

UTC Project Information	
Project Title	MPC-683 – Beneficial Reuse of Landfilled Fly Ash in Transportation Infrastructure
University	Colorado State University University of Wyoming
Principal Investigator	Mahmoud Shakouri, Ph.D. Khaled Ksaibati, Ph.D., P.E. Chengyi "Charlie" Zhang, Ph.D., P.E.
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Funding Source(s) and Amounts Provided (by each agency or organization)	<p>USDOT, Office of the Assistant Secretary for Research and Technology \$40,000</p> <p>Colorado State University \$48,000</p>
Total Project Cost	\$88,000
Agency ID or Contract Number	69A3551747108
Start and End Dates	December 17, 2021 to July 31, 2024
Brief Description of Research Project	In this study, researchers from Colorado State University and the University of Wyoming will work jointly with the concrete industry partners in the region to understand the role that landfilled fly ash (LFA) plays in controlling concrete properties in the fresh and hardened state. The overarching goal of this study is to determine if LFA that may not

	<p>meet the prescriptive limits set forth in ASTM C618 and AASHTO M295 can show adequate performance in service and whether a new classification can be introduced based on their inherent heterogeneity in physicochemical properties and performance data.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>While our has demonstrated promising results for use in concrete, actual implementation has not yet occurred. The primary barrier to implementation is the resistance to change within the concrete industry, which often relies on established materials and methods. Additionally, the stringent physical and chemical standards required for materials used in concrete mixtures pose a significant hurdle. These standards ensure quality and performance, making it challenging to introduce new materials that originate from non-traditional sources like landfills. Engaging with industry stakeholders to update and possibly revise standards to accommodate innovative materials like beneficiated LFA is a necessary step forward.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>The successful use of beneficiated landfilled fly ashes (LFA) as a supplementary cementitious material in concrete offers notable environmental and industrial benefits. It can significantly reduce landfill waste by repurposing off-spec fly ash, promoting sustainability in building materials. Additionally, LFA helps decrease reliance on dwindling traditional fly ash supplies, stabilizing the supply chain. Adopting LFA could cut greenhouse gas emissions from cement production by up to 10%, supporting global efforts to enhance sustainability and reduce environmental impacts in the building sector.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project Website 	<ul style="list-style-type: none"> • MPC Final Report – Beneficial Reuse of Landfilled Fly Ash in Transportation Infrastructure