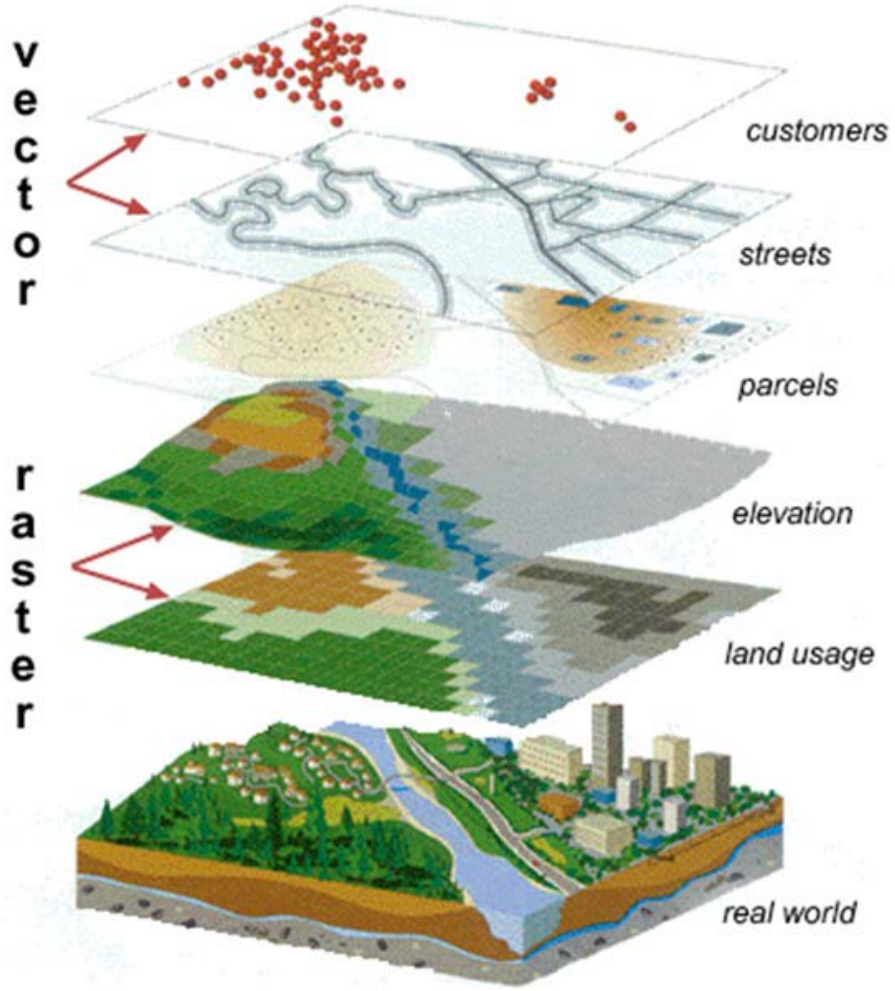


Figure 2.1: Example of raster and vector data (Hill, 2006).

2.5 GIS within PMS

As in each management system, pavement management requires a decision support system to be effective. GIS can be a vital decision support system element by facilitating the preparation, analysis, display, and management of geographical data. In PMS, GIS can considerably enhance the analysis and present the information. Figure 2.2displays the normal PMS formation for the local position (Jain et al., 2003).

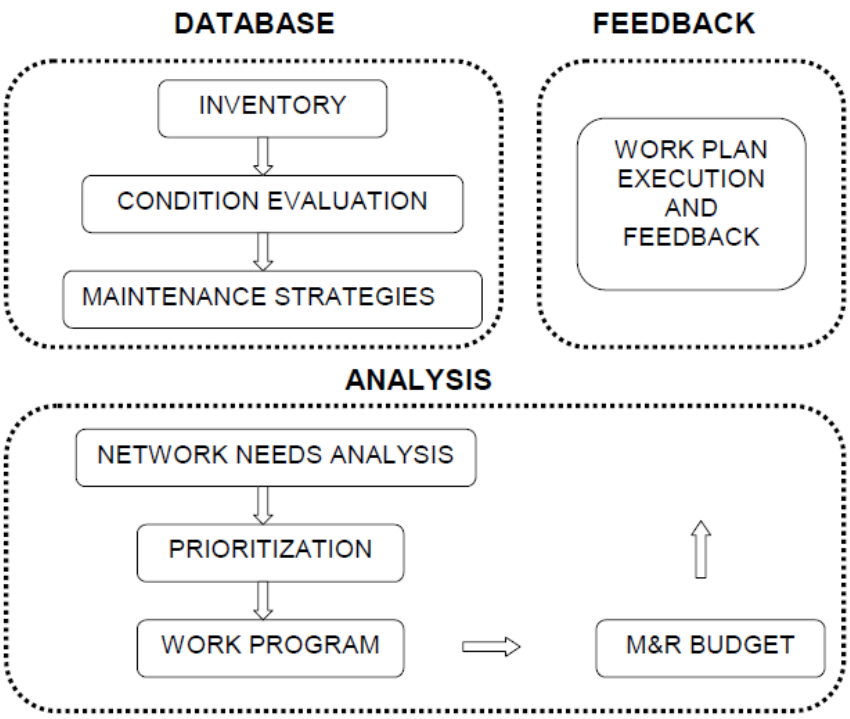


Figure 2.2: Normal PMS formation for a local position (Jain et al., 2003).

Since the mid 1990s, GIS has been applied in many areas that deal with information comprises a spatial entity, so using GIS in PMS was one of these applications. For instance, it provides the skill to visualize spatially connected pavement information on a map to rapidly assess the condition of a network. Due to the fact that, transportation agencies have accumulated vast amounts of data regarding the pavement condition; GIS became a utilitarian tool for the management plan. This has made it imperative for associations to find out a method firstly to save and manage such a huge number of data, and secondly to have the skill to employ these data efficiently to make appropriate and cost competent decisions in the M&R process (Grass, 2007). On the other hand, in 1997 the Public Services Department in the city of High Point, North Carolina enforced a PMS at the network level that gave it the skill to carry out all the data collection and rating alongside the assistance of GIS. The presented data were significant when giving data to the Mayor and Metropolitan Council associates, Citizen Commissions, and non-expert people (Thomas, 1998).

It is important to realize that the agencies in US are not the only ones who are utilizing GIS for pavement management. Grass (2007) mentioned that this concept has been requested and learned in both Japan and India. The city of Nagoya in Aichi Region of central Japan, applied GIS as a tool within their freeways PMS. The GIS plan was produced for its spatial analysis capabilities, which contained GIS presentations of the selected pavement road network and region limits.

2.6 Benefits of GIS/PMS Integration

Some of the advantages of GIS/PMS integration are:

- Ability to examine Pavement Management (PM) data on the basis of geographic location.
- Demonstrating the results of the database queries and PM studies on the network map.
- Demonstrating pavement conditions and forecast work plans on a roadway network map.
- Ability to display pavement conditions across other georeferenced information, for instance, traffic and zoning.
- Ability to update and edit pavement network map.

In addition, it can assist PM information by utilizing a format that is effortlessly understood by the managers and public (Broten, 1996).

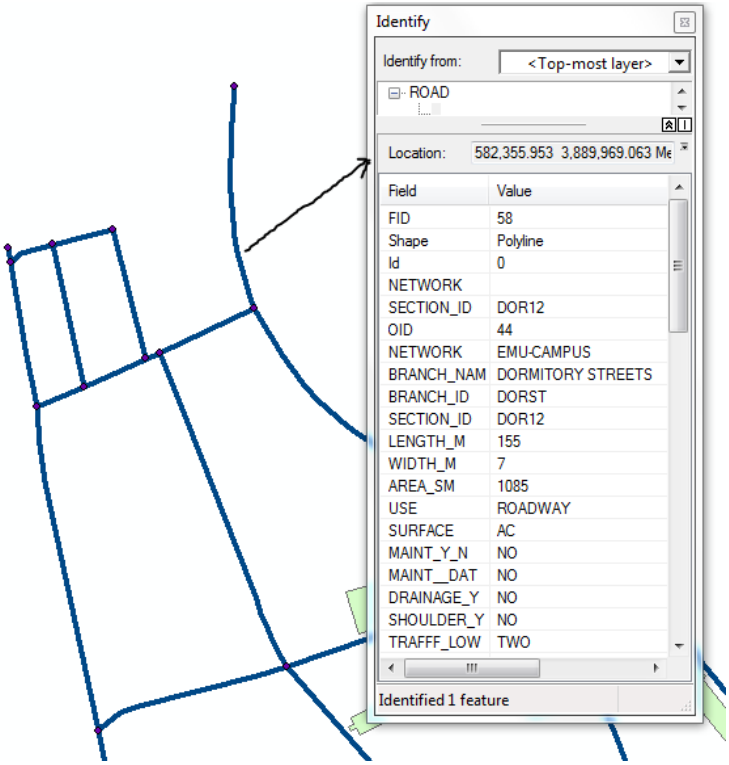


Figure 2.3: GIS functional strategy.

2.7 MicroPAVER

MicroPAVER is a software developed primarily for pavement management use, it is produced by US Army Corps of Engineers in Champaign, Illinois. In 1979 the American Public Works Association (APWA) across its research foundation commenced a technology transfer budget for this activity was a $250,000 concerted effort of 80 local offices in the US and Canada who participated in testing and assessing the PAVER software. In the beginning, a mainframe time-sharing established system PAVER has been adjusted for use on microcomputers and then renamed to MicroPAVER.

Until now MicroPAVER is being utilized by more than 600 cities, regions, airports and private consulting firms. The American Society for Testing and Materials (ASTM) standard D6433-99 obtained by MicroPAVER's Pavement Condition Index

(PCI) methodology. This standard can be described as the only pavement rating procedure that realized for rating pavement roads and parking. Moreover, ASTM D6433-99 jointly with MicroPAVER's preceding receipt of ASTM D5340-93 for rating airfield pavement condition makes MicroPAVER's PCI the standard for defining the condition of most pavement projects (APWA, 2011).

This software has been projected to make optimal budgets allocated for pavement M&R works. It applies inspection data and PCI result to delineate pavement conditions so as to predict its M&R needs in the future. The main capabilities of the software are listed below:

- Creates pavement inventory and computing PCI.
- Models pavement condition deterioration over time.
- Estimates the required budget to maintain pavements at a given condition.
- Permits the database to be split or join.
- Ability to store field collected photos in a database.
- Ability to integrate with GIS to present different data on the map.

Chapter3

PAVEMENT MANAGEMENT: MicroPAVER, LEVELS, PROCESS AND LINKING WITH GIS

3.1 PMS Software: MicroPAVER

MicroPAVER is Pavement Management software, in the beginning it was developed to serve the Department of Defense for studying the pavement condition of airfield and then for roads and parking lots. This program is most functional for small cities pavement network and limited size projects which can establish a plan for future pavement treatment. MicroPAVER provide engineers with a systematic approach for finding maintenance and rehabilitation (M&R) needs and priorities for the projects. Shahin and Walther (1990) stated that the PAVER has been used as a mainframe version and the next step MicroPAVER carried out on a microcomputer.

Field inspection data from the pavement network are inserted into the system's database then the software computes the Pavement Condition Index (PCI). The PCI information is utilized to predict the whole health of the pavement network. According to the software manual MicroPAVER capabilities involve: Inventory, PCI computation, Work plan, Condition Analysis, Condition Prediction, Maintenance and Rehabilitation (M&R) Plan and Report generation. Moreover, the system can create some queries which they are used for listing inventory, summarizing of work history and arranging PCI reports.

3.2 PMS Management Levels

Pavement management can take place at two main levels: network and project level. The network level focuses on creating the competent use of budgetary resources for the whole pavement network. On the other hand, project level is specific to a given pavement segment that has been recognized for possible rehabilitation.

Network level includes the assessment of all pavements below an agency's jurisdiction. The analysis of this level is best utilized for complete budget estimates, projected considerations, or for conducting "what if" forms of questions. The network level requires aggregated information. Thus, this level has more interest to use by the manager.

Project level focuses on a particular pavement segment and normally comes afterward network level in local agencies. This level is a sequence of steps to find out the cause, extent of pavement deterioration and analyzing life cycle cost. Additionally, it attempts to establish an accurate deterioration model. In order to make detailed design decisions and to provide additional knowledge about pavement condition and causes of deterioration for an individual project, it must collect more data than the network level and performing a detailed evaluation with additional testing such as: coring, material and nondestructive testing (Broten, 1996).

3.3 PMS Process

The implementation of PMS to a particular pavement network is carried through a systematic operation that includes several tasks on a periodic basis. This system is used universally with a very slight difference, as covered in the following steps.

3.3.1 Network Definition

The primary step in establishing a PMS is the network identification. A network is a consistent combination of pavements for M&R management. The pavement manager could be responsible for managing the pavement. The pavement network firstly, must be divided into branches and then into a unique section. A section can be defined as a smallest management unit while considering the selection of M&R treatments. Several factors should be taken into account as dividing branches into sections; these factors are pavement structure, traffic, construction history, surface type, and pavement condition (Shahin, 2005a).

3.3.2 Pavement Inventory

Pavement inventory is the basis of each PMS, usually contains the physical characteristics of the pavements and normally these data do not change amid maintenance actions.

The main intention of the inventory is to provide data for identifying the pavement's physical features. The minimum information needs for establishing pavement inventory are listed below (Washington State Department of Transportation, 1994):

- Pavement section ID and name.
- Starting and ending location for each pavement section.
- Functional classification.
- Number of lanes.
- Pavement rank.
- Pavement surface.
- Pavement thickness.
- Pavement width.

- Pavement length.
- Pavement surface area
- Construction date (last surface).
- Average Daily Traffic (ADT).

It is important to mention that the precise type of inventory data needed is reliant on the agency and the PMS software necessities. Sometimes in inventory data collection more information are being collected such as: drainage condition, sidewalk condition, and number of traffic signs which may be used at project level that usually comes after network level.

3.3.3 Pavement Condition Evaluation

After preparing the pavement inventory for the whole network pavement condition evaluation can be set out. Pavement inspection is one of the vital steps in PMS that encompasses distresses survey. The inspection can be carried out manually or utilizing automated data collection vehicles. The vehicle may comprise cameras, profiling devices, and laser sensors, the collected data are changed to a tape for more processing, either by a software program or by individuals (WSDT, 1994). Manual visual inspections are usually carried out by one or two people involving driving pavement sections at slow speeds and stopping from time to time, or by walking through the whole sections. Data collection by walking is more accurate than driving but it is costly and needs more time.

The distresses survey is according to the PCI method which is developed by the U.S. Army Corps of Engineers, and delineated in the ASTM D6433 “Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys”. This standard defines distress types, severity levels and methods for measuring and recording distresses for

both roadway and parking lots. For flexible pavement a total 19 distresses have been tabulated in MicroPAVER system, as displayed in Table 3.1.

Once the field inspection process has been finished the data recorded on the special forms, these data are utilized to calculate the PCI for the pavement sections. PCI can be computed either manually or automatically. The below points describe the steps for achieving the condition survey and calculating PCI manually (Shahin, 2005a):

1. Dividing pavement into sections (segments).
2. Dividing every pavement segment into sample unit.
3. Inspect sample units by determining distress types, severity and density (extend).
4. Determine deduct values (DV) for each distress type.
5. Compute the Total Deduct Value (TDV) which is equal to the sum of all DV.
6. Adjust TDV to get Corrected Deduct Value (CDV).
7. Compute PCI for each inspected sample unit by using equation 3.1:

$$PCI = 100 - CDV \quad (3.1)$$

8. Compute PCI for the whole section, which is equal to the average of PCI's of all sample units.

Table 3.1: Flexible pavement distresses with measurement units (MicroPAVER 5.3)

Code	Distress Name	(Units)
1	Alligator Cracking	Sq. m
2	Bleeding	(Sq. m)
3	Block Cracking	(Sq. m)
4	Bumps & Sags	(L.m)
5	Corrugation	(Sq. m)
6	Depression	(Sq. m)
7	Edge Cracking	(L.m)
8	Reflection Cracking	(L.m)
9	Lane/Shoulder Drop Off	(L.m)
10	Long & Trans Cracking	(L.m)
11	Patching	(Sq. m)
12	Polished Aggregate	(Sq. m)
13	Potholes	(Number)
14	Railroad Crossing	(Sq. m)
15	Rutting	(Sq. m)
16	Shoving	(Sq. m)
17	Slippage Cracking	(Sq. m)
18	Swell	(Sq. m)
19	Weathering & Raveling	(Sq. m)

On the other hand, PCI can be calculated automatically by entering the distress information into the MicroPAVER software. This kind of calculation saves time and decreases errors but needs experience and computer software skills.

As reported in ASTM D 6433, PCI is numerically scaled from 0 to100.It is a measure of the pavement surface functional condition. This index indicates the current health of pavement. Standard PCI scale assesses pavements within seven different classes. Besides, various colors have been utilized by MicroPAVER to delineate different states inside the standard scale. As demonstrated in Figure 3.1, current condition or pavement quality can be presented by utilizing words “Excellent” to “Failed”.

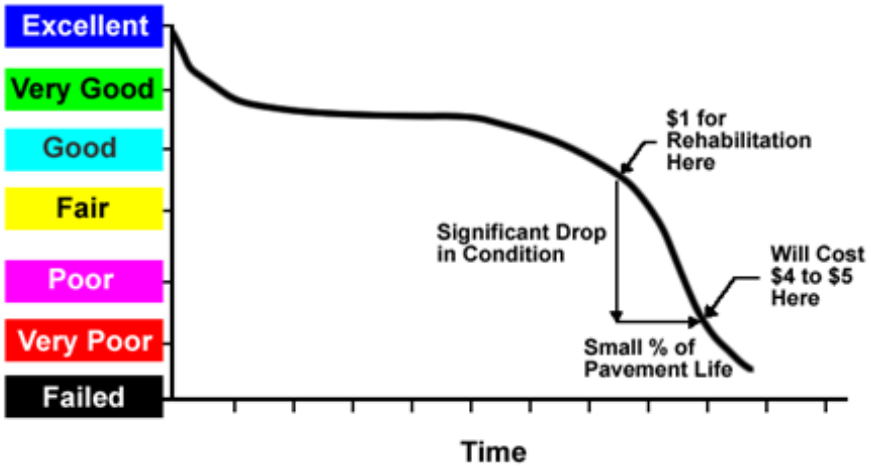


Figure 3.1: Pavement condition criteria (US Army Corps of Engineers, 2012)

3.3.4 Condition Prediction

It is well known there is no single prediction model that will apply and work in all situations and conditions. An extensive study program was carried in the U.S. ensued in the development of what is called the Family Method (Shahin and Walther, 1990). A pavement family is defined as a number (group) of pavement segments with similar deterioration, regardless of age. The Micro PAVER permits the user to determine a family based on various factors encompassing use, rank, zone, surface type, segment category, last surface construction date and PCI. MicroPAVER software has a prediction modeling engine which is utilized to create various models for different situation and conditions.

Both levels (network and project) in PMS are utilized prediction model. In network level models are utilized to examine the condition and to find out required treatment. In project level models are utilized to choose specific rehabilitation options to meet anticipated traffic and climatic issues, the models offer the main input to executing cost analysis to equate the economics of several M&R options. Thus, the accuracy of prediction is more important for project level analysis than network level analysis (Shahin, 2005b).

3.3.5 Typical Treatment Requirements

MicroPAVER contains the suggested annual M&R work level for each pavement segment across the network optimization. These M&R works are (Shahin, 2005a):

- Localized stop-gap (filling potholes).
- Localized preventative (crack filling).
- Global preventative (surface treatment).
- Major (overlay or reconstruction).

The optimization at the network is carried out by utilizing the critical PCI method. The critical PCI is "the PCI value at which the rate of PCI loss increases with time or the cost of applying localized preventive maintenance increases significantly" (Shahin, 2005a). Figure 3.2 shows critical PCI level.

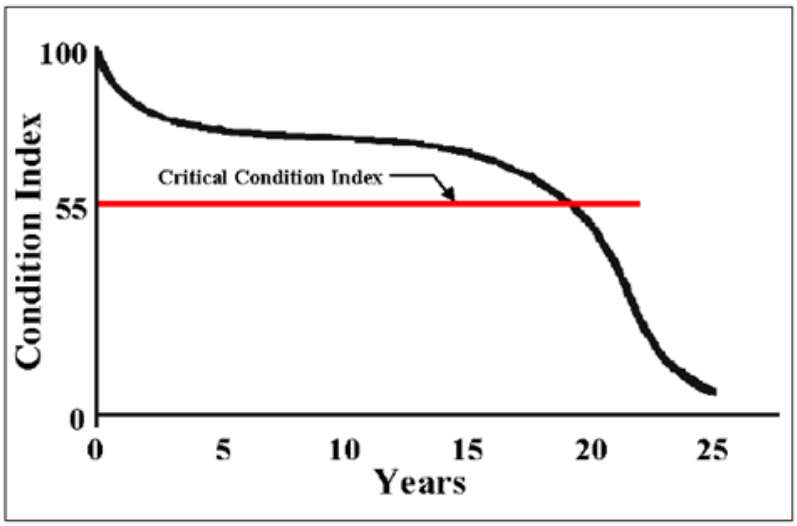


Figure 3.2:Critical PCI (Shahin, 2005a).

M&R decisions are related to the section PCI level comparable with the critical PCI level. If the section PCI is greater than the critical PCI, localized preventive and/or global preventive M&R are applied. Major M&R are applied only if the pavement segment is structurally deficient as demonstrated in Figure 3.3.

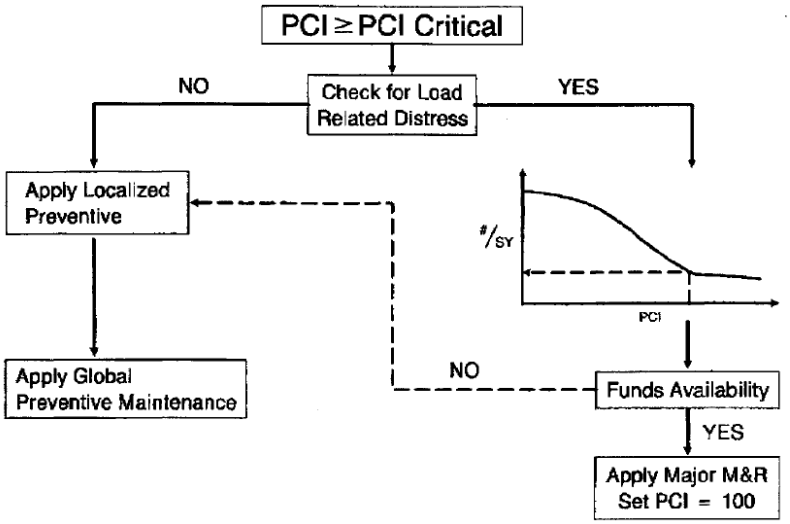


Figure 3.3: M&R decision for sections with PCI ≥ critical PCI (Shahin, 2005a).

If the section PCI is smaller than the level of the critical PCI, localized safety or major M&R are applied as shown in Figure 3.4.

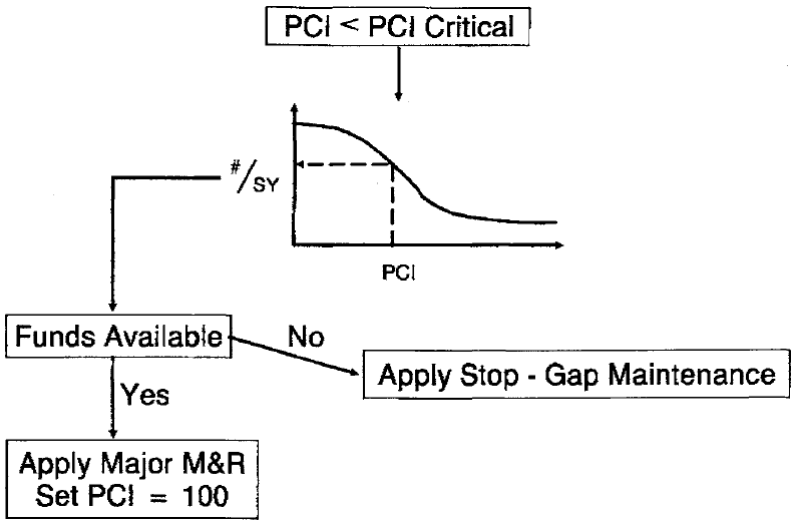


Figure 3.4: M&R decision for sections with PCI <critical PCI (Shahin, 2005a).

3.3.6 Maintenance Prioritization

After suggesting the treatment and finding costs for each pavement section, in the limited funded program the pavement manager should find a method to prioritize pavement projects.

Smith (2011) reported some possible concepts in prioritization, these concepts are:

- Worst first.
- Least Life-cycle Costs.
- Best Benefit-cost Ratio.
- Best Effectiveness-cost Ratio.

In MicroPAVER system, one of the factors that considered in prioritization is the critical PCI, which is based on the concept that is more economic to preserve and maintain the pavement segments in which they are above the critical PCI level than those segments below the critical level. Therefore, those pavement sections which are greater than the critical PCI should get a higher priority than those sections at or smaller than the critical PCI. It is important to note that those segments greater than the critical PCI and they display structural distress should get a higher priority than the other sections, so as to decrease the cost before the rate of deterioration increases by fixing the deterioration and bringing back the pavement segment to good condition. The remaining pavement segments can be prioritized regards to the PCI and pavement rank (Shahin and Walther, 1990).

After tabulating suggested projects for M&R, in network level, agencies can use this candidate project list as a link with project level. It is important to realize that the PCI is not only the factor for establishing prioritization, there are other factors that can be taken into account such as: pavement rank, use, drainage condition, and friction.

3.3.7 Linking PMS with GIS

With the increase of Geographic Information System (GIS) knowledge, PMS in GIS environment has come to be effective in practice. One of the key of success in implementing PMS is the data presentation. PMS results should be clear, confident and updatable. GIS as a scientific tool can be used to assist this process.

According to the database integration method, there are three approaches for linking PMS with GIS (Zhang et al. 2002):

1. Seamless integration: The PMS is carried out inside the GIS by sharing a common database.
2. Database linkage: Exporting PMS data then importing it into the GIS for demonstrating or querying.
3. Exporting of map: Exporting map from the GIS then importing it into the PMS for utilizing it in the map presentation.

Database linkage can be considered as a cheaper method among the abovementioned approaches. In this method data are exported from one of the databases such as: Structural Query Language (SQL), Microsoft Access or Microsoft Excel then imported into the attribute table in GIS. Each pavement section is linked with one row in the attribute table. Figure 3.5 shows GIS and database integration. Database linkage is a suitable way for an agency where they want to update the databases (GIS database and PMS database) separately.

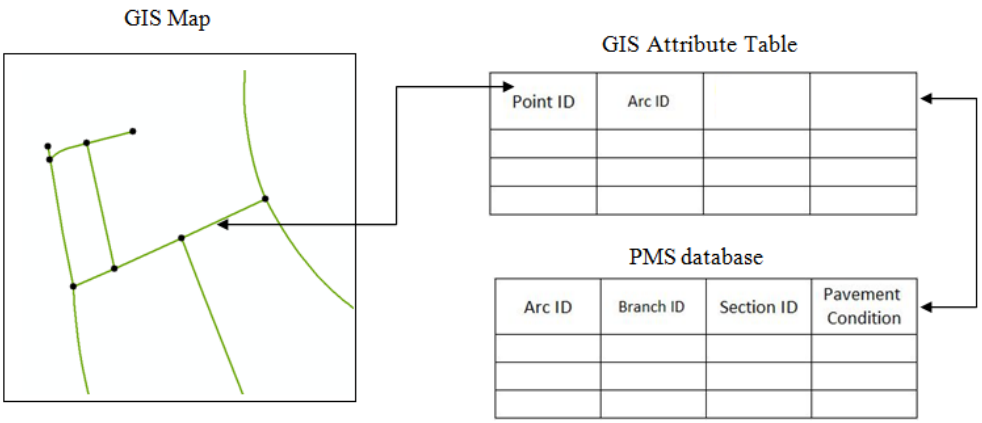


Figure 3.5: GIS- PMS database integration.

The following points are briefly describing GIS/ PMS integration:

1. Importing a base map (scanned or raster map) to ArcGIS.
2. Georeferencing the imported map.
3. Creating and editing pavement network (shapefile).
4. Adding and joining PMS database with the created shapefile.
5. Creating thematic maps, reports, and queries.

GIS provides the pavement manager with the ability to produce queries, reports, and performing statistical analysis. Moreover, it will let the user to update the database at any time if required. Integrating GIS with PMS will be discussed in details in Chapter 4.

Chapter 4

DEVELOPMENTOF THE PMS FOR EMU CAMPUS PAVEMENT NETWORK

4.1Developing a PMS for EMU Campus Pavement Network

Shahin and Walther (1990) remarked that "a PMS provides a systematic, consistent method for selecting maintenance and rehabilitation (M&R) needs, priorities and determining the optimal time of repair by predicting future pavement condition". In this research, a PMS for Eastern Mediterranean University campus (EMU-PMS) was developed on the basis of the systematic process as demonstrated in Figure 4.1. In this process, the two main software are utilized, these software are MicroPAVER and Geographic Information System (GIS) software, the first one is used for storing and evaluating the PMS data and the second one (GIS) has been used as an intelligent software for presenting PMS results on a geographic map. Figure 4.1 shows a proposed system that can be explained in the following sections.

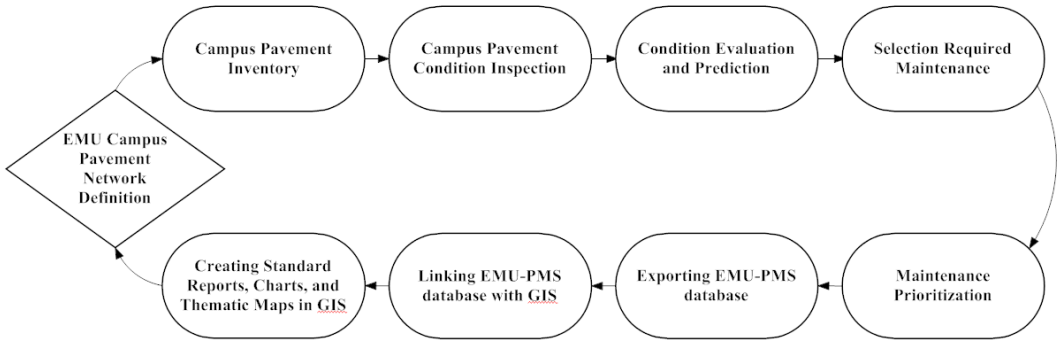


Figure 4.1: EMU-PMS Process.

4.1.1 EMU Campus Pavement Network Definition

Eastern Mediterranean University (EMU) campus pavement network includes about 9 km length of roadway and 20 parking lots. Figure 4.2 indicates the asphalt concrete surface area of roadway and for parking lots.

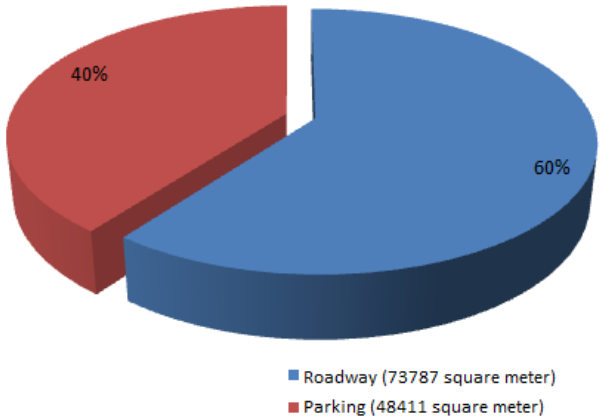


Figure 4.2: EMU campus pavement network surface area.

It is well known, for defining a pavement network a suitable referencing system should be chosen. The main purpose of a referencing system is to delineate one pavement section in the network from other sections. In the campus there is no referencing system of roadways and parking lots. In other word, there is no existing systematic road numbering. Therefore, a new system has been developed for coding and numbering roads and parking.

In this study, campus network is represented by using nodes and lines. For instance, between every two nodes there is one line which is representing the pavement segment. In this network identification, nodes are usually located at the road conjunctions. Based on the numbering progression system nodes are being numbered from east to west.

In order to manage the pavement network properly, the network should be broken into branches then the branches should be divided into smaller units which are called sections (segments). In this study, branches are divided into sections based on change in:

- Functional classification.
- Lane numbers.
- Pavement rank.
- Surface type.
- Pavement width.
- Construction date.

The campus pavement network was divided into four major branches for roadways (Academic Street, Dormitories Street, Sport Street and South Street) and also each parking is considered as a single branch. Table 4.1shows a sample of branch and section coding system.

Table 4.1: Sample of campus pavement network coding.

Branch Name	**Branch ID**	**Section ID**
Academic Street	ACAST	ACA 01, ACA 02,….ACA 39
Dormitories Street	DORST	DOR 01, DOR 02,….DOR 12
Sport Street	SPST	SP 01, SP 02,….SP 06
South Street	SST	S 01, S02, ….S08
Parking of Civil DPT	PCIVIL	PCIVIL 01
Parking of Rector Office	PRECT	PRECT01

As demonstrated in Figure 4.3 campus roadways contained 59 sections and parking lots contained 20 sections.

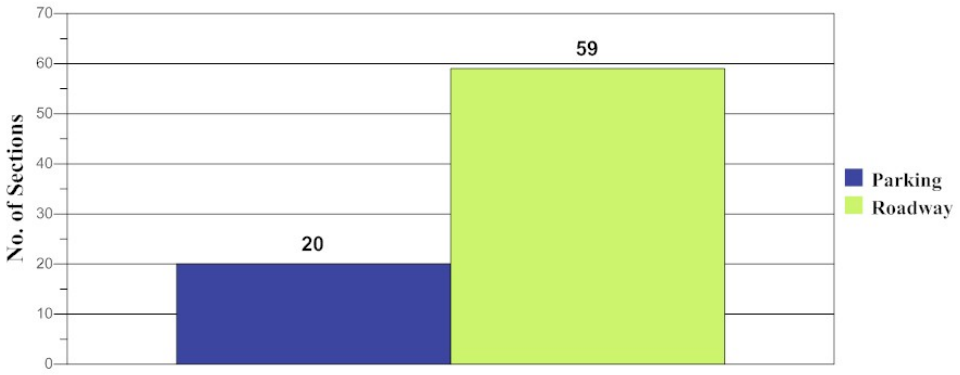


Figure 4.3: EMU campus pavement section distribution.

4.1.2 Pavement Inventory and Condition Survey

The EMU campus pavement network includes both paved roadway and parking lots. In this study, about 122,198 square meters of asphalt concrete surface have been surveyed. Firstly, inventory data collected then pavement condition inspected section by section finally recorded in the special form as presented in appendix A.

4.1.2.1 Pavement Inventory

The primary function of the pavement inventory survey is to provide data to identify the pavement physical features, in this study some of the collected inventory data are:

- Pavement section ID and name.
- Starting and ending of sections (From, To)
- Construction date (last construction).
- Functional classification.
- Pavement rank.
- Pavement surface.
- Pavement width.
- Pavement length.
- Pavement surface area.

- Maintenance date.
- Sidewalk exists.
- Drainage exists.
- Number of lanes.
- Traffic flow (One/ Two direction).

A number of tools have been used for this purpose, such as a manual odometer (measuring wheel), three-meter straight-edge, tape measure, ruler and digital camera. The measuring wheel was used to measure the length of the road and also to measure the lengths or areas of existing distresses. The three-meter straight-edge and ruler were used to measure pothole depth and other depressions, and the digital camera was used for capturing. Figures 4.4 to 4.6 demonstrate an inventory survey process.

Figure 4.4: Measuring section geometry

Figure 4.5:Measuring Wheel.

Figure 4.6:Tape measure.

A part of inventory data is shown in Table 4.2and a detailed inventory is attached in Appendix B.

Table 4.2: Part of EMU campus pavement inventory.

