

**Arkansas State Highway and Transportation Department  
Transportation Research Committee**

**RESEARCH PROBLEM STATEMENT**

<b>DATE:</b> 09/12/2016	<b>PROJECT AREA:</b> Construction
<b>TITLE:</b> Low Weight Ground Improvement and Load Transfer Platform	
<b>PROBLEM STATEMENT:</b>	
<p>Infrastructure along United States Highway (US-63), in Northeastern Arkansas, has been being upgraded for several years to accommodate the upgrade from US-63 being a US highway to being an interstate (I-555). The high cost of the infrastructure, due to the poor soil conditions, still exists along this corridor. By using the knowledge gained about deep foundation response in seismically active areas, from the TRC-1204 (Turrell, Arkansas), TRC-1502 (Turrell, Arkansas) projects, and knowledge gained about geosynthetic response in seismically active areas, from the MBTC-3020 (Marked Tree, Arkansas) project, low weight foundation elements (timber piles and geosynthetics, recycled plastic blocks, and geofoam) will be instrumented and monitored to ensure proper performance during a seismic event. Specifically, prior to construction of a given access road within this corridor, test sections will be constructed, using the same means and methods that will be utilized for the actual roadway, and the best performing method will be selected.</p>	
<b>OBJECTIVES:</b>	
<p>The foundation elements within the test section will be instrumented to ensure that the stresses from the access road are shed into the foundation soils. Specifically, the test sections will help ensure that: 1) the timber piles will not punch into the abutment and embankment soils, 2) no detrimental settlement of the roadway will occur due to the weight of the abutment and embankment soils causing consolidation of the foundation soils, 3) no detrimental movement of the roadway will occur due to a shear failure of the foundation soils, and/or 4) the foundation elements will not deform when subjected to ground shaking. The information gathered from the test section will enable cost savings. Specifically, at least \$1M cost savings will be obtained by completing the research associated with these test sections.</p>	
<b>FORM OF RESEARCH IMPLEMENTATION:</b>	
<p>The research will be performed in conjunction with a construction project that involves soft ground conditions. Therefore, the research will be directly implementable on the project and will result in cost savings of at least \$1M.</p>	
<b>REVIEWER:</b> Chris Dailey	<b>Estimated Project Duration:</b> 24
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Standing Subcommittee  
Ranking

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Advisory Council  
Ranking

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Statement Combined with  
Statement Number(s)

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