

ICNet Members' New England Research & Project Survey



Research/Project Focus	Investigation of hydraulic properties of composite arch tubes in a stream bed.
Research/Project Description	The Task 9 investigates water flow interaction with the tubes and decking as it flows under the FRP tubular bridge, and a Manning's roughness coefficient is calculated for water flow under the composite bridge system. The aim is provide the manning parameter input for the HEC-RAS used by DOT to investigate hydraulic characteristic of river with bridge in back pack such as backwater profile "Research and Development to Advance Buried Composite Bridge Technologies" (PI: Dr. Habib Dagher P.E.)
Primary Category*	Roads, Bridges Culverts
Geographic Location	Maine
Funding	Maine Department of transportation
Contact	Qingping Zou, UMaine-O: qingping.zou@maine.edu
Infrastructure sectors effected, subject area	Bridge/transportation
For modeled climate or sea level rise projections, AOGCM or other sources used	Maine DOT will be the one who assess sea level projection and its effect on the bridge design for the future climate using the manning coefficient provided by this study.

Other Information, data, models, used	None
Time periods analyzed	Current
Status /Date submitted to ICNet	Submitted January 2014
Brief key findings to date	Depending on the arch radius, Manning coefficients for Bridge-in-a-Backpack are significantly larger than smooth concrete (0.012). This is an important result, and for many engineers it may be unexpected. hydraulic modeling and predictions of water flowing under the Bridge-in-a-Backpack were previously done using traditional tools for uniform concrete arch structures.
Key publications/reports?	Technical report to Maine DOT
Other information (e.g., web links to technical reports).	None

*** Categories: Roads, bridges, and culverts; Pavement and/or soils; Hydrology (study of data/floods); Environmental/water resources (stormwater, drinking water); Transportation assets (network); Climate model output**