



DEPARTMENT OF PUBLIC WORKS
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PAVEMENT CONDITION EVALUATION ALTERNATIVE METHODS OCTOBER 20, 2014

The Public Works Department is responsible for the maintenance of 113 miles of roadway within St. Marys. Due to funding shortages from a sluggish economy, it has become increasingly more important to develop a pavement management philosophy that utilizes the appropriate pavement repair technology at the optimum time to increase the service life of the roadways. This philosophy is a shift in direction from previous lines of thought. Typically, roadways were repaired in a "worst first" approach which resulted in minimal mileage being repaired due to the higher costs associated with these repairs. The shift in thought is to make repairs to a roadway before it gets into a major repair category. If the right pavement preservation technology is applied to the road at the right time, preventative maintenance can significantly improve the roadways condition, and therefore service life, at a lower unit cost.

Wikipedia defines Pavement Management as *"the process of planning the maintenance and repair of a network of roadways or other paved facilities in order to optimize pavement conditions over the entire network. Pavement management incorporates life cycle costs into a more systematic approach to minor and major road maintenance and reconstruction projects. The needs of the entire network as well as budget projections are considered before projects are executed. Pavement management encompasses the many aspects and tasks needed to maintain a quality pavement inventory, and ensure that the overall condition of the road network can be sustained at desired levels."*

However, the first step in establishing a pavement management system is to evaluate the existing conditions of the roadway network. There are basically three methods of performing this evaluation. These methods evaluate pavements utilizing a windshield survey, ground survey or an automated vehicle survey. These methods will be further explained below.

Windshield Survey - In the windshield survey method, streets are driven and inspected from a moving vehicle. This method is typically used where the philosophy remains to expend pavement repair funding in a "worst first" approach. This method provides the quickest evaluation of the overall condition of a roadway but provides the highest degree of subjectivity to the evaluation. These surveys are typically done by existing Public Works employees during the normal course of their daily duties. Data generated from this method is not conducive for pavement management systems.

Ground Survey - In the ground survey method, evaluations are conducted by personnel actually walking the roadways. The personnel perform on the ground measurements of pavement distress factors such as cracking, edge raveling and rutting (20 actual distress

factors are investigated). Since it is impractical to physically measure and investigate every square inch of roadways, the roadways are broken down into 100 feet long segments generated from a randomizing program for each street. Data generated from this method is extremely valuable for pavement management systems.

Automated Vehicle Survey – In the automated vehicle survey method, a vehicle is equipped with several sensors and cameras and manned by two or three personnel. Roadways are driven in one direction only (worst side of a two lane roadway) and data recorded from the sensors, cameras and also windshield survey. Once the data has been gathered, computer programs evaluate the data to determine the roadway condition. Data generated from this method is also extremely valuable for pavement management systems.

The Public Works Department is currently in the process of updating our internal work order system software (Cartegraph). This update also included an asset management module for pavements at no additional costs. Both the ground survey and automated vehicle survey data sets are compatible with this new pavement management system. There is also a system called COPACES that was developed for GDOT which they provide at no cost for local governments. However, this system is proprietary and is not compatible with other systems. This system is also not based on or compatible with our GIS system.

Representatives from a ground survey method (The Barnhardt Group) and an automated vehicle survey method (Infrastructure Management Services) met with city management staff and discussed their inspection services. Both companies are capable of performing the work and providing a solid base line for the pavement management program. The data from both methods are compatible with the City's upcoming pavement management software (Cartegraph). Unless otherwise directed, the survey will be incorporated into the budget considerations for the fiscal year 2016.