Branch ID	**Branch Name**	**Section ID**	**Use**	**Length (m)**	**Width (m)**	**Section Area (m^2)**
SST	SOUTH STREET	S06	ROADWAY	100.00	9.00	900.00
SST	SOUTH STREET	S01	ROADWAY	138.00	6.00	828.00
SST	SOUTH STREET	S02	ROADWAY	70.00	8.60	602.00
SST	SOUTH STREET	S03	ROADWAY	84.00	8.60	722.40
SST	SOUTH STREET	S04	ROADWAY	98.00	9.00	882.00
SST	SOUTH STREET	S05	ROADWAY	213.00	9.00	1,917.00
SST	SOUTH STREET	S07	ROADWAY	160.00	8.50	1,360.00
SST	SOUTH STREET	S08	ROADWAY	157.00	9.00	1,413.00
ACAST	ACADEMIC STREET	ACA23	ROADWAY	136.00	8.80	1,196.80
ACAST	ACADEMIC STREET	ACA32	ROADWAY	60.00	10.00	600.00
ACAST	ACADEMIC STREET	ACA18	ROADWAY	42.00	11.00	462.00
ACAST	ACADEMIC	ACA19	ROADWAY	136.00	9.50	1,292.00

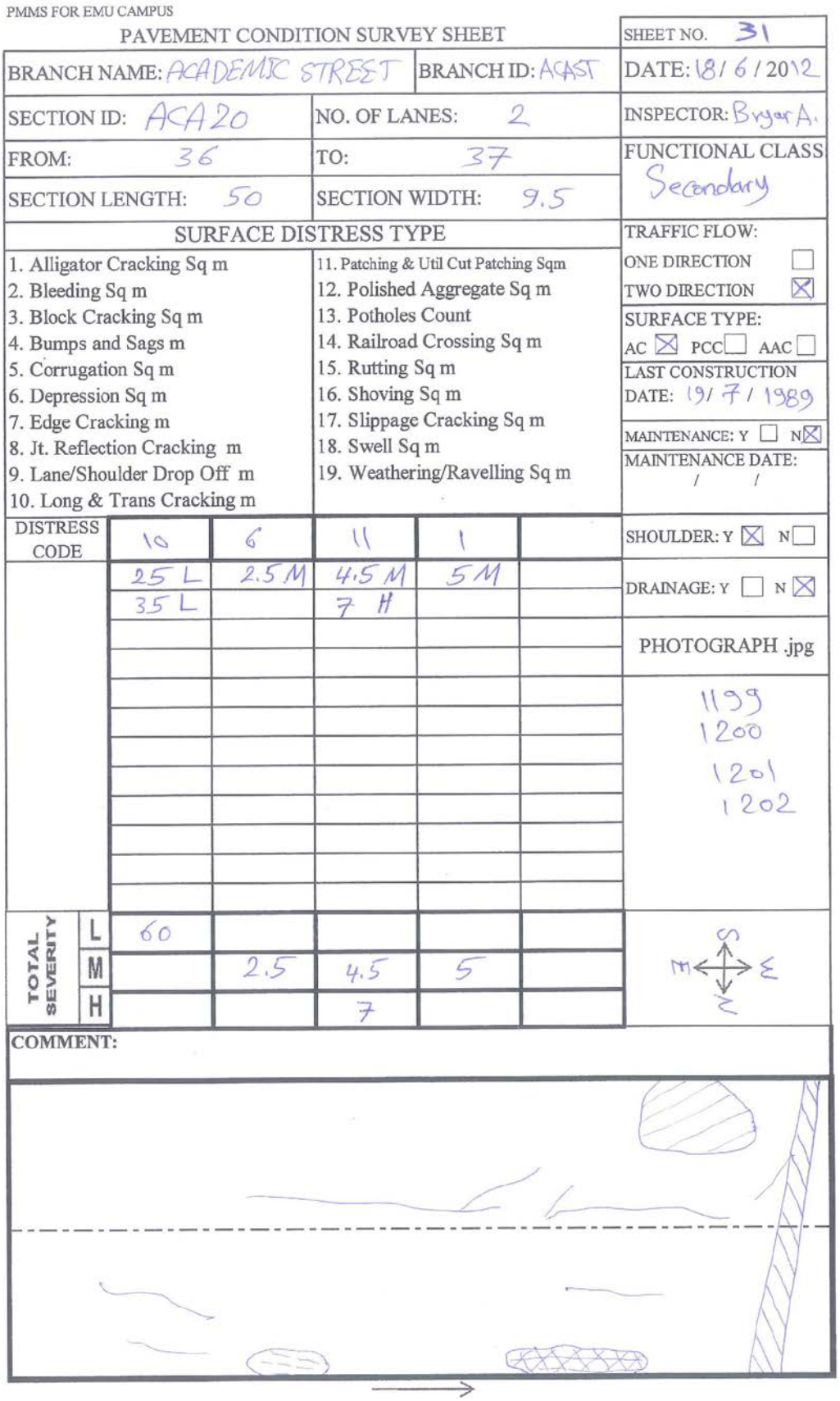
Branch ID	Branch Name	Section ID	Use	Length (m)	Width (m)	Section Area (m^2)
	STREET					
ACAST	ACADEMIC STREET	ACA20	ROADWAY	50.00	9.50	475.00
ACAST	ACADEMIC STREET	ACA16	ROADWAY	85.00	9.50	807.50
ACAST	ACADEMIC STREET	ACA22	ROADWAY	98.00	8.00	784.00
ACAST	ACADEMIC STREET	ACA15	ROADWAY	75.00	9.50	712.50
ACAST	ACADEMIC STREET	ACA24	ROADWAY	78.00	9.00	702.00
ACAST	ACADEMIC STREET	ACA25	ROADWAY	67.00	9.00	603.00
ACAST	ACADEMIC STREET	ACA26	ROADWAY	76.00	6.00	456.00
ACAST	ACADEMIC STREET	ACA27	ROADWAY	85.00	6.00	510.00
ACAST	ACADEMIC STREET	ACA28	ROADWAY	62.00	7.20	446.40
ACAST	ACADEMIC STREET	ACA29	ROADWAY	101.00	7.40	747.40
ACAST	ACADEMIC STREET	ACA30	ROADWAY	387.00	10.00	3,870.00
ACAST	ACADEMIC STREET	ACA21	ROADWAY	123.00	8.80	1,082.40
ACAST	ACADEMIC STREET	ACA07	ROADWAY	77.00	8.60	662.20
ACAST	ACADEMIC STREET	ACA01	ROADWAY	53.00	7.80	413.40
ACAST	ACADEMIC STREET	ACA02	ROADWAY	212.00	9.00	1,908.00
ACAST	ACADEMIC STREET	ACA03	ROADWAY	245.00	5.80	1,421.00
ACAST	ACADEMIC STREET	ACA04	ROADWAY	116.00	9.00	1,044.00
ACAST	ACADEMIC STREET	ACA17	ROADWAY	98.00	8.70	852.60
ACAST	ACADEMIC STREET	ACA06	ROADWAY	55.00	9.00	495.00
ACAST	ACADEMIC STREET	ACA33	ROADWAY	126.00	9.00	1,134.00
ACAST	ACADEMIC STREET	ACA08	ROADWAY	139.00	11.50	1,598.50
ACAST	ACADEMIC STREET	ACA09	ROADWAY	47.00	8.00	376.00
ACAST	ACADEMIC STREET	ACA10	ROADWAY	90.00	6.00	540.00
ACAST	ACADEMIC STREET	ACA11	ROADWAY	61.00	5.70	347.70
ACAST	ACADEMIC STREET	ACA12	ROADWAY	100.00	3.45	345.00
ACAST	ACADEMIC STREET	ACA13	ROADWAY	89.00	6.00	534.00
ACAST	ACADEMIC STREET	ACA14	ROADWAY	73.00	6.00	438.00

Branch ID	Branch Name	Section ID	Use	Length (m)	Width (m)	Section Area (m^2)
ACAST	ACADEMIC STREET	ACA05	ROADWAY	124.00	8.50	1,054.00
ACAST	ACADEMIC STREET	ACA31	ROADWAY	309.00	8.70	2,688.30
SPST	SPORT STREET	SP05	ROADWAY	420.00	10.00	4,200.00
SPST	SPORT STREET	SP03	ROADWAY	157.00	6.60	1,036.20
SPST	SPORT STREET	SP02	ROADWAY	354.00	6.60	2,336.40
SPST	SPORT STREET	SP01	ROADWAY	97.00	7.80	756.60
SPST	SPORT STREET	SP06	ROADWAY	403.00	8.70	3,506.10
SPST	SPORT STREET	SP04	ROADWAY	197.00	10.00	1,970.00
DORST	DORMITORY STREET	DOR05	ROADWAY	273.00	9.40	2,566.20
DORST	DORMITORY STREET	DOR11	ROADWAY	100.00	6.00	600.00
DORST	DORMITORY STREET	DOR10	ROADWAY	160.00	7.00	1,120.00
DORST	DORMITORY STREET	DOR09	ROADWAY	152.00	6.00	912.00
DORST	DORMITORY STREET	DOR06	ROADWAY	267.00	7.00	1,869.00
DORST	DORMITORY STREET	DOR04	ROADWAY	314.00	9.00	2,826.00
DORST	DORMITORY STREET	DOR03	ROADWAY	372.00	7.00	2,604.00
DORST	DORMITORY STREET	DOR08	ROADWAY	60.00	7.00	420.00
DORST	DORMITORY STREET	DOR01	ROADWAY	282.00	10.00	2,820.00
DORST	DORMITORY STREET	DOR12	ROADWAY	155.00	7.00	1,085.00
DORST	DORMITORY STREET	DOR07	ROADWAY	81.00	7.00	567.00
DORST	DORMITORY STREET	DOR02	ROADWAY	337.00	10.00	3,370.00
PREGIST	PARKING OF REGISTER	PREGIST01	PARKING	42.00	17.00	714.00
PSERV	PARKING OF SERVICE BUILD	PSERV01	PARKING	318.00	12.60	4,006.80
PACTIV1	PARKING OF ACTIVITY C1	PACTIV11	PARKING	53.00	30.00	1,590.00
PACTIV2	PARKING OF ACTIVITY C2	PACTIV21	PARKING	59.00	23.00	1,357.00
PSABAN	PARKING OF SABANCI	PSABAN01	PARKING	114.00	22.00	2,508.00
PPOST	PARKING OF POST OFFICE	PPOST01	PARKING	232.00	14.80	3,433.60
PIT	PARKING OF IT DPT	PIT01	PARKING	39.00	17.50	682.50

Branch ID	Branch Name	Section ID	Use	Length (m)	Width (m)	Section Area (m^2)
PLIB	PARKING OF LIBRARY	PLIB01	PARKING	145.00	5.70	826.50
PBUSIN	PARKING OF BUSINESS DPT	PBUSIN01	PARKING	132.00	22.00	2,904.00
PMECH	PARKING OF MECHANICAL DPT	PMECH01	PARKING	56.00	12.80	716.80
PRECT	PARKING OF RECTOR	PRECT01	PARKING	40.00	28.00	1,120.00
PCC	PARKING OF CC	PCC01	PARKING	58.00	21.60	1,252.80
PLALA	PARKING OF LALA HALL	PLALA01	PARKING	65.50	12.00	786.00
PARCH	PARKING OF ARCH DPT	PARCH01	PARKING	285.00	25.00	7,125.00
PLAW	PARKING OF LAW DPT	PLAW01	PARKING	300.00	9.20	2,760.00
PEMC	PARKING OF EMC	PEMC01	PARKING	424.00	15.00	6,360.00
PCIVIL	PARKING OF CIVIL DPT	PCIVIL01	PARKING	237.00	12.70	3,009.90
PHEALTH	PARKING OF HEALTH CENTER	PHEALTH01	PARKING	47.00	40.00	1,880.00
PFANATIC	PARKING OF FANATIC	PFANATIC01	PARKING	308.00	15.00	4,620.00
PIND	PARKING OF INDUSTRIAL DPT	PIND01	PARKING	33.00	23.00	759.00

4.1.2.2 Pavement Condition Survey

Field walking condition survey of the pavement sections was carried out in June 2012 to collect and assess the existing condition of the pavement network. This survey was conducted by using “Paver Asphalt Distress Manual” which is evolved by the US Army Corps of Engineers(US Army Corps of Engineers, 1997).A range of distress types was measured and assessed according to their severity level. Records from these measurements and assessments were registered in the survey sheet as shown in Figure 4.7, and all sheets are outlined in Appendix A.



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 31

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 18/6/2012

SECTION ID: ACA20 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 36 | TO: 37 | FUNCTIONAL CLASS: Secondary

SECTION LENGTH: 50 | SECTION WIDTH: 9.5

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 19/7/1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1199
1200
1201
1202

DISTRESS CODE	10	6	11	1	
	25 L	2.5 M	4.5 M	5 M	
	35 L		7 H		

TOTAL SEVERITY						
	L	60				
	M		2.5	4.5	5	
	H			7		

COMMENT:

Figure 4.7: Pavement Condition Survey Sheet, part of this sheet was given from MicroPAVER version 5.3 manual (US Army Corps of Engineers, 2005).

The most common distresses which were surveyed in the EMU campus pavement network are illustrated in Figures 4.8 to 4.16.

Figure 4.8: Alligator Cracking. (sect. ACA 01).Figure 4.9: Pothole (sect. DOR02).

Figure 4.10: Block Cracking (sect.ACA 16).

Figure 4.11: Depression (sect.SP 05).

Figure 4.12: Edge Cracking (sect. ACA 02).

Figure 4.13: Bumps and Sags (sect. ACA 15).

Figure 4.14: Patching (sect. SP 03).Figure 4.15: Longitudinal Cracking (sect.ACA 20).

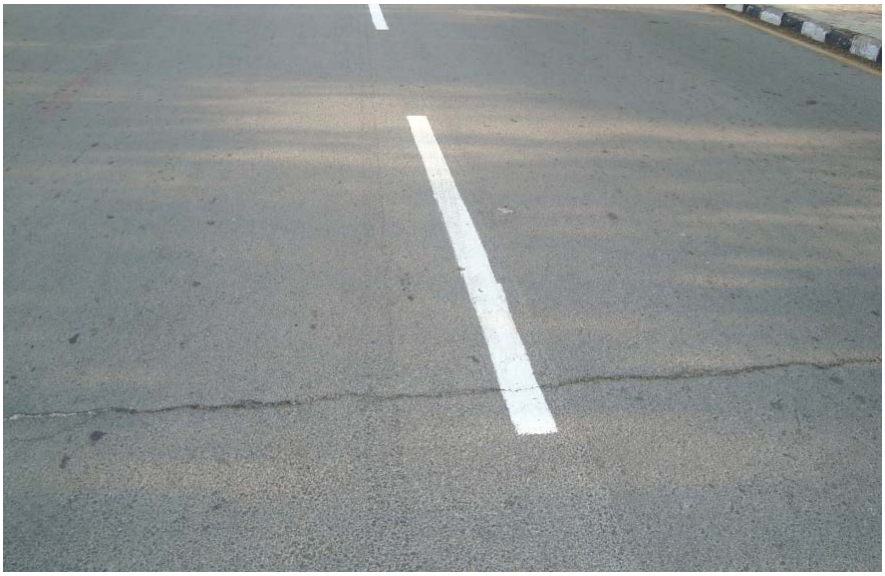


Figure 4.16: Transverse cracking (sect.ACA 31).

4.1.3 Condition Evaluation and Prediction

Once an inventory and condition survey completed, the recorded results entered to the MicroPAVER database, this software calculates the Pavement Condition Index (PCI) for each individual sections. The PCI is derived from the critical score, from a combination of the quantities of different types of distress and their severity. Table 4.3 shows the PCI results for each pavement section.

Table 4.3: PCI value of EMU campus pavement in 2012.

Branch ID	Section ID	Use	Length (m)	Width (m)	Area (m^2)	PCI
SST	S06	ROADWAY	100.00	9.00	900.00	82.00
SST	S01	ROADWAY	138.00	6.00	828.00	63.00
SST	S02	ROADWAY	70.00	8.60	602.00	77.00
SST	S03	ROADWAY	84.00	8.60	722.40	63.00
SST	S04	ROADWAY	98.00	9.00	882.00	100.00
SST	S05	ROADWAY	213.00	9.00	1,917.00	82.00
SST	S07	ROADWAY	160.00	8.50	1,360.00	57.00
SST	S08	ROADWAY	157.00	9.00	1,413.00	45.00
ACAST	ACA23	ROADWAY	136.00	8.80	1,196.80	85.00
ACAST	ACA32	ROADWAY	60.00	10.00	600.00	93.00
ACAST	ACA18	ROADWAY	42.00	11.00	462.00	65.00
ACAST	ACA19	ROADWAY	136.00	9.50	1,292.00	58.00
ACAST	ACA20	ROADWAY	50.00	9.50	475.00	64.00
ACAST	ACA16	ROADWAY	85.00	9.50	807.50	54.00
ACAST	ACA22	ROADWAY	98.00	8.00	784.00	100.00
ACAST	ACA15	ROADWAY	75.00	9.50	712.50	64.00
ACAST	ACA24	ROADWAY	78.00	9.00	702.00	100.00
ACAST	ACA25	ROADWAY	67.00	9.00	603.00	100.00
ACAST	ACA26	ROADWAY	76.00	6.00	456.00	100.00
ACAST	ACA27	ROADWAY	85.00	6.00	510.00	100.00
ACAST	ACA28	ROADWAY	62.00	7.20	446.40	63.00
ACAST	ACA29	ROADWAY	101.00	7.40	747.40	67.00
ACAST	ACA30	ROADWAY	387.00	10.00	3,870.00	96.00
ACAST	ACA21	ROADWAY	123.00	8.80	1,082.40	82.00
ACAST	ACA07	ROADWAY	77.00	8.60	662.20	78.00
ACAST	ACA01	ROADWAY	53.00	7.80	413.40	30.00
ACAST	ACA02	ROADWAY	212.00	9.00	1,908.00	99.00
ACAST	ACA03	ROADWAY	245.00	5.80	1,421.00	47.00
ACAST	ACA04	ROADWAY	116.00	9.00	1,044.00	92.00
ACAST	ACA17	ROADWAY	98.00	8.70	852.60	86.00
ACAST	ACA06	ROADWAY	55.00	9.00	495.00	100.00
ACAST	ACA33	ROADWAY	126.00	9.00	1,134.00	92.00
ACAST	ACA08	ROADWAY	139.00	11.50	1,598.50	100.00
ACAST	ACA09	ROADWAY	47.00	8.00	376.00	89.00
ACAST	ACA10	ROADWAY	90.00	6.00	540.00	98.00

Branch ID	Section ID	Use	Length (m)	Width (m)	Area (m^2)	PCI
ACAST	ACA11	ROADWAY	61.00	5.70	347.70	61.00
ACAST	ACA12	ROADWAY	100.00	3.45	345.00	64.00
ACAST	ACA13	ROADWAY	89.00	6.00	534.00	100.00
ACAST	ACA14	ROADWAY	73.00	6.00	438.00	88.00
ACAST	ACA05	ROADWAY	124.00	8.50	1,054.00	31.00
ACAST	ACA31	ROADWAY	309.00	8.70	2,688.30	100.00
SPST	SP05	ROADWAY	420.00	10.00	4,200.00	67.00
SPST	SP03	ROADWAY	157.00	6.60	1,036.20	62.00
SPST	SP02	ROADWAY	354.00	6.60	2,336.40	68.00
SPST	SP01	ROADWAY	97.00	7.80	756.60	84.00
SPST	SP06	ROADWAY	403.00	8.70	3,506.10	95.00
SPST	SP04	ROADWAY	197.00	10.00	1,970.00	56.00
DORST	DOR05	ROADWAY	273.00	9.40	2,566.20	74.00
DORST	DOR11	ROADWAY	100.00	6.00	600.00	99.00
DORST	DOR10	ROADWAY	160.00	7.00	1,120.00	93.00
DORST	DOR09	ROADWAY	152.00	6.00	912.00	89.00
DORST	DOR06	ROADWAY	267.00	7.00	1,869.00	94.00
DORST	DOR04	ROADWAY	314.00	9.00	2,826.00	59.00
DORST	DOR03	ROADWAY	372.00	7.00	2,604.00	50.00
DORST	DOR08	ROADWAY	60.00	7.00	420.00	84.00
DORST	DOR01	ROADWAY	282.00	10.00	2,820.00	75.00
DORST	DOR12	ROADWAY	155.00	7.00	1,085.00	93.00
DORST	DOR07	ROADWAY	81.00	7.00	567.00	89.00
DORST	DOR02	ROADWAY	337.00	10.00	3,370.00	57.00
PREGIST	PREGIST01	PARKING	42.00	17.00	714.00	100.00
PSERV	PSERV01	PARKING	318.00	12.60	4,006.80	89.00
PACTIV1	PACTIV11	PARKING	53.00	30.00	1,590.00	81.00
PACTIV2	PACTIV21	PARKING	59.00	23.00	1,357.00	100.00
PSABAN	PSABAN01	PARKING	114.00	22.00	2,508.00	90.00
PPOST	PPOST01	PARKING	232.00	14.80	3,433.60	92.00
PIT	PIT01	PARKING	39.00	17.50	682.50	86.00
PLIB	PLIB01	PARKING	145.00	5.70	826.50	60.00
PBUSIN	PBUSIN01	PARKING	132.00	22.00	2,904.00	62.00
PMECH	PMECH01	PARKING	56.00	12.80	716.80	88.00
PRECT	PRECT01	PARKING	40.00	28.00	1,120.00	86.00
PCC	PCC01	PARKING	58.00	21.60	1,252.80	63.00
PLALA	PLALA01	PARKING	65.50	12.00	786.00	80.00
PARCH	PARCH01	PARKING	285.00	25.00	7,125.00	83.00
PLAW	PLAW01	PARKING	300.00	9.20	2,760.00	90.00
PEMC	PEMC01	PARKING	424.00	15.00	6,360.00	73.00
PCIVIL	PCIVIL01	PARKING	237.00	12.70	3,009.90	63.00
PHEALTH	PHEALTH01	PARKING	47.00	40.00	1,880.00	96.00
PFANATIC	PFANATIC01	PARKING	308.00	15.00	4,620.00	80.00
PIND	PIND01	PARKING	33.00	23.00	759.00	95.00

The summarized PCI results for EMU campus pavement network are shown in Table 4.4 and the detailed PCI reports are outlined in Appendix B.

Table 4.4: Campus pavement branches, sections and PCI result in (2012).

Number of Branches	Number of Sections	Total Area (m^2)	Average PCI
24	79	122198	79

As observed in Table 4.5the PCI should convert into a qualitative measure which reflects the overall conditions of each section.

Table 4.5: PCI Ranges (supported by the US Army Corps of Engineers)

PCI Range	Condition
86 –100	Excellent
71 – 85	Very Good
56 – 70	Good
41 – 55	Fair
26 – 40	Poor
11 –25	Very Poor
0 – 10	Failed

It is important to note that the PCI method deals with surface conditions only. Surface conditions are often symptoms of underlying problems, while in many cases possible distresses may well be hidden under the pavement without inevitably indicating any visual distress signs on the surface. Thus, the PCI reports should be considered for guidance and not conclusive information on the conditions of the pavement.

The MicroPAVER software has a prediction modeling engine that is utilized to create various models and applied to those segments which they have similar characteristics. The completed historical data were not available in the campus. However, rehabilitation recommendations can be made without performing a detailed pavement testing survey on the specific pavement sections that they need rehabilitation action. Moreover, the collected and recorded data in this system can

form a basis for any future update, and it will assist in establishing the prediction model with more investigation and research about the pavement network.

4.1.4 Maintenance Requirement

An assessment of the maintenance needs for the existing pavement sections in EMU campus were made by using MicroPAVER software. This software permits the user to input potential maintenance actions alongside the cost of every single activity. The next step, it links the collected data and estimates M&R plan for a specified length of time.

In this system based on the distress inspection information, critical PCI concept and the available budget the desirable M&R action is applied to the sections that need treatment (Shahin, 2005a). In this study M&R work plan has been established for the EMU campus pavement network for the next 5 years, a detailed report plan and estimation results are presented in Appendix C.

The interpretation of M&R needs in terms of Critical PCI is illustrated in Figure 4.17.

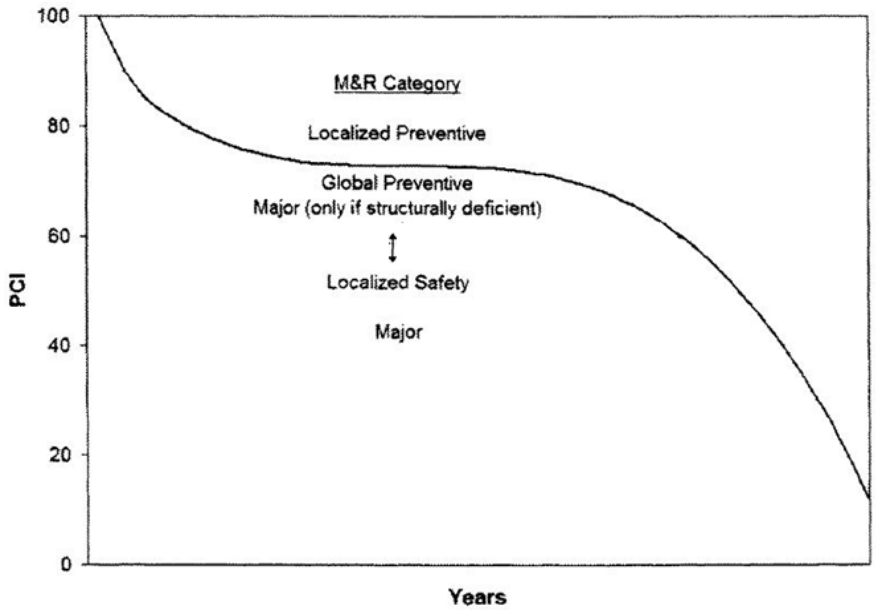


Figure 4.17: M&R Category in terms of the Critical PCI (Shahin, 2005a).

Currently, a number of global preventative actions cannot be performed in practice in the region because of the local companies' technical limitation and lack of specific machine for applying these treatments. Therefore, these treatments are not taken into account. On the other hand, the unit costs of possible M&R works are given from the local companies and entered into the software for estimating work plan costs.

The plan starts from 2013 to 2017. While applying this system for this period of time two different budget program (Limited and Unlimited) are applied in the assessment, as identified in the following sections.

4.1.4.1 Budget Program

One of the most significant functions of MicroPAVER software is the capacity to address the budget scenarios issue. A total of two work plan scenarios applied to the campus pavement to discover how the campus pavement network would enhance over the planned years (2013 – 2017): limited budget ($50000/year) and unlimited budget.

4.1.4.1.1 Limited Budget:

Analyzing the impact of EMU available budget for maintenance actions on the campus pavement condition is addressed in this research. The limited budget is assumed to $50000 per year. In this kind of analysis usually the prioritization created to list the sections that receive M&R actions.

4.1.4.1.2 Unlimited Budget:

In the unlimited funds, it is assumed that about all pavement segments which show deterioration would pass across the maintenance plan as there is no restriction to forbid the pavement manager from maintaining the whole network. In this situation, the total budget required can be estimated to cover all the deteriorated sections.

Figure 4.18 indicates the average PCI for the campus pavement network in 2012 and during the five year plan. No budget shows the deterioration of campus pavement within the coming five years that means there is no maintenance action during this period. On the other hand, at the campus expected pavement maintenance budget of $50000 per year, the average PCI would be 75, and also at the unlimited budget, the average PCI would be 85 in 2017.

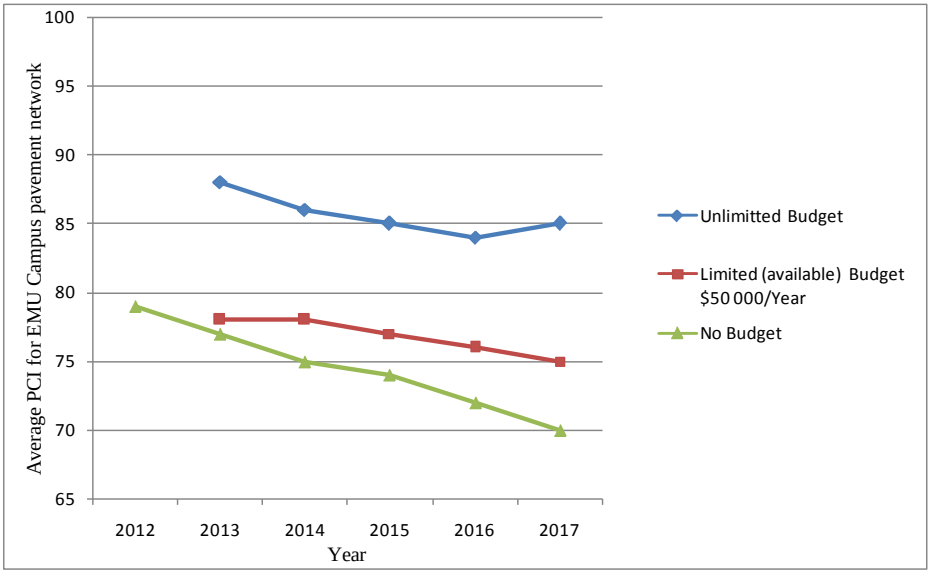


Figure 4.18: Average campus PCI within the three different budget programs.

4.1.5 Maintenance Prioritization

After generating maintenance needs for the pavement segments, MicroPAVER software makes a prioritized listing of pavement section projects on the basis of the sections PCI results and distresses information for those segments that display structural distresses, and for the remaining sections PCI and pavement rank are taken into account in priority process.

An ordered pavement project provides the user with a knowledge about where and when to spend money in a specific year. Tables 4.6 and 4.7 are summarized M&R plan and yearly estimated budget for the campus M&R action for the coming five years.

Table 4.6: EMU campus pavement M&R plan in 2013-2017 (Limited Budget)

Plan Year	Sum of Stop Gap ($)	Sum of Preventative ($)	Sum of Major < Critical ($)	Sum of Major ≥ Critical ($)	Total ($)
2013	2821.23	28138.33	0.00	18377.25	49,336.81
2014	2,937.16	22,896.61	0.00	22,067.74	47,871.51
2015	3,548.77	23,290.23	13,003.00	5,889.97	45,731.97
2016	3,920.61	24,150.58	13,974.56	0.00	42,045.75
2017	4,023.12	22,698.61	22,690.30	0.00	49,412.02

Table 4.7: EMU campus pavement M&R plan in 2013-2017 (Unlimited Budget)

Plan Year	Sum of Stop Gap ($)	Sum of Preventative ($)	Sum of Major < Critical ($)	Sum of Major ≥ Critical ($)	Total ($)
2013	0.00	17,714.09	162,760.52	234,815.63	415,290.22
2014	0.00	17,395.46	0.00	0.00	17,395.46
2015	0.00	17,949.99	41,247.82	0.00	59,197.81
2016	0.00	18,239.59	46,586.02	0.00	64,825.62
2017	0.00	16,587.79	95,031.80	0.00	111,619.60

4.2 MicroPAVER performance

One of the vital steps in implementing PMS is choosing the software for data analysis purpose. In this study, MicroPAVER software has been selected as PMS software for creating a database and analyzing the data. In Figure 4.19 the flowchart indicates how this software was applied to the Eastern Mediterranean University campus Pavement Management System (EMU-PMS):

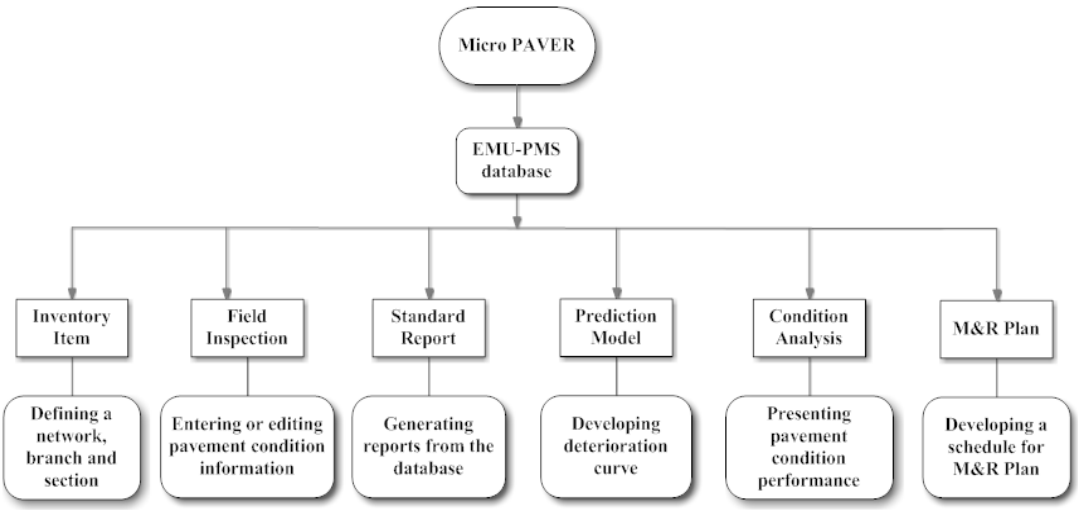


Figure 4.19: Applying MicroPAVER for the EMU campus pavement network.

The pursuing figures demonstrate the steps of applying MicroPAVER to the EMU campus pavement network:

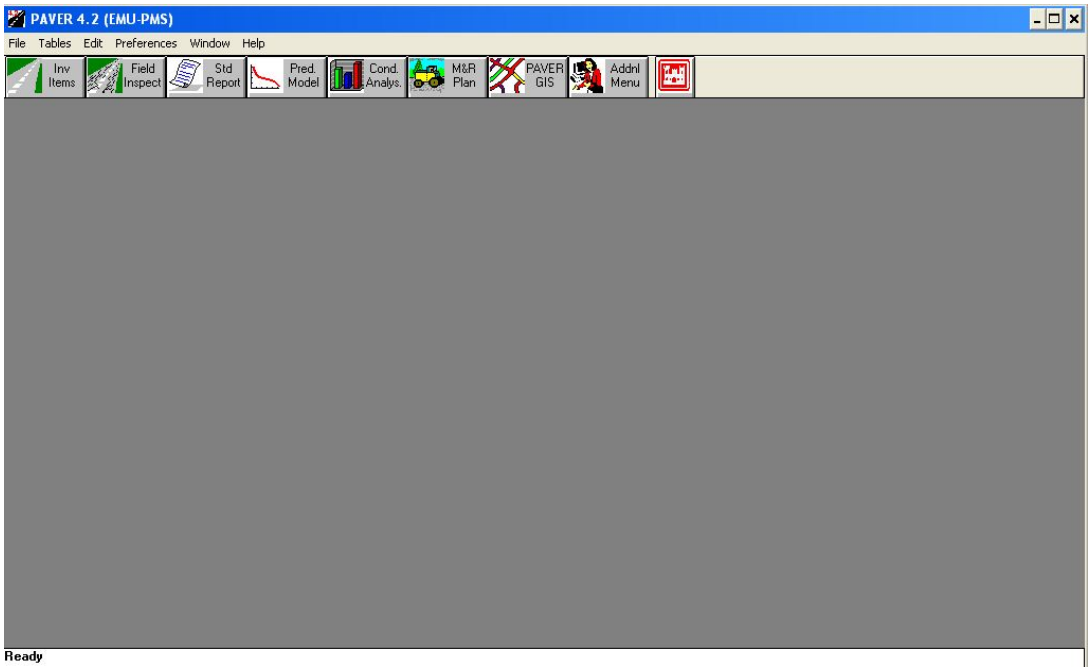


Figure 4.20: The main interface of MicroPAVER desktop obtained from MicroPAVER version 4.1 user manual (US Army Corps of Engineers, 1998).

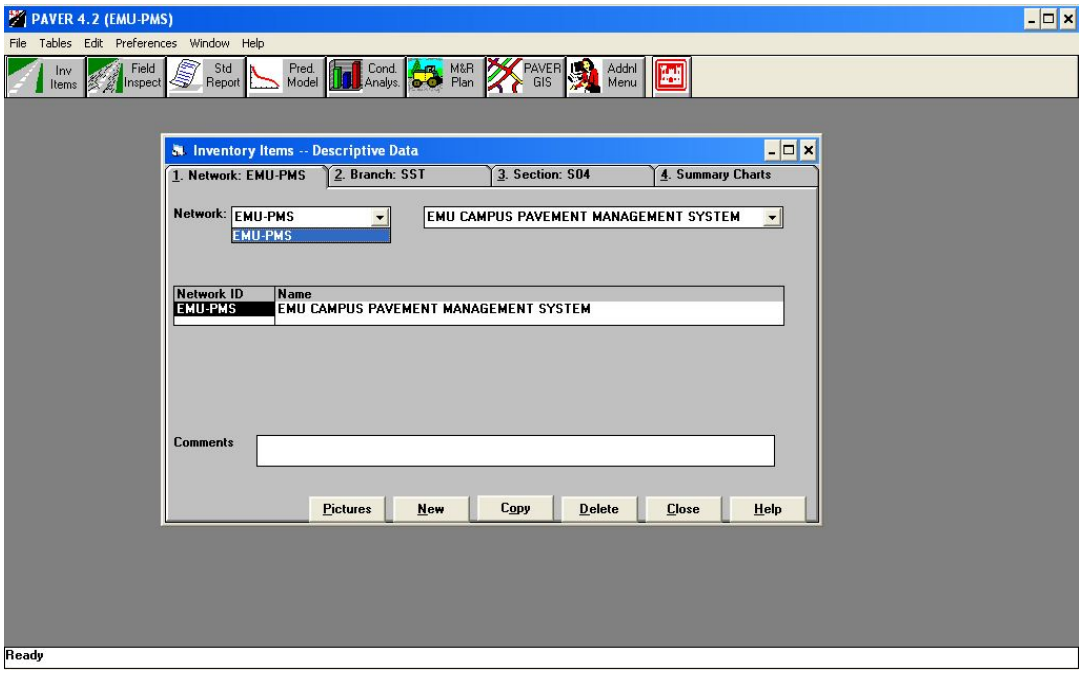


Figure 4.21: Inventory item feature.

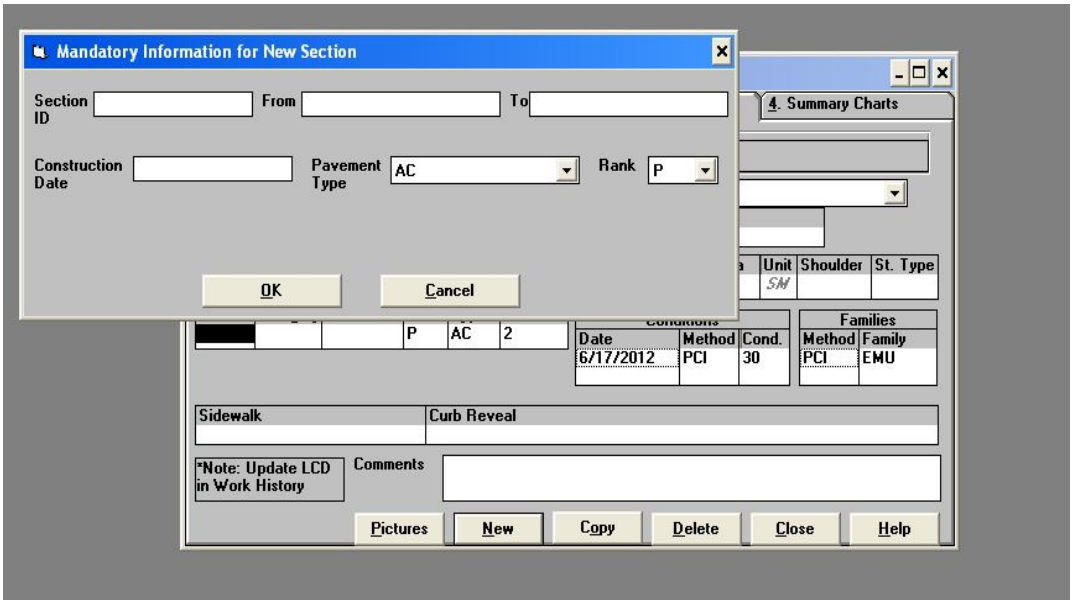


Figure 4.22: Creating a new pavement section.

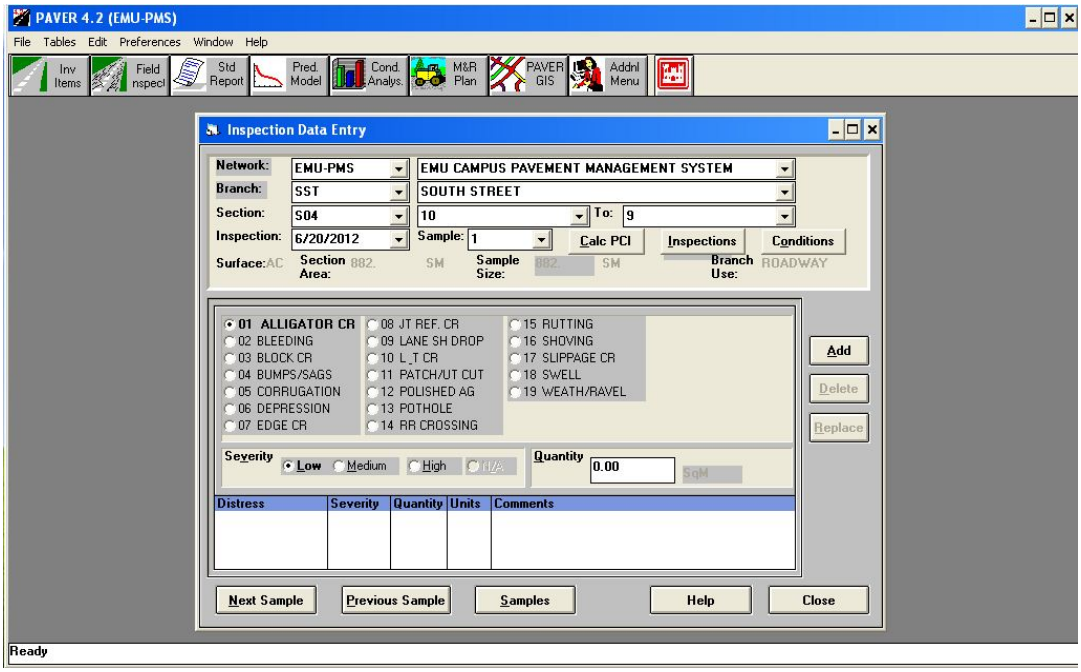


Figure 4.23: Field inspection feature utilized for inputting distress information.

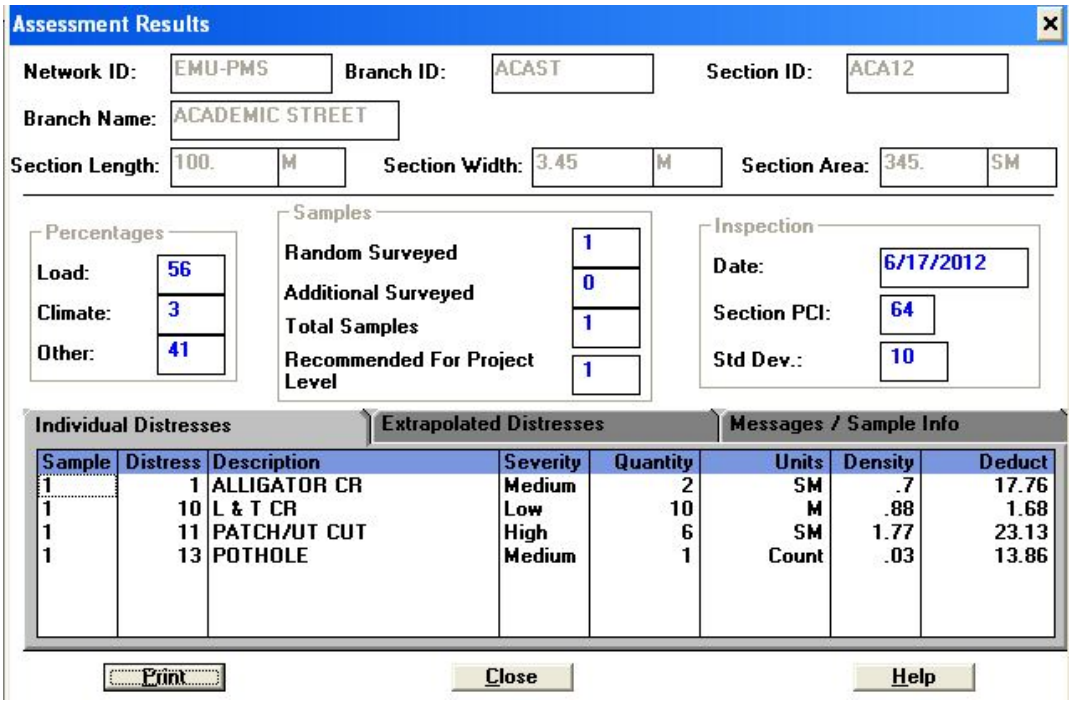


Figure 4.24: PCI Calculated for an individual segment.

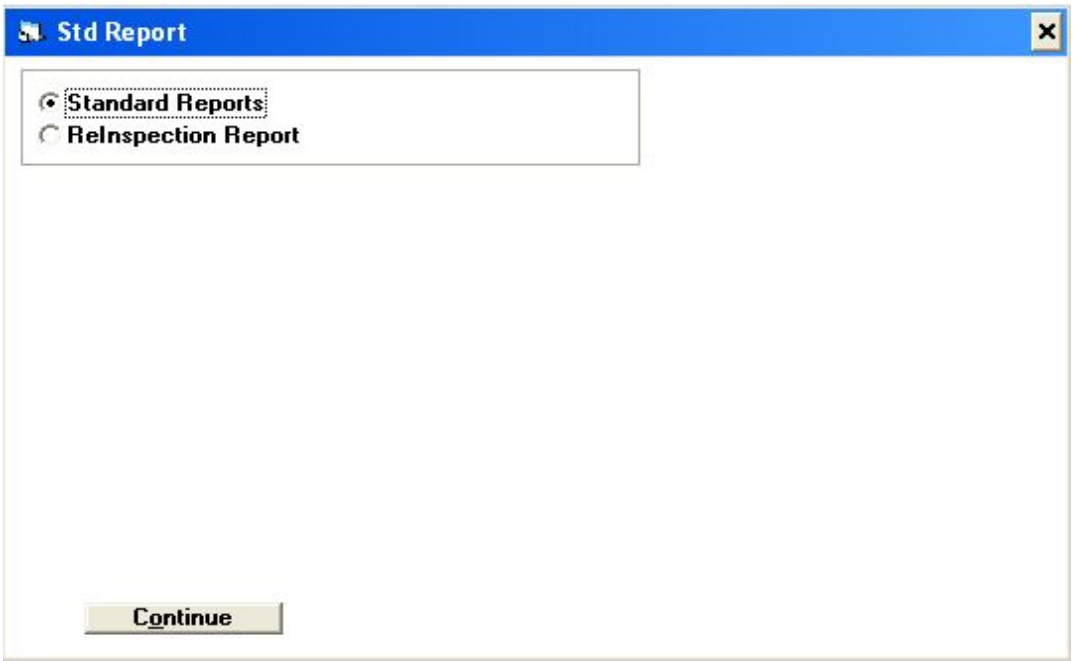


Figure 4.25: Creating reports from the system.

