**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

**Calendar Year 2014**

Date: September 19, 2014

Lead Agency (FHWA or State DOT): Michigan 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.*

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| **Transportation Pooled Fund Program Project #**  **TPF-5(254)** | | **Transportation Pooled Fund Program - Report Period:**  □Quarter 1 (January 1 – March 31)  □Quarter 2 (April 1 – June 30)  □Quarter 3 (July 1 – September 30)  □Quarter 4 (October 1 – December 31) | |
| **Project Title:**  **Evaluation and Analysis of Decked Bulb-T Beam Bridge (As Alternate ABC to Side-by-Side Box Beam)** | | | |
| **Name of Project Manager(s):**  Matt Chynoweth, P.E.- MDOT PM  Dave Juntunen, P.E.- Co. PM | **Phone Number:**  517-322-3322  517-335-2993 | | **E-Mail**  [ChynowethM@michigan.gov](mailto:ChynowethM@michigan.gov)  [juntunend@michigan.gov](mailto:juntunend@michigan.gov) |
| **Lead Agency Project ID:**  MDOT Job No. 114419  MDOT Research No. OR11-010 | **Other Project ID (i.e., contract #):**  Contract No. 2010-0293 | | **Project Start Date:**  September 19, 2011 |
| **Original Project End Date:**  September 30, 2014 | **Current Project End Date:**  ***February 28, 2015*** | | **Number of Extensions:**  None. |

Project schedule status:

□On schedule ***NCTE Granted*** □On revised schedule □Ahead of schedule □Behind schedule

Overall Project Statistics:

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| **Total Project Budget** | **Total Cost to Date for Project** | **Percentage of Work**  **Completed to Date** |
| TOTAL PROJECT BUDGET: $367,200.  Research Work: $349,000.  Travel Budget: $ 18,200. (2-Amendments) | Total Costs: $325,927.60  Research Work:$321,602.60  Travel Costs: $ 4,325.00 | Work: 92.1% |

***Quarterly*** Project Statistics:

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| **Total Project Expenses**  **and Percentage This Quarter** | **Total Amount of Funds**  **Expended This Quarter** | **Total Percentage of**  **Time Used to Date** |
| $325,927.60 (88.8%) | $45,601. | 92% |

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| **Project Description**:  To analyze and evaluate the decked bulb-T beam (or decked I- beam) as a viable replacement for the side-by-side box-beam bridge.  The project description uses the term bulb- T beam as a general description of an I- beam shape, with a wide top flange that can  serve as a deck surface. For this type of beam to be a viable replacement to a box beam, it must have a very robust cross-section  designed to have a shallow depth-to-span ratio; which makes it very different than the standard AASHTO section used by some states.  The use of a bulb- T beam cross section would eliminate inherent problems associated with the ability to inspect and repair box-beam  type structures. The Bulb-T beam cross-section will provide enough space at the section bottom for ease of periodical inspections and  maintenance of critical elements; such as beam web and the suffit of the bridge deck slab.  **Scope of Work:**  The purpose of this proposed study is to collaborate and share common interests with State DOTs in the Midwest area, and other research stakeholders, regarding alternative/innovative solution(s)to environmental and structural challenges in building and maintaining a sustainable transportation infrastructure. In correlation with analyzing the bulb T beam this study includes comparing alternative non corrosive materials, including, but not limited to carbon fiber, stainless steel and stainless clad reinforcement materials. The study analysis and evaluation will include the evaluation of top flange connection details including the use of ultra high performance concrete (UHPC) to fill the joint between the adjacent decked bulb t beams (as used in New York).   The goal is to have a bridge structure with a service life exceeding 100 years, and have rapid construction applicability. |

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| **Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**  Project On Time:  The project is ahead of schedule:  Task 1 is 100% completed.  Task 2 is approximately 100% completed.  Task 3 is approximately 100% completed.  Percent of Completion: Experimental Investigation (EI) Portion ~100% complete. Numerical  Simulation (NS) Portion ~100% complete.  Percent Completions By Category:  By Time- approximately 92% completed.  By Work- approximately 92% completed.  By Budget- approximately 89% completed.  ***No Cost Time Extension was granted to the PI. Since the FEA analysis and results of the parametric study, and the results of the conducted extensive experimental work need careful documentation, and clear presentation, the project was given an extension through February 28, 2015 to finalize and submit the comprehensive report.***  ***Dr. Grace was authorized to travel to Columbus, Ohio to deliver a presentation during the T-6 committee meeting scheduled on June 23, 2014. See partial agenda below:***  T-6  AASHTO Technical Subcommittee for Fiber Reinforced Polymer Composites  Paul Liles, Chair  June 23, 2014  8:00 am – Noon  Union D  8:00 am Welcome and Opening Remarks Paul Liles, Chair  8:10 am Introductions Paul Liles, Chair  8:20 am Presentation – Update on Use of Carbon Fiber Prestressing Strand  Yoshiaki Yamamoto of Tokyo Rope Manufacturing Company  ***9:10 am Presentation – Ongoing Research on Carbon Fiber Prestressing***  ***Dr. Nabil Grace from Lawrence Technological University…………………………………..***  Next TAC meeting planned in 4th quarter of calendar year 2014.  Project Within Budget: Yes  Total Project Expenditures (To Date): $325,927.60 |
| **Anticipated work next quarter**: ***Dr. Nabil Grace (PI) continues to work on carefully documenting the research results and***  ***presenting the results in a very comprehensive final report for the TAC to review in December 2014.*** |

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| **Results This Period:**  **PI travel to Ohio to T6 AASHTO Technical Subcommittee.** |
| **Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that**  **might affect the completion of the project within the time, scope and fiscal constraints set forth in the**  **agreement, along with recommended solutions to those problems).** |

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| **Potential Implementation:** |