

Arkansas Department of Transportation
Transportation Research Committee

RESEARCH PROBLEM STATEMENT

DATE: 09/14/2017	PROJECT AREA: Maintenance
TITLE: Reducing the cost of bridge deck inspection	
PROBLEM STATEMENT: <p>Bridge decks require special consideration within AHTD's roadway network, as the unique structural and environmental conditions often lead to cracking and spalling, which require patching. When evaluating bridges, the percent of patch area on bridges is of significance, as patching contributes significantly to how the bridge deck is rated. Currently, there are two techniques for inspecting bridge decks: visual inspection and sounding. However, there is interest in attempting to use ARAN images to perform bridge deck inspections, and this would speed the process and hopefully increase the consistency of ratings from bridge to bridge. Ideally, AHTD would like to utilize the ARAN images first in order to get a general quantification of deck inspection quality, and only perform a more precise yet more expensive visual inspection if the off-site digital inspection warranted the additional resources. This approach would save significant resources in on-site bridge inspections and provide a more efficient automation of bridge deck evaluation.</p>	
OBJECTIVES: <p>This research will have three objectives. First, prepare a state of the art literature review on other state's use of images or video in bridge deck evaluation. Second, determine whether the existing ARAN images can be further analyzed for better correlation with visual inspection through advanced image analysis, including grey-scale analysis. Third, either utilize existing ARAN images and recommend a new analysis technique, or provide alternative methods for collecting data electronically versus visually on bridge deck inspection.</p>	
FORM OF RESEARCH IMPLEMENTATION: <p>It is anticipated that there will be two forms of research implementation. First, a computer program will be provided that automatically analyzes the percent of bridge deck patching automatically and electronically that has a high level of correlation with visual inspections. Second, guidelines will be developed for the maintenance division that provide a framework for deciding whether a bridge warrants visual inspection or sounding after a review of the ARAN images.</p>	
Estimated Project Duration: 24	months
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Standing Subcommittee
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