Arkansas Department of Transportation
Transportation Research Committee

RESEARCH PROBLEM STATEMENT

DATE: 09/11/2017 PROJECT AREA: Maintenance

TITLE: Cost-Benefit Analysis of Steel Bridge Preservation Actions for Improved Joint Corrosion Protection

PROBLEM STATEMENT:
Steel bridge corrosion protection is an ongoing battle having significant revolving costs for the state. Current preservation actions involve polymeric paint coatings which require re-coating/replacement each decade; however, with budget limitations and limits on access to state resources, these coating replacement actions may be only reactionary to observed corrosion issues. With the higher likelihood of corrosion occurring near girder supports and under deck expansion joints, alternative (and more targeted/localized) coating protection and end region detailing methods may provide longer-lasting and more cost-effective steel preservation solutions. This project will explore alternative coating protection methods (metalizing coatings, sacrificial anodes, galvanic paints, etc.) and combinations for extending bridge maintenance life. Additionally, since end regions and locations below expansion joints are "hot spots" for corrosion within steel bridges, alternative detailing strategies which prevent the pooling of liquids on the steel surface will be explored.

OBJECTIVES:
The proposed research project has three main objectives: 1) perform cost-benefit analyses on different corrosion protection methods (localized near corrosion hot-spots at bridge ends and expansion joints), 2) perform accelerated corrosion testing with various corrosion application methods (metalizing, sacrificial anodes, etc.) for performance investigation, and 3) develop alternative detailing strategies to avoid pooling and water stagnation near bridge ends and underneath expansion joint locations.

FORM OF RESEARCH IMPLEMENTATION:
Results from the proposed research project will be presented in project reports, peer reviewed journal publications, and technical presentations. Strategies for implementation of findings in bridge maintenance will be presented in an implementation plan (to be presented to AHTD at the project conclusion) which will include lessons learned from all aspects of the project.

Estimated Project Duration: 18 months

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