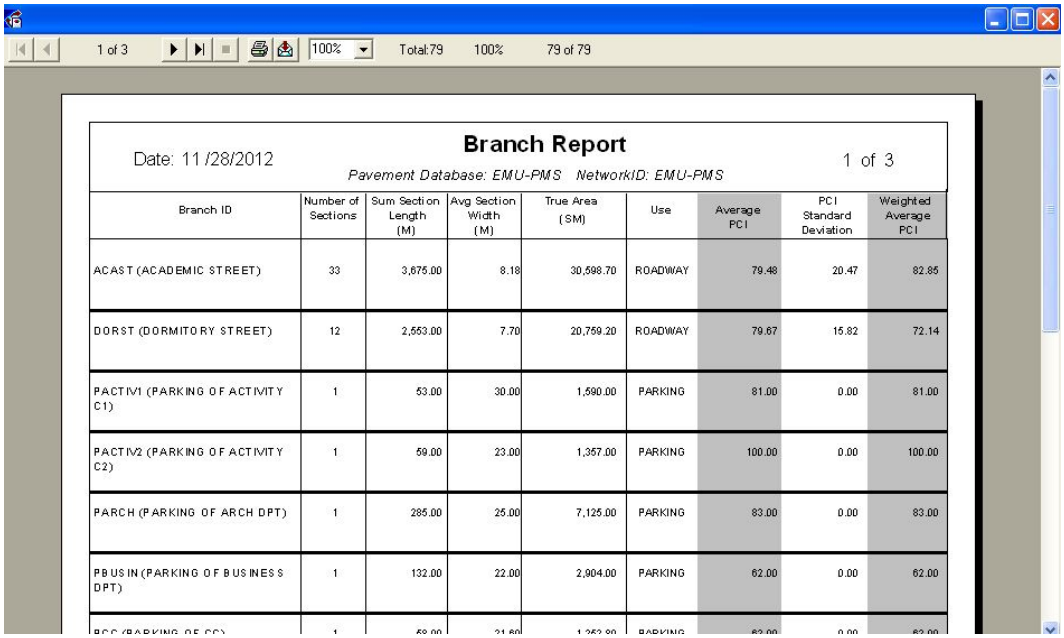


Figure 4.26: An example for report outputs.

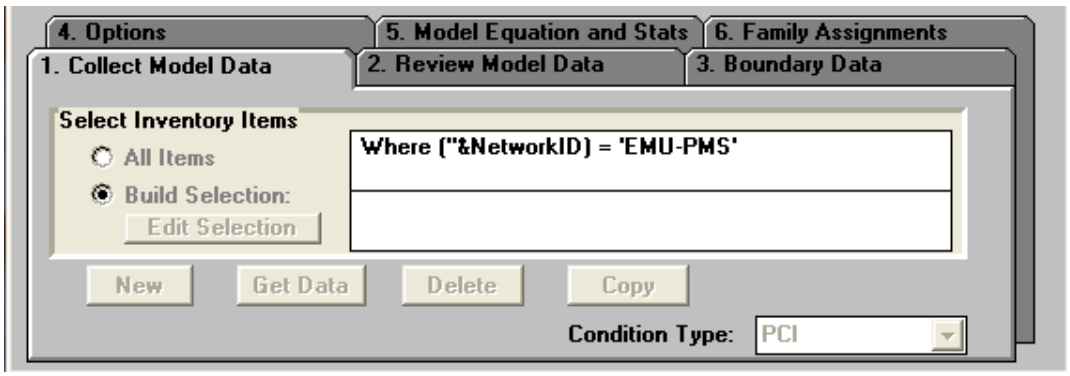


Figure 4.27: Predicting future pavement condition.

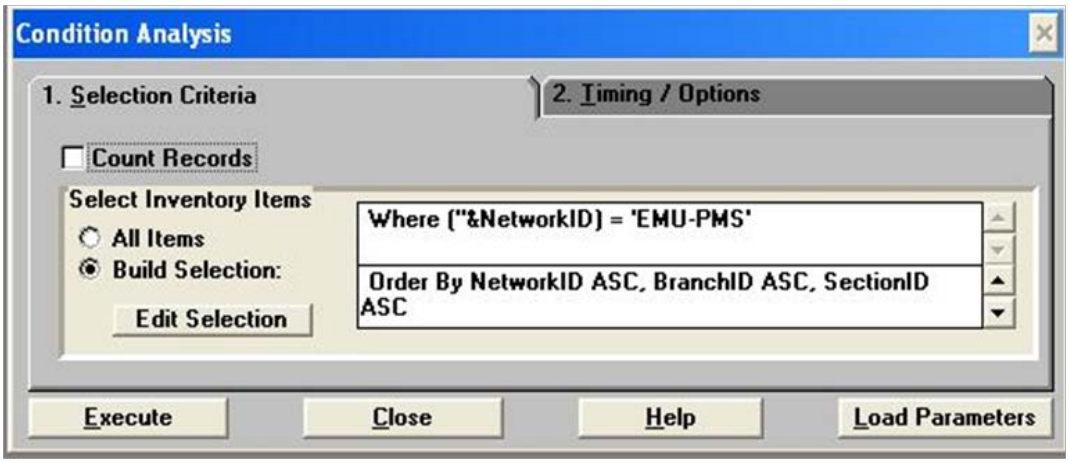


Figure 4.28: Condition analysis utilized for demonstrating pavement performance.

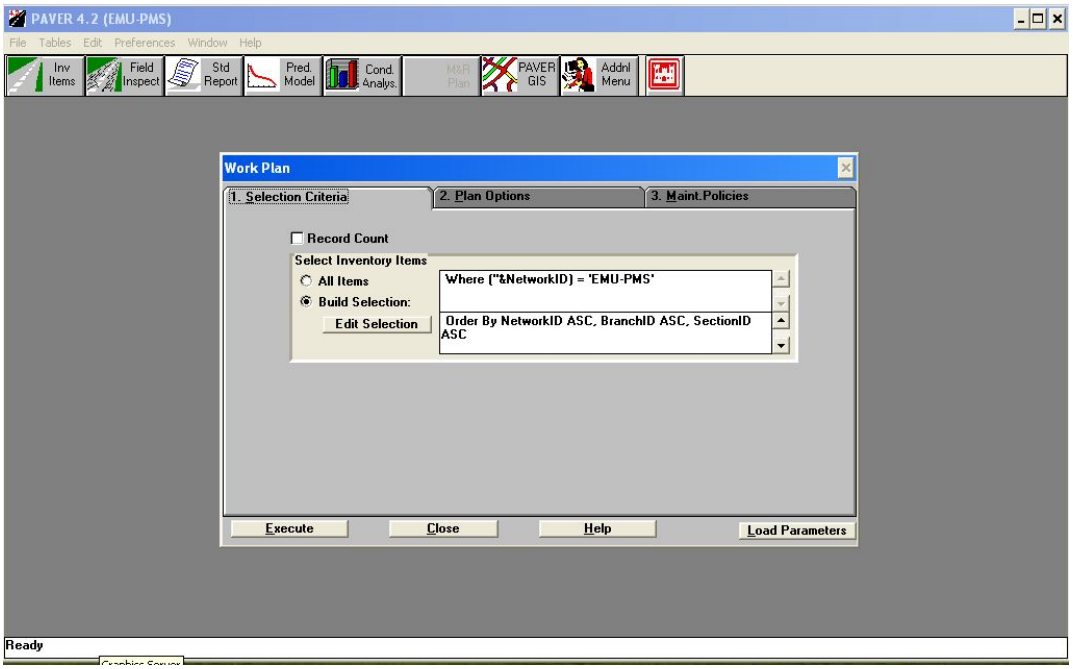


Figure 4.29: Work Plan tool utilized for scheduling M&R actions.

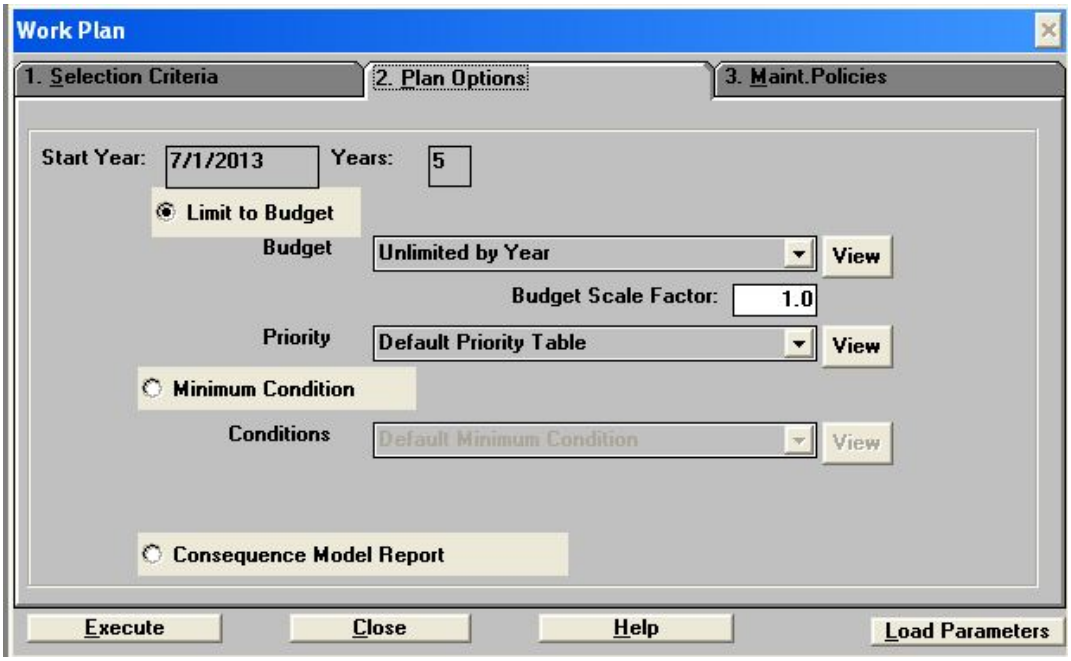


Figure 4.30: Inserting the budget for M&R works.

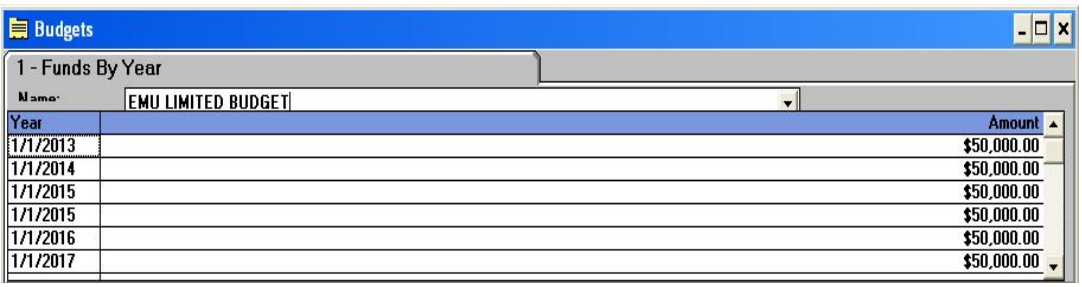


Figure 4.31: Limited budget entered to the database.

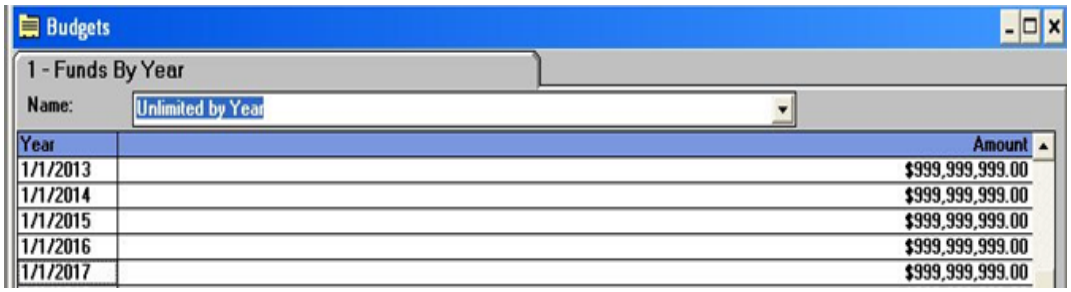


Figure 4.32: Unlimited budget entered to the database.

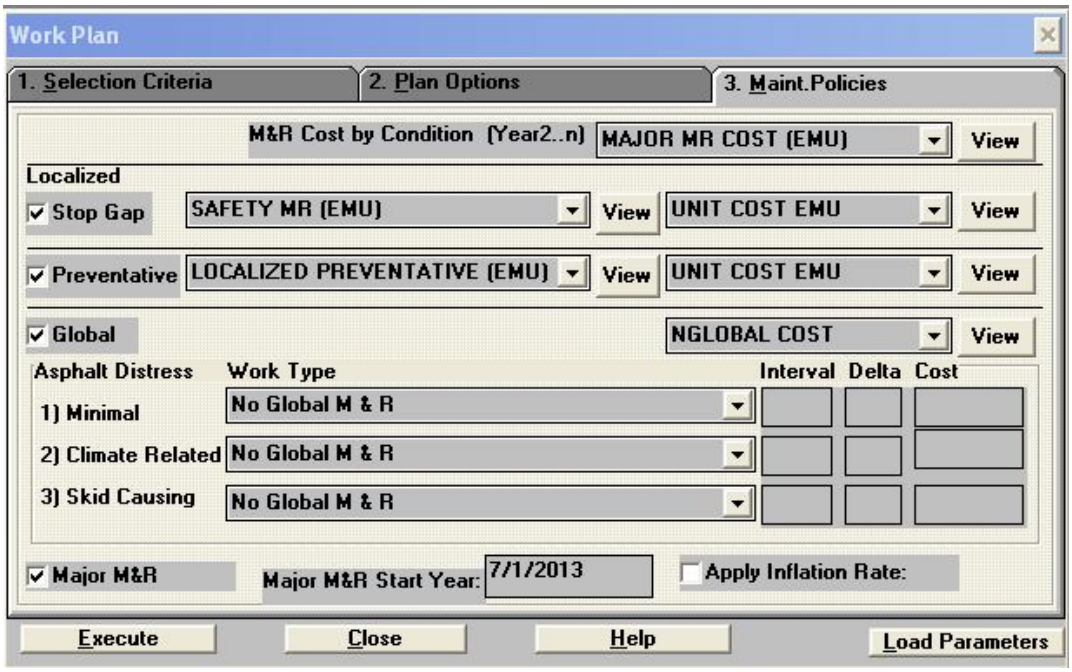
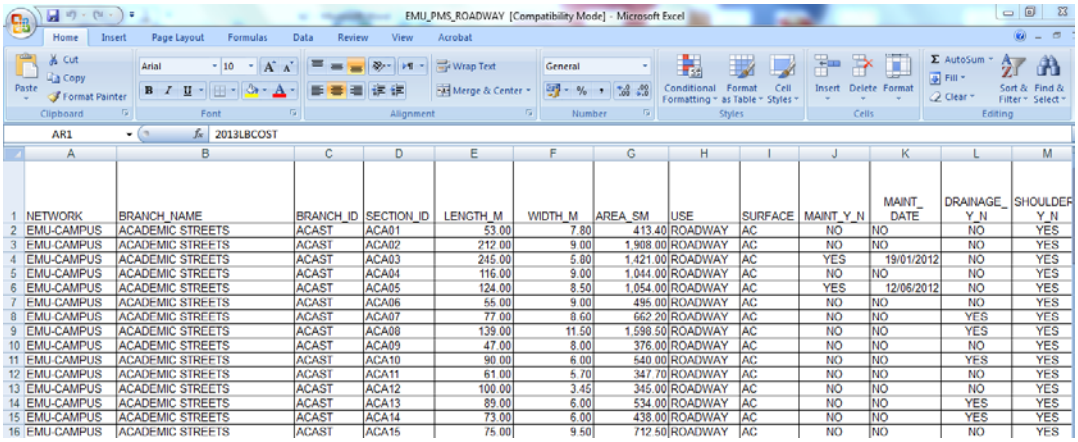


Figure 4.33: Selecting M&R policies.

4.3 EMU-PMS Database

Finally, the collected and calculated data are stored in a database, for this purpose Microsoft Excel is utilized. This simple database can be updated while the maintenance actions take steps, or in any essential time, Figure 4.34, displays database interface. The next sections in this chapter cover the integration process between EMU-PMS database and Geographic Information System (GIS).



EMU_PMS_ROADWAY [Compatibility Mode] - Microsoft Excel

	NETWORK	BRANCH_NAME	BRANCH_ID	SECTION_ID	LENGTH_M	WIDTH_M	AREA_SM	USE	SURFACE	MAINT_Y_N	MAINT_DATE	DRAINAGE_Y_N	SHOULDER Y_N
2	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA01	53.00	7.80	413.40	ROADWAY	AC	NO		NO	YES
3	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA02	212.00	9.00	1,908.00	ROADWAY	AC	NO	NO	NO	YES
4	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA03	245.00	5.80	1,421.00	ROADWAY	AC	YES	19/01/2012	NO	YES
5	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA04	116.00	9.00	1,044.00	ROADWAY	AC	NO	NO	NO	YES
6	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA05	124.00	8.50	1,054.00	ROADWAY	AC	YES	12/06/2012	NO	YES
7	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA06	55.00	9.00	495.00	ROADWAY	AC	NO	NO	NO	YES
8	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA07	77.00	8.60	662.20	ROADWAY	AC	NO	NO	YES	YES
9	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA08	139.00	11.50	1,598.50	ROADWAY	AC	NO	NO	YES	YES
10	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA09	47.00	8.00	376.00	ROADWAY	AC	NO	NO	NO	YES
11	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA10	90.00	6.00	540.00	ROADWAY	AC	NO	NO	YES	YES
12	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA11	61.00	5.70	347.70	ROADWAY	AC	NO	NO	NO	YES
13	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA12	100.00	3.45	345.00	ROADWAY	AC	NO	NO	NO	YES
14	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA13	89.00	6.00	534.00	ROADWAY	AC	NO	NO	YES	YES
15	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA14	73.00	6.00	438.00	ROADWAY	AC	NO	NO	YES	YES
16	EMU-CAMPUS	ACADEMIC STREETS	ACAST	ACA15	75.00	9.50	712.50	ROADWAY	AC	NO	NO	NO	YES

Figure 4.34: EMU-PMS database.

4.4 PMS and GIS Integration

GIS is one of the latest techniques followed by using computers to save quantities massive tabular data with large areas of the maps that cannot be saved properly on a paper. The data are saved with maps in a consistent type so it is easy for the user to display tabular data with maps in a variety of styles, and also it allows the user to conduct computational and statistical processing to extract the results that help in making a quick and appropriate decision.

In this research GIS was utilized in the EMU campus Pavement Management System (EMU-PMS) to assist in the preparation of a suitable database of campus paved roadways and parking lots. GIS acts as a Management Information System which can be best described as a system to store and deliver reliable data, in an efficient manner to the required planning process.

4.4.1 PMS and GIS Database Linkage

As mentioned in the previous chapter the main method for linking PMS and GIS is database linkage process. In this study the latest version of GIS software has been utilized so as to establish the database and develop the system. ArcGIS 10 which is developed by “Environmental Systems Research Institute” (ESRI) was the primary

GIS software utilized to perform the required integration with PMS. Figure 4.35 shows ArcGIS interface.

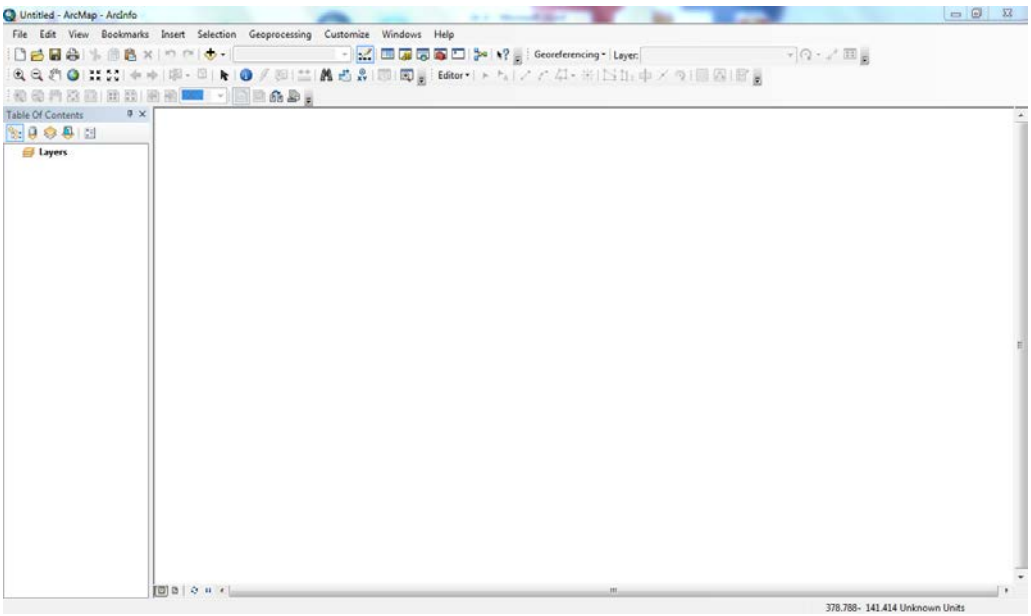


Figure 4.35: The main interface of ArcGIS (ArcMAP).

Applying GIS in EMU-PMS aims to:

- Act as storage for campus pavement inventory data.
- Link the campus pavement data with the referenced map.
- Display the current and future pavement condition on a thematic map.
- Display the proposed M&R actions on a thematic map.
- Provide an easy access to the campus pavement segments.
- Assist in conducting statistical analysis.
- Assist in conducting “what if” queries to the pavement segments.
- Assist in decision making process.
- Act as a tool in monitoring and updating campus pavement maintenance process.

In order to link (EMU-PMS) data with GIS, and also to accomplish the above objectives, the following steps should be performed properly.

1. Importing a base map (scanned map or satellite image).
2. Georeferencing the imported map.
3. Creating a pavement network (shapefile).
4. Adding the PMS data and join it with a shapefile.
5. Creating queries, reports, standard charts and thematic maps.

1. Importing a base map

In this process a base map for EMU campus was obtained from the GoogleMap (Google Maps, 2012) then imported into the ArcMap by using add tool, as shows in Figure 4.36 and 4.37.

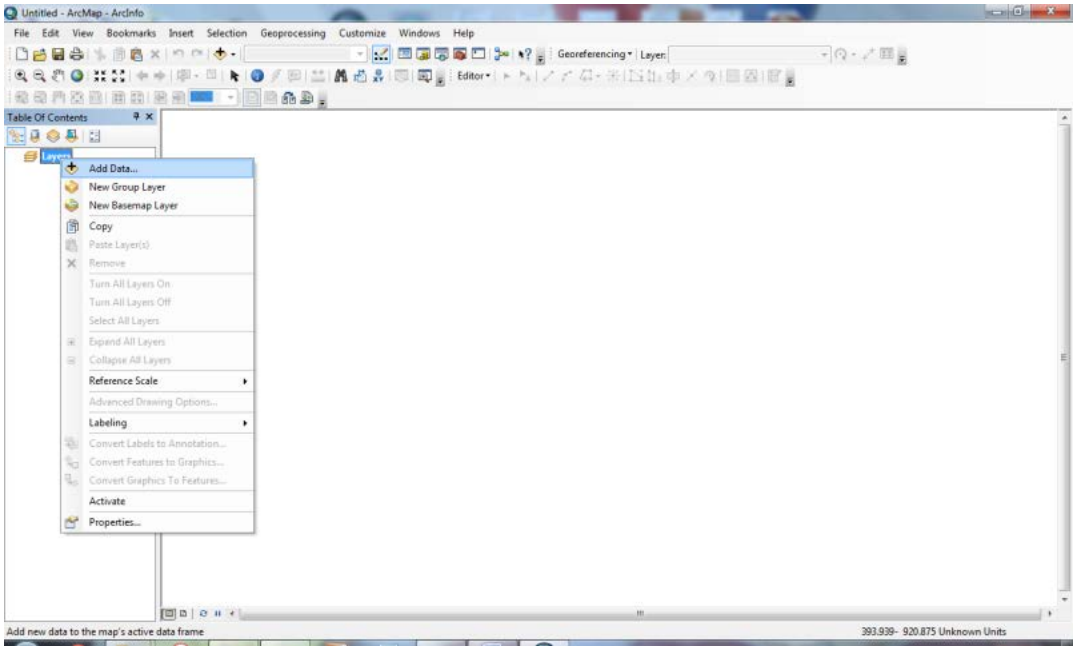


Figure 4.36: Importing EMU campus map to ArcMap

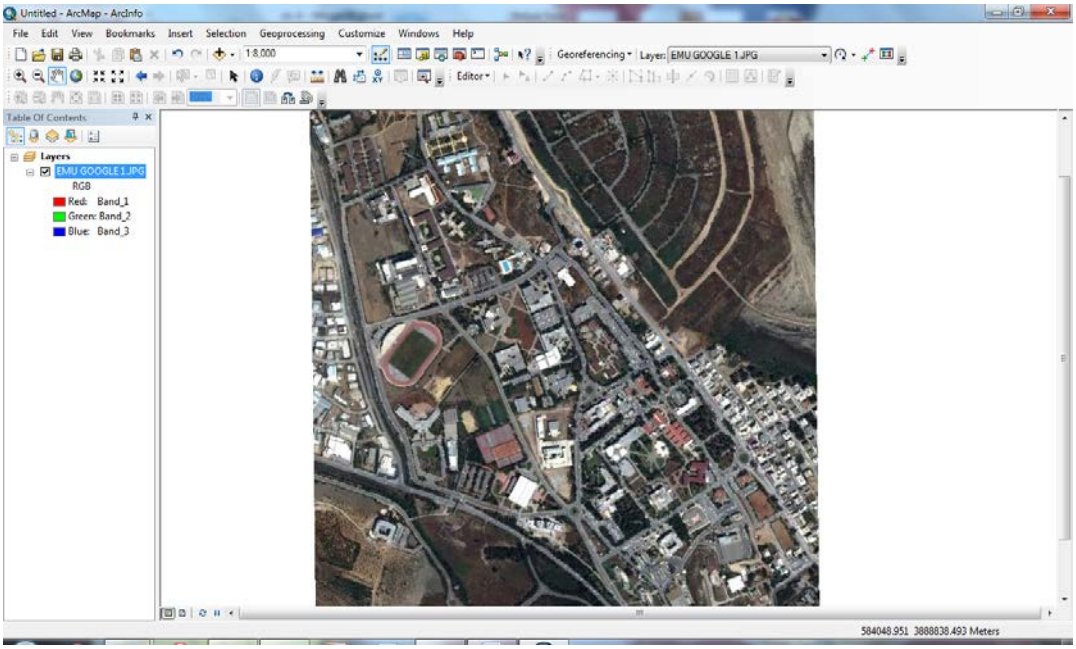


Figure 4.37: EMU campus map imported

2. *Georeferencing campus Map*

After adding the campus map to ArcMap, the raster image (EMU GOOGLE) should be georeferenced in ArcGIS as indicated in Figure 4.38 (ESRI, 2012).

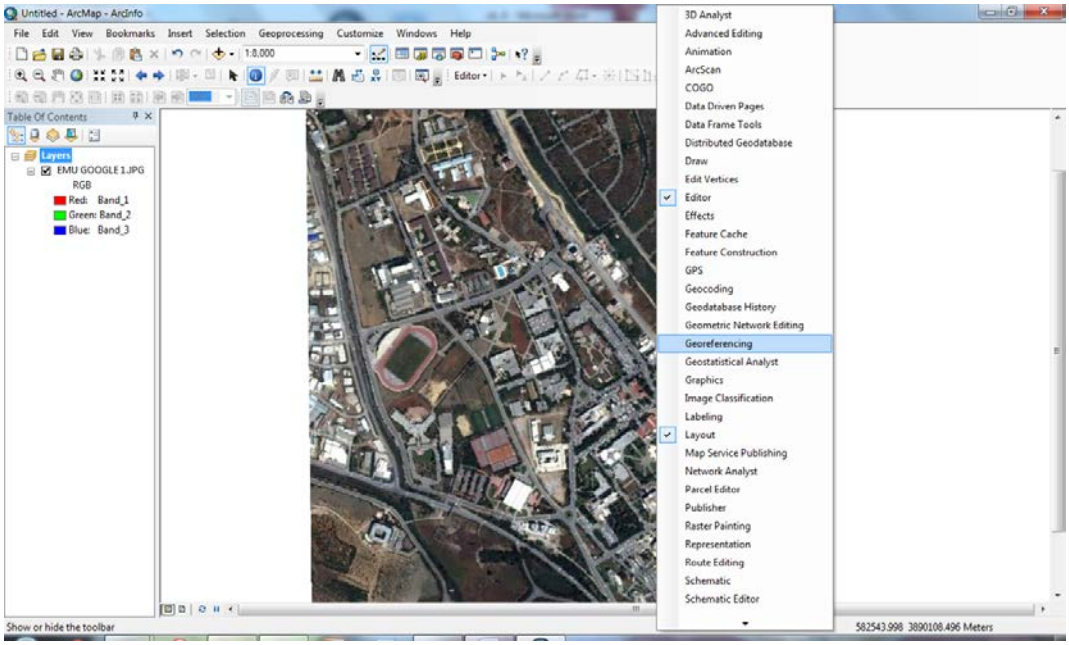


Figure 4.38: Georeferencing EMU campus Map

3. Creating a shapefile

Once step one and two are finished, the pavement network was saved in a shapefile format (*.shp) in ArcGIS (ArcCatalog) by creating points, lines and polygons. This step is shown in Figure 4.39, and described below:

Point: indicates nodes for campus network definition.

Line: indicates roadway center lines, which is usually between two nodes there is one line (section).

Polygon: indicates parking lots inside the campus.

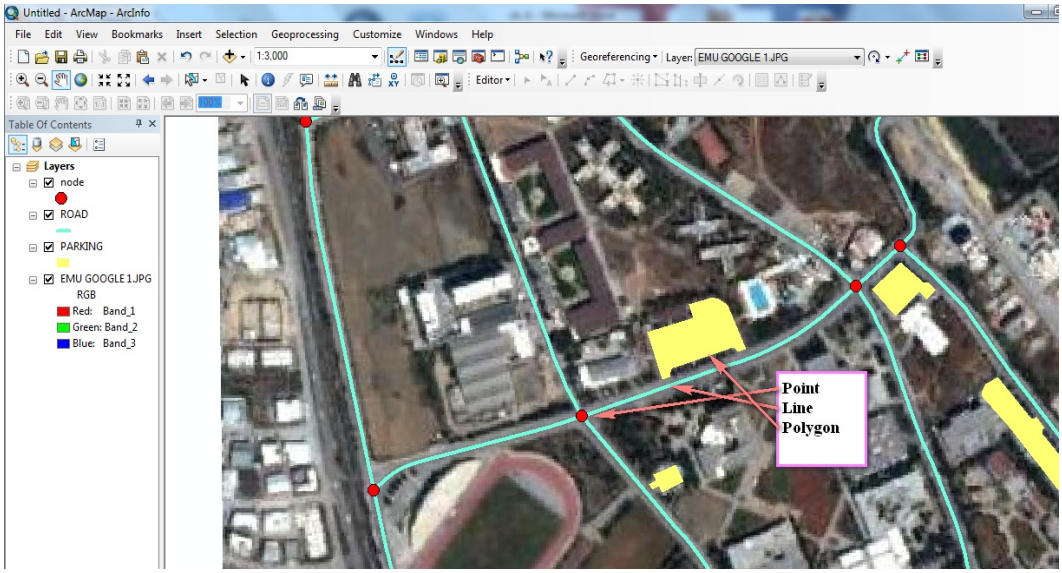


Figure 4.39: Pavement sections, parking layer and nodes are created.

4. Joining PMS data with a shapefile

One of the essential steps in this process is integrating PMS data with GIS attribute table. In this step PMS data in database (*.dbf) format which was prepared in PMS process are added and joined with the attribute table. Figure 4.40 and Figure 4.41 demonstrate the databases linkage steps.

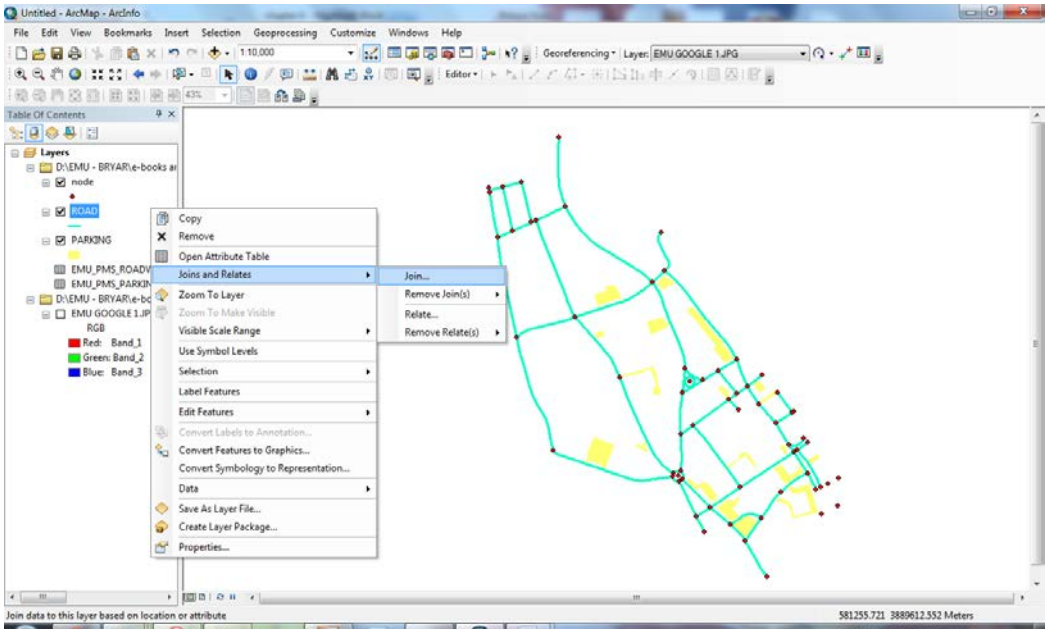


Figure 4.40: EMU-PMS data joined in the system.

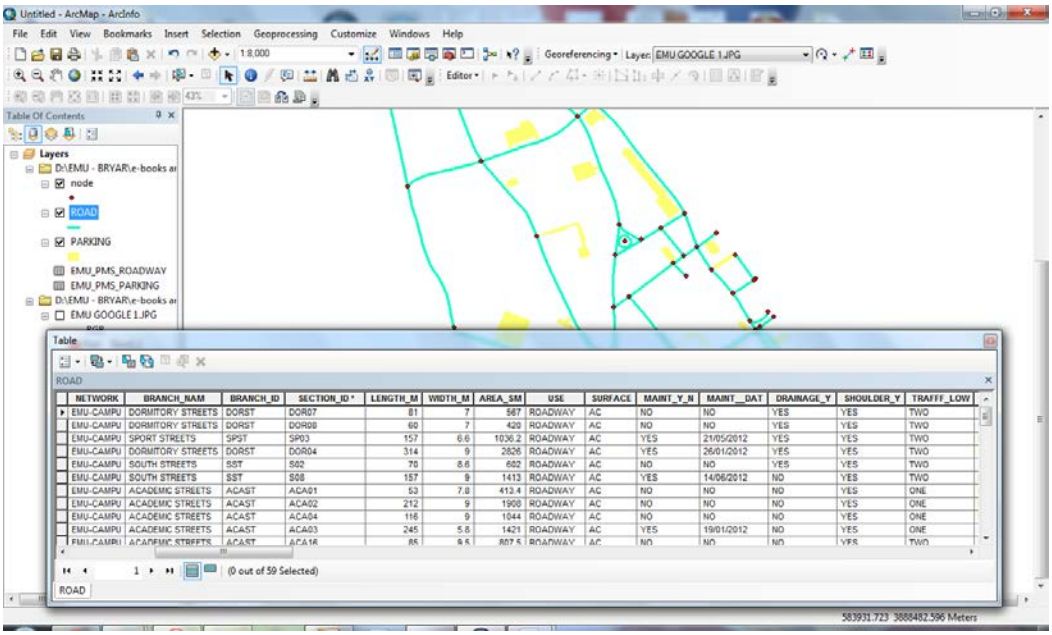


Figure 4.41: Attribute table after joining.

In the above integration one row in GIS attribute table represents one pavement section with its data.

5. *Documenting and mapping*

Finally, various reports, queries, charts, thematic maps with legends and symbols are produced. Figure 4.42 shows a simple created query, in Appendix D mapped data are outlined which shows the study analysis and results on GIS maps.

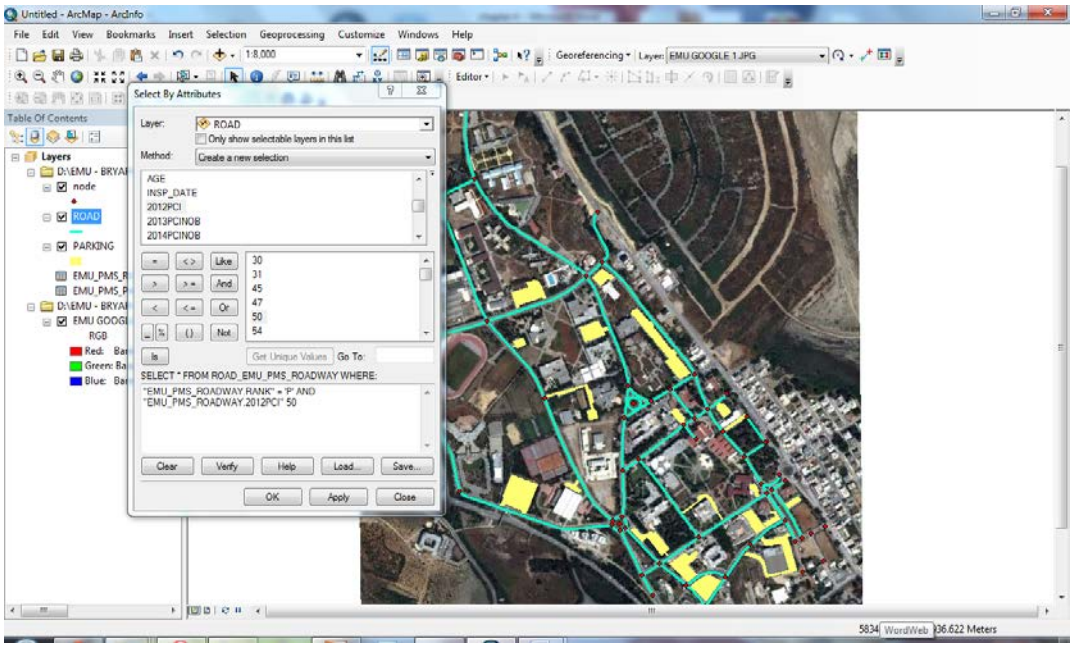
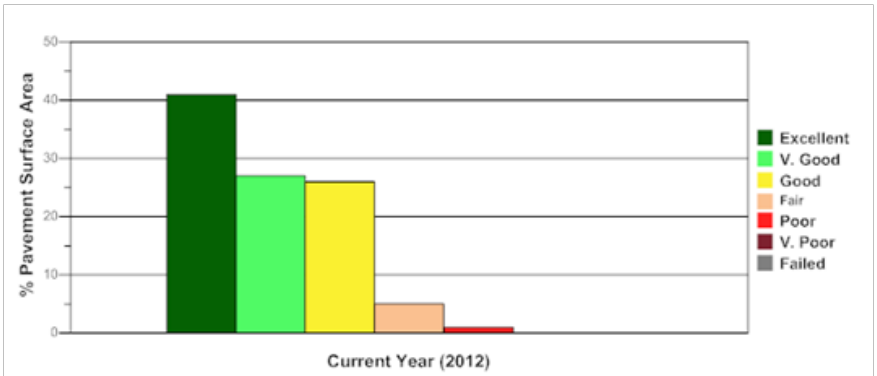


Figure 4.42: Simple query created.

4.5 Discussion

1. In Figure 4.43 the percentages of campus paved surface area are classified based on the present (2012) condition, it can be seen that 41 % of the pavement surfaced area are in (Excellent) condition, 27 % are in (Very Good), 26 % are classed as (Good), 5 % are classed as (Fair), 1% classed as (Poor) condition and also there are no (Very Poor) and (Failed) condition classification.



