Arkansas Department of Transportation
Transportation Research Committee

RESEARCH PROBLEM STATEMENT

DATE: 08/24/2017
PROJECT AREA: Maintenance

TITLE: Lowering Cost for Snow & Ice Removal in Arkansas

PROBLEM STATEMENT:
In the United States, 15 million tons of deicing salt are used each year and more than $2 billion are spent on winter road maintenance. The annual average snowfall in the state of Arkansas ranges from 10.4 inches in the extreme northwest to 2.8 inches in the lowlands of the southeast. The Arkansas Department of Transportation (ArDOT) spent $18 million on snow and ice removal in 2014 alone. Salt brine and sand/salt mixtures are the common deicers used by ArDOT. This project will focus on investigating methods to lower the cost for snow and ice removal while maintaining or improving the deicing efficacy, which includes: (1) identifying alternative deicing materials with comparable or cheaper overall cost; (2) optimizing various aspects of snow and ice removal operation, such as timing and frequency of deicer application, brine preparation, necessary equipment (brine making machines, sensors for road conditions, etc.); and (3) considering short and long term impacts of deicers on pavement materials and environment. While initial raw material cost may be more expensive for alternative snow and ice removal materials, there may be significant cost savings in fewer necessary applications. In addition to fewer applications saving driver and truck economic costs, this may also increase safety by reducing the number of slow moving snow and ice removal vehicles from the roadway. Direct adoption of best management practices for snow and ice removal from northern states might not work for Arkansas due to its unique weather and road conditions. This project may aid ArDOT with significant cost saving measures for winter road maintenance.

OBJECTIVES:
The overall objective of this project is to investigate methods to lower the cost of snow and ice removal by (1) identifying alternative deicing materials and application practices, (2) quantifying economic aspects of various snow and ice removal operation, and (3) considering impacts of deicers on pavement materials and environment. An improved snow and ice removal protocol will be developed. In addition, a cost saving analysis will be performed on the new protocol.

FORM OF RESEARCH IMPLEMENTATION:
Proposed revision will be prepared and presented for the ArDOT Snow and Ice Removal Guide.

Estimated Project Duration: 24 months
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Standing Subcommittee Ranking
Advisory Council Ranking
Statement Combined with Statement Number(s)
3 / 9 18 / 44

Updated 7/20/2017