TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): ___IOWA DOT_____

INSTRUCTIONS:

Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *TPF-5(366)*	**Transportation Pooled Fund Program - Report Period:** Quarter 1 (January 1 – March 31, 2022) Quarter 2 (April 1 – June 30, 2022) Quarter 3 (July 1 – September 30, 2022) XQuarter 4 (October 4 – December 31, 2022)

Project Title: Development of a Design Guide for the Structural Design of Ultra High Performance Concrete		
Project Manager: Jim Hauber Brian Worrel	**Phone:** 239-1393 239-1471	**E-mail:** james.hauber@iowadot.us brian.worrel@iowadot.us
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Lead Agency Project ID:	**Other Project ID (i.e., contract #):** Addendum 618	**Project Start Date:** 6/15/17
Original Project End Date: 5/31/18	**Project End Date:** 10/31/2022	**Number of Extensions:** Pooled fund project – yearly budgets

X On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Total Percentage of Work Completed
$239,528	$239,528	65%

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
$52,115		5%

Project Description: Ultra-High Performance Concrete (UHPC) has been recognized as a choice of material for mitigating bridge infrastructure challenges as well as to introduce innovative construction projects. In recent years, the use of UHPC has gained momentum in bridge projects across the country. However, formal structural design guidance for this material does not exist in North America, and therefore a comprehensive effort is required to formulate recommended design guidance so that the application of this material can be broadened.

The overall objective of this study is to facilitate advancement in the state-of-the-practice for UHPC in the US highway sector, which will include development of a design and construction guide specification. These advancements will also focus on other critical needs that are currently hindering the wider use of UHPC

A Steering Committee will be formed for this Pooled Fund Project. This Steering Committee can include contributing entities and will be led by the host State. The tasks are:

1. Coordinate meetings amongst committee members with the goal of study execution and information dissemination.
2. Provide guidance on national level advancement efforts.
3. Develop and prioritize research needs statements.
4. Develop, verify, and/or standardize test methods for assessment of UHPC material properties.
5. Complete structural performance-related research as necessary to develop greater knowledge of structural behavior.
6. Complete construction-related research as necessary to develop greater understanding of optimal construction processes.
7. Coordinate, share, and advance existing special provisions for the use of UHPC in highway construction projects.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

Progress This Quarter:

The remainder of task 2 tests were completed. The results have been drafted into a second journal article and the first article has been submitted to the ACI Journal.

Anticipated work next quarter:

N/A

Significant Results:

AASHTO T397 tensile test procedure can be performed with a success rate of at least 70% by incorporating the recommended changes. This test is reliable to achieve tensile characteristics of UHPC with varying fiber volume, fiber type, and specimen size. Though a 70 % success rate was observed with the higher capacity machine, the effect of machine dependency on tensile response quantification was observed. Reduced tensile strengths, but with significant post-cracking behavior, were observed when steel fibers were fully or partially replaced with steel fibers.