UTC Project Information	
Project Title	MPC-596 – Measurement of Turbulent Flow Characteristics and Bed Shear Stress in Laboratory Soil Erosion Tests
University	South Dakota State University
Principal Investigator	Francis Ting, Ph.D., P.E.
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT, Research and Innovative Technology Administration $74,007 South Dakota State University $77,887
Total Project Cost	$151,894
Agency ID or Contract Number	69A3551747108
Start and End Dates	April 11, 2019 to July 31, 2023
Brief Description of Research Project	The objective of this research project is to measure the characteristics of turbulent flow over an eroding soil sample in an erosion function apparatus (EFA) type facility. A gravel bed will be installed in an open-channel flume to produce fully developed turbulent flow over a rough bed. The turbulent flow will pass over a prepared soil sample housed in a floor recess. The velocity profile over the gravel bed and the soil sample will be measured using a Particle Image Velocimetry (PIV) system. PIV measurements will also be conducted with the soil sample replaced by a smooth bed to provide a baseline for comparison purpose. The measured data will be used to quantify the effects of surface roughness and depth of the soil erosion on the induced bed shear stress and soil erosion rates. The outcome of this experimental investigation will be an improved laboratory setup for measuring soil erodibility. A future extension of this project would use the improved EFA facility to develop a soil erodibility chart for South Dakota soils. This information should be useful for assessing the susceptibility of soil erosion and scour in highway projects.
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	