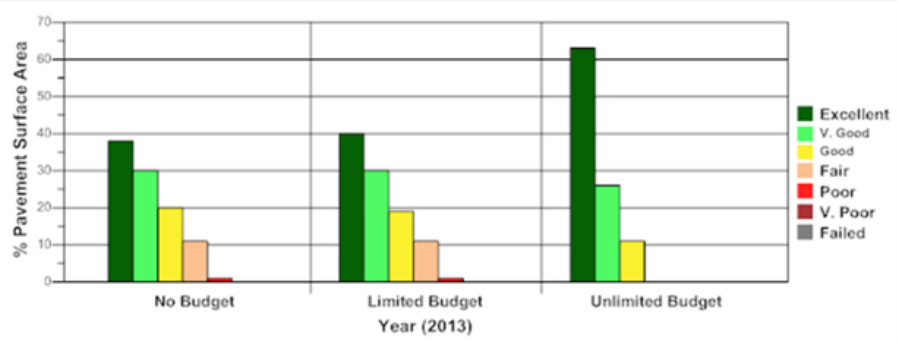
Rating	% Pavement Surface Area (2012)
Excellent	41
V. Good	27
Good	26
Fair	5
Poor	1
V. Poor	0
Failed	0

Figure 4.43: Classification of campus pavement area in 2012.

2. The percentage of campus pavement surface area classified during applying the three analyzing assumptions (No Budget, Limited Budget and Unlimited Budget) for the five planned years. Figure 4.44 indicates the analyzing assumption in 2013, in (No Budget) assumption it can be noted that 38 % of the campus pavement area will be in (Excellent) condition that means decreasing 3% of pavement area in this condition in one year if there is no maintenance action. On the other hand, in (Limited Budget) assuming 40 % of pavement area in (Excellent) condition, it indicates that the allocated budget increased PCI of the pavement network. Moreover, in (Unlimited Budget) 63% are classed in (Excellent) condition which shows dramatic increase in this condition because in this situation most of the sections are passed across the maintenance process.

   There is no change in (Fair) condition between (No Budget and Limited Budget) assumption because in the limited budget program the high priority

offered to those sections that do not require too much cost. In other word, the system attempt to keep the majority segments in excellent condition. The rest conditions are illustrated in Figure 4.44 and the complete campus pavement area classification from 2013 to 2107 are provided in appendix D.



Rating	No Budget	Limited Budget	Unlimited Budget
Excellent	38	40	63
V. Good	30	30	26
Good	20	19	11
Fair	11	11	0
Poor	1	1	0
V. Poor	0	0	0
Failed	0	0	0

Figure 4.44: Pavement area classified with the three budget program in 2013.

Chapter 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In this research, campus pavement network was inspected and analyzed for both roadway and parking based on the existing surface condition. As a conclusion from the accomplished analytical results the following observations can be drawn:

1. The campus pavement network has been identified and all pavement sections have been inspected. Moreover, PCI computed for each individual section.

2. A suitable treatment with cost of application has been suggested for each pavement section.

3. A GIS database has been created and section's PCI value was displayed on a thematic map with different legends and symbols. Additionally, various reports and charts have been generated.

4. Finally, the proposed plan was established for five years from 2013 to 2017 and for each planned year a work plan has been constructed for both campus roadway and parking.

5.2 Recommendations

1. Setting up a consistent numbering system for the campus pavement network to be suited to the future projects.

2. Continue to update and develop the GIS database and performing further studies such as: travel time, delay time and bus stop study.

3. Re-inspecting campus pavement segments in the future to observe the deterioration rate of the sections and continue to do further investigation on the campus pavement in terms of material and structural tests.

4. In case of cut in assumed budget, the university administration is recommended to carry out only the stop-gap and do nothing activities.

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APPENDICES

Appendix A: Pavement Condition Survey Sheets

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 1

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/6/2012
SECTION ID: ACA 33	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 50	TO: 46	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 126	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5/8/2000

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

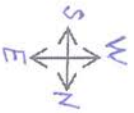
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

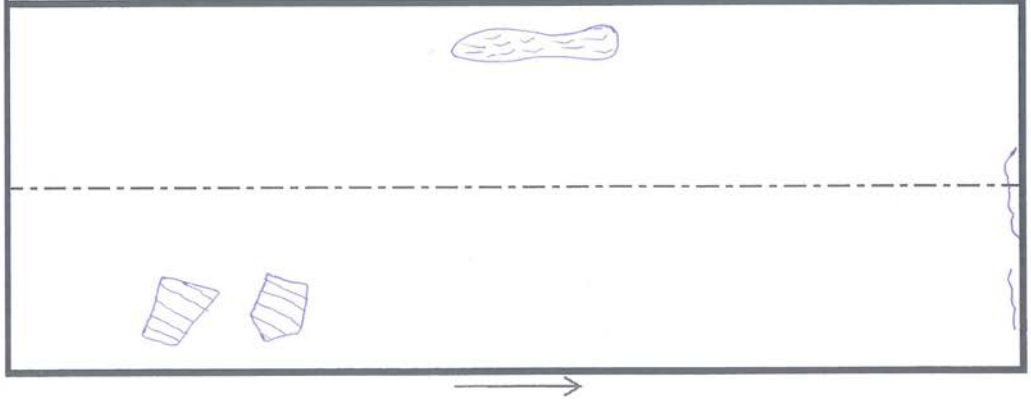
DISTRESS CODE					
	11	1	10		
	0.7 L	5.4 L	1.5 M		
	1.87 L				
TOTAL SEVERITY L	2.57	5.4			
TOTAL SEVERITY M			1.5		
TOTAL SEVERITY H					

PHOTOGRAPH .jpg

1074
1075
1076



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 2

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17 / 6 / 2012
SECTION ID: ACA 30	NO. OF LANES: 2	INSPECTOR: BRYAR A.
FROM: 46	TO: 38	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 387	SECTION WIDTH: 10	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 18 / 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

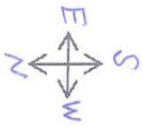
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE					
	17	10	11		
	3.82 L	1.4 L	6.3 M		
TOTAL SEVERITY L	3.82	9.1			
TOTAL SEVERITY M			6.3		
TOTAL SEVERITY H					

1079
1081
1082
1083
1084



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 3

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 17/ 6 / 2012

SECTION ID: ACA 22 | NO. OF LANES: 2 | INSPECTOR: Bryor A.

FROM: 38 | TO: 33 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 98 | SECTION WIDTH: 8

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/ 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

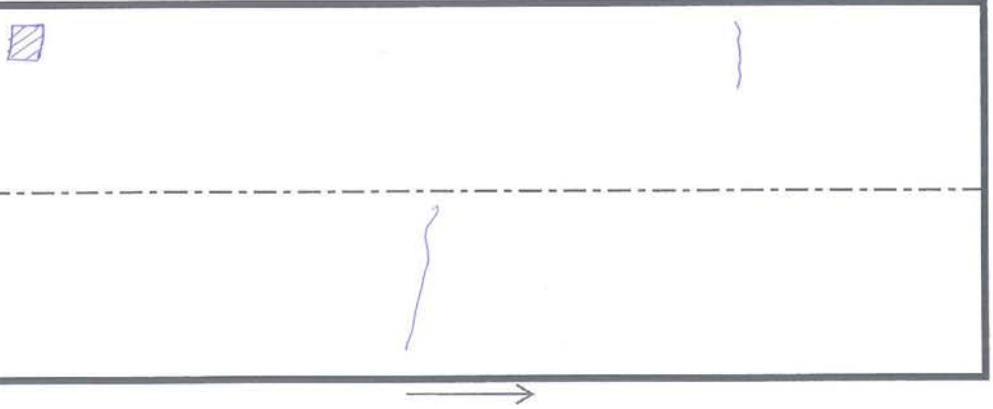
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1085
1086
1087

DISTRESS CODE	11	10			
	0.5 L	3.3 L			
		0.6 L			
TOTAL SEVERITY L	0.5	3.9 L			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 4

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/6/2012
SECTION ID: ACA15	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 33	TO: 32	FUNCTIONAL CLASS: Seandary
SECTION LENGTH: 75	SECTION WIDTH: 9.5	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5/7/1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

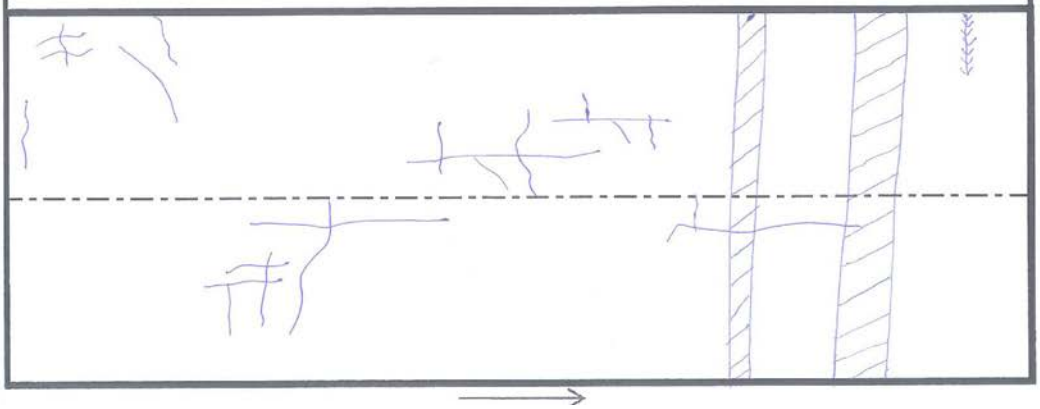
PHOTOGRAPH .jpg

DISTRESS CODE		10	3	11	4	
		1.4 L	1.9 L	0.75 M	1.2 H	
		2 L	22 M	5 M		
		18 M	12.4 L	6.8 H		
		23 L	6 L			
TOTAL SEVERITY	L	26.4	20.3			
	M	18	22	5.75		
	H			6.8	1.2	

1088
1089
1090
1091
1093
1094

N W E S

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 5

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17 / 6 / 2012
SECTION ID: ACA 14	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 33	TO: 24	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 73	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14 / 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

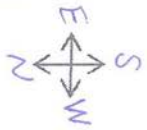
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

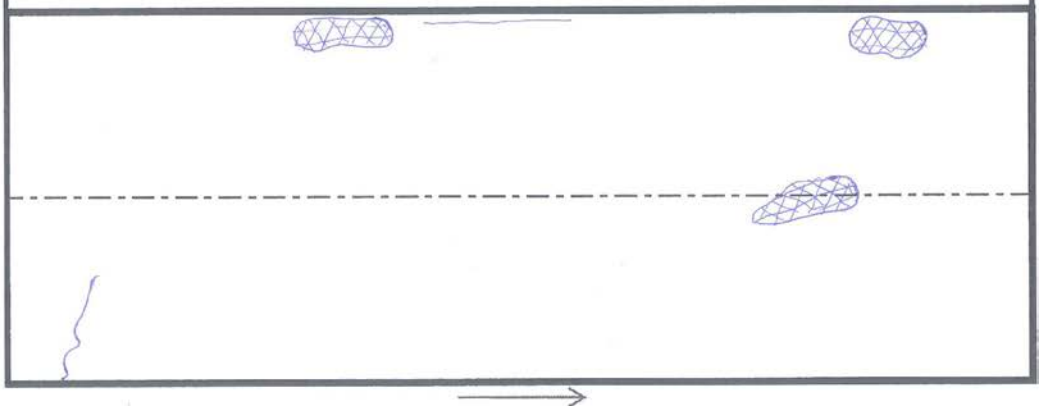
PHOTOGRAPH .jpg

DISTRESS CODE	10	1	7		
	2.5 L	0.8 L	5.8 L		
		0.55 M			
TOTAL SEVERITY L	2.5	0.8	5.8		
TOTAL SEVERITY M		0.55			
TOTAL SEVERITY H					

1095
1096
1097



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 6

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACA ST	DATE: 17/6/2012
SECTION ID: ACA 13	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 214	TO: 22	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 89	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1098

DISTRESS CODE						
		10				
		0.4L				
TOTAL SEVERITY	L	0.4				
	M					
	H					

W N E S

COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 7

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACA ST	DATE: 17/ 6 / 2012
SECTION ID: ACA 11	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 22	TO: 20	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 61	SECTION WIDTH: 5.7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 16/ 7/ 1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

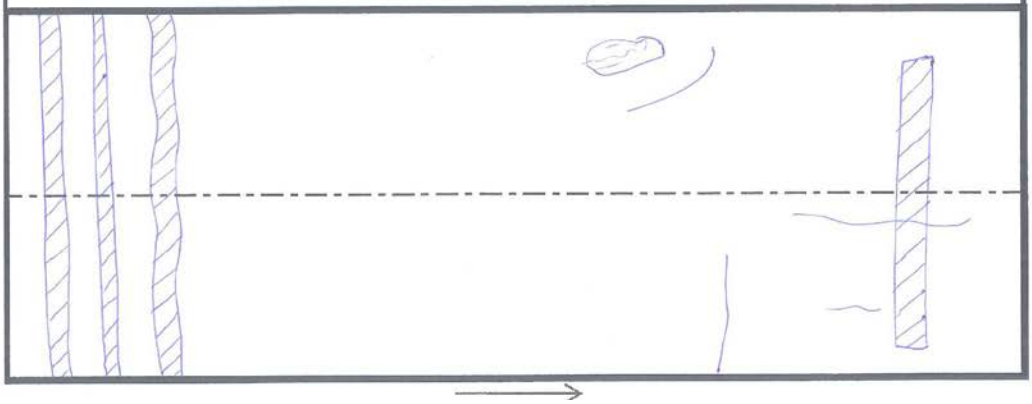
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1099
1100
1101
1102

DISTRESS CODE		11	10	6	17	
		6.9 L	5.7 L	1 L	0.4 L	
		3 H	2 L			
		7.8 H	3.5 L			
		3 M	6 L			
TOTAL SEVERITY	L	6.9	17.2	1	0.4	
	M	3				
	H	10.8				

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 8

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 17/ 6 / 2012

SECTION ID: ACA 12 | NO. OF LANES: 1 | INSPECTOR: Bryan A.

FROM: 23 | TO: 21 | FUNCTIONAL CLASS: Tertiary

SECTION LENGTH: 100 | SECTION WIDTH: 3.45

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 16 / 7 / 1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

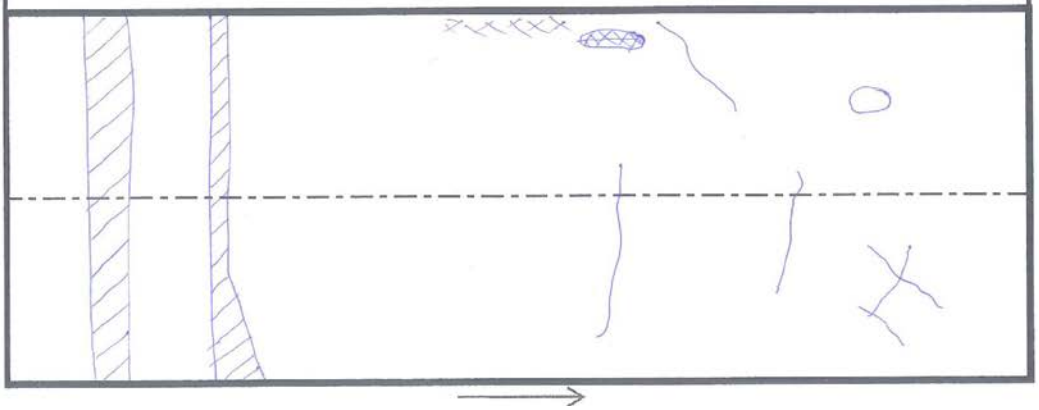
PHOTOGRAPH .jpg

DISTRESS CODE	11	10	1	13	
	3 H	3 L	2.4M	1 M	
	3.1 H	1 L			
		4 L			
		2 L			
TOTAL SEVERITY L		10			
TOTAL SEVERITY M			2.4	1	
TOTAL SEVERITY H	6.1				

1103
1104
1105
1106
1107

E S Z m

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 9

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/6 / 2012
SECTION ID: ACA 10	NO. OF LANES: 2	INSPECTOR: BryarA.
FROM: 22	TO: 14	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 90	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/ 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

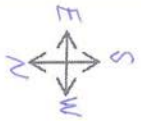
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE					
	7	10			
	4.5 L	2.4 L			
TOTAL SEVERITY L	4.5	2.4			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

1108
1109
1110
1111
1112



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 10

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/6/2012
SECTION ID: ACA 09	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 19	TO: 18	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 47	SECTION WIDTH: 8	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 22/7/1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

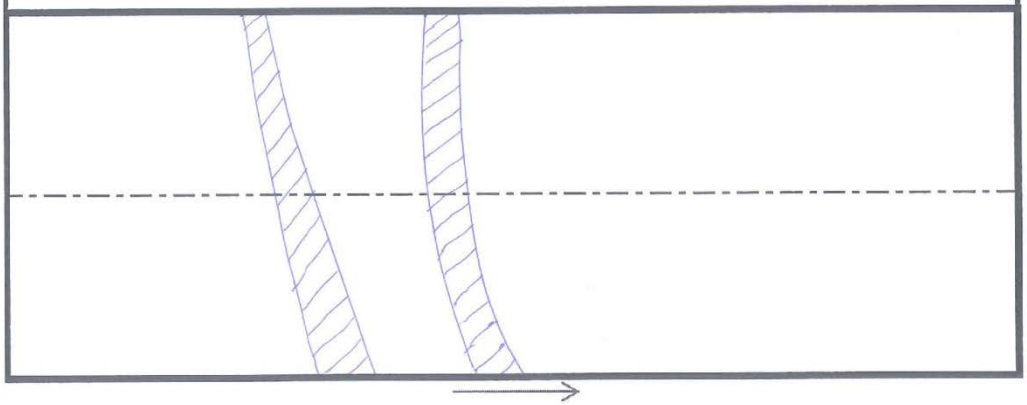
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1114
1115
1116
1117

DISTRESS CODE						
		11				
		7.5L				
		3.6M				
TOTAL SEVERITY	L	7.5				
	M	3.6				
	H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 11

BRANCH NAME: ACADEMIC STREET	BRANCH ID:	DATE: 17/6/2012
SECTION ID: ACA01	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 12	TO: 13	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 53	SECTION WIDTH: 7.8	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 23/7/1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

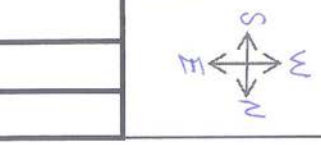
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

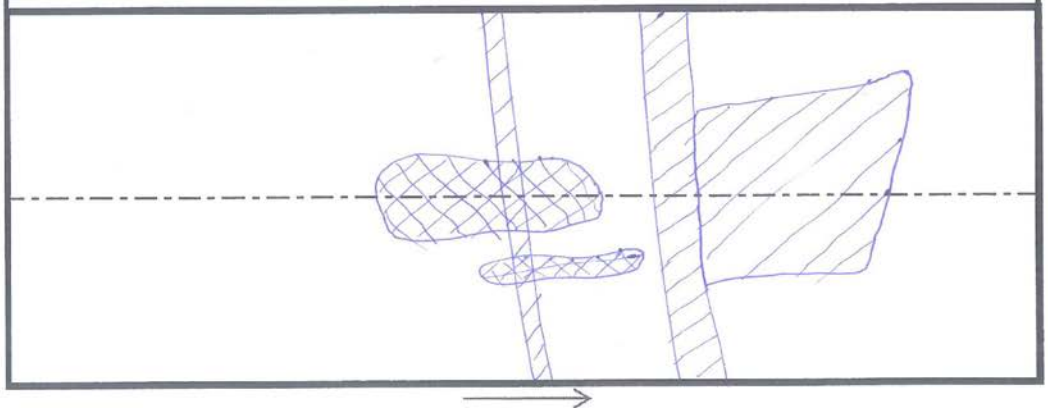
PHOTOGRAPH .jpg

DISTRESS CODE		1	11			
		15.7 H	3.3 H			
		12 H	8.3 M			
			23 H			
TOTAL SEVERITY	L					
	M		8.3			
	H	27.7	26.3			

1119
1120
1118
1121
1122
1123
1124



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 12

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 17/6/2012

SECTION ID: ACA 02 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 13 | TO: 15 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 212 | SECTION WIDTH: 9

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

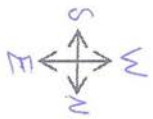
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE		7	3	17	10	
		4.7L	18L	0.3L	2.5L	
TOTAL SEVERITY	L	4.7	18	0.5	2.5	
	M					
	H					

1125
1126
1127
1128
1128



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 13

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/ 6 / 2012
SECTION ID: ACA 04	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 15	TO: 16	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 116	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5 / 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

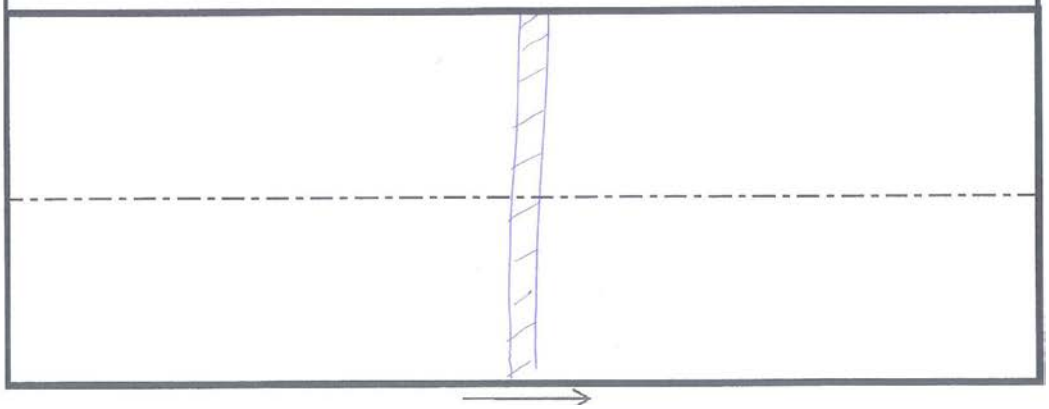
DISTRESS CODE					
	11				
	7.2M				

1129
1130
1131

TOTAL SEVERITY						
	L					
	M	7.2				
	H					

S
W E
N

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 14

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/ 6 / 2012
SECTION ID: ACA 06	NO. OF LANES: 2	INSPECTOR: BryarA.
FROM: 16	TO: 17	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 55	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5 / 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

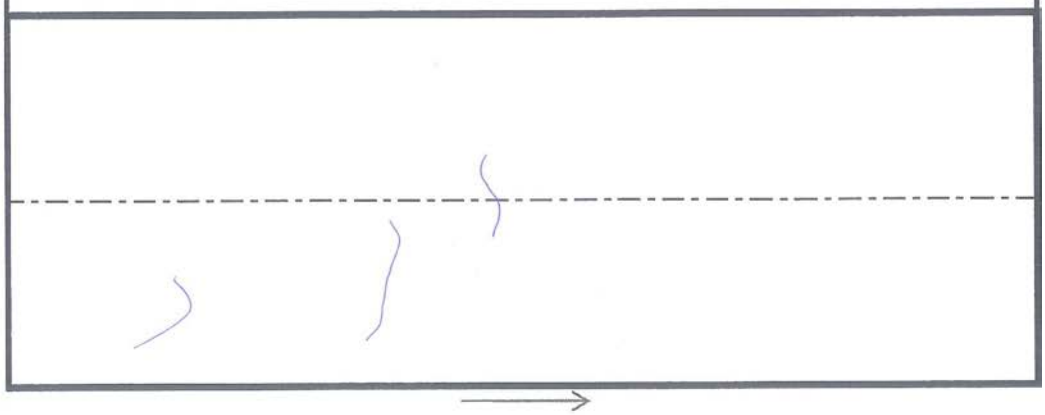
PHOTOGRAPH .jpg

1132
1133
1134

DISTRESS CODE					
	10				
	6.5L				
TOTAL SEVERITY L	6.5				
TOTAL SEVERITY M					
TOTAL SEVERITY H					

S
W E
N

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 15

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 17/6/2012

SECTION ID: ACA07 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 17 | TO: 11 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 77 | SECTION WIDTH: 8.6

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 11/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1135
1136

DISTRESS CODE		1	3			
		1 M	1.5 L			
		0.5 L				
		4.7 M				
		1.3 M				
TOTAL SEVERITY	L	0.5	1.5			
	M	7				
	H					

N
W E
S

COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 16

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17/ 6 / 2012
SECTION ID: ACA 08	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 29	TO: 17	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 139	SECTION WIDTH: 11.5	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/ 7 / 1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

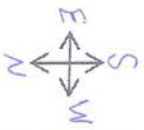
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1137
1138

DISTRESS CODE					
	3				
	2.4L				
TOTAL SEVERITY L	2.4				
TOTAL SEVERITY M					
TOTAL SEVERITY H					



COMMENT:

754

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 17

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 17 6 / 2012
SECTION ID: ACA 21	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 26	TO: 37	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 123	SECTION WIDTH: 8.8	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

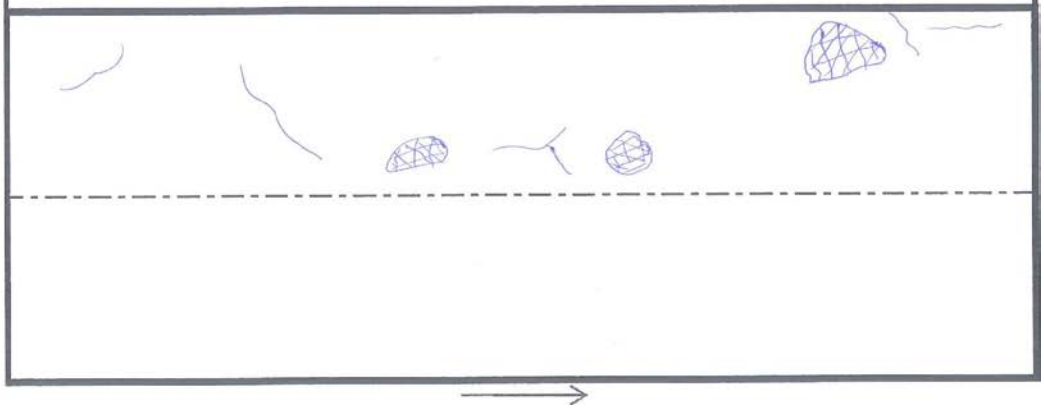
PHOTOGRAPH .jpg

DISTRESS CODE	17	1	10	7	
	0.5 L	0.5 M	4.2 L	2.7 L	
		0.6 L		2.5 L	
		2.2 H			
TOTAL SEVERITY L	0.5	0.6	4.2	5.2	
TOTAL SEVERITY M		0.5			
TOTAL SEVERITY H		2.2			

1142
1143
1144
1145

E S W N

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 18

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 17/6/2012

SECTION ID: ACA23 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 37 | TO: 41 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 136 | SECTION WIDTH: 8.8

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

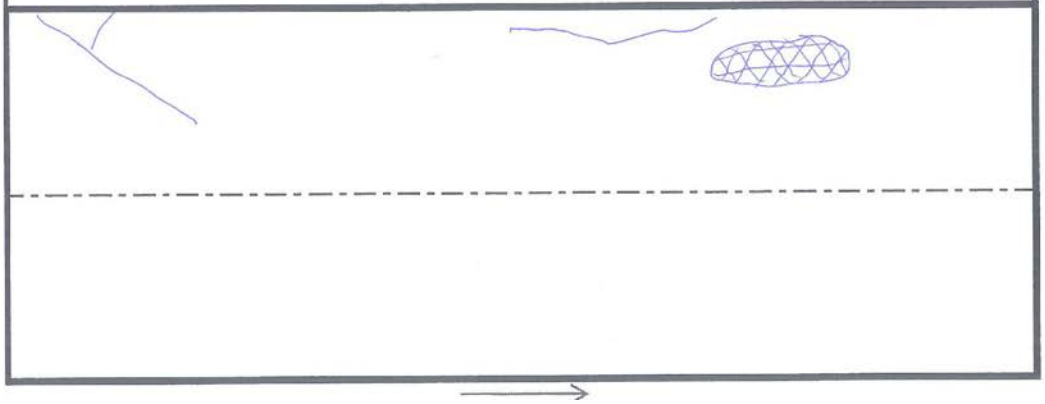
PHOTOGRAPH .jpg

1146
1147
1148

DISTRESS CODE					
	10	7	1		
	2.1 L	6.6 L	5 M		
TOTAL SEVERITY L	2.1	6.6			
TOTAL SEVERITY M			5		
TOTAL SEVERITY H					

E S W N

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 19

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/ 6 / 2012
SECTION ID: ACA 26	NO. OF LANES: 2	INSPECTOR: BryarA.
FROM: 41	TO: 40	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 76	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☒
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15/ 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

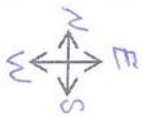
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1151

DISTRESS CODE					
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 20

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACA ST | DATE: 18/6/2012

SECTION ID: ACA 28 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 44 | TO: 40 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 62 | SECTION WIDTH: 7.2

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15/7/1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

DISTRESS CODE	3	10	1		
	1.8 L	2.8 M	5.32 H		
		1.8 L	1.6 H		

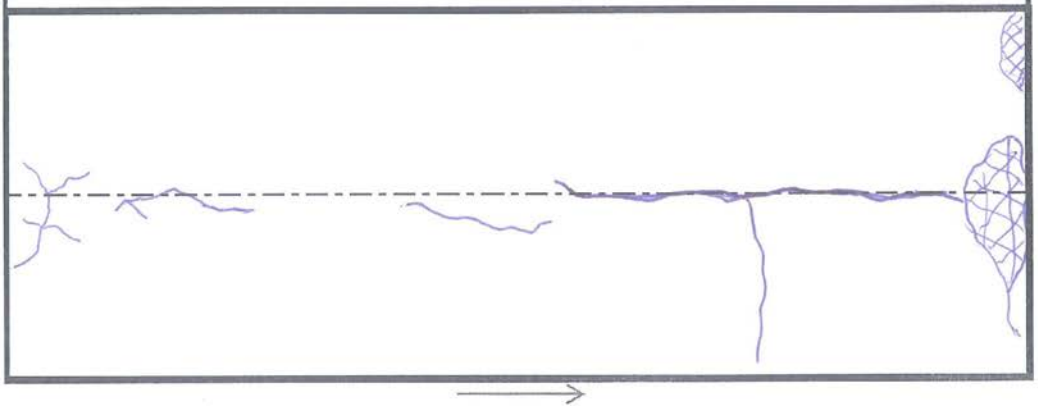
PHOTOGRAPH .jpg

1152
1153
1154
1155

TOTAL SEVERITY						
	L	1.8	1.8			
	M		2.8			
	H			6.92		

E
N S
W

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 21

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/6/2012
SECTION ID: ACA 27	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 41	TO: 44	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 85	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg 1156

DISTRESS CODE					
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H					

COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 22

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACA ST | DATE: 18/6/2012

SECTION ID: ACA 29 | NO. OF LANES: | INSPECTOR:

FROM: 43 | TO: 43 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 101 | SECTION WIDTH: 7.4

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/7/1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

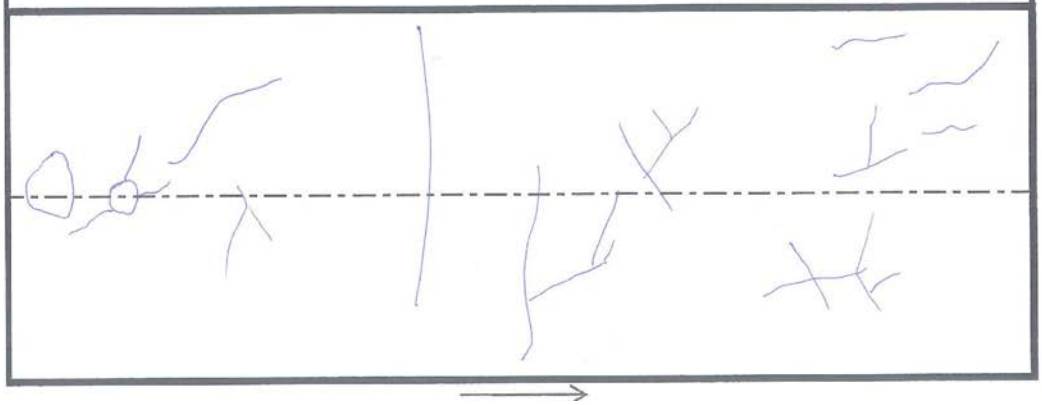
DRAINAGE: Y ☐ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE					
	10	13	3		
	15 L	1 H	23 L		
	6 L	1 L	50 M		
	12 L		14 L		
			120 L		
TOTAL SEVERITY L	33	1	157		
TOTAL SEVERITY M			50		
TOTAL SEVERITY H		1			

1157
1158
1159
1160
1164
1163

COMMENT: This section is a round about "law dept."



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 23

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 18 / 6 / 2012

SECTION ID: ACA 31 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 44 | TO: 47 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 309 | SECTION WIDTH: 8.7

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 20 / 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

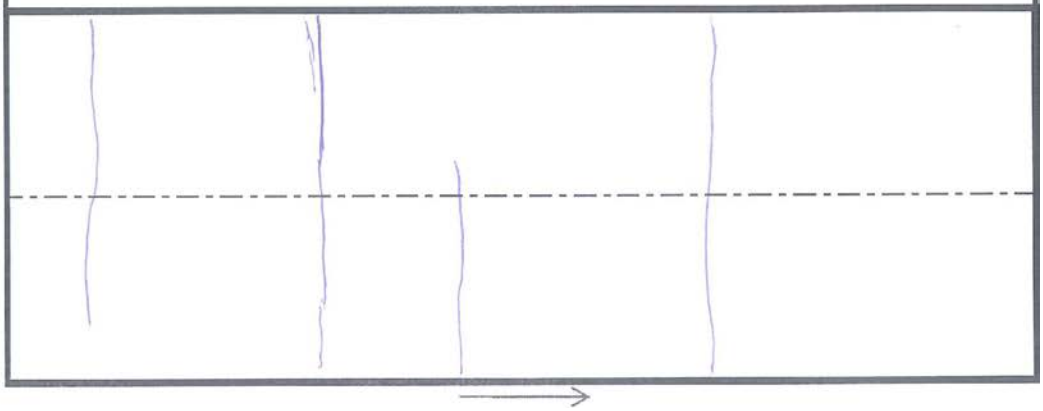
PHOTOGRAPH .jpg

DISTRESS CODE					
	10				
	7.5 L				
	4 L				
	3 M				
	7.2 L				
	8.5 L				
TOTAL SEVERITY L	27.2				
TOTAL SEVERITY M	3				
TOTAL SEVERITY H					

1165
1166
1167
1168

E
S
Z
M

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 24

BRANCH NAME: ACADEMIC STREET	BRANCH ID:	DATE: 18/6/2012
SECTION ID: ACA 32	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 46	TO: 47	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 60	SECTION WIDTH: 10	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5/8/2000

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

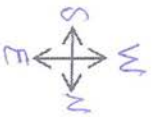
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE					
	1				
	2.9 L				

1170
1171

TOTAL SEVERITY						
	L					
	M					
	H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 25

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACA ST	DATE: 18/6/2012
SECTION ID: ACA 25	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 40	TO: 39	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 67	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

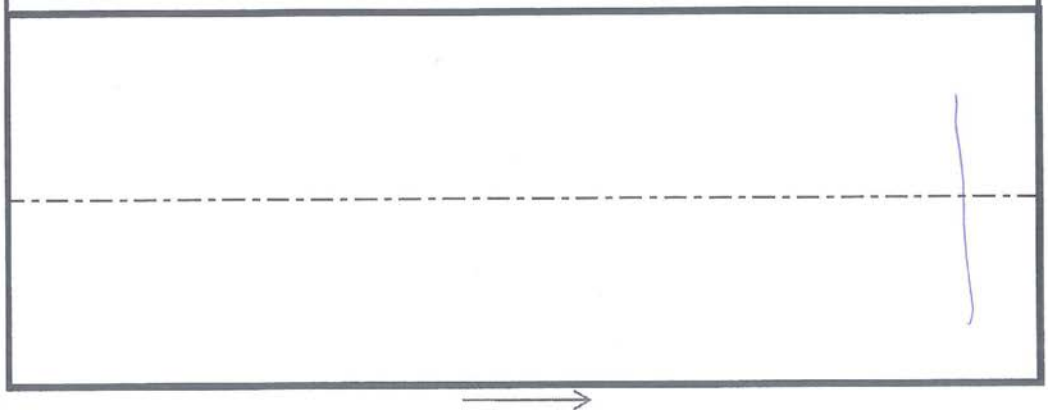
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE					
		10			
		6.2L			
TOTAL SEVERITY L		6.2			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

1172
1173
1174

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 26

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/6/2012
SECTION ID: ACA 24	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 39	TO: 38	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 78	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m	11. Patching & Util Cut Patching Sqm
2. Bleeding Sq m	12. Polished Aggregate Sq m
3. Block Cracking Sq m	13. Potholes Count
4. Bumps and Sags m	14. Railroad Crossing Sq m
5. Corrugation Sq m	15. Rutting Sq m
6. Depression Sq m	16. Shoving Sq m
7. Edge Cracking m	17. Slippage Cracking Sq m
8. Jt. Reflection Cracking m	18. Swell Sq m
9. Lane/Shoulder Drop Off m	19. Weathering/Ravelling Sq m
10. Long & Trans Cracking m	

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14/8/2003

MAINTENANCE: Y ☐ N ☒

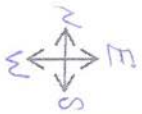
MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg 1175

DISTRESS CODE					
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 27

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/6/2012
SECTION ID: ACA 17	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 39	TO: 34	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 98	SECTION WIDTH: 8.7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 11/7/1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

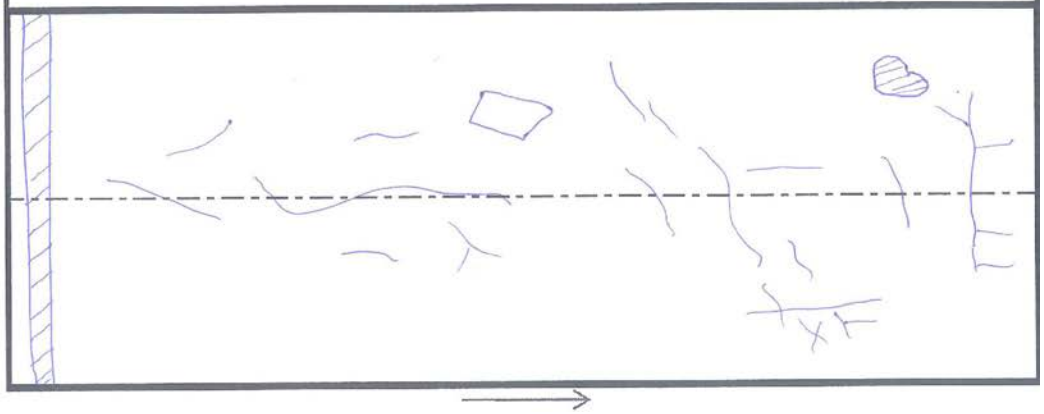
PHOTOGRAPH .jpg

DISTRESS CODE					
	11	10	3		
	8	29 L	14 L		
	0.5	7.5 L	20 L		
	0.3	5 L			
		6 L			
		1 L			
TOTAL SEVERITY L		48.5	34		
TOTAL SEVERITY M	9				
TOTAL SEVERITY H					

1176
1177
1178
1179

N W E S

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 28

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/6 / 2012
SECTION ID: ACA18	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 35	TO: 31	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 42	SECTION WIDTH: 11	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15/ 7/ 1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

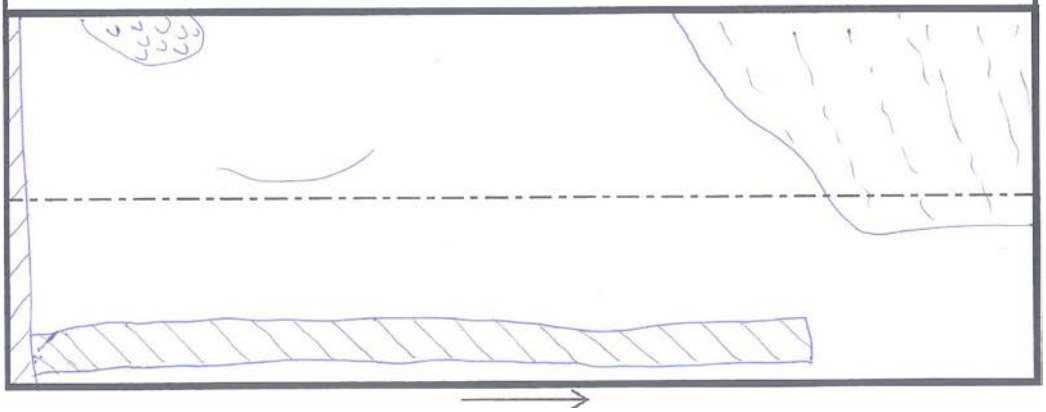
DISTRESS CODE	11	4	19	10	
	44M	5.3M	100 L	3 L	

1180
1181
1182
1183
1184

TOTAL SEVERITY						
	L			100	3	
	M	44	5.3			
	H					

N W S E

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 29

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACA ST | DATE: 18/6 / 2012

SECTION ID: ACA 16 | NO. OF LANES: 2 | INSPECTOR: Bayar A.

