TriDurLE

National Center for Transportation Infrastructure Durability & Life-Extension

UTC Project Information – National UTC TriDurLE	
Project Title	Development of a Multi-Camera Based Photogrammetric Method for Improving Three-Dimensional Full-Field Displacement Measurements of Geosynthetics During Tensile Test
University	Missouri University of Science and Technology (S&T)
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Funding Source(s) and Amount Provided (by each agency or organization)	TriDurLE: $90,005 Missouri S&T: $90,005
Total Project Cost	$180,010
Agency ID or Contract Number	
Start and End Dates	07/01/2023 – 06/30/2024
Brief Description of Research Project	The research aims to develop a low-cost photogrammetric method for continuously measuring and tracking the 3-D full-field displacements and complete strains of geosynthetics during tensile tests. The proposed method will be non-contact, cost-effective, accurate, and capable of measuring the 3-D displacements of the geosynthetics at any location within the geosynthetics and at any moment during the tensile test. The proposed method can also identify any localized strains at any location within the specimen.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The developed photogrammetric method from this study can be used in dynamic tests where the objects are continuously moving/deforming, such as tensile tests on the geosynthetics, which cannot be done by using the conventional one-camera-based photogrammetric method. Departments of Transportation (DOTs) and contractors can use the method for measuring the deformational response of geosynthetics with continuous movements or deformation.
Impacts/Benefits of Implementation (actual, not anticipated)	The research product will allow the DOTs and contractors to use a low-cost method to measure continuous and complete displacements of geosynthetics at all locations in the laboratory tests, which could not be assessed by the expensive conventional extensometers. The implementation will improve the testing accuracy and efficiency in research and production while saving taxpayers' money.

Web links • Reports • Project website	