UTC Project Information	
Project Title	Evaluation of Surface Treatments to Mitigate ASR
University	University of Arkansas
Principal Investigator	PI: W. Micah Hale, Ph.D., P.E., University of Arkansas
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Funding Source(s) and Amounts Provided (by each agency or organization)	SPTC: $135,748 Headwaters Resources: $1207,144 University of Arkansas: 16,363
Total Project Cost	$259,255
Agency ID or Contract Number	DTRT13-G-UTC36 SPTC14.1-20
Start and End Dates	August 1, 2014 – July 31, 2016
Brief Description of Research Project	**PROBLEM**: Alkali-silica reaction (ASR) is an expansive reaction between the alkalis in cement and reactive silica in aggregates. Transportation agencies are currently experiencing the detrimental effects of ASR. Current research shows that concrete expansion due to ASR may be exacerbated by extreme weather changes (e.g. freeze/thaw cycles), which can cause further deterioration of pavements and structures. This proposed project will examine the effectiveness of silane and other potential sealers in mitigating ASR in concrete structures. **PROPOSED SOLUTION**: The expansion that occurs within the alkali-silica gel can exceed concrete's tensile strength, which leads to cracking and concrete deterioration. For this expansion to occur, sufficient moisture must be available. When the internal relative humidity of concrete falls below 80 percent, ASR will cease and expansion will stop. One of the major objectives of this project is to examine the effectiveness of silane (and other sealers) in reducing the internal relative humidity of ASR-infected concrete. This will be achieved through two research phases. The first phase will monitor the expansion of an ASR-infected concrete barrier wall in Northwest Arkansas. The barrier was instrumented on a previous research project. This project will continue research with regard to the monitoring of expansion and relative humidity. Application rates for silane and other sealers will also be evaluated to determine the most effective mitigation regimen. The second phase will consist of casting and testing field exposure blocks containing reactive silica. The blocks will be treated with a variety of vapor barriers to reduce internal relative humidity, including silane, to determine the most effective treatment

	with regard to ASR expansion mitigation.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links • Reports • Project website	