FROM: 33 | TO: 35 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 85 | SECTION WIDTH: 9.5

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/ 7 / 1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

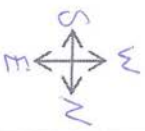
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

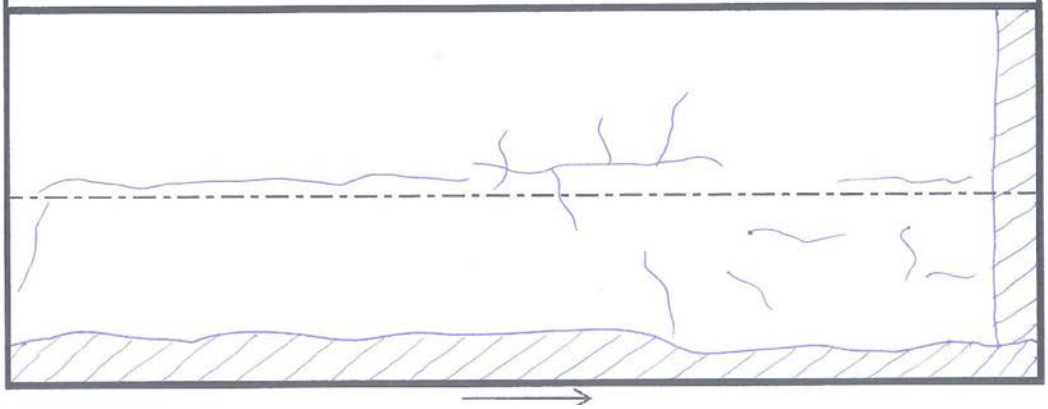
PHOTOGRAPH .jpg

DISTRESS CODE		10	11	3		
		19 L	120 M	150 M		
		4 M	9.5 L	11 L		
		30 L				
TOTAL SEVERITY	L	49	9.5	11		
	M	4	120	150		
	H					

1185
1186
1187
1188
1189



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 30

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/ 6 / 2012
SECTION ID: ACA 19	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 35	TO: 36	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 136	SECTION WIDTH: 9.5	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/ 7/ 1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

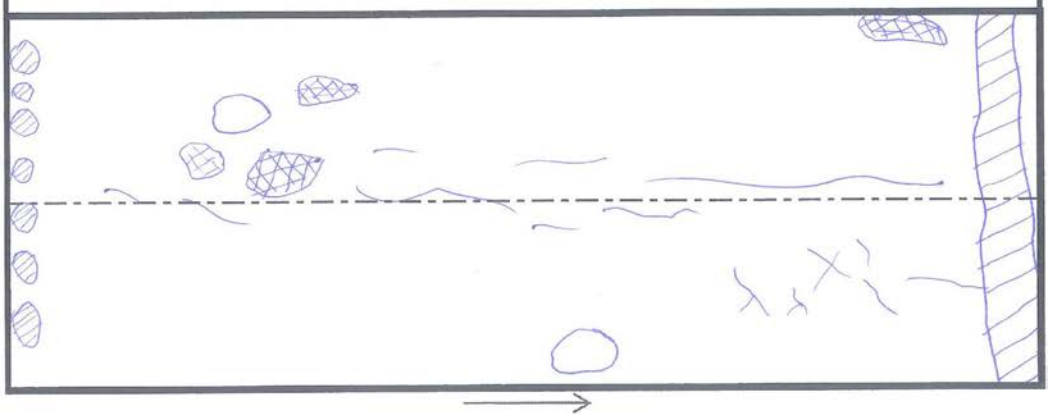
PHOTOGRAPH .jpg

DISTRESS CODE	11	10	1	13	3
	3 H	45 L	6.5 M	1 H	9 L
	10 M	45 L	3 L	1 H	
		10 L	1 M		
			3.5 H		
TOTAL SEVERITY L		100	3		9
TOTAL SEVERITY M	10		7.5		
TOTAL SEVERITY H	3		3.5	2	

1191
1192
1193
1194
1195
1196
1197
1198

S
W E
N

COMMENT:



103

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 31

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 18/6/2012
SECTION ID: ACA20	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 36	TO: 37	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 50	SECTION WIDTH: 9.5	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 19/7/1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

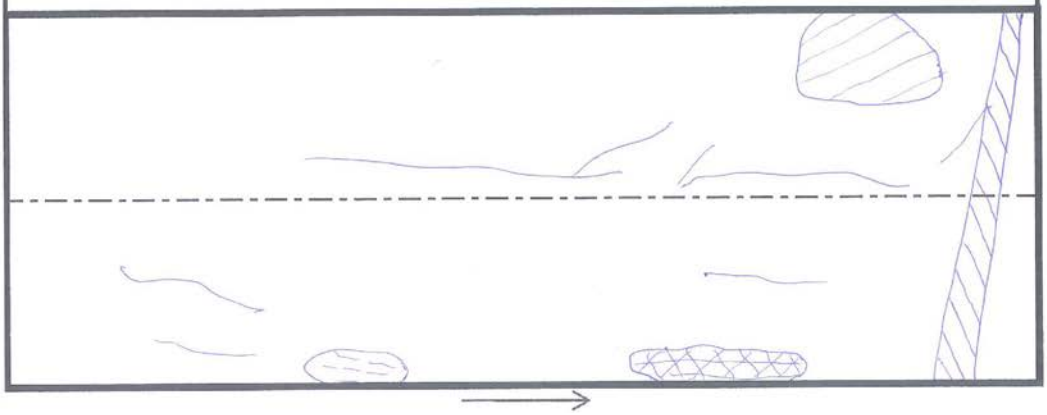
PHOTOGRAPH .jpg

1199
1200
1201
1202

DISTRESS CODE					
	10	6	11	1	
	25 L	2.5 M	4.5 M	5 M	
	35 L		7 H		
TOTAL SEVERITY L	60				
TOTAL SEVERITY M		2.5	4.5	5	
TOTAL SEVERITY H			7		

N S E W

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 32

BRANCH NAME: ACADEMIC STREET | BRANCH ID: ACAST | DATE: 18/6/2012

SECTION ID: ACA 03 | NO. OF LANES: 2 | INSPECTOR: Bryan A.

FROM: 36 | TO: 15 | FUNCTIONAL CLASS: Secondary

SECTION LENGTH: 245 | SECTION WIDTH: 5.8

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13/8/1992

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 19/1/2012

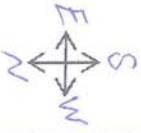
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1203
1204
1205
1206
1207

DISTRESS CODE		11	1	10		
		4.5 H	1.2 H	15 L		
		2.9 H	7 M	9 L		
		10 H	1 L	7 L		
		5.8 M	20 H			
		7 H	3 L			
		6 M	1 M			
		2.4 L	1 M			
		6 H				
		3.5 L				
		6 M				
TOTAL SEVERITY	L	5.9	4	31		
	M	17.8	9			
	H	30	21			



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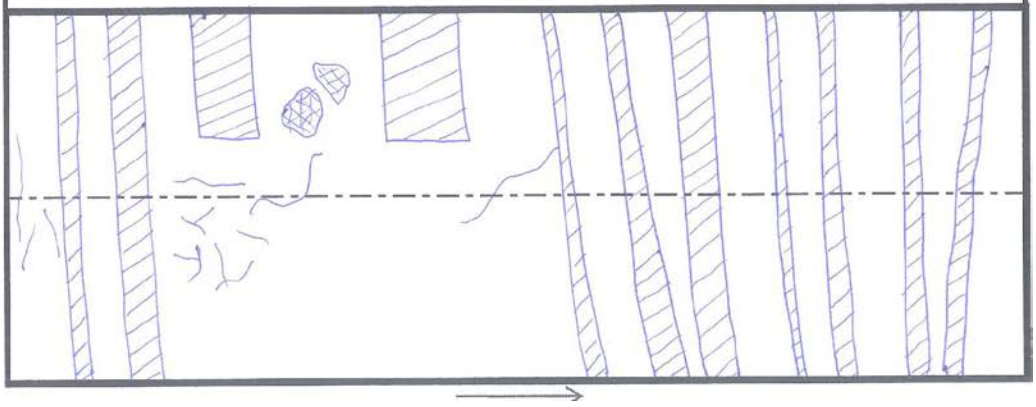


PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 33

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/6/2012
SECTION ID: DOR02	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 47	TO: 51	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 337	SECTION WIDTH: 10	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 16/7/1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 27/1/2012

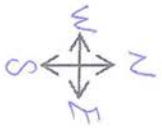
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

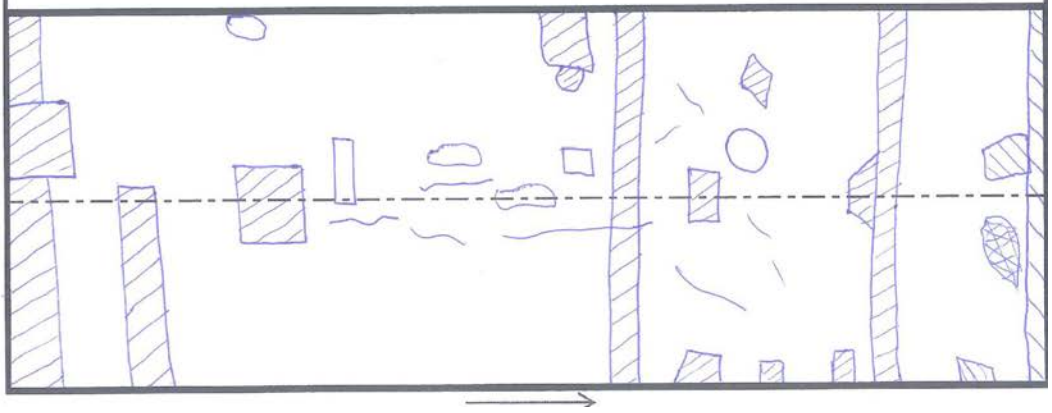
PHOTOGRAPH .jpg

DISTRESS CODE	11	13	10	1	
	8.5 M	1 L	2.8 M	3.2 H	
	2.8 H	1 M	2.5 M	3 M	
	5.4 M	1 H	5 L	3 M	
	1.5 L		6 M	10 M	
	3 H		42 L	5 L	
	5.6 H		4 L		
	8.5 H		25 L		
	3.5 L		24 L		
	40 M		30 L		
	28 L		8 M		
	8.3 L				
	2.9 M				
TOTAL SEVERITY L	41.3	1	130	5	
TOTAL SEVERITY M	56.8	1	19.3	16	
TOTAL SEVERITY H	19.9	1		3.2	

1212
1214
1217
1218
1220
1221
1222



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 34

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/ 6/ 2012
SECTION ID: DOR05	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 51	TO: 55	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 273	SECTION WIDTH: 9.4	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 20/ 7/ 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

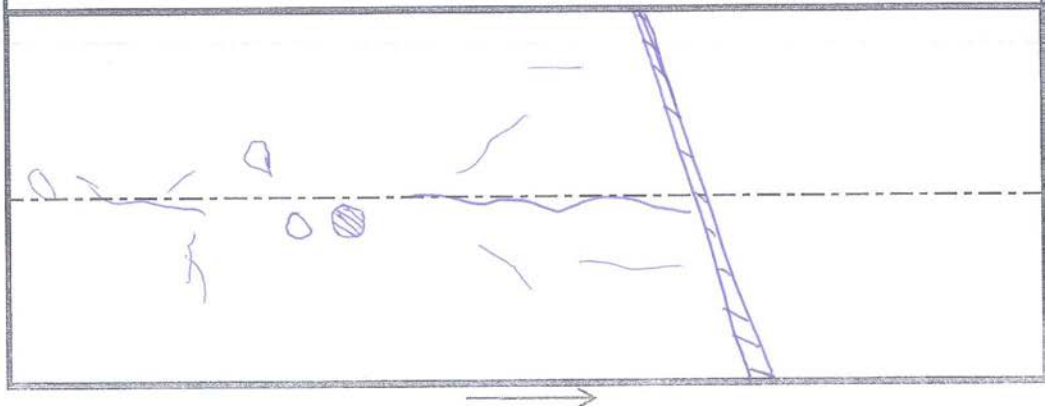
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1223
1224
1225

DISTRESS CODE						
		10	13	11		
		15 L	1 H	1 H		
		12 M	1 L	10 L		
		5 L				
		14 L				
TOTAL SEVERITY	L	34	1	10		
	M	12				
	H		1	1		

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 35

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/6/2012
SECTION ID: DOR 06	NO. OF LANES: 2	INSPECTOR: BryanA.
FROM: 51	TO: 52	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 267	SECTION WIDTH: 7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m	11. Patching & Util Cut Patching Sqm
2. Bleeding Sq m	12. Polished Aggregate Sq m
3. Block Cracking Sq m	13. Potholes Count
4. Bumps and Sags m	14. Railroad Crossing Sq m
5. Corrugation Sq m	15. Rutting Sq m
6. Depression Sq m	16. Shoving Sq m
7. Edge Cracking m	17. Slippage Cracking Sq m
8. Jt. Reflection Cracking m	18. Swell Sq m
9. Lane/Shoulder Drop Off m	19. Weathering/Ravelling Sq m
10. Long & Trans Cracking m	

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13/7/2001

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

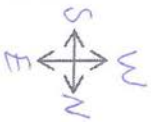
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

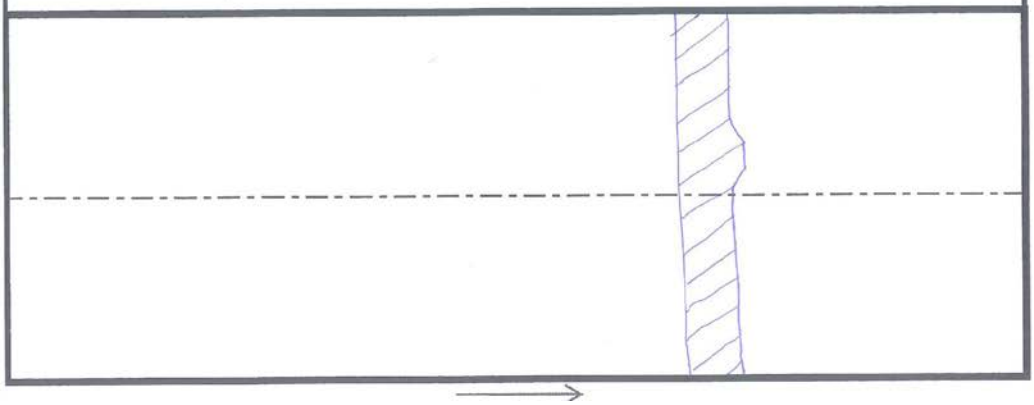
PHOTOGRAPH .jpg

1226
1227
1228

DISTRESS CODE					
	11				
	7M				
TOTAL SEVERITY L					
TOTAL SEVERITY M	7				
TOTAL SEVERITY H					



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 36

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/ 6/ 2012
SECTION ID: DOR 07	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 52	TO: 53	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 81	SECTION WIDTH: 7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 22/ 7/ 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

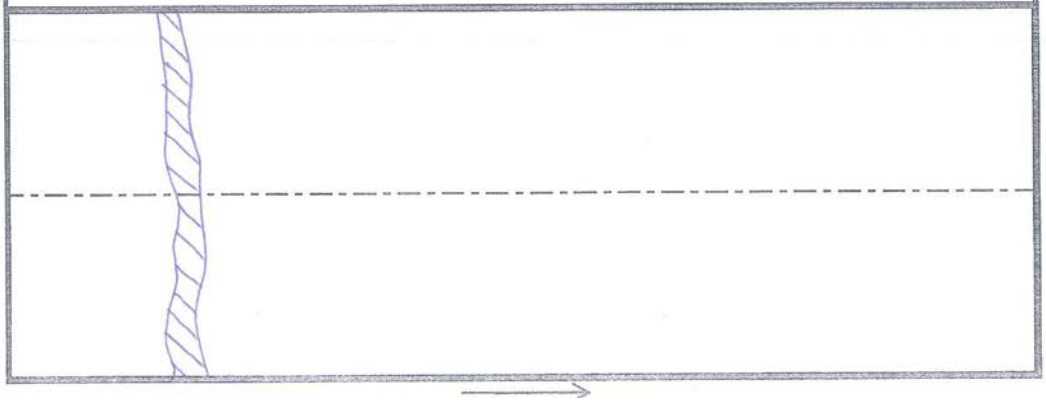
PHOTOGRAPH .jpg

1229
1230

DISTRESS CODE					
	11	6			
	3.5 L	8 M			

TOTAL SEVERITY						
	L	3.5				
	M		8			
	H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 37

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/6/2012
SECTION ID: DOR09	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 53	TO: 57	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 152	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 5/8/2007

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

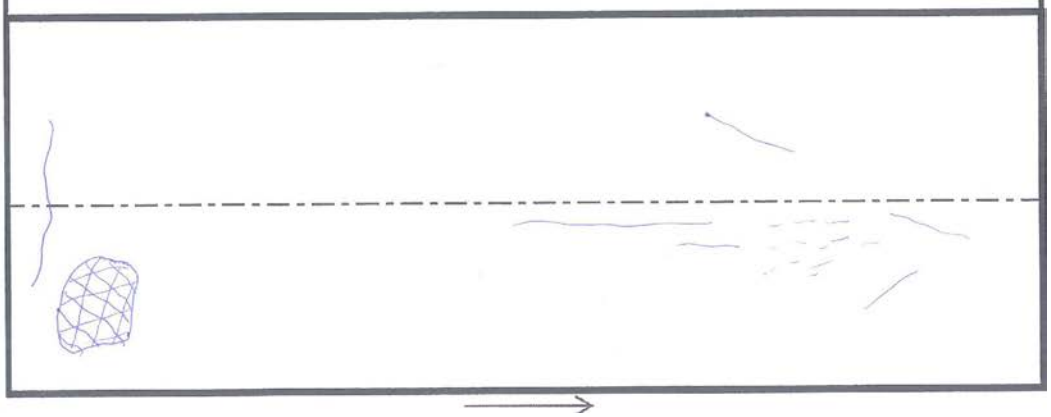
PHOTOGRAPH .jpg

1231
1232
1233

DISTRESS CODE					
	1	10			
	10L	10L			
TOTAL SEVERITY L	10	10			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

E W S N

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 38

BRANCH NAME: DORMITORY STREET	BRANCH ID: DOR ST	DATE: 19/ 6/ 2012
SECTION ID: DOR 11	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 56	TO: 58	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 100	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 6 / 8 / 2007

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

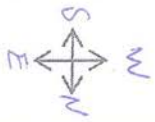
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1234

DISTRESS CODE					
	7				
	3L				
TOTAL SEVERITY L	3				
TOTAL SEVERITY M					
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 39

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/6/2012
SECTION ID: DOR 10	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 59	TO: 54	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 160	SECTION WIDTH: 7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 17/8/2003

MAINTENANCE: Y ☐ N ☒

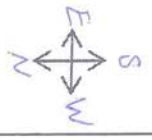
MAINTENANCE DATE: / /

SHOULDER: Y ☐ N ☒

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg: 1235, 1236

DISTRESS CODE					
	1				
	4.5 M				
TOTAL SEVERITY L					
TOTAL SEVERITY M	4.5				
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 40

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/ 6 / 2012
SECTION ID: DOR 08	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 53	TO: 54	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 60	SECTION WIDTH: 7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 22/ 7/ 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

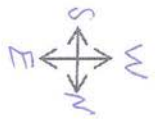
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1237
1238

DISTRESS CODE					
6					
6 L					
12 M					
TOTAL SEVERITY L	6				
TOTAL SEVERITY M	12				
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 41

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/6/2012
SECTION ID: DOR 04	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 54	TO: 49	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 314	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 26/7/1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 26/1/2012

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

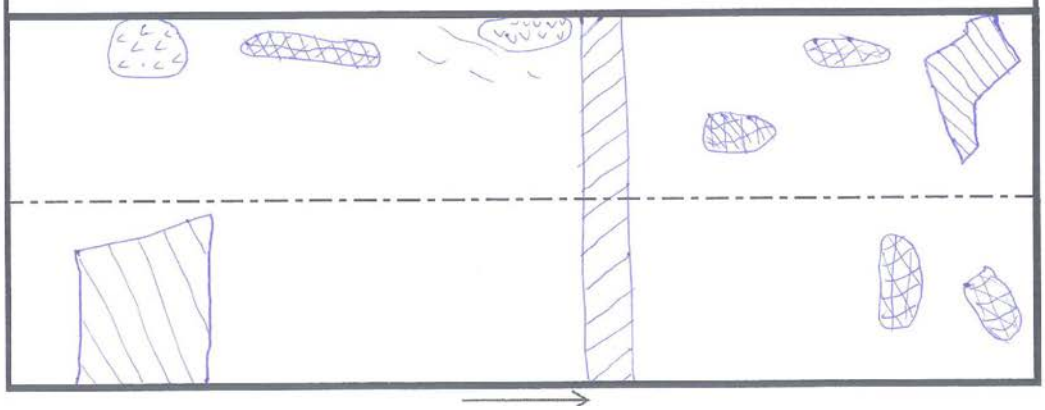
PHOTOGRAPH .jpg

DISTRESS CODE	11	6	1	10	
	108 H	21 M	1 L	18 L	
	7.5 M		6 M	25 L	
	15 L		1.8 L		
	32 M				
TOTAL SEVERITY L	15		3	43	
TOTAL SEVERITY M	39.5	21	6		
TOTAL SEVERITY H	108				

1239
1240
1241
1242
1243
1244
1246

N W E S

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 42

BRANCH NAME: SPORT STREET | BRANCH ID: SPST | DATE: 19/6/2012

SECTION ID: SP05 | NO. OF LANES: 2 | INSPECTOR: Bryan A.

FROM: 49 | TO: 42 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 420 | SECTION WIDTH: 10

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 16/7/1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 26/1/2012

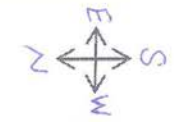
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

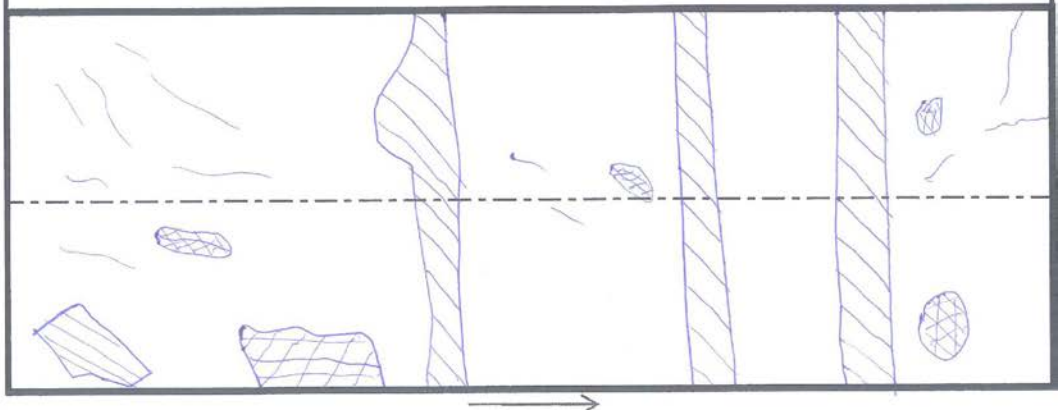
PHOTOGRAPH .jpg

DISTRESS CODE	11	10	1		
	25 L	30 L	19 H		
	33 L	12 M	3 L		
	10 M	30 L	10 H		
		10 L	0.5 L		
		3 M	2.5 L		
		5 L			
		25 L			
TOTAL SEVERITY L	58	100	6		
TOTAL SEVERITY M	10	15			
TOTAL SEVERITY H			29		

1248
1249
1250
1251
1252



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 43

BRANCH NAME: SPORT STREET	BRANCH ID: SPST	DATE: 19/ 6/ 2012
SECTION ID: SP06	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 42	TO: 28	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 403	SECTION WIDTH: 8.7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 20/ 8 / 2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

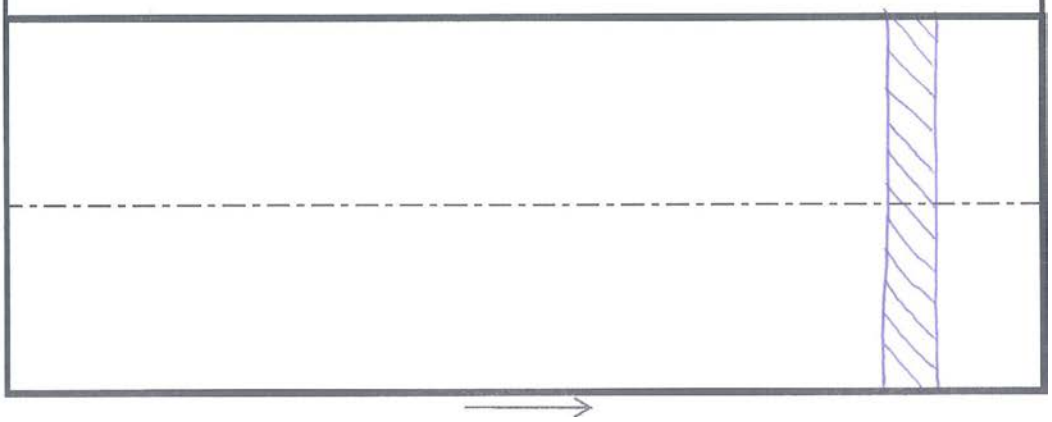
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1253
1254

DISTRESS CODE					
	11				
	9 M				
TOTAL SEVERITY L					
TOTAL SEVERITY M	9				
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 44

BRANCH NAME: DORMITORY STREET	BRANCH ID: DORST	DATE: 19/6/2012
SECTION ID: DOR01	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 47	TO: 48	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 282	SECTION WIDTH: 10	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13/7/1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

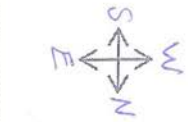
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1255
1257
1258
1259
1260

DISTRESS CODE					
	10	3	1	11	
	35 L	22 M	3 M	9 M	
	16 L		1 H	18 M	
	25 M		6 M		
	15 L		3 L		
	13 L				
	15 L				
	17 L				
	2.5 M				
	3 L				
TOTAL SEVERITY L	114		3		
TOTAL SEVERITY M	27.5	22	9	27	
TOTAL SEVERITY H			1		



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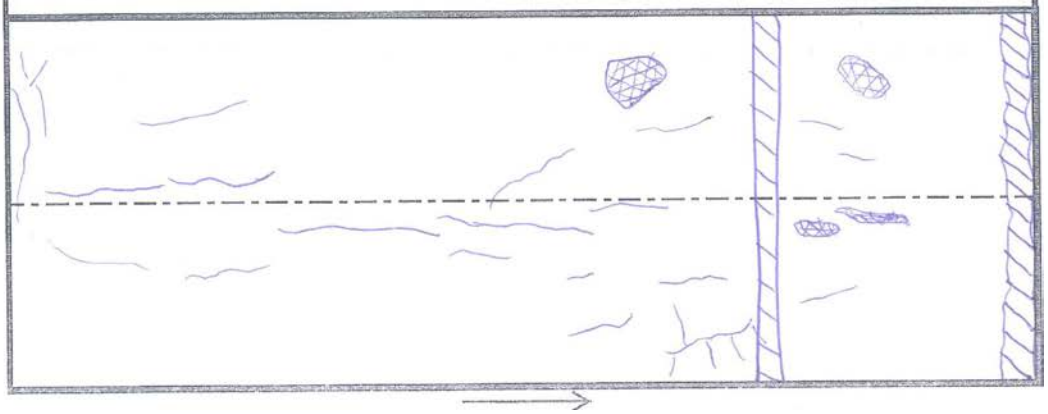


PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 45

BRANCH NAME: DORMITORY STREET	BRANCH ID: DOR ST	DATE: 19/ 6/ 2012
SECTION ID: DOR03	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 52	TO: 48	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 372	SECTION WIDTH: 7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☐ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14/ 7/ 1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 14/ 6/ 2012

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

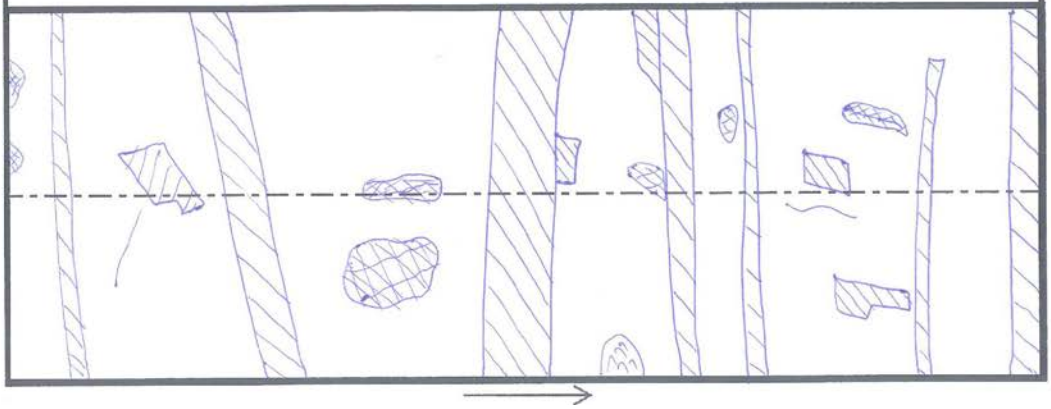
PHOTOGRAPH .jpg

DISTRESS CODE	11	10	1	6	
	0.8 L	1.5 L	10 H	15 H	
	3.5 L	5 L	12 M	10 M	
	8.5 M		1 L		
	7 H		2.5 M		
	23 M		20 M		
	2 L		15 L		
	3.5 H				
	10 L				
	17 L				
	12 L				
	23 L				
TOTAL SEVERITY L	80	6.5	16		
TOTAL SEVERITY M	31.5		34.5	10	
TOTAL SEVERITY H	3.5		10	15	

1261
1262
1263
1264
1265
1266
1267
1268

N W E S

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 46

BRANCH NAME: SPORT STREET	BRANCH ID: SPST	DATE: 19/6/2012
SECTION ID: SP04	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 48	TO: 49	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 197	SECTION WIDTH: 10	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 22/7/1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

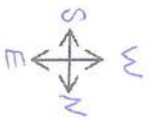
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

DISTRESS CODE					
	10	1	11	13	
	20 L	20 M	3 L	1 H	
	7 L	8 L		2 L	
		5 H		1 M	
		7 L			
		10 M			
TOTAL SEVERITY L	27 L	15	3	2	
TOTAL SEVERITY M		30		1	
TOTAL SEVERITY H		5		1	

PHOTOGRAPH .jpg

1269
1271
1273
1274
1275
1276



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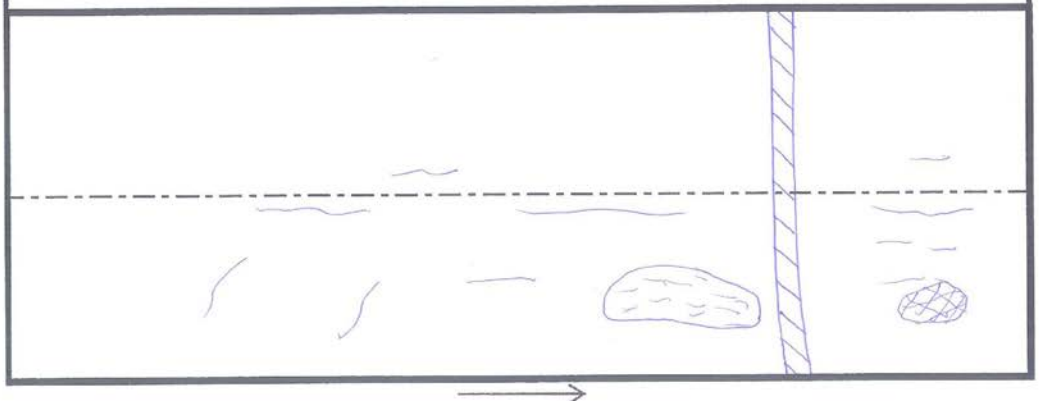


PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 47

BRANCH NAME: SPORT STREET	BRANCH ID: SPST	DATE: 19/6/2012
SECTION ID: SP03	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 48	TO: 45	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 157	SECTION WIDTH: 6.6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13/7/1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 21/5/2012

SHOULDER: Y ☒ N ☐

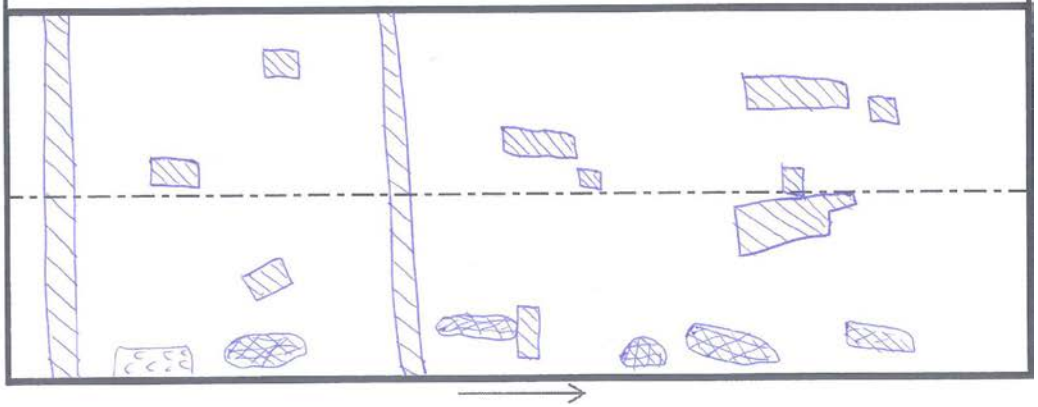
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg: 1277, 1278, 1279, 1280, 1281

DISTRESS CODE	11	1			
	9 L	0.8 L			
	1.5 L	8 L			
	4 L	21 M			
	3.5 L	1 L			
	37 L	1 L			
	15 M	8.5 M			
	15 L	6 L			
		4 L			
TOTAL SEVERITY L	70	14.8			
TOTAL SEVERITY M	15	29.5			
TOTAL SEVERITY H					

N W S E

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 48

BRANCH NAME: SPORT STREET | BRANCH ID: SPST | DATE: 19 / 6 / 2012

SECTION ID: SP02 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 45 | TO: 27 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 354 | SECTION WIDTH: 6.6

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13 / 7 / 1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 24 / 1 / 2012

SHOULDER: Y ☒ N ☐

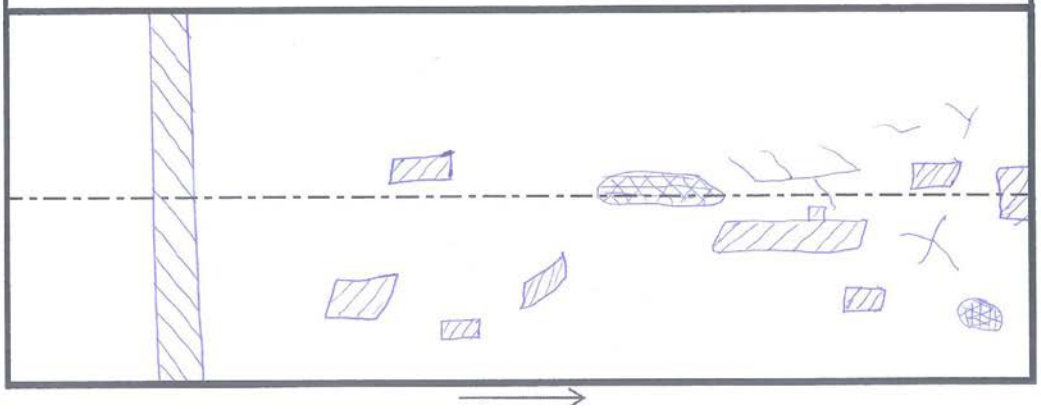
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1282
1283
1284

DISTRESS CODE					
	11	1	3	10	
	12 L	14 L	19 L	20 L	
	2.5 H	8 M	6 L	5 M	
	10 M	2 H			
	33 L				
	5 L				
	15 H				
	4 H				
	2 M				
TOTAL SEVERITY L	55	14	25	20	
TOTAL SEVERITY M	12	8		5	
TOTAL SEVERITY H	21.5	2			

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 49

BRANCH NAME: SPORT STREET	BRANCH ID: SPST	DATE: 20/6/2012
SECTION ID: SP01	NO. OF LANES:	INSPECTOR: Bryar A.
FROM: 25	TO:	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 97	SECTION WIDTH: 7.8	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☐ N ☒

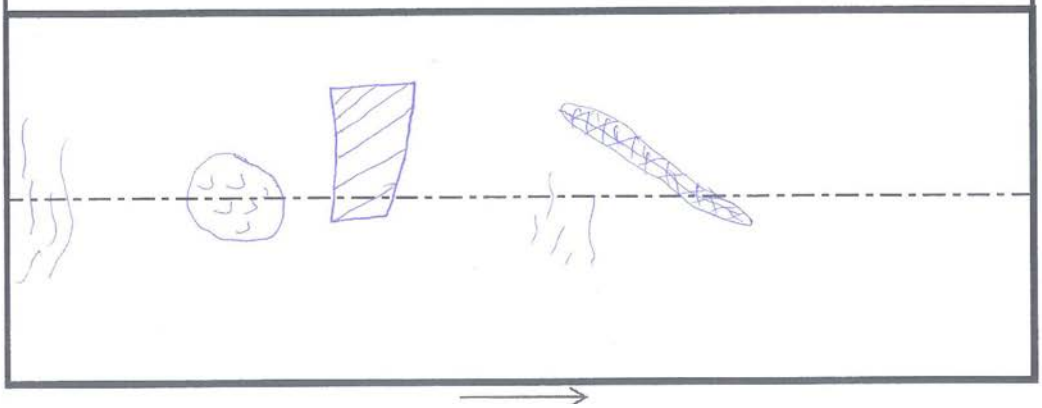
DRAINAGE: Y ☐ N ☒

DISTRESS CODE					
	10	4	11	1	
	3.5L	3.5M	9 L	2.5M	
	5 L				
TOTAL SEVERITY L	8.5		9		
TOTAL SEVERITY M		3.5		2.5	
TOTAL SEVERITY H					

PHOTOGRAPH .jpg

1286
1287
1288
1289

COMMENT: This section is round about closer to LaLa Mustafa pasha Hall.



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 50

BRANCH NAME: ACADEMIC STREET	BRANCH ID: ACAST	DATE: 20/ 6 / 2012
SECTION ID: ACA 05	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 30	TO: 16	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 124	SECTION WIDTH: 8.5	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☒ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 8 / 8 / 2003

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 12 / 6 / 2012

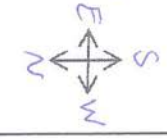
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

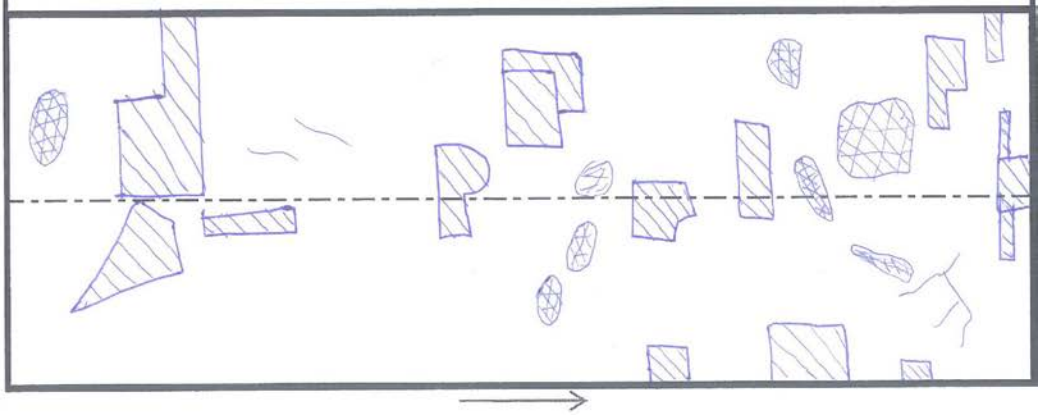
PHOTOGRAPH .jpg

DISTRESS CODE	1	11	10	3	
	4 H	30 L	11 L	20 L	
	1.5 M	10.5 L	7.5 L		
	1.5 M	24 L			
	4 H	4 L			
	28 H	2 M			
	4 M	20 M			
	24 M	24 L			
	15 M	7.5 L			
	6 M	8 M			
	2.2 H	8 L			
TOTAL SEVERITY L		108	18	20	
TOTAL SEVERITY M	52	30			
TOTAL SEVERITY H	38.2				

1290
1291
1292
1293
1294
1297
1298
1302
1303



COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 51

BRANCH NAME: SOUTH STREET | BRANCH ID: SST | DATE: 20/6/2012

SECTION ID: S08 | NO. OF LANES: 2 | INSPECTOR: Bryar A.

