Arkansas Department of Transportation
Transportation Research Committee

RESEARCH PROBLEM STATEMENT

DATE: 09/15/2017
PROJECT AREA: Construction

TITLE: Exploring the Implementation of Intelligent Compaction

PROBLEM STATEMENT:
Intelligent Compaction (IC) provides real-time data visualization of compaction data, which assists roller operators in achieving the needed coverage over the full pavement area. IC uses an accelerometer in the rolling drum to measure the response of the material being compacted to the compaction forces being applied. Many states have implemented the use of IC for soil, granular base, and asphalt pavements. The use of IC ensures that proper density is reach in soil and granular bases, and proper air voids in asphalt pavements. Reaching the proper density and air void levels ensures long-term performance of the roadway. States have seen a reduction of up to 20% of fuel consumption during the rolling operation, which translates into a potential overall cost of compaction on construction sites by 20%. Therefore, ArDOT could benefit from incorporating IC into specifications in order to reduce the time, money, and fuel spent during the compaction process of the entire pavement structure.

OBJECTIVES:
1) Complete a full literature review, focusing on state specifications, for the application of IC on soil, granular base, and asphalt pavement
2) Identify a minimum of four reconstruction or new construction jobs in Arkansas and contact two IC equipment manufacturers to obtain IC data on soil, granular base, and asphalt pavement.
3) Analyze monetary and environmental savings using IC versus traditional compactors

FORM OF RESEARCH IMPLEMENTATION:
The research implementation will focus around providing proposed revised specifications for Sections 200, 300, and 400 in ArDOT's highway construction specifications. In addition, recommendations for enhancing ArDOT's manual of field sampling and testing procedures will be provided.

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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