QUARTERLY PROGRESS REPORT

December 1, 2018 - February 28, 2019

PROJECT TITLE: Research Advances on the Use of Solid Wastes in Concrete and Asphalt

PRINCIPAL INVESTIGATOR(S): Timothy G. Townsend

AFFILIATION: Professor, University of Florida
Department of Environmental Engineering Sciences

CO-PRINCIPAL INVESTIGATOR(S): Christopher C. Ferraro

AFFILIATION: Research Assistant Professor, University of Florida
Department of Civil and Coastal Engineering

COMPLETION DATE: May 31, 2019 **PHONE NUMBER: 352-392-0846**

PROJECT WEBSITE: https://www.essie.ufl.edu/home/townsend/research/bu/research-advances-on-waste-in-concrete--asphalt/

Work accomplished during this reporting period:

During this time period, the UF team has processed waste to energy (WTE) ash obtained in the previous reporting period using a washing pretreatment step. The washed ash-derived aggregate along with its waste components (e.g., washwater) have been analyzed to determine properties including, but not limited to, fine particulate content, metals leachability, and gradation. The effects of washing on ash-derived aggregate will be further examined with respect to how these aggregates change the physical performance of asphalt concrete and portland cement concrete (e.g., tensile strength for asphalt concrete, compressive strength for portland cement concrete). For asphalt concrete, volumetric parameters (e.g., voids in mineral aggregate, optimum asphalt binder content) are currently being examined to determine how a washed ash-aggregate product may reduce the amount of asphalt binder needed for a mixture. Simultaneously, this is expected to improve aggregate-binder adhesion and result in improved physical properties such as moisture and rutting (deformation) resistance. Lastly, the UF team continues to draft a report including a literature review of work done to date along with documentation of the testing results relevant to this project.

Work planned for the next reporting period:

The UF research team will continue to compose a draft report including a literature review of work done to date on this topic along with documenting the testing results with respect to ash, processing (washing), asphalt concrete, portland cement concrete, and other relevant information. The team is also working on scheduling a TAG meeting to discuss results and obtain insight from professionals in the next reporting period.

TAG Meetings:

No Technical Awareness Group (TAG) meetings were planned for this period.

Metrics:

- *Graduate Students:*

Name	Rank	Department	Professor	Institution
Kyle Clavier	PhD Student	Environmental Engineering	Timothy Townsend	University of Florida
Yalan Liu	PhD Student	Environmental Engineering	Timothy Townsend	University of Florida
Chad Spreadbury	PhD Student	Environmental Engineering	Timothy Townsend	University of Florida

- *Undergraduate Students:*

Name	Rank	Department	Professor	Institution
Brian Cochran	Undergraduate Research Assistant	Civil Engineering	Timothy Townsend	University of Florida
Mohamad Shawar	Undergraduate Research Assistant	Civil Engineering	Timothy Townsend	University of Florida
Sharez Sohail	Undergraduate Research Assistant	Environmental Engineering	Timothy Townsend	University of Florida
Thomas LeBlanc	Undergraduate Research Assistant	Environmental Engineering	Timothy Townsend	University of Florida

- *Research publications resulting from THIS Hinkley Center project:* **None.**
- *Research presentations resulting from (or about) THIS Hinkley Center project:* **None.**
- *Who has referenced or cited your publications from this project:* **None.**
- *How have the research results from THIS Hinkley Center project been leveraged to secure additional research funding? What additional sources of funding are you seeking or have you sought?* **None.**

- *What new collaborations were initiated based on THIS Hinkley Center project?* **None.**

- *How have the results from THIS Hinkley Center funded project been used (not will be used) by the FDEP or other stakeholders?* **None.**