DATE: 09/25/2020

PROJECT AREA: Maintenance

TITLE: Implementing Preventative Pavement Maintenance

PROBLEM STATEMENT:

In December, 2018, ARDOT and FHWA signed a preventative maintenance plan. Within this plan, 25 asphalt pavement treatments, 13 concrete pavement treatments, and 6 "other" treatments are defined. For the asphalt and concrete pavement treatments, guidance is provided on matching groupings of treatments to roadway conditions. However, it is not clear on exactly which treatments are best suited for specific roads. For example, there are 6 Category II treatments for asphalt pavements, yet the most utilized treatment by far is still the chip seal, with relatively little usage of the other 5 treatments. Similarly, there is limited use of joint resealing for concrete pavements, which falls in Category IV. The effectiveness of these methods is highly dependent on implementation at the correct time in the pavement's life. Therefore, there is a need to show the economic benefit of using each treatment, which will hopefully increase the effectiveness of the preventative maintenance plan. In addition, there is a need to describe the site selection, design, manufacture, construction, and quality assurance with each of the treatments. This research will aim to fulfill both of these needs.

OBJECTIVES:

There are two objectives to this research. First, an economic analysis will be performed for the 25 asphalt pavement treatments and 13 concrete pavement treatments. This will include initial cost and life cycle cost of each treatment. Second, a robust decision tree analysis will be designed to make it easier to understand the "right treatment for the right road at the right time" in order to fully leverage the benefits of all 38 treatments. This will include a short description of each treatment, along with a comprehensive review of the site selection, design, the manufacture, the construction, and the quality assurance for each treatment. This work will be executed through a review of Arkansas and other state's experiences.

FORM OF RESEARCH IMPLEMENTATION AND RETURN ON INVESTMENT:

There are two primary forms of research implementation. First, a comprehensive manual will be developed for each treatment, focusing on the design, manufacture, construction, and quality assurance of each treatment for asphalt and concrete pavement. Second, a 1.5 day training seminar will be developed and given in each of the ten districts based on this manual to distribute this information to ARDOT. These two forms of implementation will compliment the existing preventative maintenance plan. A key part of the research will be to demonstrate the economic benefits of proper preventative maintenance over reactive activities to pavement deterioration.

Estimated Project Duration: 24 Months

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Standing Subcommittee Ranking

Advisory Council Ranking

Statement Combined with Statement Number(s)

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