

UTC Project Information	
Project Title	MPC-531 – Flood Hydrograph Generation for Predicting Bridge Scour in Cohesive Soils
University	South Dakota State University
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Funding Agencies	USDOT, Research and Innovative Technology Administration
Agency ID or Contract Number	DTRT13-G-UTC38
Project Cost	\$139,672
Start and End Dates	September 30, 2013 to September 30, 2018
Project Duration	September 30, 2013 to September 30, 2018
Brief Description of Research Project	This research has three main objectives. First, select three bridge sites in South Dakota with long stream flow records (> 50 years) to compute the scour histories using the <u>Scour Rate In Cohesive Soils</u> (SRICOS) method. The results will be analyzed to understand the relationship between time sequence of flows, rate of scour, and final scour depth to answer the fundamental question of how the characteristics of a hydrograph such as flood magnitude and duration, and the order of occurrence of floods would influence scour development in cohesive soils. Second, develop a decision tool to identify the types of field situations where the SRICOS method will be appropriate and beneficial. Third, provide guidelines for hydrologic analysis and hydrograph generation for using the SRICOS method based on the site conditions and project requirements.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The expected outcomes of this project will be an alternative approach to evaluation of bridge scour in cohesive soils. The results of this proposed research will be directly applicable to practice, first by giving the design engineer detailed guidelines to identify bridge sites where the SRICOS method may be useful and, second, by providing step-by-step instructions and worked examples on how to generate flood hydrographs for scour prediction using the SRICOS method. When use of the SRICOS method is advisable, substantial savings in foundation costs may result and this can be measured by the dollars saved in SDDOT projects.

<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>One graduate student will work on this project and complete a Master of Science (MS) thesis. The student will attend and present his/her work at an annual Transportation Research Board (TRB) Meeting. Conference and journal papers will be published to disseminate the results of this project widely to the practitioners. The information developed by this project will also be used for presentations and term projects in hydraulic engineering classes taught by the principal investigator.</p>
<p>Web Links</p> <ul style="list-style-type: none">• Reports• Project Website	<ul style="list-style-type: none">• MPC Research Report – Flood Hydrograph Generation for Predicting Bridge Scour in Cohesive Soils