

## Research Project Descriptions

UTC Project Information	
Project Title	<b>Development of a mechanistic-based design method for geosynthetics-reinforced pavement on expansive soils</b>
University	Louisiana Tech University
Principal Investigator	PI: Jay Wang, Louisiana Tech University (LaTech)
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Funding Source(s) and Amounts Provided (by each agency or organization)	SPTC: \$34,192 Louisiana Tech University: \$34,535
Total Project Cost	\$68,727
Agency ID or Contract Number	DTRT13-G-UTC36 SPTC 15.1-23
Start and End Dates	3/01/2016 – 2/28/2017
Brief Description of Research Project	<p><b>PROBLEM:</b> Expansive soils cause a significant hazard to pavements and light building foundations. During periods of high moisture, expansive soils will swell underneath pavement structure, and during periods of very dry season in which soil moisture dramatically falls, expansive soils will shrink and can result in significant contractive deformation. These cycles of swell and/or shrinkage can lead to pavement cracking. Shrinkage due to water content loss in the soils frequently causes longitudinal pavement cracks.</p> <p><b>PROPOSED SOLUTION:</b> This project extends the current SPTC project by characterizing local expansive soils, developing methods to predict soil heaves and calculate induced stresses in pavements and shallow foundations. An easily implementable model will be developed on the basis of the theory of Timoshenko beam on elastic foundation, in which the mechanism of soil strength and stiffness enhancements from geosynthetics is mathematically considered. As compared with the traditional finite element models, the proposed analytical model will be significantly simple and more easily implemented. The closed-form solutions make pavement stress analyses and soil heave predictions separate.</p>
Describe Implementation of Research Outcomes (or why not implemented)	
Place Any Photos Here	

Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul>	