ARDOT TRC TRANSPORTATION RESEARCH COMMITTEE

PROBLEM STATEMENT
No. 14

RESEARCH PROBLEM STATEMENT

DATE: 09/25/2020	**PROJECT AREA:** Materials

TITLE: Effect of Using Wood Ash as Alternative Filler in Hot Mix Asphalt (HMA)

PROBLEM STATEMENT:

Rutting and thermal cracking prevention through binder modification with filler material. Scope of this research project includes, finding the optimum content of the filler wood ash in to the asphalt concrete. With time asphalt binder looses its elasticity and becomes more susceptible to thermal cracking and fatigue failure. Significant improvement can be achieved through chemically modifying the binder and then optimizing the gradation curve for the aggregate and at the same time proportioning the aggregate to binder ratio. Making sure the overall mix performance is satisfactory and G* value increase at the same time.

OBJECTIVES:

Finding the optimum binder content for the best performance is the goal of this research. Series of curve will be plotted with the test result form a range of binder content and trend will be analyzed from the rutting and freeze-thaw results. DSR will be used for checking the rheological properties of binder and RTFO will be used to test the aging parameter.

FORM OF RESEARCH IMPLEMENTATION AND RETURN ON INVESTMENT:

The research implementation will be in the form of practical application of results. The research aims to produce a comparatively better filler in terms of engineering properties and cost effectiveness. Successful effort will produce technical data that ARDOT could incorporate into technical standards and transfer the knowledge to industry. The wide scale implementation of successful research finding will generate employment through out the state. if the outcome of the proposed study results in quality improvements of road surface condition and saves 0.1% of the $2 billion that Arkansas residents currently pay, the net savings could amount to $2 million annually.

Estimated Project Duration: 18 **Months**

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Standing Subcommittee Ranking	Advisory Council Ranking	Statement Combined with Statement Number(s)
8/8	27	