FROM: 16 | TO: 8 | FUNCTIONAL CLASS: Primary

SECTION LENGTH: 157 | SECTION WIDTH: 9

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 1/7/1992

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 14/6/2012

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

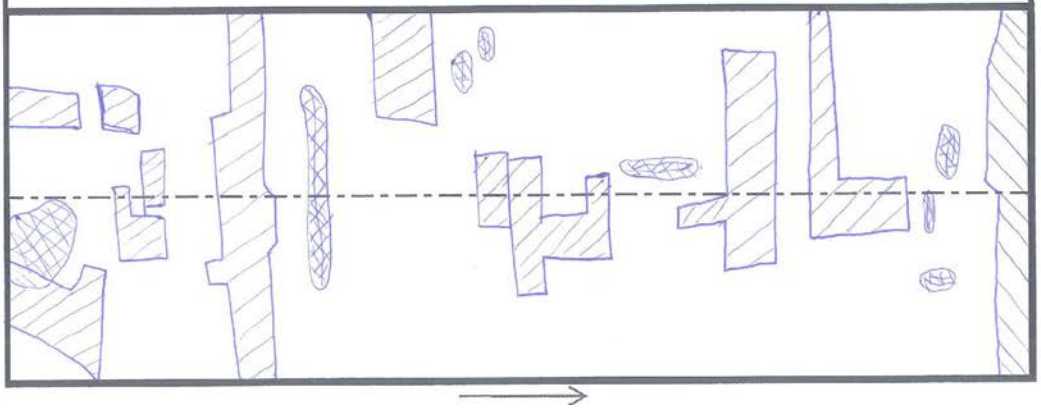
PHOTOGRAPH .jpg

DISTRESS CODE	1	11			
	6 M	65 M			
	21 M	38 L			
	6 M	32 M			
	14 M	60 L			
	15 M	110 L			
		58 L			
		57 L			
TOTAL SEVERITY L		323			
TOTAL SEVERITY M	62	97			
TOTAL SEVERITY H					

1304
1305
1307
1308

N S E

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 52

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 20/6/2012
SECTION ID: S07	NO. OF LANES: 2	INSPECTOR: BryarA.
FROM: 8	TO: 3	FUNCTIONAL CLASS: Primary
SECTION LENGTH: 160	SECTION WIDTH: 8.5	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 1 / 7/ 1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

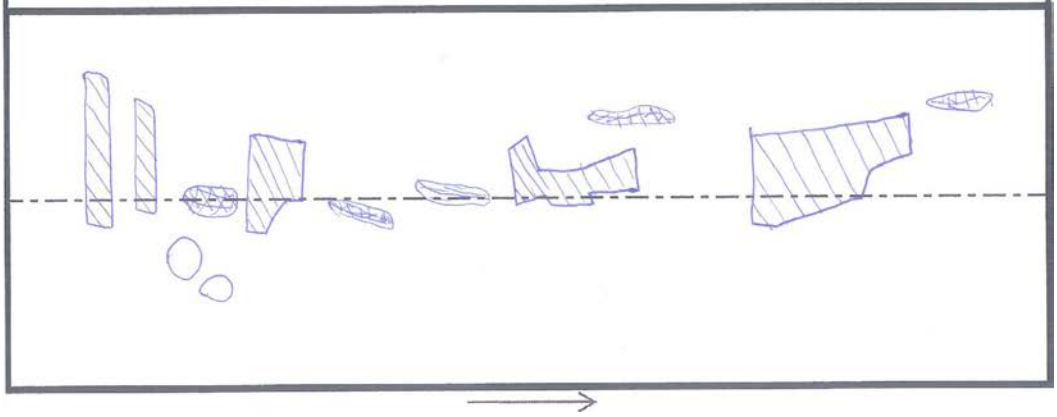
PHOTOGRAPH .jpg

1309
1310
1311
1312

DISTRESS CODE		11	13	1		
		35 M	1 L	7 L		
		56 L	1 L	7.5 L		
			1 M	8.5 M		
				30 M		
				5 M		
TOTAL SEVERITY	L	56	2	14.5		
	M	35	1	43.5		
	H					

N E S W

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 53

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 20/6/2012
SECTION ID: S05	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 8	TO: 10	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 213	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 21/8/1995

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: 14/6/2012

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

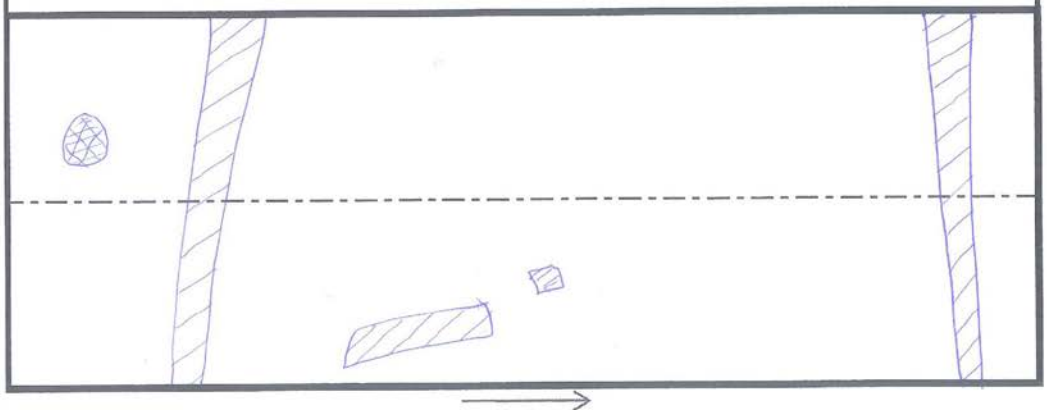
DISTRESS CODE					
	1	11	3		
	3M	26 L	4M		
		14 L			
		1 H			
		8 H			
TOTAL SEVERITY L		40			
TOTAL SEVERITY M	3		4		
TOTAL SEVERITY H		9			

PHOTOGRAPH .jpg

1313
1314
1315
1316
1317
1318
1319

N
E
W
S

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 54

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 20/6/2012
SECTION ID: S04	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 10	TO: 9	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 98	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 8/8/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

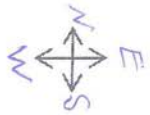
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1320

DISTRESS CODE					
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 55

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 20/6 / 2012
SECTION ID: S03	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 9	TO: 14	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 84	SECTION WIDTH: 8.6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15/ 8/ 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

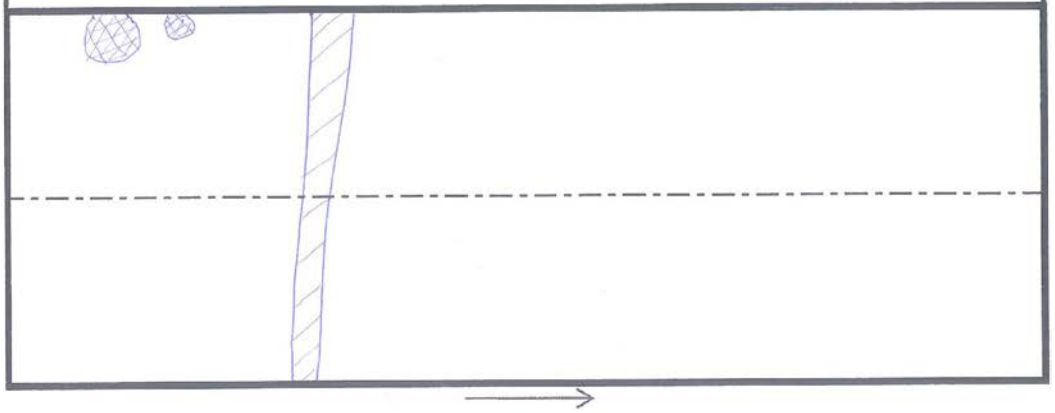
PHOTOGRAPH .jpg

DISTRESS CODE					
	1	11	13		
	2 M	9 H	1 H		
	0.8 M	1.8 H			
TOTAL SEVERITY L					
TOTAL SEVERITY M	2.8				
TOTAL SEVERITY H		10.8	1		

1321
1322
1323
1324

E
W
N

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 56

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 20/6/2012
SECTION ID: S02	NO. OF LANES: 2	INSPECTOR: Bryan A.
FROM: 7	TO: 9	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 70	SECTION WIDTH: 8.6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m	11. Patching & Util Cut Patching Sqm
2. Bleeding Sq m	12. Polished Aggregate Sq m
3. Block Cracking Sq m	13. Potholes Count
4. Bumps and Sags m	14. Railroad Crossing Sq m
5. Corrugation Sq m	15. Rutting Sq m
6. Depression Sq m	16. Shoving Sq m
7. Edge Cracking m	17. Slippage Cracking Sq m
8. Jt. Reflection Cracking m	18. Swell Sq m
9. Lane/Shoulder Drop Off m	19. Weathering/Ravelling Sq m
10. Long & Trans Cracking m	

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15/8/1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

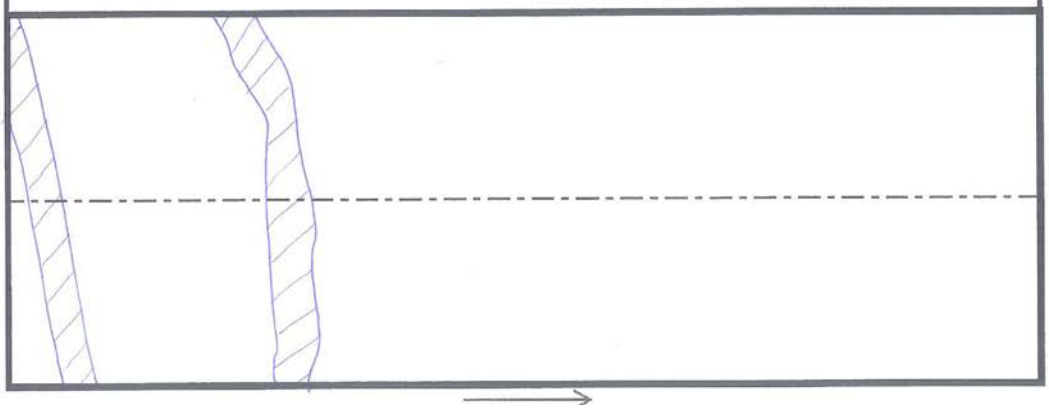
PHOTOGRAPH .jpg

1332
1333
1334

DISTRESS CODE					
	11				
	8 H				
	11 L				

TOTAL SEVERITY						
	L	11				
	M					
	H	8				

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 57

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 20/6/2012
SECTION ID: S01	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 13	TO: 6	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 138	SECTION WIDTH: 6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m	11. Patching & Util Cut Patching Sqm
2. Bleeding Sq m	12. Polished Aggregate Sq m
3. Block Cracking Sq m	13. Potholes Count
4. Bumps and Sags m	14. Railroad Crossing Sq m
5. Corrugation Sq m	15. Rutting Sq m
6. Depression Sq m	16. Shoving Sq m
7. Edge Cracking m	17. Slippage Cracking Sq m
8. Jt. Reflection Cracking m	18. Swell Sq m
9. Lane/Shoulder Drop Off m	19. Weathering/Ravelling Sq m
10. Long & Trans Cracking m	

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 20/7/2001

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

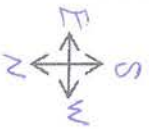
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE					
	11				
	40 H				
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H	40				

1326
1327
1328
1329
1330



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 58

BRANCH NAME: PARKING OF CC	BRANCH ID: PCC	DATE: 2016 / 2012
SECTION ID: PCC 01	NO. OF LANES:	INSPECTOR: Bryar A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 58	SECTION WIDTH: 21.6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 6 / 8 / 1992

MAINTENANCE: Y ☐ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

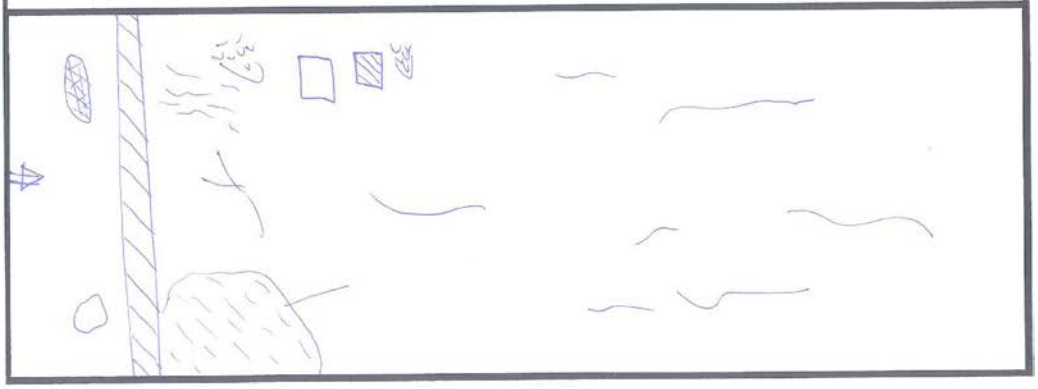
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE	13	1	11	10	4
	1 H	2.5 M	8 M	18 L	11 M
	3 H	2 M		10 L	7 M
				60 L	1 H
TOTAL SEVERITY L				88	
TOTAL SEVERITY M		4.5	8		18
TOTAL SEVERITY H	4				1

1350
1351
1352
1353
1354
1355
1356
1357
1358

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 59

BRANCH NAME: PARKING OF RECTOR	BRANCH ID: PRECT	DATE: 20/6/2012
SECTION ID: PRECT01	NO. OF LANES:	INSPECTOR: Bryar A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 40	SECTION WIDTH: 28	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 4/8/1989

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

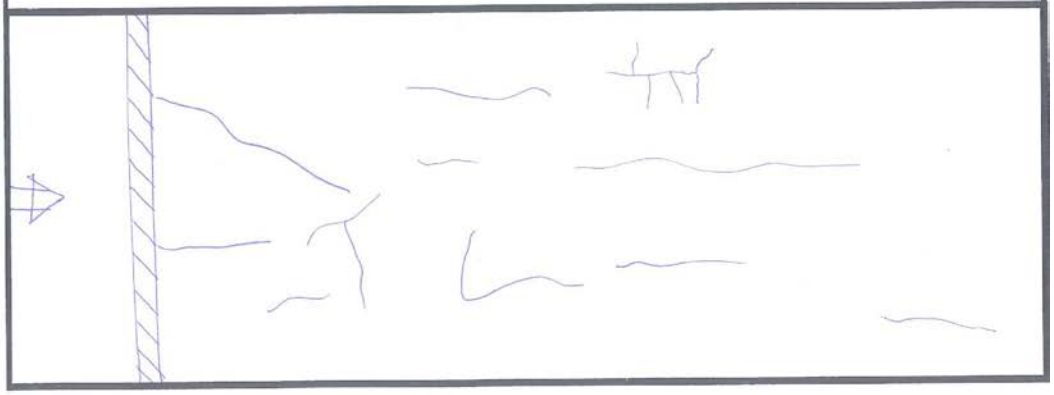
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1359
1360
1361
1362

DISTRESS CODE					
	11	10	3		
	2 H	100 L	30 L		
	12 L				
TOTAL SEVERITY L	12	100	30		
TOTAL SEVERITY M					
TOTAL SEVERITY H	2H				

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 60

BRANCH NAME: PARKING OF MECHANICAL DPT	BRANCH ID: PMECH	DATE: 20/6/2012
SECTION ID: PMECH01	NO. OF LANES:	INSPECTOR: Bryan A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 56	SECTION WIDTH: 12.8	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 21/8/1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

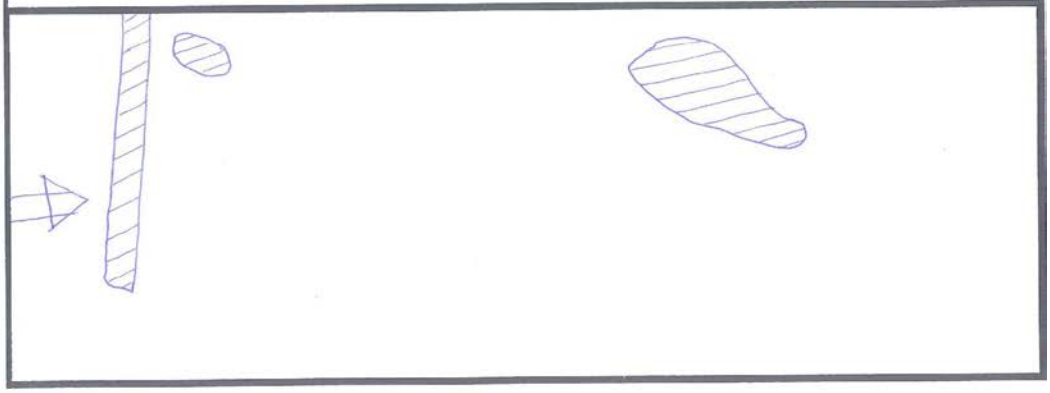
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1363
1364
1365
1366
1367

DISTRESS CODE					
	11				
	3.6 L				
	4 M				
	4.5 M				
TOTAL SEVERITY L	3.6				
TOTAL SEVERITY M	8.5				
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 61

BRANCH NAME: PARKING OF IT DPT | BRANCH ID: PIT | DATE: 20/ 6 / 2012

SECTION ID: PIT 01 | NO. OF LANES: | INSPECTOR: Bryar A.

FROM: | TO: | FUNCTIONAL CLASS

SECTION LENGTH: 39 | SECTION WIDTH: 17.5

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 23/ 6 / 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

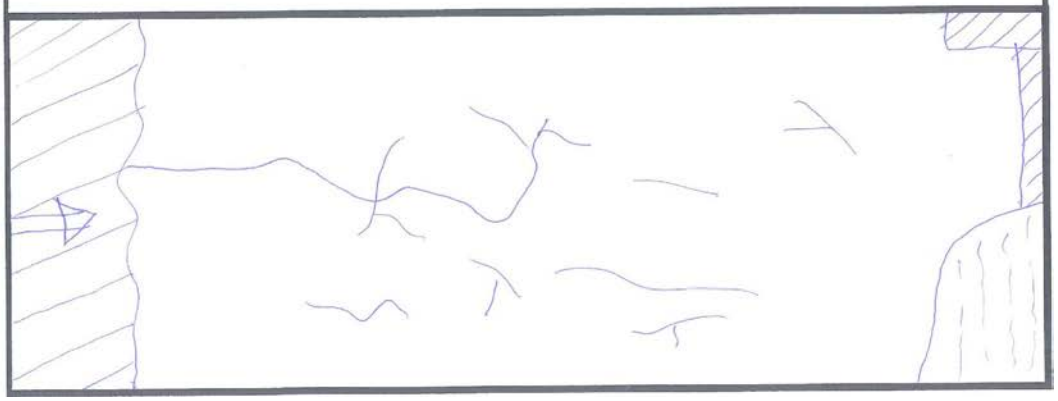
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE		11	10	3	19	
		22 L	5 L	40 L	30 L	
		3 L	22 L			
TOTAL SEVERITY	L	25	27	40	30	
	M					
	H					

1368
1369
1370
1371

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 62

BRANCH NAME: PARKING OF REGISTER	BRANCH ID: PREGIST	DATE: 20/ 6 / 2012
SECTION ID: P REGIST 01	NO. OF LANES:	INSPECTOR:
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 42	SECTION WIDTH: 17	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14 / 7 / 2001

MAINTENANCE: Y ☐ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☐ N ☐

DRAINAGE: Y ☐ N ☐

PHOTOGRAPH .jpg

1374
1375

DISTRESS CODE					
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H					

COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 63

BRANCH NAME: PARKING OF LIBRARY	BRANCH ID: PLIB	DATE: 20/6 / 2012
SECTION ID: PLIB01	NO. OF LANES:	INSPECTOR:
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 145	SECTION WIDTH: 5.7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 18 / 8 / 1995

MAINTENANCE: Y ☐ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☐ N ☒

DRAINAGE: Y ☐ N ☒

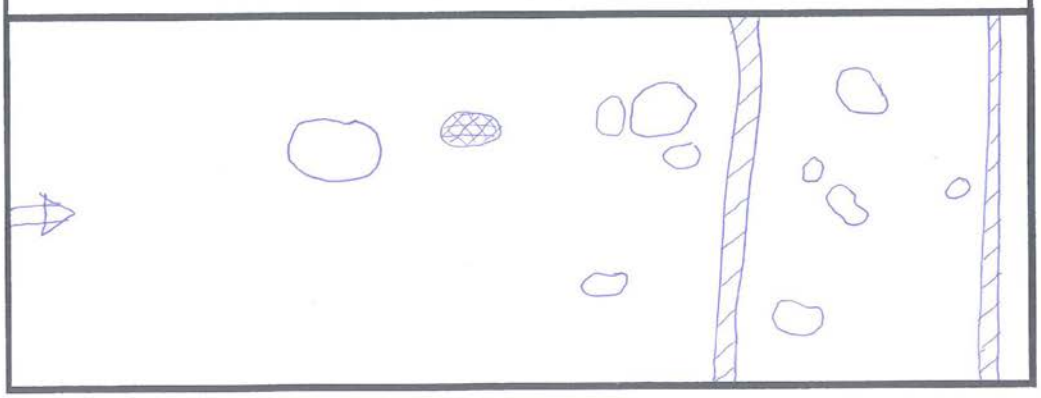
DISTRESS CODE					
13	1	11			
1 H	1.5L	8M			
1 H					
2 M					
1 M					
1 L					
1 L					
1 L					
1 L					

PHOTOGRAPH .jpg

1376
1377
1378
1379
1380
1381
1382

TOTAL SEVERITY					
L	4	1.5			
M	3		8		
H	2				

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 64

BRANCH NAME: PARKING OF ACTIVITY C2	BRANCH ID: PACTIV2	DATE: 20/6/2012
SECTION ID: PACTIV21	NO. OF LANES:	INSPECTOR: Bryar A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 59	SECTION WIDTH: 23	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 27/7/2003

MAINTENANCE: Y ☐ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1309

DISTRESS CODE					
TOTAL SEVERITY L					
TOTAL SEVERITY M					
TOTAL SEVERITY H					

COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 65

BRANCH NAME: PARKING OF ACTIVITY CI	BRANCH ID: PACTIVI	DATE: 21 / 6 / 2012
SECTION ID: PACTIVII	NO. OF LANES:	INSPECTOR: Bryan A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 53	SECTION WIDTH: 30	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☐ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 15 / 8 / 1995

MAINTENANCE: Y ☐ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☐ N ☐

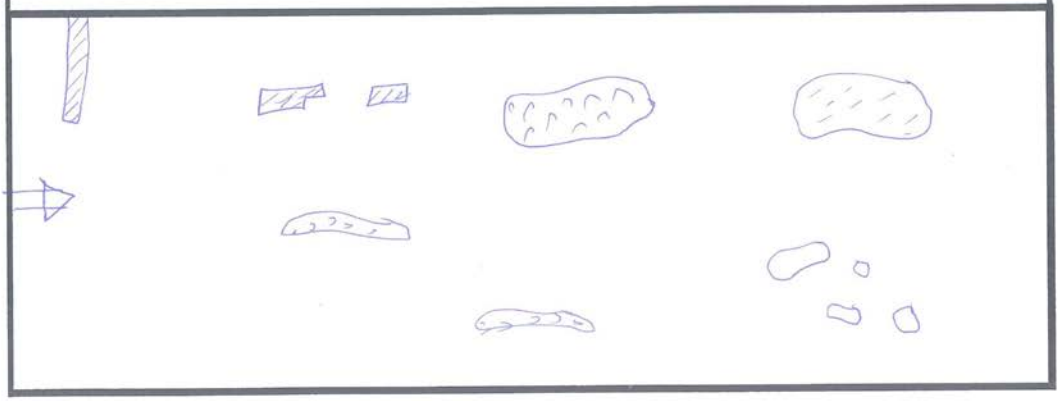
DRAINAGE: Y ☐ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE	11	4	13	6	19
	17 M	21 L	1 L	55 L	25 M
	4 L		3 L		
TOTAL SEVERITY L	4	21	4	55	
TOTAL SEVERITY M	17				25
TOTAL SEVERITY H					

1390
1391
1392
1393
1394
1395

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 66

BRANCH NAME: PARKINGOF SERVICE BUILDIN	BRANCH ID: PSERV	DATE: 21/6/2012
SECTION ID: PSERV01	NO. OF LANES:	INSPECTOR: Bryan A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 318	SECTION WIDTH: 12.6	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 27/7/2001

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

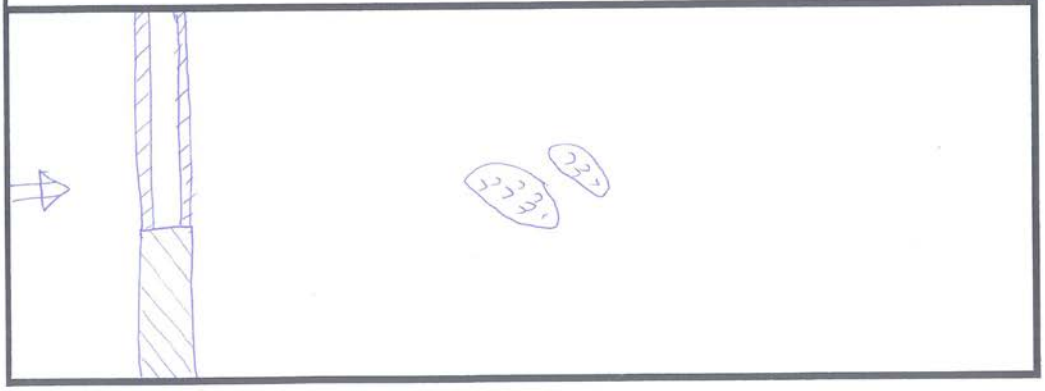
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1396
1397

DISTRESS CODE					
	11	4			
	12 M	3 M			
	15 M				
TOTAL SEVERITY L					
TOTAL SEVERITY M	27	3			
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 67

BRANCH NAME: PARKING OF SABANGI	BRANCH ID: PSABAN	DATE: 21 / 6 / 2012
SECTION ID: PSABAN 01	NO. OF LANES:	INSPECTOR: Bryan A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 114	SECTION WIDTH: 22	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 16 / 8 / 1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1399

DISTRESS CODE					
	1				
	6M				
TOTAL SEVERITY L					
TOTAL SEVERITY M	6				
TOTAL SEVERITY H					

COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 68

BRANCH NAME: PARKING OF POST OFFICE	BRANCH ID: PPOST	DATE: 21/6/2012
SECTION ID: PPOST 01	NO. OF LANES:	INSPECTOR: Bryar A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 232	SECTION WIDTH: 14.8	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13/8/1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

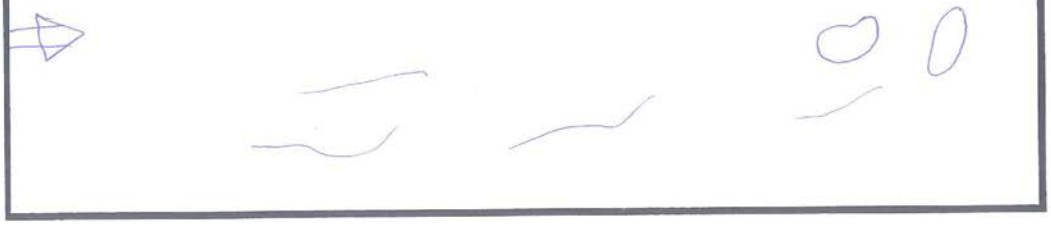
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1401
1402
1403
1404

DISTRESS CODE					
10	1				
30 L	4 M				
TOTAL SEVERITY L	30	4			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 69

BRANCH NAME: PARKING OF BUSINESS	BRANCH ID: PBUSN
SECTION ID: PBUSN01	NO. OF LANES:
FROM:	TO:
SECTION LENGTH: 132	SECTION WIDTH: 22

DATE: 21 / 6 / 2012

INSPECTOR: Bryar A.

FUNCTIONAL CLASS:

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 2 / 8 / 1992

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

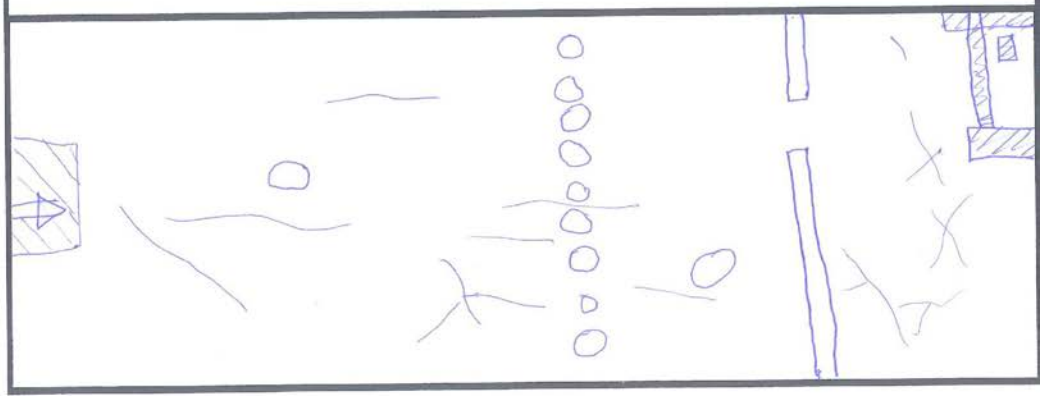
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1405
1406
1407
1408
1409
1410
1411

DISTRESS CODE		11	10	3	13	
		50 M	150 L	40 L	3 L	
		5.6 M	20 L	45 L	5 H	
		26 M			2 M	
		1.5 L				
		8 L				
TOTAL SEVERITY	L	9.5	170	85	3	
	M	81.6			2	
	H				5	

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 70

BRANCH NAME: PARKING OF EMC	BRANCH ID: PEMC	DATE: 2/16/2012
SECTION ID: PEMC01	NO. OF LANES:	INSPECTOR: Bryar A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 424	SECTION WIDTH: 15	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 19/8/1995

MAINTENANCE: Y ☐ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

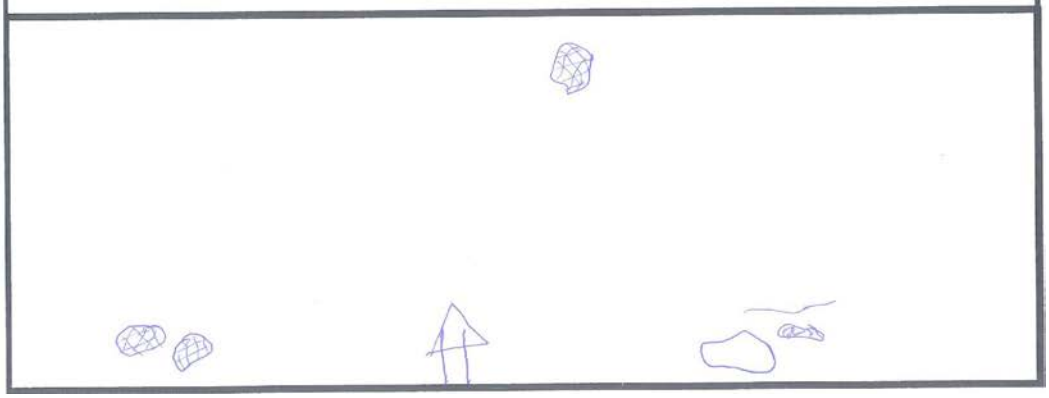
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1414
1415
1416
1417
1419

DISTRESS CODE					
	13	1			
	3H	3 M			
		11 H			
TOTAL SEVERITY L					
TOTAL SEVERITY M		3			
TOTAL SEVERITY H	3	H			

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 71

BRANCH NAME: PARKING OF LALA HALL | BRANCH ID: PLALA | DATE: 21 / 6 / 2012

SECTION ID: PLALA 01 | NO. OF LANES: | INSPECTOR: Bryar A.

FROM: | TO: | FUNCTIONAL CLASS

SECTION LENGTH: 65.5 | SECTION WIDTH: 12

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13 / 7 / 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

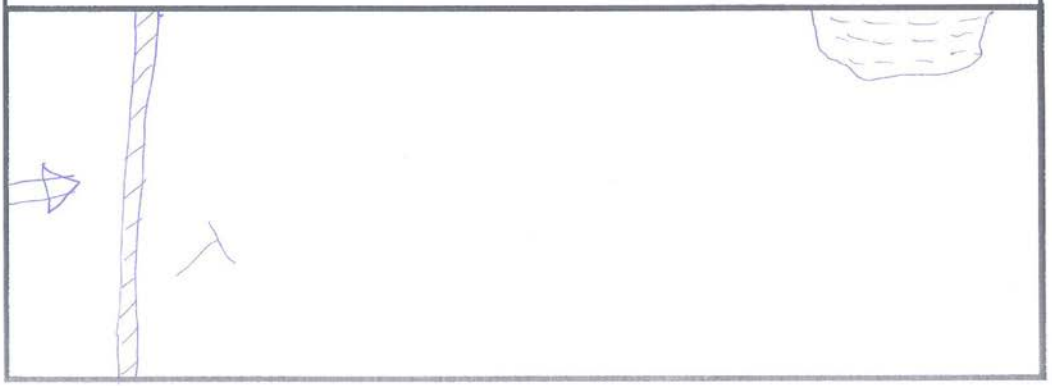
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1421
1422
1423

DISTRESS CODE	11	19	3		
	10 M	60 M	2 L		
TOTAL SEVERITY L			2		
TOTAL SEVERITY M	10	60			
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 72

BRANCH NAME: PARKING of LAW DPT.	BRANCH ID: PLAW	DATE: 21 / 6 / 2012
SECTION ID: PLAW01	NO. OF LANES:	INSPECTOR: BryarA.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 300	SECTION WIDTH: 9,2	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 7 / 8 / 2000

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

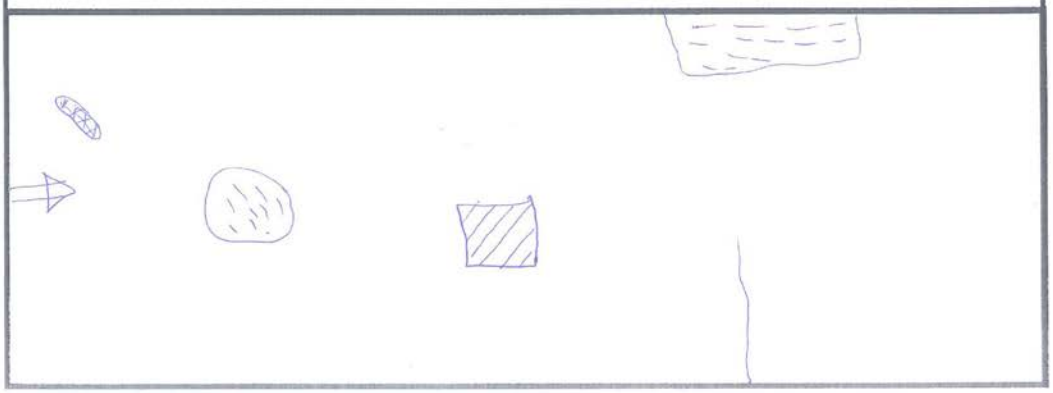
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE	1	19	11	10	
	1 L	4.6 M	4 M	4 L	
		50 L			
TOTAL SEVERITY L	1	50		4	
TOTAL SEVERITY M		4.6	4		
TOTAL SEVERITY H					

1425
1426
1427
1428
1429
1430

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 73

BRANCH NAME: PARKING OF FANATIC	BRANCH ID: PFANATIC	DATE: 21/6/2012
SECTION ID: PFANATIC 01	NO. OF LANES:	INSPECTOR:
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 308	SECTION WIDTH: 15	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m	11. Patching & Util Cut Patching Sqm
2. Bleeding Sq m	12. Polished Aggregate Sq m
3. Block Cracking Sq m	13. Potholes Count
4. Bumps and Sags m	14. Railroad Crossing Sq m
5. Corrugation Sq m	15. Rutting Sq m
6. Depression Sq m	16. Shoving Sq m
7. Edge Cracking m	17. Slippage Cracking Sq m
8. Jt. Reflection Cracking m	18. Swell Sq m
9. Lane/Shoulder Drop Off m	19. Weathering/Ravelling Sq m
10. Long & Trans Cracking m	

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 19/6/1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

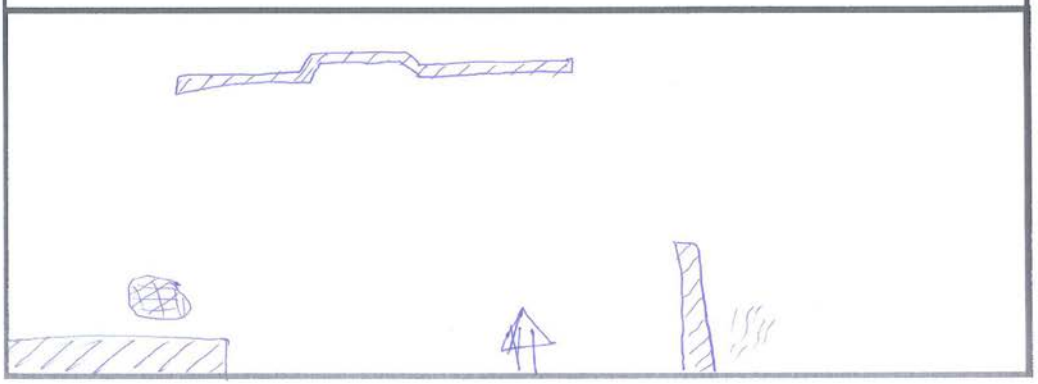
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1440
1441
1442
1443
1444
1445

DISTRESS CODE					
	11	1	10		
	7M	6H	6L		
	1H				
	45L				
	11H				
TOTAL SEVERITY L	45		6		
TOTAL SEVERITY M	7				
TOTAL SEVERITY H	12	6			

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 74

BRANCH NAME: PARKING OF HEALTH CENTER | BRANCH ID: PHEALTH | DATE: 21 / 6 / 2012

SECTION ID: PHEALTH01 | NO. OF LANES: | INSPECTOR: Beyar A.

FROM: | TO: | FUNCTIONAL CLASS

SECTION LENGTH: 47 | SECTION WIDTH: 40

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 13 / 8 / 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

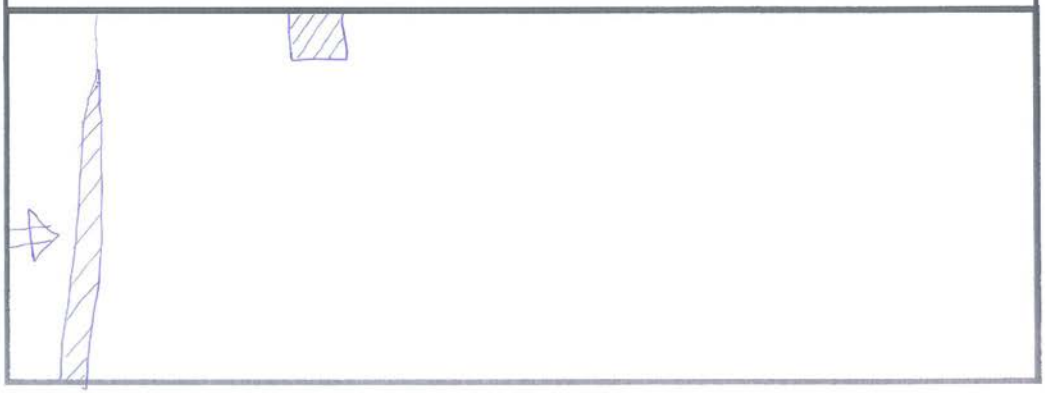
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1446
1447
1448
1449

DISTRESS CODE					
11					
3 L					
2 M					
TOTAL SEVERITY L	3				
TOTAL SEVERITY M	2				
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 75

BRANCH NAME: PARKING OF ARCH DPT. BRANCH ID: PARCH

DATE: 21 / 6 / 2012

SECTION ID: PARCH 01 NO. OF LANES:

INSPECTOR: Bryar A.

