

Arkansas State Highway and Transportation Department Transportation Research Committee

RESEARCH PROBLEM STATEMENT

DATE: 09/12/2016	PROJECT AREA: Pavements
TITLE: Field Evaluation of Full-Depth Reclamation	
PROBLEM STATEMENT:	
<p>TRC1405, "Examination of Full-Depth Reclamation [FDR] Techniques for Shale Areas Across Arkansas," came to two primary conclusions: (1) FDR can be used in Arkansas to increase the structural capacity of a roadway without having to completely remove and replace a pavement structure; and (2) FDR on the proper roadway appears to be economically competitive to commonly-used techniques of removing/replacing, and constructing a two-inch overlay. However, TRC1405 was conducted exclusively in the laboratory; a key element necessary for proper implementation of the technology involves field production, construction, and initial performance of FDR roadways. Research is needed to successfully implement the laboratory findings of the first project by executing at least three FDR test sections in Arkansas.</p> <p>Portland cement, asphalt emulsion, and asphalt foam FDR technologies will be demonstrated in the field, with a minimum of a 1/2 mile test section for each technology. It is anticipated that the test section will be in either the Fayetteville Shale area (north-central Arkansas) or the Brown Dense Shale area (south-west Arkansas). Ideally, the sections will overlap with the four sections evaluated in TRC1405. If a new test section is identified, samples will be taken from the roadway and a mix design will be completed for all three technologies. Once the mix design is established, the field construction will occur. Each technology's design, production, and construction will be documented and the existing FDR handbook on design from TRC1405 will be expanded to include production and construction. Either a thin asphalt concrete overlay, or a chip seal will be placed on top of the FDR sections for a wearing course. Each test section will be monitored for a minimum of six months to determine short-term performance. Monitoring will include Ground Penetrating Radar and Falling Weight Deflectometer to quantify surface and structural performance. At the end of this project, appropriate FDR technologies will be recommended for use in Arkansas, and a draft specification for design and construction will be delivered.</p>	
OBJECTIVES:	
<p>The overall objective of the research is to identify, recommend, and draft specifications for appropriate FDR technologies for Arkansas, based on BOTH laboratory and field examination. Specific objectives include:</p> <p>(1) Identify three, 1/2-mile test sections for the construction of Portland cement, asphalt emulsion, and asphalt foam FDR sections. A full mix design, along with laboratory performance testing, will be performed for each technology on materials sampled from these sections.</p> <p>(2) Assist AHTD with the construction the three test sections - including the identification of a regional FDR construction company.</p> <p>(3) Monitor the sections post-construction for a minimum of six months to track the in-place performance of the sections.</p> <p>(4) Draft specifications, including both design and construction, for FDR use in Arkansas - to include all appropriate FDR technologies.</p>	
FORM OF RESEARCH IMPLEMENTATION:	
<p>There will be three forms of research implementation: (1) appropriate FDR technologies will be recommended for use in Arkansas; (2) Draft specifications for the design and construction of these technologies will be delivered; (3) the FDR handbook will be expanded from the current laboratory-design-only to include both field production and construction.</p>	
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Standing Subcommittee
Ranking

2/7

Advisory Council
Ranking

16

Statement Combined with
Statement Number(s)
