UTC Project Information

Project Title	Multi-Functional Concrete Pavement Inlays
University	University of Illinoi at Urbana-Champaign
Principal Investigator	Jeffery R Roesler, PhD, PE Professor University of Illinois Urbana-Champaign 205 N. Mathews Ave, 217-265-0218
PI Contact Information	jroesler@illinois.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	$155,670 USDOT $112,775 UIUC
Total Project Cost	$268,445
Agency ID or Contract Number	DTR13-G-UTC44
Start and End Dates	May 15, 2014 – May 14, 2017
Brief Description of Research Project	While asphalt concrete has been the preferred choice for pavement preservation, there is a demand for concrete alternatives that overcomes material and construction shortcomings while still meeting the extended service life objectives of pavement preservation. Current concrete technologies, such as self-consolidating concrete (SCC), thin concrete overlays, and macro-fibers, can be integrated and extended to present a solution that can be placed rapidly without internal vibration and meet the functional requirements for preservation. Moreover, this technology can be enhanced into a multi-functional concrete pavement inlay by employing emission reducing photo-catalytic cement to improve air and runoff water quality while also reducing urban heat island effects. This research develops multi-functional concrete from the point of view of its rapid placement, superior consolidation, bonding with the substrate pavement, post-cracking serviceability, and subsequently quantifies through life cycle assessment its environmental benefits in mitigating urban heat island effects and reducing near-road emissions.

Describe Implementation of Research Outcomes (or why not implemented)	N/A
Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	The research objectives will be met by further refining ongoing research on thin concrete inlay materials in the laboratory, evaluation of full-scale test sections already constructed, modeling and testing of concrete inlay impact on urban heat island and air quality. Specific research gains will be in quantifying air quality improvements, serviceability life predictions, optimized inlay mixtures for given functional objectives, surface reflectivity measurements, development of LCA module to assess impact of energy reduction and global warming potential, and end-of-life recyclability and renewal of the inlaid pavement.
Web Links	
• Reports • Project website	<www.chpp.egr.msu.edu>