**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

Date: June 30, 2013

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):**  David Juntunen, P.E./  Matthew Chynoweth, P.E | **Phone Number:**  517-335-2993  517-322-3322 | | **E-Mail**  juntunend@michigan.gov  ChynowethM@michigan.gov |
| **Lead Agency Project ID:**  MDOT Job No. 114419; OR11-010 | **Other Project ID (i.e., contract #):**  2010-0293 | | **Project Start Date:**  September 19, 2011 |
| **Original Project End Date:**  September 30, 2014 | **Current Project End Date:**  September 30, 2014 | | **Number of Extensions:**  None. |

Project schedule status:

□On schedule □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: $359,000.00  Research Work: $349,000.00  Travel Budget: $ 10,000.00 (Amendment) | $232,607.52 | 67% |

***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** |
| $232,607.52 (67%) | $46,770. | 54% |

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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 on schedule:  Task 1 is 100% completed.  Task 2 is approximately 100% completed.  Task 3 is approximately 70% completed.  This quarter period the researcher tested to failure an over-reinforced decked bulb T beam. Also, a bridge model was tested up to  80% of ultimate load carrying capacity.  Percent of Completion: Experimental Investigation (EI) Portion ~80% complete. Numerical  Simulation (NS) Portion ~98% complete.  Percent Completions By Category:  By Time- approximately 54% completed.  By Work- approximately 67% completed.  By Budget- approximately 67% completed.  Project Within Budget:  Project expenditures to date- $232,607.52  A TAC Summer Meeting was held on June 25, 2013. This meeting was followed by a field site visit on June 26, 2013 to Stress Con Industry/Fabrication Facility in Kalamazoo.  At the TAC meeting the principal investigator provided a high level summary of work progress to date. At the Stress Con facility TAC members witnessed stressing of box beam CFCC strands for the M102 project in Michigan. |
| **Anticipated work next quarter**:  Start load distribution test. |

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| **Results This Period:**  Full test of over-reinforced CFCC bulb t beam. Full model of bulb T beam bridge tested to 80% of ultimate load. |
| **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:** |