FROM: TO:

FUNCTIONAL CLASS

SECTION LENGTH: 285 SECTION WIDTH: 25

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW:
ONE DIRECTION ☐
TWO DIRECTION ☐

SURFACE TYPE:
AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 14 / 8 / 1995

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

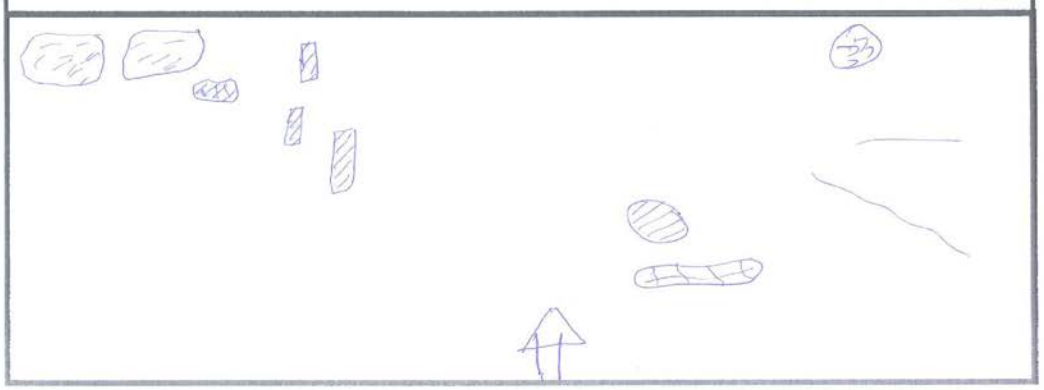
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE		4	3	11	19	
		2 L	40 L	0.6 H	175 M	
				2.5 H	120 L	
				1 M		
TOTAL SEVERITY	L	2	40		120	
	M			1	175	
	H			3.1		

1450
1452
1454
1455
1457
1458

COMMENT:



PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 76

BRANCH NAME: PARKING OF CIVIL DPT	BRANCH ID: PCIVIL	DATE: 21 / 6 / 2012
SECTION ID: PCIVIL 01	NO. OF LANES:	INSPECTOR: Bryar A.
FROM:	TO:	FUNCTIONAL CLASS
SECTION LENGTH: 237	SECTION WIDTH: 12.7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m	11. Patching & Util Cut Patching Sqm
2. Bleeding Sq m	12. Polished Aggregate Sq m
3. Block Cracking Sq m	13. Potholes Count
4. Bumps and Sags m	14. Railroad Crossing Sq m
5. Corrugation Sq m	15. Rutting Sq m
6. Depression Sq m	16. Shoving Sq m
7. Edge Cracking m	17. Slippage Cracking Sq m
8. Jt. Reflection Cracking m	18. Swell Sq m
9. Lane/Shoulder Drop Off m	19. Weathering/Ravelling Sq m
10. Long & Trans Cracking m	

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 28 / 7 / 1992

MAINTENANCE: Y ☒ N ☐

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

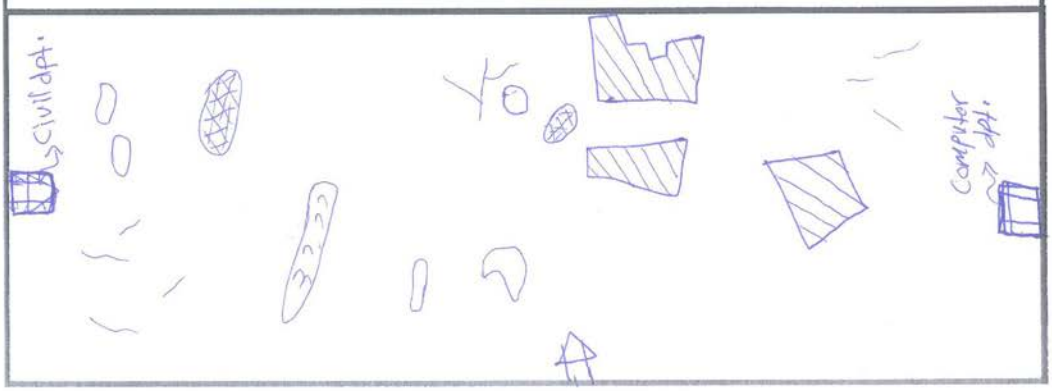
DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

1431
1432
1436
1437
1438
1439

DISTRESS CODE	11	13	10	4	1
	20 M	1 H	67 L	21 L	1 M
	6 M	1 M	7 L	15 L	10 L
	23 H	1 L	5 L		
		1 L			
TOTAL SEVERITY L		2	79	36	10
TOTAL SEVERITY M	26	1			1
TOTAL SEVERITY H	23	1			

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 77

BRANCH NAME: PARKING OF INDUSTRIAL DPT | BRANCH ID: PIND | DATE: 21/6/2012

SECTION ID: PIND | NO. OF LANES: | INSPECTOR: Bryar A.

FROM: | TO: | FUNCTIONAL CLASS

SECTION LENGTH: 33 | SECTION WIDTH: 23

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☐

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 22/7/2001

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

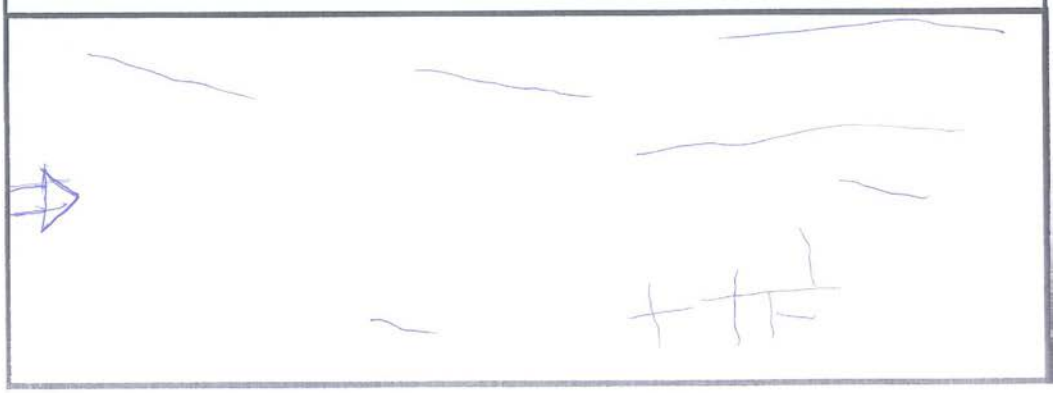
SHOULDER: Y ☒ N ☐

DRAINAGE: Y ☒ N ☐

PHOTOGRAPH .jpg

DISTRESS CODE					
	3	10			
	4L	20L			
	6L	15L			
		6L			
TOTAL SEVERITY L	10	41			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

COMMENT:



PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 78

BRANCH NAME: SOUTH STREET	BRANCH ID: SST	DATE: 2016 / 2012
SECTION ID: S06	NO. OF LANES: 2	INSPECTOR: Bryar A
FROM: 61	TO: 62	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 100	SECTION WIDTH: 9	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 22/7/2003

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☒ N ☐

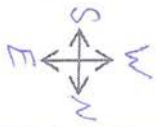
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

1398

1400

DISTRESS CODE					
	1				
	5 M				
	4 L				
TOTAL SEVERITY L	4				
TOTAL SEVERITY M	5				
TOTAL SEVERITY H					



COMMENT:

PMMS FOR EMU CAMPUS

PAVEMENT CONDITION SURVEY SHEET

SHEET NO. 79

BRANCH NAME: DORMITORY STREET	BRANCH ID: DOR ST	DATE: 19/6/2012
SECTION ID: DOR 12	NO. OF LANES: 2	INSPECTOR: Bryar A.
FROM: 56	TO: 60	FUNCTIONAL CLASS: Secondary
SECTION LENGTH: 155	SECTION WIDTH: 7	

SURFACE DISTRESS TYPE

1. Alligator Cracking Sq m
2. Bleeding Sq m
3. Block Cracking Sq m
4. Bumps and Sags m
5. Corrugation Sq m
6. Depression Sq m
7. Edge Cracking m
8. Jt. Reflection Cracking m
9. Lane/Shoulder Drop Off m
10. Long & Trans Cracking m
11. Patching & Util Cut Patching Sqm
12. Polished Aggregate Sq m
13. Potholes Count
14. Railroad Crossing Sq m
15. Rutting Sq m
16. Shoving Sq m
17. Slippage Cracking Sq m
18. Swell Sq m
19. Weathering/Ravelling Sq m

TRAFFIC FLOW: ONE DIRECTION ☐ TWO DIRECTION ☒

SURFACE TYPE: AC ☒ PCC ☐ AAC ☐

LAST CONSTRUCTION DATE: 6/8/2007

MAINTENANCE: Y ☐ N ☒

MAINTENANCE DATE: / /

SHOULDER: Y ☐ N ☒

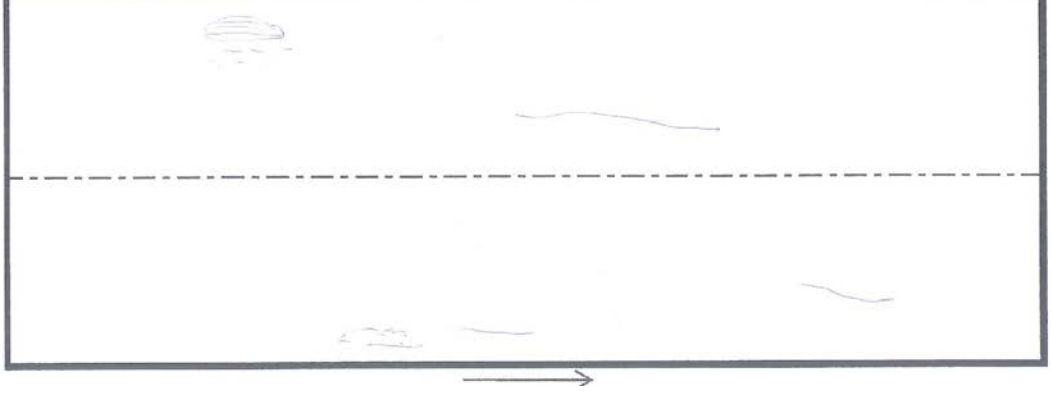
DRAINAGE: Y ☐ N ☒

PHOTOGRAPH .jpg

DISTRESS CODE					
	1	10			
	3L	10L			
	2L				
TOTAL SEVERITY L	5	10			
TOTAL SEVERITY M					
TOTAL SEVERITY H					

N W E S

COMMENT:



Appendix B: Pavement Inventory and PCI Reports

Table B.1.1: EMU campus pavement inventory (Roadway).

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	LENGTH (m)	WIDTH (m)	AREA (m^2)	CONST.DATE	SUR-FACE	RANK	DRAIN_AGE
ACADEMIC STREETS	ACAST	ACA01	12	13	53.00	7.80	413.40	23/07/1992	AC	P	NO
ACADEMIC STREETS	ACAST	ACA02	13	15	212.00	9.00	1,908.00	05/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA03	36	15	245.00	5.80	1,421.00	13/08/1992	AC	S	NO
ACADEMIC STREETS	ACAST	ACA04	15	16	116.00	9.00	1,044.00	05/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA05	30	16	124.00	8.50	1,054.00	08/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA06	16	17	55.00	9.00	495.00	05/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA07	17	11	77.00	8.60	662.20	11/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA08	29	17	139.00	11.50	1,598.50	13/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA09	19	18	47.00	8.00	376.00	22/07/1992	AC	P	NO
ACADEMIC STREETS	ACAST	ACA10	22	14	90.00	6.00	540.00	15/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA11	22	20	61.00	5.70	347.70	16/07/1989	AC	S	NO
ACADEMIC STREETS	ACAST	ACA12	23	21	100.00	3.45	345.00	16/07/1989	AC	T	NO
ACADEMIC STREETS	ACAST	ACA13	24	22	89.00	6.00	534.00	14/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA14	33	24	73.00	6.00	438.00	14/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA15	33	32	75.00	9.50	712.50	05/07/1989	AC	S	NO
ACADEMIC STREETS	ACAST	ACA16	33	35	85.00	9.50	807.50	07/07/1989	AC	P	NO
ACADEMIC STREETS	ACAST	ACA17	39	34	98.00	8.70	852.60	11/07/1992	AC	S	NO
ACADEMIC STREETS	ACAST	ACA18	35	31	42.00	11.00	462.00	15/07/1989	AC	S	YES
ACADEMIC STREETS	ACAST	ACA19	35	36	136.00	9.50	1,292.00	17/07/1989	AC	S	NO
ACADEMIC STREETS	ACAST	ACA20	36	37	50.00	9.50	475.00	19/07/1989	AC	S	NO
ACADEMIC STREETS	ACAST	ACA21	26	37	123.00	8.80	1,082.40	13/08/2003	AC	P	YES

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	LENGTH (m)	WIDTH (m)	AREA (m^2)	CONST.DATE	SUR-FACE	RANK	DRAIN_AGE
ACADEMIC STREETS	ACAST	ACA22	38	33	98.00	8.00	784.00	17/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA23	37	41	136.00	8.80	1,196.80	14/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA24	39	38	78.00	9.00	702.00	14/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA25	40	39	67.00	9.00	603.00	15/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA26	41	40	76.00	6.00	456.00	15/08/2003	AC	P	NO
ACADEMIC STREETS	ACAST	ACA27	41	44	85.00	6.00	510.00	17/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA28	44	40	62.00	7.20	446.40	17/07/1995	AC	P	NO
ACADEMIC STREETS	ACAST	ACA29	43	43	101.00	7.40	747.40	17/07/1995	AC	P	NO
ACADEMIC STREETS	ACAST	ACA30	46	38	387.00	10.00	3,870.00	18/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA31	44	47	309.00	8.70	2,688.30	20/08/2003	AC	P	YES
ACADEMIC STREETS	ACAST	ACA32	46	47	60.00	10.00	600.00	05/08/2000	AC	P	NO
ACADEMIC STREETS	ACAST	ACA33	50	46	126.00	9.00	1,134.00	05/08/2000	AC	P	YES
DORMITORY STREETS	DORST	DOR01	47	48	282.00	10.00	2,820.00	13/07/1995	AC	P	YES
DORMITORY STREETS	DORST	DOR02	47	51	337.00	10.00	3,370.00	16/07/1995	AC	P	YES
DORMITORY STREETS	DORST	DOR03	52	48	372.00	7.00	2,604.00	14/07/1995	AC	P	YES
DORMITORY STREETS	DORST	DOR04	54	49	314.00	9.00	2,826.00	19/07/1995	AC	S	YES
DORMITORY STREETS	DORST	DOR05	51	55	273.00	9.40	2,566.20	20/07/1995	AC	P	NO
DORMITORY STREETS	DORST	DOR06	51	52	267.00	7.00	1,869.00	13/07/2001	AC	P	NO
DORMITORY STREETS	DORST	DOR07	52	53	81.00	7.00	567.00	22/07/1995	AC	S	YES
DORMITORY STREETS	DORST	DOR08	53	54	60.00	7.00	420.00	22/07/1995	AC	S	YES
DORMITORY STREETS	DORST	DOR09	53	57	152.00	6.00	912.00	05/08/2007	AC	S	YES
DORMITORY STREETS	DORST	DOR10	59	54	160.00	7.00	1,120.00	17/08/2003	AC	S	NO

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	LENGTH (m)	WIDTH (m)	AREA (m^2)	CONST.DATE	SUR-FACE	RANK	DRAIN_AGE
DORMITORY STREETS	DORST	DOR11	56	58	100.00	6.00	600.00	06/08/2007	AC	T	YES
DORMITORY STREETS	DORST	DOR12	56	60	155.00	7.00	1,085.00	06/08/2007	AC	S	NO
SPORT STREETS	SPST	SP01	25	25	97.00	7.80	756.60	14/08/2003	AC	P	NO
SPORT STREETS	SPST	SP02	45	27	354.00	6.60	2,336.40	13/07/1995	AC	P	YES
SPORT STREETS	SPST	SP03	48	45	157.00	6.60	1,036.20	13/07/1995	AC	P	YES
SPORT STREETS	SPST	SP04	48	49	197.00	10.00	1,970.00	22/07/1995	AC	P	YES
SPORT STREETS	SPST	SP05	49	42	420.00	10.00	4,200.00	16/07/1995	AC	P	YES
SPORT STREETS	SPST	SP06	42	28	403.00	8.70	3,506.10	20/08/2003	AC	P	YES
SOUTH STREETS	SST	S01	13	6	138.00	6.00	828.00	20/07/2001	AC	S	YES
SOUTH STREETS	SST	S02	7	9	70.00	8.60	602.00	15/08/1995	AC	S	YES
SOUTH STREETS	SST	S03	9	14	84.00	8.60	722.40	15/08/1995	AC	S	YES
SOUTH STREETS	SST	S04	10	9	98.00	9.00	882.00	08/08/2003	AC	S	NO
SOUTH STREETS	SST	S05	8	10	213.00	9.00	1,917.00	21/08/1995	AC	S	NO
SOUTH STREETS	SST	S06	61	62	100.00	9.00	900.00	22/07/2003	AC	S	NO
SOUTH STREETS	SST	S07	8	3	160.00	8.50	1,360.00	01/07/1992	AC	P	YES
SOUTH STREETS	SST	S08	16	8	157.00	9.00	1,413.00	01/07/1992	AC	P	NO

Table B.1.2: EMU campus pavement inventory (Parking).

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	AREA (m^2)	CONST-DATE
PARKING OF ACTIVITY C1	PACTIV1	PACTIV11	ACTIVITY CENTER	ACTIVITY CENTER	1,590.00	15/08/1995
PARKING OF ACTIVITY C2	PACTIV2	PACTIV21	ACTIVITY CENTER	JIMMIES CAFE	1,357.00	27/07/2003
PARKING OF ARCH DPT	PARCH	PARCH01	OPPOSITE TO ARCH DPT	OPPOSITE TO ARCH DPT	7,125.00	14/08/1995
PARKING OF BUSINESS DPT	PBUSIN	PBUSIN01	BUSINESS DPT	BUSINESS DPT	2,904.00	02/08/1992
PARKING OF COMP CENTER	PCC	PCC01	COMPUTER CENTER	COMPUTER CENTER	1,252.80	06/08/1992
PARKING OF CIVIL DPT	PCIVIL	PCIVIL01	COMPUTER DPT	CIVIL DPT	3,009.90	28/07/1992
PARKING OF EMC	PEMC	PEMC01	EMC	EMC	6,360.00	19/08/1995
PARKING OF FANATIC	PFANATIC	PFANATIC01	FANATIC RESTURANT	FANATIC RESTURANT	4,620.00	19/06/1995
PARKING OF HEALTH CENTER	PHEALTH	PHEALTH01	BESIDE HEALTH CENTER	BESIDE HEALTH CENTER	1,880.00	13/08/1995
PARKING OF INDUSTRIAL DPT	PIND	PIND01	INDUSTRIAL DPT	INDUSTRIAL DPT	759	22/07/2001
PARKING OF IT DPT	PIT	PIT01	IT DPT	IT DPT	682.5	23/06/1995
PARKING OF LALA HALL	PLALA	PLALA01	LALA M PASHA HALL	LALA M PASHA HALL	786	13/07/1995
PARKING OF LAW DPT	PLAW	PLAW01	45	OPPOSITE TO LAW DPT	2,760.00	07/08/2000
PARKING OF LIBRARY	PLIB	PLIB01	LIBRARY	LIBRARY	826.5	18/08/1995
PARKING OF MECHANICAL DPT	PMECH	PMECH01	OPPOSITE TO RECTOR OFFICE	OPPOSITE TO RECTOR OFFICE	716.8	21/08/1992
PARKING OF POST OFFICE	PPOST	PPOST01	POST OFFICE	POST PFFICE	3,433.60	13/08/1992
PARKING OF RECTOR	PRECT	PRECT01	RECTOR OFFICE	RECTOR OFFICE	1,120.00	04/08/1989
PARKING OF REGISTER	PREGIST	PREGIST01	REGISTER OFFICE	REGISTER OFFICE	714	14/07/2001
PARKING OF SABANCI	PSABAN	PSABAN01	SABANCI DORMITORY	SABANCI DORMITORY	2,508.00	16/08/1992
PARKING OF SERVICE BUILD	PSERV	PSERV01	SERVICE BUILDING	SERVICE BUILDING	4,006.80	20/07/2001

Table B.1.3: PCI Report (Roadway).

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	LENGH (m)	WIDTH (m)	AREA (m^2)	CONST_ DATE	INSPECTI-ON DATE	PCI (2012)
ACADEMIC STREETS	ACAST	ACA01	12	13	53.00	7.80	413.40	23/07/1992	17/06/2012	30.00
ACADEMIC STREETS	ACAST	ACA02	13	15	212.00	9.00	1,908.00	05/08/2003	17/06/2012	99.00
ACADEMIC STREETS	ACAST	ACA03	36	15	245.00	5.80	1,421.00	13/08/1992	18/06/2012	47.00
ACADEMIC STREETS	ACAST	ACA04	15	16	116.00	9.00	1,044.00	05/08/2003	17/06/2012	92.00
ACADEMIC STREETS	ACAST	ACA05	30	16	124.00	8.50	1,054.00	08/08/2003	20/06/2012	31.00
ACADEMIC STREETS	ACAST	ACA06	16	17	55.00	9.00	495.00	05/08/2003	17/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA07	17	11	77.00	8.60	662.20	11/08/2003	17/06/2012	78.00
ACADEMIC STREETS	ACAST	ACA08	29	17	139.00	11.50	1,598.50	13/08/2003	17/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA09	19	18	47.00	8.00	376.00	22/07/1992	17/06/2012	89.00
ACADEMIC STREETS	ACAST	ACA10	22	14	90.00	6.00	540.00	15/08/2003	17/06/2012	98.00
ACADEMIC STREETS	ACAST	ACA11	22	20	61.00	5.70	347.70	16/07/1989	17/06/2012	61.00
ACADEMIC STREETS	ACAST	ACA12	23	21	100.00	3.45	345.00	16/07/1989	17/06/2012	64.00
ACADEMIC STREETS	ACAST	ACA13	24	22	89.00	6.00	534.00	14/08/2003	17/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA14	33	24	73.00	6.00	438.00	14/08/2003	17/06/2012	88.00
ACADEMIC STREETS	ACAST	ACA15	33	32	75.00	9.50	712.50	05/07/1989	17/06/2012	64.00
ACADEMIC STREETS	ACAST	ACA16	33	35	85.00	9.50	807.50	07/07/1989	18/06/2012	54.00
ACADEMIC STREETS	ACAST	ACA17	39	34	98.00	8.70	852.60	11/07/1992	18/06/2012	86.00
ACADEMIC STREETS	ACAST	ACA18	35	31	42.00	11.00	462.00	15/07/1989	18/06/2012	65.00
ACADEMIC STREETS	ACAST	ACA19	35	36	136.00	9.50	1,292.00	17/07/1989	18/06/2012	58.00
ACADEMIC STREETS	ACAST	ACA20	36	37	50.00	9.50	475.00	19/07/1989	18/06/2012	64.00
ACADEMIC STREETS	ACAST	ACA21	26	37	123.00	8.80	1,082.40	13/08/2003	17/06/2012	82.00

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	LENGH (m)	WIDTH (m)	AREA (m^2)	CONST_ DATE	INSPECTI-ON DATE	PCI (2012)
ACADEMIC STREETS	ACAST	ACA22	38	33	98.00	8.00	784.00	17/08/2003	17/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA23	37	41	136.00	8.80	1,196.80	14/08/2003	17/06/2012	85.00
ACADEMIC STREETS	ACAST	ACA24	39	38	78.00	9.00	702.00	14/08/2003	18/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA25	40	39	67.00	9.00	603.00	15/08/2003	18/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA26	41	40	76.00	6.00	456.00	15/08/2003	18/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA27	41	44	85.00	6.00	510.00	17/08/2003	18/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA28	44	40	62.00	7.20	446.40	17/07/1995	18/06/2012	63.00
ACADEMIC STREETS	ACAST	ACA29	43	43	101.00	7.40	747.40	17/07/1995	18/06/2012	67.00
ACADEMIC STREETS	ACAST	ACA30	46	38	387.00	10.00	3,870.00	18/08/2003	17/06/2012	96.00
ACADEMIC STREETS	ACAST	ACA31	44	47	309.00	8.70	2,688.30	20/08/2003	18/06/2012	100.00
ACADEMIC STREETS	ACAST	ACA32	46	47	60.00	10.00	600.00	05/08/2000	18/06/2012	93.00
ACADEMIC STREETS	ACAST	ACA33	50	46	126.00	9.00	1,134.00	05/08/2000	17/06/2012	92.00
DORMITORY STREETS	DORST	DOR01	47	48	282.00	10.00	2,820.00	13/07/1995	19/06/2012	75.00
DORMITORY STREETS	DORST	DOR02	47	51	337.00	10.00	3,370.00	16/07/1995	19/06/2012	57.00
DORMITORY STREETS	DORST	DOR03	52	48	372.00	7.00	2,604.00	14/07/1995	19/06/2012	50.00
DORMITORY STREETS	DORST	DOR04	54	49	314.00	9.00	2,826.00	19/07/1995	19/06/2012	59.00
DORMITORY STREETS	DORST	DOR05	51	55	273.00	9.40	2,566.20	20/07/1995	19/06/2012	74.00
DORMITORY STREETS	DORST	DOR06	51	52	267.00	7.00	1,869.00	13/07/2001	19/06/2012	94.00
DORMITORY STREETS	DORST	DOR07	52	53	81.00	7.00	567.00	22/07/1995	19/06/2012	89.00
DORMITORY STREETS	DORST	DOR08	53	54	60.00	7.00	420.00	22/07/1995	19/06/2012	84.00
DORMITORY STREETS	DORST	DOR09	53	57	152.00	6.00	912.00	05/08/2007	19/06/2012	89.00
DORMITORY STREETS	DORST	DOR10	59	54	160.00	7.00	1,120.00	17/08/2003	19/06/2012	93.00

BRANCH NAME	BRANCH ID	SECTION ID	FROM	TO	LENGH (m)	WIDTH (m)	AREA (m^2)	CONST_ DATE	INSPECTI-ON DATE	PCI (2012)
DORMITORY STREETS	DORST	DOR11	56	58	100.00	6.00	600.00	06/08/2007	19/06/2012	99.00
DORMITORY STREETS	DORST	DOR12	56	60	155.00	7.00	1,085.00	06/08/2007	19/06/2012	93.00
SPORT STREETS	SPST	SP01	25	25	97.00	7.80	756.60	14/08/2003	20/06/2012	84.00
SPORT STREETS	SPST	SP02	45	27	354.00	6.60	2,336.40	13/07/1995	19/06/2012	68.00
SPORT STREETS	SPST	SP03	48	45	157.00	6.60	1,036.20	13/07/1995	19/06/2012	62.00
SPORT STREETS	SPST	SP04	48	49	197.00	10.00	1,970.00	22/07/1995	19/06/2012	56.00
SPORT STREETS	SPST	SP05	49	42	420.00	10.00	4,200.00	16/07/1995	19/06/2012	67.00
SPORT STREETS	SPST	SP06	42	28	403.00	8.70	3,506.10	20/08/2003	19/06/2012	95.00
SOUTH STREETS	SST	S01	13	6	138.00	6.00	828.00	20/07/2001	20/06/2012	63.00
SOUTH STREETS	SST	S02	7	9	70.00	8.60	602.00	15/08/1995	20/06/2012	77.00
SOUTH STREETS	SST	S03	9	14	84.00	8.60	722.40	15/08/1995	20/06/2012	63.00
SOUTH STREETS	SST	S04	10	9	98.00	9.00	882.00	08/08/2003	20/06/2012	100.00
SOUTH STREETS	SST	S05	8	10	213.00	9.00	1,917.00	21/08/1995	20/06/2012	82.00
SOUTH STREETS	SST	S06	61	62	100.00	9.00	900.00	22/07/2003	20/06/2012	82.00
SOUTH STREETS	SST	S07	8	3	160.00	8.50	1,360.00	01/07/1992	20/06/2012	57.00
SOUTH STREETS	SST	S08	16	8	157.00	9.00	1,413.00	01/07/1992	20/06/2012	45.00

Table B.1.4: PCI Report (Parking).

BRANCH_NAME	BRANCH ID	SECTION ID	FROM	TO	AREA (m^2)	CONST_ DATE	INSPECTI-ON DATE	PCI (2012)
PARKING OF ACTIVITY C1	PACTIV1	PACTIV11	ACTIVITY CENTER	ACTIVITY CENTER	1,590.00	15/08/1995	21/06/2012	81.00
PARKING OF ACTIVITY C2	PACTIV2	PACTIV21	ACTIVITY CENTER	JIMMIES CAFE	1,357.00	27/07/2003	20/06/2012	100.00
PARKING OF ARCH DPT	PARCH	PARCH01	OPPOSITE TO ARCH DPT	OPPOSITE TO ARCH DPT	7,125.00	14/08/1995	21/06/2012	83.00
PARKING OF BUSINESS DPT	PBUSIN	PBUSIN01	BUSINESS DPT	BUSINESS DPT	2,904.00	02/08/1992	21/06/2012	62.00
PARKING OF COMP CENTER	PCC	PCC01	COMPUTER CENTER	COMPUTER CENTER	1,252.80	06/08/1992	20/06/2012	63.00
PARKING OF CIVIL DPT	PCIVIL	PCIVIL01	COMPUTER DPT	CIVIL DPT	3,009.90	28/07/1992	21/06/2012	63.00
PARKING OF EMC	PEMC	PEMC01	EMC	EMC	6,360.00	19/08/1995	21/06/2012	73.00
PARKING OF FANATIC	PFANATIC	PFANATIC01	FANATIC RESTURANT	FANATIC RESTURANT	4,620.00	19/06/1995	21/06/2012	80.00
PARKING OF HEALTH CENTER	PHEALTH	PHEALTH01	BESIDE HEALTH CENTER	BESIDE HEALTH CENTER	1,880.00	13/08/1995	21/06/2012	96.00
PARKING OF INDUSTRIAL DPT	PIND	PIND01	INDUSTRIAL DPT	INDUSTRIAL DPT	759	22/07/2001	21/06/2012	95.00
PARKING OF IT DPT	PIT	PIT01	IT DPT	IT DPT	682.5	23/06/1995	20/06/2012	86.00
PARKING OF LALA HALL	PLALA	PLALA01	LALA M PASHA HALL	LALA M PASHA HALL	786	13/07/1995	21/06/2012	80.00
PARKING OF LAW DPT	PLAW	PLAW01	45	OPPOSITE TO LAW DPT	2,760.00	07/08/2000	21/06/2012	90.00

BRANCH_NAME	BRANCH ID	SECTION ID	FROM	TO	AREA (m^2)	CONST_ DATE	INSPECTI-ON DATE	PCI (2012)
PARKING OF LIBRARY	PLIB	PLIB01	LIBRARY	LIBRARY	826.5	18/08/1995	20/06/2012	60.00
PARKING OF MECHANICAL DPT	PMECH	PMECH01	OPPOSITE TO RECTOR OFFICE	OPPOSITE TO RECTOR OFFICE	716.8	21/08/1992	20/06/2012	88.00
PARKING OF POST OFFICE	PPOST	PPOST01	POST OFFICE	POST PFFICE	3,433.60	13/08/1992	21/06/2012	92.00
PARKING OF RECTOR	PRECT	PRECT01	RECTOR OFFICE	RECTOR OFFICE	1,120.00	04/08/1989	20/06/2012	86.00
PARKING OF REGISTER	PREGIST	PREGIST01	REGISTER OFFICE	REGISTER OFFICE	714	14/07/2001	20/06/2012	100.00
PARKING OF SABANCI	PSABAN	PSABAN01	SABANCI DORMITORY	SABANCI DORMITORY	2,508.00	16/08/1992	21/06/2012	90.00
PARKING OF SERVICE BUILD	PSERV	PSERV01	SERVICE BUILDING	SERVICE BUILDING	4,006.80	20/07/2001	21/06/2012	89.00

Appendix C: Suggested Work Plan for EMU Campus Pavement Network

Table C.1.1: Suggested Work Plan for (Roadways) from 2013 to 2017
(Limited Budget)

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
ACA01	413.40	Stop Gap	1,220.69	Stop Gap	311.49	Stop Gap	355.99	Major M&R < Critical	8,899.5	Do Nothing	0.00
ACA02	1,908.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA03	1,421.00	Stop Gap	1,372.37	Stop Gap	260.03	Stop Gap	290.64	Stop Gap	351.83	Stop Gap	443
ACA04	1,044.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	89.87
ACA05	1,054.00	Do Nothing	0.00	Stop Gap	737.44	Stop Gap	850.89	Stop Gap	964.35	Major M&R < Critical	22,69
ACA06	495.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA07	662.20	Preventative	392.94	Major M&R >= Critical	5,474.17	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA08	1,598.50	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA09	376.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA10	540.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA11	347.70	Preventative	562.11	Preventative	247.00	Preventative	261.97	Major M&R < Critical	5,074.9	Do Nothing	0.00
ACA12	345.00	Preventative	545.05	Major M&R >= Critical	4,307.7	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA13	534.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA14	438.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
ACA15	712.50	Preventative	429.97	Preventative	460.13	Preventative	490.81	Preventative	521.49	Do Nothing	0.00
ACA16	807.50	Do Nothing	0.00	Stop Gap	86.89	Major M&R < Critical	13,003	Do Nothing	0.00	Do Nothing	0.00
ACA17	852.60	Do Nothing	0.00	Preventative	73.39	Preventative	91.74	Preventative	146.82	Preventative	201.90
ACA18	462.00	Preventative	132.50	Preventative	288.42	Preventative	308.31	Preventative	328.20	Preventative	348.09
ACA19	1,292.00	Preventative	850.00	Stop Gap	139.02	Stop Gap	139.02	Stop Gap	139.02	Stop Gap	166.85
ACA20	475.00	Preventative	693.09	Major M&R >= Critical	5,930.9	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA21	1,082.40	Preventative	226.88	Preventative	186.39	Preventative	256.31	Preventative	326.24	Preventative	396.16
ACA22	784.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA23	1,196.80	Preventative	300.21	Preventative	115.90	Preventative	167.43	Preventative	244.75	Preventative	322.06
ACA24	702.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA25	603.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA26	456.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA27	510.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA28	446.40	Major M&R >= Critical	5,439.25	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA29	747.40	Do Nothing	0.00	Preventative	434.42	Preventative	466.59	Preventative	498.76	Preventative	530.95
ACA30	3,870.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	166.56
ACA31	2,688.30	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA32	600.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA33	1,134.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	97.61

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
DOR01	2,820.00	Preventative	598.86	Preventative	1,123.2	Preventative	1,274.9	Preventative	1,396.3	Preventative	1,517.7
DOR02	3,370.00	Preventative	2,019.45	Stop Gap	362.61	Stop Gap	362.61	Stop Gap	398.91	Stop Gap	471.50
DOR03	2,604.00	Stop Gap	228.17	Stop Gap	392.37	Stop Gap	448.46	Stop Gap	504.55	Stop Gap	560.64
DOR04	2,826.00	Preventative	5,815.00	Preventative	2,129.2	Stop Gap	304.08	Stop Gap	304.08	Stop Gap	334.51
DOR05	2,566.20	Preventative	138.85	Preventative	1,105.0	Preventative	1,215.4	Preventative	1,325.9	Preventative	1,436.3
DOR06	1,869.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	93.00	Preventative	120.66
DOR07	567.00	Preventative	438.14	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	79.32
DOR08	420.00	Preventative	614.99	Do Nothing	0.00	Preventative	72.32	Preventative	99.46	Preventative	126.59
DOR09	912.00	Do Nothing	0.00	Do Nothing	0.00	Major M&R >= Critical	5,889.9	Do Nothing	0.00	Do Nothing	0.00
DOR10	1,120.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	90.00	Preventative	84.36
DOR11	600.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
DOR12	1,085.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	81.72
SP01	756.60	Preventative	265.41	Preventative	81.41	Preventative	130.29	Preventative	179.16	Preventative	228.04
SP02	2,336.40	Preventative	1,632.97	Preventative	1,307.7	Preventative	1,408.2	Preventative	1,508.8	Preventative	1,609.45
SP03	1,036.20	Major M&R >= Critical	12,938.10	Do Nothing	0.00	Preventative	0.00	Do Nothing	0.00	Do Nothing	0.00
SP04	1,970.00	Do Nothing	0.00	Stop Gap	211.97	Stop Gap	213.00	Stop Gap	254.41	Stop Gap	296.84
SP05	4,200.00	Preventative	1,337.19	Preventative	2,441.2	Preventative	2,621.9	Preventative	2,802.7	Preventative	2,983.6
SP06	3,506.10	Do Nothing	0.00	Do Nothing	0.00	Preventative	0.00	Preventative	113.18	Preventative	188.10
S01	828.00	Preventative	1,780.51	Preventative	552.55	Preventative	588.20	Preventative	623.86	Stop Gap	89.09
S02	602.00	Preventative	438.14	Preventative	200.89	Preventative	239.78	Preventative	272.18	Preventative	298.09

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
S03	722.40	Preventative	787.12	Preventative	482.08	Preventative	513.19	Preventative	544.29	Stop Gap	77.73
S04	882.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	0.00	Do Nothing	0.00	Do Nothing	0.00
S05	1,917.00	Preventative	687.89	Preventative	330.11	Preventative	453.95	Preventative	577.78	Preventative	701.62
S06	900.00	Preventative	300.25	Major M&R >= Critical	6,354.97	Preventative	0.00	Do Nothing	0.00	Do Nothing	0.00
S07	1,360.00	Preventative	1,957.19	Stop Gap	146.34	Stop Gap	146.34	Stop Gap	160.98	Stop Gap	190.28
S08	1,413.00	Do Nothing	0.00	Stop Gap	289.00	Stop Gap	349.84	Stop Gap	441.10	Stop Gap	532.35
Total Costs ($)			**44,143**		**36,563**		**32,915**		**29,186**		**37,462**

Table C.1.2: Suggested Work Plan for (Parking) from 2013 to 2017(Limited Budget)

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
PACTIV11	1,590.00	Do Nothing	0.00	Preventative	325.15	Preventative	427.87	Preventative	530.58	Preventative	633.3
PACTIV21	1,357.00	Preventative	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00

PARCH01	7,125.00	Preventative	208.37	Preventative	996.79	Preventative	1,457	Preventative	1,917	Preventative	2,377
PBUSIN01	2,904.00	Preventative	216.84	Preventative	2,000.4	Preventative	2,125	Stop Gap	312.47	Stop Gap	312.4
PCC01	1,252.80	Preventative	833.91	Preventative	836.03	Preventative	889.98	Preventative	943.92	Stop Gap	134.8
PCIVIL01	3,009.90	Preventative	1,202	Preventative	2,008.6	Preventative	2,138	Preventative	2,267	Stop Gap	323.8
PEMC01	6,360.00	Preventative	867.48	Preventative	2,813.4	Preventative	3,149	Preventative	3,422	Preventative	3,696
PFANATIC01	4,620.00	Preventative	961.92	Preventative	1,094	Preventative	1,392	Preventative	1,690	Preventative	1,989
PHEALTH01	1,880.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	80.92
PIND01	759.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
PIT01	682.50	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	117.53	Preventative	161.
PLALA01	786.00	Do Nothing	0.00	Preventative	186.12	Preventative	236.90	Preventative	287.68	Preventative	338.4
PLAW01	2,760.00	Do Nothing	0.00	Preventative	118.79	Preventative	178.19	Preventative	237.58	Preventative	296.9
PLIB01	826.50	Preventative	151.71	Preventative	604.93	Stop Gap	88.93	Stop Gap	110.55	Stop Gap	88.93
PMECH01	716.80	Do Nothing	0.00	Do Nothing	0.00	Preventative	0.00	Do Nothing	0.00	Preventative	123.4
PPOST01	3,433.60	Preventative	252.51	Do Nothing	0.00	Preventative	147.78	Preventative	221.67	Preventative	295.5
PRECT01	1,120.00	Preventative	151.94	Do Nothing	0.00	Preventative	120.51	Preventative	192.86	Preventative	265.2
PREGIST01	714.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	0.00	Do Nothing	0.00	Do Nothing	0.00
PSABAN01	2,508.00	Preventative	346.94	Preventative	107.94	Preventative	161.92	Preventative	215.89	Preventative	269.8
PSERV01	4,006.80	Do Nothing	0.00	Preventative	215.57	Preventative	301.79	Preventative	388.02	Preventative	560.5
TOTAL COSTS ($)			**5,193**		**11,307**		**12,816**		**12,854**		**11,949**

Table C.1.3: Suggested Work Plan for (Roadways) from 2013 to 2017 (Unlimited Budget)

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
ACA01	413.40	Major M&R < Critical	8,899.5	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA02	1,908.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA03	1,421.00	Major M&R < Critical	24,166	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA04	1,044.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	89.87
ACA05	1,054.00	Major M&R < Critical	22,690	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA06	495.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA07	662.20	Major M&R >= Critical	5,075	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA08	1,598.50	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA09	376.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA10	540.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA11	347.70	Preventative	562.11	Preventative	247.0	Preventative	261.97	Major M&R < Critical	5,074.9	Do Nothing	0.00
ACA12	345.00	Major M&R >= Critical	4,099.7	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA13	534.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA14	438.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
ACA15	712.50	Preventative	429.97	Preventative	460.1	Preventative	490.81	Preventative	521.49	Major M&R < Critical	10,184
ACA16	807.50	Major M&R < Critical	12,029	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA17	852.60	Do Nothing	0.00	Do Nothing	0.00	Preventative	91.74	Preventative	146.82	Preventative	201.90
ACA18	462.00	Preventative	132.50	Preventative	288.4	Preventative	308.31	Preventative	328.20	Preventative	348.09
ACA19	1,292.00	Major M&R >= Critical	17,689	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA20	475.00	Major M&R >= Critical	5,644.5	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA21	1,082.40	Preventative	226.88	Preventative	186.3	Preventative	256.31	Preventative	326.24	Preventative	396.16
ACA22	784.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA23	1,196.80	Preventative	300.21	Preventative	115.9	Preventative	167.43	Preventative	244.75	Preventative	322.06
ACA24	702.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA25	603.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA26	456.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA27	510.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA28	446.40	Major M&R >= Critical	5,439.2	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA29	747.40	Do Nothing	0.00	Preventative	435.4	Preventative	466.59	Preventative	498.76	Preventative	530.95
ACA30	3,870.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	166.56
ACA31	2,688.30	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
ACA32	600.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
ACA33	1,134.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	97.61
DOR01	2,820.00	Major M&R >= Critical	24,161	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
DOR02	3,370.00	Major M&R >= Critical	47,156	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
DOR03	2,604.00	Major M&R < Critical	41,931	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
DOR04	2,826.00	Preventative	5,827	Preventative	2,129	Major M&R < Critical	41,200	Do Nothing	0.00	Do Nothing	0.00
DOR05	2,566.20	Preventative	138.85	Preventative	1,106	Preventative	1,215.4	Preventative	1,325.9	Preventative	1,436.3
DOR06	1,869.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	120.66
DOR07	567.00	Preventative	438.14	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	79.32
DOR08	420.00	Preventative	614.99	Do Nothing	0.00	Preventative	85.00	Preventative	99.46	Preventative	126.59
DOR09	912.00	Major M&R >= Critical	5,889	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
DOR10	1,120.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	84.36
DOR11	600.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
DOR12	1,085.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	81.72
SP01	756.60	Preventative	265.41	Do Nothing	0.00	Preventative	130.29	Preventative	179.16	Preventative	228.04
SP02	2,336.40	Major M&R >= Critical	24,947	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00

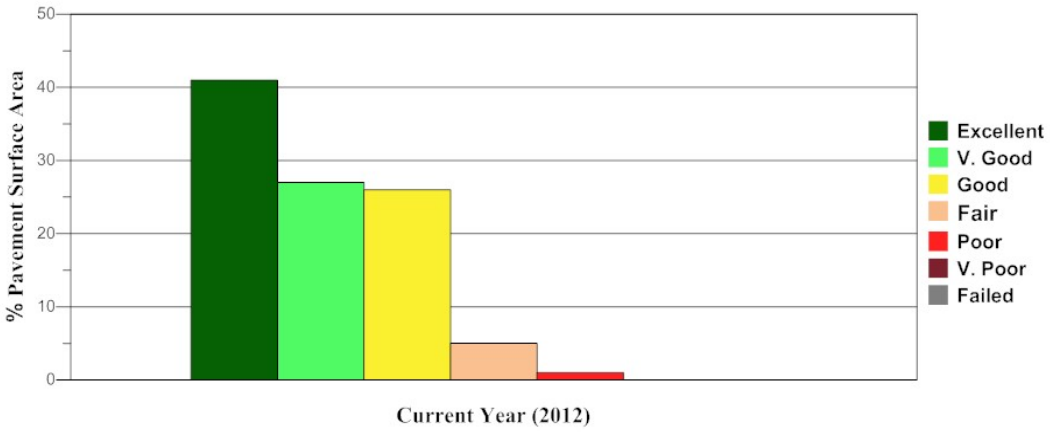
		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
SP03	1,036.20	Major M&R >= Critical	12,938	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
SP04	1,970.00	Major M&R < Critical	28,160	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
SP05	4,200.00	Major M&R >= Critical	46,112	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
SP06	3,506.10	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	113.18	Preventative	188.63
S01	828.00	Preventative	1,780.8	Preventative	552.5	Preventative	588.20	Preventative	623.86	Major M&R < Critical	12,085
S02	602.00	Preventative	438.14	Preventative	200.8	Preventative	239.78	Preventative	272.18	Preventative	298.09
S03	722.40	Preventative	787.12	Preventative	482.0	Preventative	513.19	Preventative	544.29	Major M&R < Critical	10,544
S04	882.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
S05	1,917.00	Preventative	687.89	Preventative	331	Preventative	453.95	Preventative	577.78	Preventative	701.62
S06	900.00	Major M&R >= Critical	5,812.4	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
S07	1,360.00	Major M&R >= Critical	19,030	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
S08	1,413.00	Major M&R < Critical	24,882	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
Total Costs ($)			**399,388**		**6,534**		**46,469**		**10,877**		**38,312**

Table C.1.4: Suggested Work Plan for (Parking) from 2013 to 2017(Unlimited Budget)

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
PACTIV11	1,590.00	Do Nothing	0.00	Preventative	325.15	Preventative	427.87	Preventative	530.58	Preventative	633.30
PACTIV21	1,357.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
PARCH01	7,125.00	Preventative	208.37	Preventative	996.79	Preventative	1,457	Preventative	1,917	Preventative	2,377
PBUSIN01	2,904.00	Preventative	216.84	Preventative	2,000	Preventative	2,125	Major M&R < Critical	41,424	Do Nothing	0.00
PCC01	1,252.80	Preventative	833.91	Preventative	836.03	Preventative	889.98	Preventative	943.92	Major M&R < Critical	18,285
PCIVIL01	3,009.90	Preventative	1,244	Preventative	2,008	Preventative	2,138	Preventative	2,267	Major M&R < Critical	43,931
PEMC01	6,360.00	Preventative	867.48	Preventative	2,875	Preventative	3,149	Preventative	3,423	Preventative	3,696
PFANATIC01	4,620.00	Preventative	961.92	Preventative	1,094	Preventative	1,393	Preventative	1,691	Preventative	1,989
PHEALTH01	1,880.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	80.92
PIND01	759.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
PIT01	682.50	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	117.53	Preventative	161.62
PLALA01	786.00	Do Nothing	0.00	Preventative	186.12	Preventative	236.90	Preventative	287.68	Preventative	338.45
PLAW01	2,760.00	Do Nothing	0.00	Preventative	118.79	Preventative	178.19	Preventative	237.58	Preventative	296.98
PLIB01	826.50	Major M&R >= Critical	10,818	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
PMECH01	716.80	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Preventative	90.00	Preventative	123.43
PPOST01	3,433.60	Preventative	252.51	Do Nothing	0.00	Preventative	147.78	Preventative	221.67	Preventative	295.56

		2013		2014		2015		2016		2017	
SECTION ID	**AREA (m^2)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**	**TREATME-NT ACTION**	**COST ($)**
PRECT01	1,120.00	Preventative	151.94	Preventative	97	Preventative	120.51	Preventative	192.86	Preventative	265.22
PREGIST 01	714.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00	Do Nothing	0.00
PSABAN 01	2,508.00	Preventative	346.94	Preventative	107.94	Preventative	162.92	Preventative	215.89	Preventative	269.86
PSERV01	4,006.80	Do Nothing	0.00	Preventative	216.57	Preventative	301.79	Preventative	388.02	Preventative	560.55
TOTA COSTS ($)			**15,901**		**10,861**		**12,728**		**53,948**		**73,307**

Appendix D: Charts and GIS Mapped data



FigureD1.1: Rating of campus pavement area (2012).

