RUTGERS
Center for Advanced Infrastructure and Transportation

Project Overview Report

1. UTC Identifying Number
   DTRT13-G-UTC28
2. Center Identifying Number
   CAIT-UTC-NC10
3 Project Title
   Initial Evaluation of the Albedo and Solar-Radiation Flux of Asphalt Pavements
4. Principle Investigator & Contact Information
   John Hencken, Research Engineer
   Center for Advanced Infrastructure and Transportation
   Rutgers, The State University of New Jersey
   100 Brett Road
   Piscataway, NJ 08854
5. Rutgers/CAIT Project Manager
   Patrick Szary, Ph.D.
6. Customer Principal
   Robert Blight
   New Jersey Department of Transportation
   1035 Parkway Avenue
   Trenton, NJ 08625
7. Project Description
   The goal of this research is to improve the procedures utilized to analyze albedo and solar radiation flux of asphalt pavements. The methodology of measuring albedo and solar radiation flux of pavements has been borrowed from agriculture research and has been applied in two different methodologies to date, the first being in-situ testing which requires lane closures and the second being conducted on large test plots paved in an open space, which limits the type of variation between pavements parameters that can be tested and does not easily allow for three samples to be tested simultaneously due to space, cost, and time limitations. The ability to test three samples simultaneously would allow for measurement repeatability and would provide results with statistical significance, which has yet to be done. In addition, the equipment being utilized has varied from project to project and new equipment has become available that will provide better results.
8. Implementation of Research Outcomes (or why not implemented)
   Measuring albedo and solar radiation flux of asphalt samples requires a multi-faceted approach to ensure the most control and enable the separate evaluation of basic properties. The proposed testing would be conducted in natural light in outdoor conditions, which lends itself to changing environmental conditions and potential security concerns for laboratory equipment left outside. The following four criteria, which are explained in more detail below, are considered important to consider for the implementation of this study; sample design and preparation, equipment utilized and equipment setup, testing location and sample storage, and the testing scheme utilized to collect the date.
9. Impacts/Benefits of Implementation (actual, not anticipated)
   TBD
10. Dates and Budget
    Start Date: 12/1/2014
    End Date: 12/31/2015
    UTC (CAIT) Dollars: $ 50,286
    Cost Sharing: $ 0
    Total Dollars: $ 50,286
11. Keywords
    Asphalt Pavement, Urban Thermal Loading, Urban Heat Island Effect, UHI, Environmental Radiation, Albedo, Sustainabillity

12. Web Links (Reports and Project Website)
https://cait.rutgers.edu/cait/research/initial-evaluation-albedo-and-solar-radiation-flux-asphalt-pavements