



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	High-Early Strength Concrete for Rapid Bridge Deck Repair and Rehabilitation
University	University of Washington
Principal Investigator	Travis Thonstad
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Funding Source(s) and Amounts Provided (by each agency or organization)	\$70,000 (ABC-UTC) \$35,000 (UW)
Total Project Cost	\$105,000
Agency ID or Contract Number	69A3551747121
Start and End Dates	May 15, 2023 - May 14, 2024
Brief Description of Research Project	<p>Bridge decks across the United States continue to suffer premature deterioration due to various durability-related issues including freeze-thaw, salt-scale, corrosion, and volume changes (plastic, drying, and restrained shrinkage, thermal effects, etc.). As bridge decks continue to wear and age, there will be need to repair/replace existing concrete bridge decks and to do so in a timely, efficient fashion, with minimum disruption to the traveling public. The proposed research will investigate the potential in developing a high-early strength concrete (HESC) overlay mixture comprised of calcium sulfoaluminate (CSA) cement. This research will involve a comprehensive laboratory program aimed at evaluating CSA based HESC concrete overlay mixtures, characterizing and quantifying concrete performance, and ultimately recommending high potential overlay mixtures. A particular focus of the proposed research is to evaluate bond strength and bond characteristics of CSA mixtures as an indicator for overlay performance. An initial screening phase will be performed to develop and optimize viable material and mixture design candidates. Thereafter, the final phase will involve an exhaustive series of fresh and hardened performance tests including characterizing bond performance of several CSA overlay applications (e.g., subsurface preparation, curing duration, and bond enhancing admixtures). The research team will develop a report summarizing this valuable fresh and hardened concrete property data and will evaluate, in coordination with the project's advisory panel, key technical issues relating to CSA overlay performance.</p>

<p>Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here</p>	<p>The outcomes will be tracked and reported once they are identified.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>The impacts will be tracked and reported once they are identified.</p>
<p>Web Links</p> <ul style="list-style-type: none">• Reports• Project website	<p>https://abc-utc.fiu.edu/research-projects/high-early-strength-concrete-for-rapid-bridge-deck-repair-and-rehabilitation/</p>