



# BENEFITS OF INFRASTRUCTURE MAINTENANCE IN ACTION:

## A PAVEMENT MAINTENANCE CASE STUDY

### Introduction

The State of Illinois suffers from a historic lack of investment in transportation infrastructure, leading to the deterioration of thousands of bridges and roads. Appropriate funding needs to be provided to allow for proper maintenance to meet the needs of our crumbling infrastructure. While current revenues may not provide the financial resources to maintain our existing highways, roads or transit systems, there are other ways to invest in our infrastructure. In this article, we will take a closer look at Primera Engineers' partnership with a local county, highlighting the benefits of investing in maintenance.

## Kicking Proper Maintenance to the Curb

The fact that infrastructure improvements need maintenance in the first place is one that is frequently left out of the initial equation. These improvements are designed with the expectation that someone will, on a routine basis, clean the gutters, bridges, catch basins and usual appurtenances that come with a modern improvement. Pavement striping needs to be renewed, sometimes on a yearly basis. Signs get knocked down. Light bulbs burn out. Unfortunately, while this maintenance work should be regarded as routine, it tends to be expensive. As a result, it is an area that usually presents itself as ripe for budget cutting.



## Local Maintenance Programs

Primera Engineers has worked closely with a local county for several years, administering services for the Division of Transportation's Pavement Maintenance Program for the county's highway system. Regular, routine maintenance is critical to ensuring that our systems are operating as they were designed. The county recognized this and created a pavement maintenance program using Motor Fuel Tax (MFT) funds to ensure that proper maintenance is not dismissed or forgotten. The program keeps a finger on the pulse of several roadway projects needing improvements across the county. Through these efforts, the county is enhancing public safety and extending the infrastructure lifespan, ultimately saving copious amounts of valuable resources. Well-planned infrastructure and upkeep transportation systems set communities up for success.

## Utilizing Sustainable Pavement Practices for Road Maintenance

Primera's construction engineering and administration services have helped the county maintain high quality transportation systems, specifically roadways. The county prepared construction documents outlining the specific maintenance techniques Primera was to implement. During road maintenance, Primera followed the county's suggestion and used echelon paving, a road construction technique requiring two paving machines to work simultaneously, with one following slightly behind the other. Echelon paving results in a nearly seamless longitudinal joint which is essential in the prevention of pavement cracking. In using this method, the county avoided unnecessary upkeep plans, costs, and challenges in the future. In addition to echelon paving throughout the joint heaters, the county chose to use a POLY level binder for reflective crack control which Primera helped lay. POLY binders are designed to improve the performance of asphalt pavements, especially under varying temperatures and heavy traffic loads.



## Challenges of Sustainable Pavement Practices

Although using the echelon paving method and installing the POLY level binder was the sustainable choice, it made for more challenges upfront. Echelon paving typically causes significant traffic disruption as it closes multiple lanes simultaneously. It also requires more equipment and additional crew members, increasing the complexity and cost of the project. Using a POLY level binder is a tricky Hot Mix Asphalt (HMA) due to the complexity in mixing, requirement of specialty equipment, and performance variability. The performance of polymer-modified asphalt may vary given the specific roadway conditions and type of polymer used. However, these extensive methods are significantly more effective when it comes to maintaining the high quality and durability of the roadway.



## Conclusion

Investing wisely in infrastructure, whether storm sewers, bridges, highways or local roads, is critically important. The decision to implement echelon paving and a POLY level binder for the local county was a complex one. The advanced practices increased project costs and required more coordination, planning, and skill. However, choosing these methods ultimately reduces the county's immediate need for upkeep and repairs, making the decision both smart and sustainable. By properly combining Life Cycle cost analysis in the design phase and committing to realistic maintenance costs over the life of an improvement, an agency can minimize its total expense for infrastructure responsibilities and free up funding for maintenance and operations.