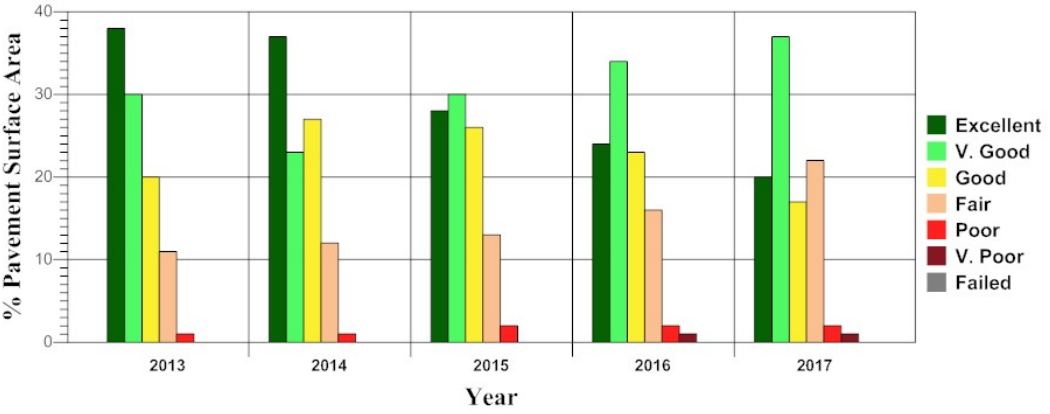


Figure D1.2: Rating of campus pavement area (No Budget).

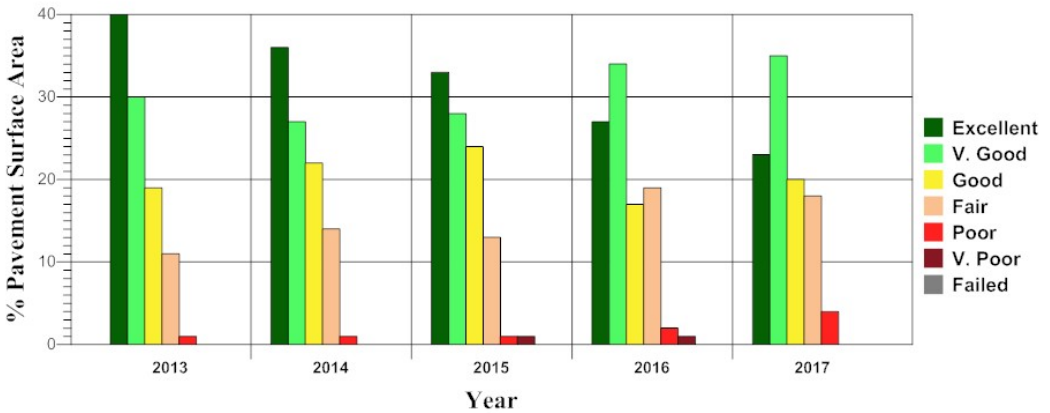


Figure D1.3: Rating of campus pavement area (Limited Budget).

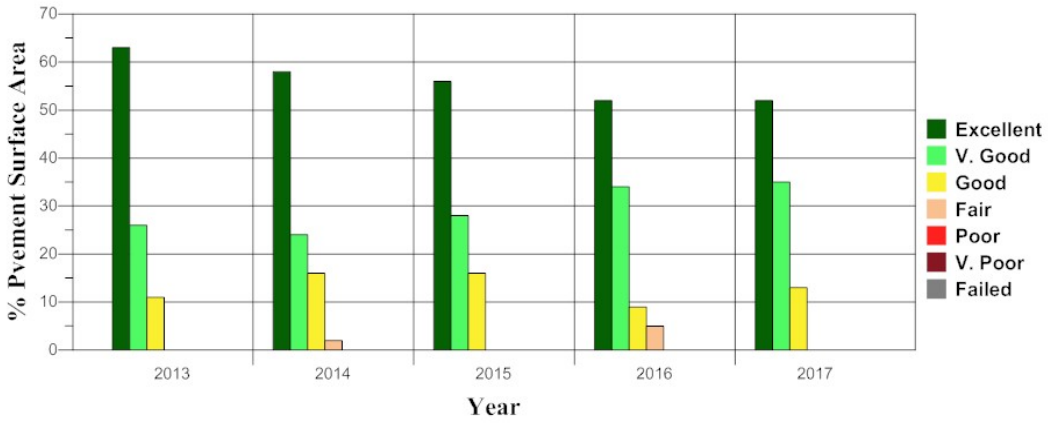


Figure D1.4: Rating of campus pavement area (Unlimited Budget).

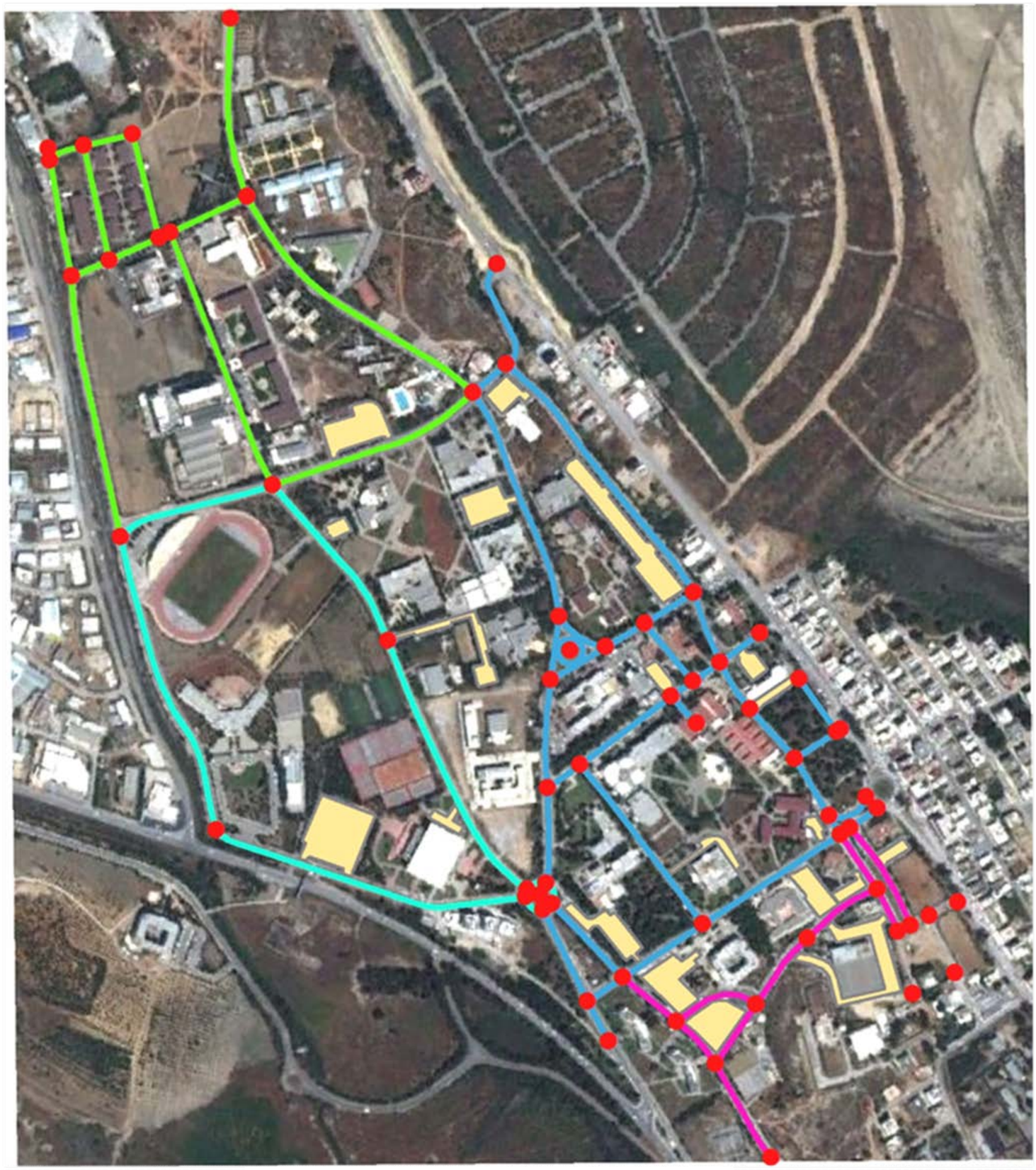


Figure D1.5: EMU Campus raster image and vector data.

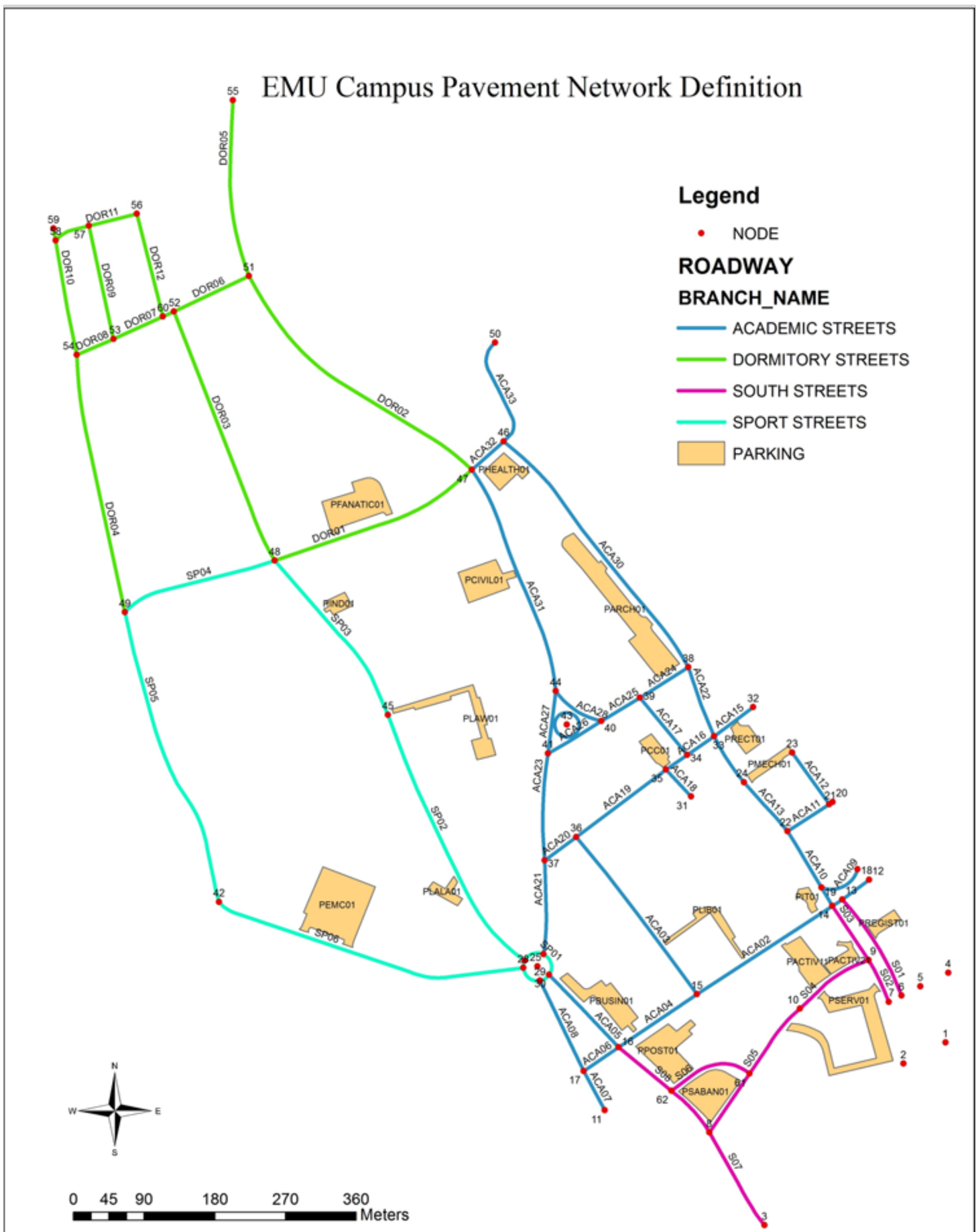


Figure D1.6: Campus pavement network definition.

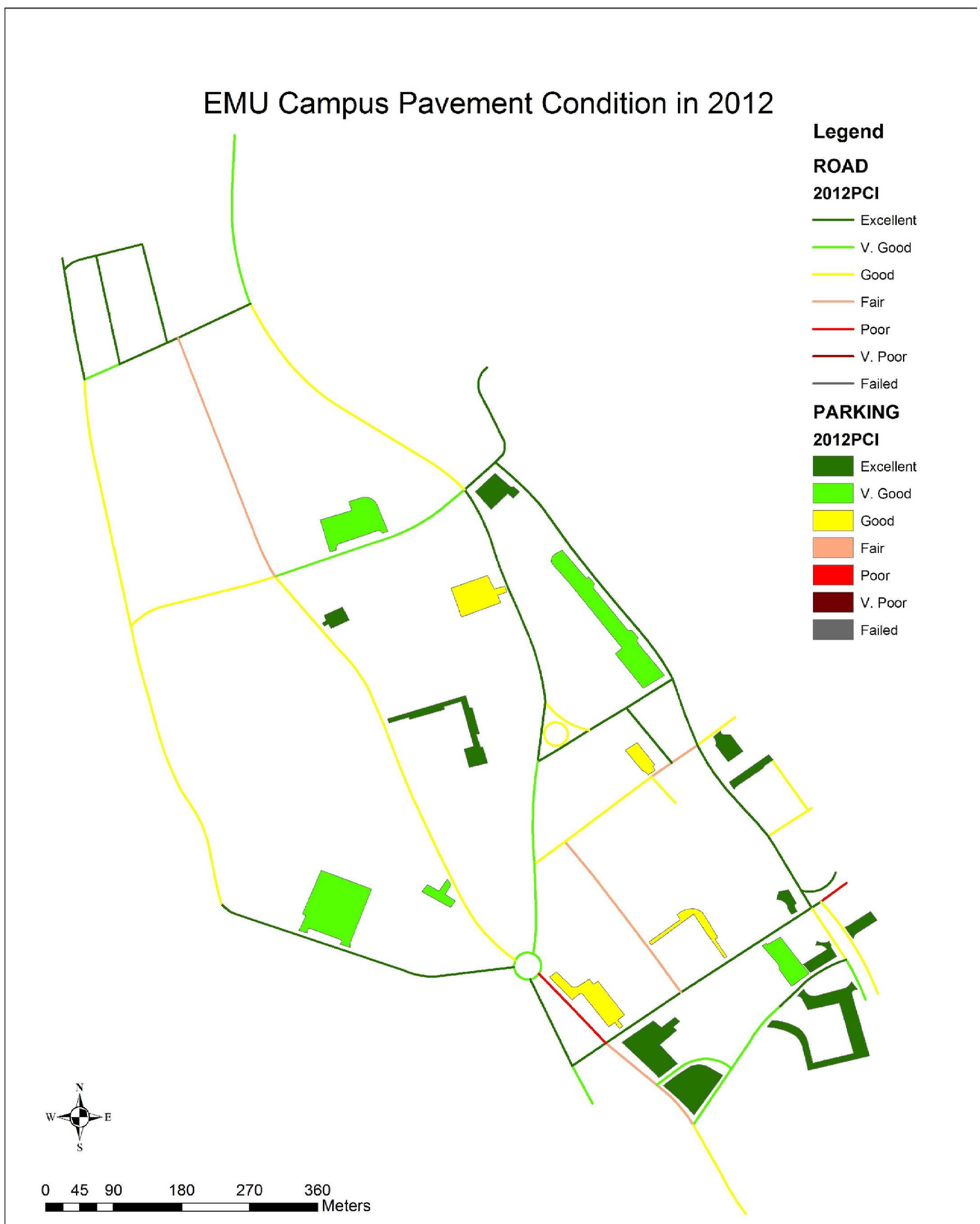


Figure D1.7: Current Campus Pavement Condition

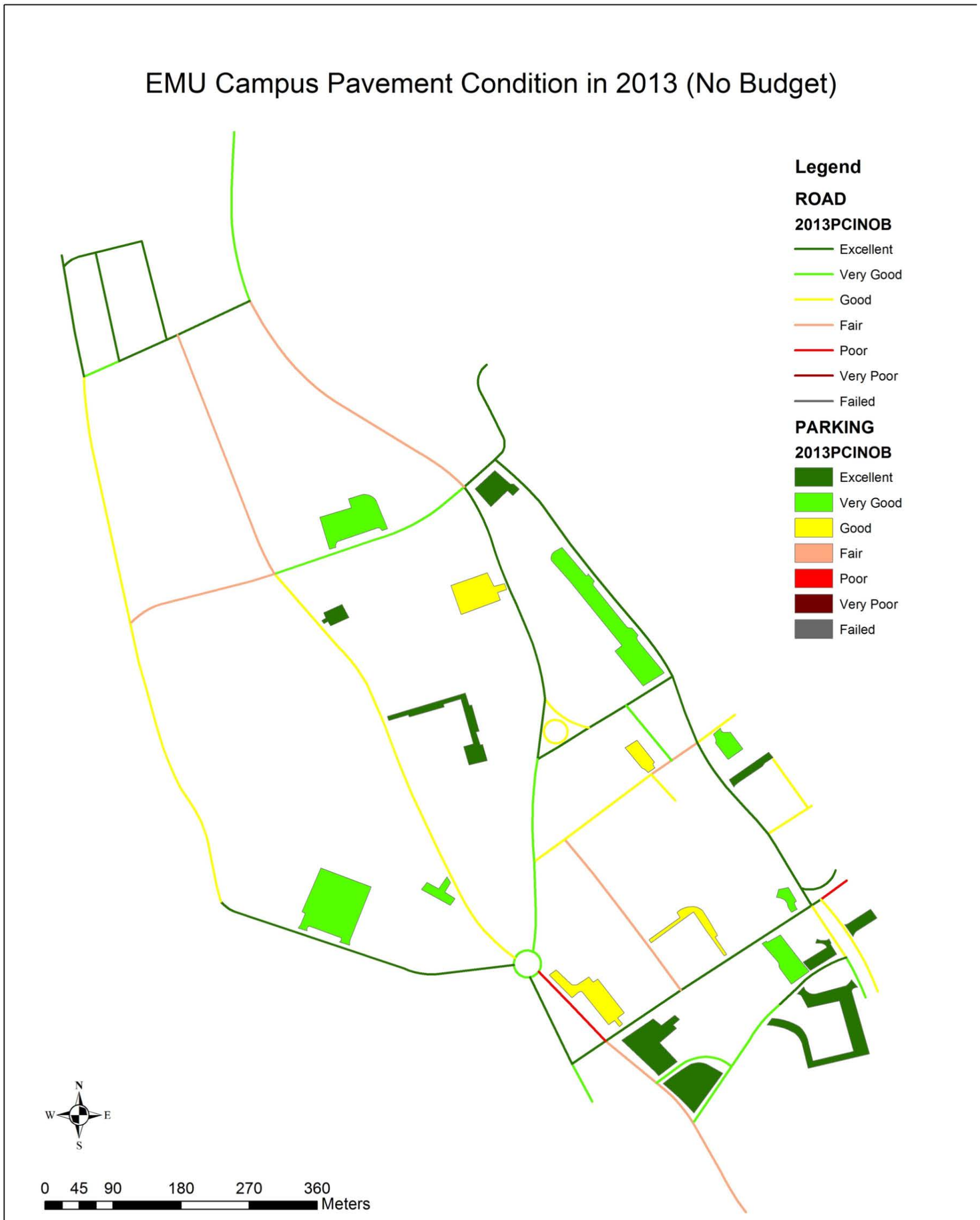


Figure D1.8: Campus Pavement Condition in 2013 (No Treatment Action)

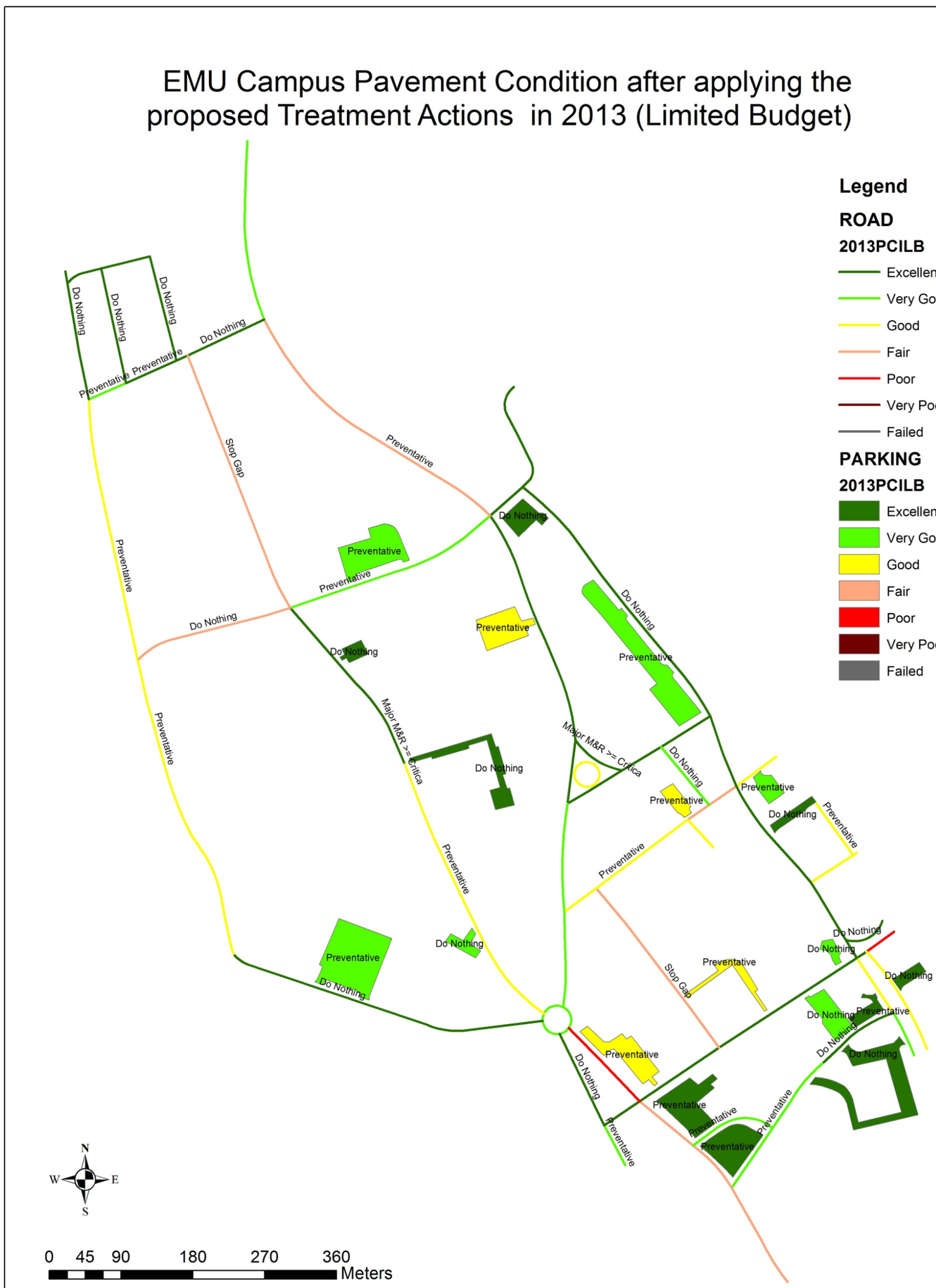


Figure D1.9: Campus pavement condition in 2013 (after applying Treatment in Limited Budget scenario)

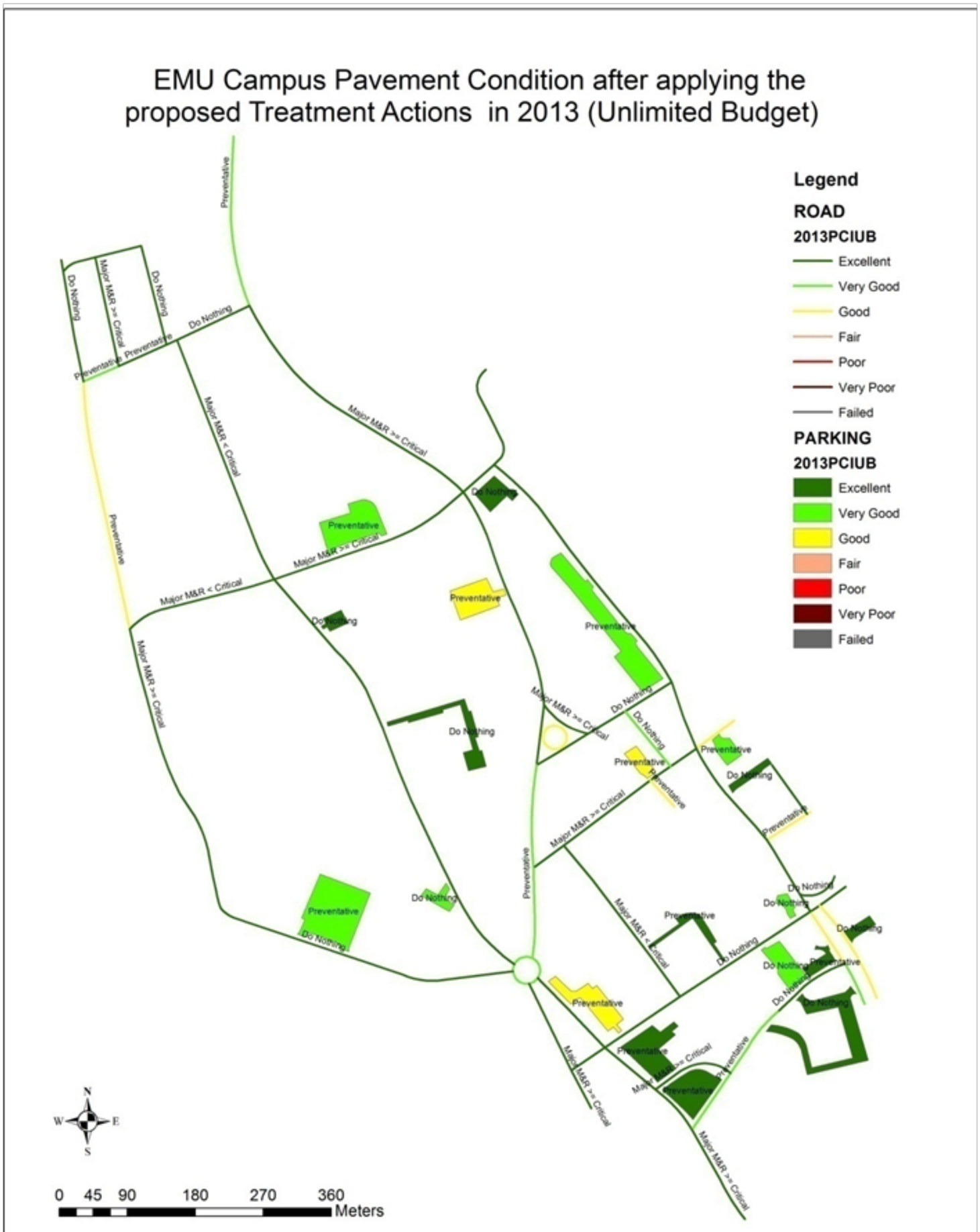


Figure D1.10: Campus pavement condition in 2013 (after applying Treatment in Unlimited Budget scenario)

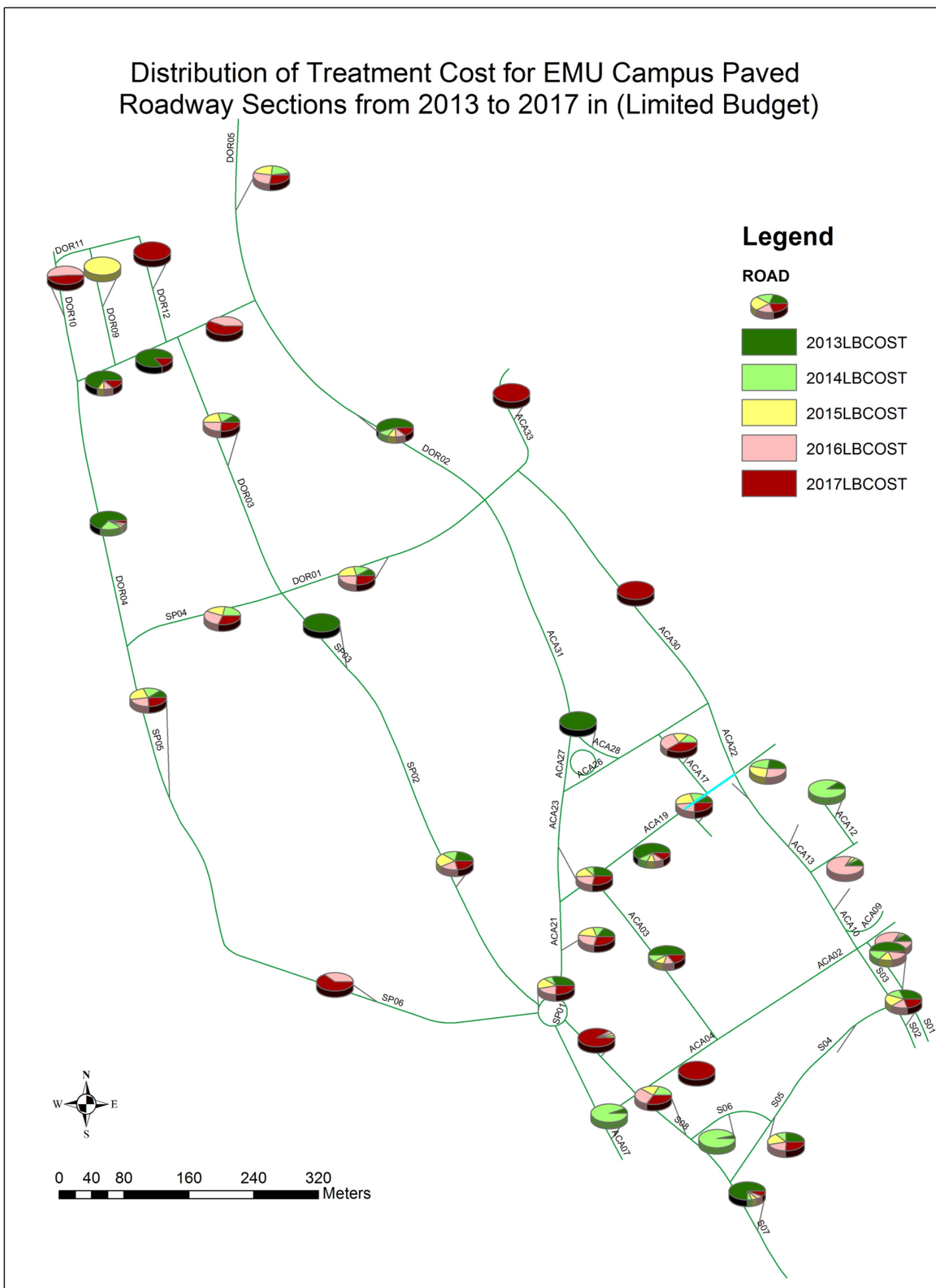


Figure D1.11: Treatment Cost Distribution of Campus Roadway from 2013 to2017 (Limited Budget)

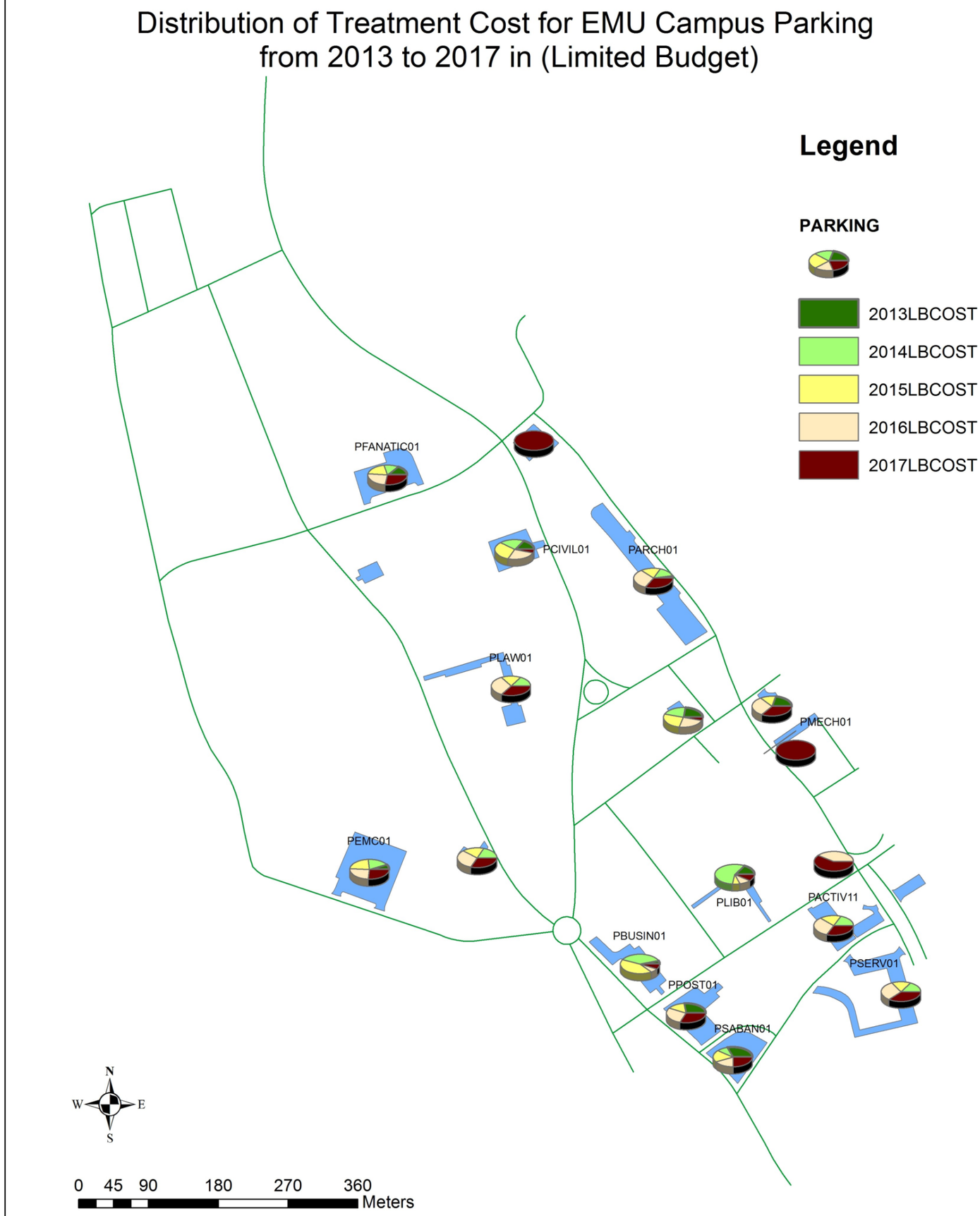


Figure D1.12: Treatment Cost Distribution of Campus Parking from 2013 to2017
(Limited Budget)