**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

**Lead Agency: Utah Department of Transportation**

**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(272)** | | **Transportation Pooled Fund Program - Report Period:**  \_ Quarter 1 (January 1 – March 31, 2012)  **\_** Quarter 2 (April 1 – June 30, 2012)  **x Quarter 3 (July 1 – September 30, 2012)**  \_ Quarter 4 (October 1 – December 31, 2012) | |
| **Project Title:**  Evaluation of Lateral Pile Resistance Near MSE Walls at a Dedicated Wall Site | | | |
| **Name of Project Manager(s):**  David Stevens | **Phone Number:**  801-633-6246 | | **E-Mail**  [davidstevens@utah.gov](mailto:davidstevens@utah.gov) |
| **Lead Agency Project ID:**  5H06803H, 42053, ePM PIN 11075  UDOT PIC No. UT11.404 | **Other Project ID (i.e., contract #):**  UDOT Contract No. Pending | | **Project Start Date:**  Contract in Preparation |
| **Original Project End Date:**  Contract in Preparation | **Current Project End Date:**  Contract in Preparation | | **Number of Extensions:** |

Project schedule status:

**X** 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** |
| $150,000.00 | $0 | 0 |

***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** |
| 0 | $0 | 0 |

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| **Project Description**:  Abutment piles are frequently surrounded by mechanically stabilized earth (MSE) walls rather than a soil slope. Piles near MSE walls must be designed for lateral loads from earthquakes and thermal expansion. Unfortunately, there are no design methods available to predict the reduction in pile resistance or the increase in force on the walls for these conditions. In addition, little guidance is available regarding the spacing behind the wall necessary to eliminate these effects. The data base of load tests is limited to three recent test series in Utah and one test series with block wall/geogrids in Kansas. Testing in the recent Utah study shows significant decrease in lateral resistance and increases in reinforcement force as piles are placed closer to the MSE wall. Placing piles further from the wall increases bridge cost. Additional field testing at a dedicated wall site with single and group piles is necessary to define performance.  Objectives for this study include:  1. Determine reduced lateral pile resistance vs. distance behind MSE wall for single and group piles from dedicated full-scale testing.  2. Determine the increase in wall force due to lateral load on the pile.  3. Develop design rules (p-multipliers, etc.) to account for reduced pile resistance.  4. Develop equations to predict increased force on MSE reinforcement due to lateral pile loading.  Tasks for this study include:  1. Construct dedicated MSE wall(s) away from the highway right-of-way, in coordination with contractors and suppliers.  2. Conduct lateral load tests on single piles and pile groups at dedicated MSE wall(s).  3. Perform parametric studies with a calibrated numerical model.  4. Develop design procedures to predict reduced pile resistance and increased wall pressures based on the results of the testing program and the parametric studies.  5. Submit a final report that documents the entire research effort.  6. Make presentations at AASHTO bridge engineers committee meetings to implement design methods into code.  Dr. Kyle Rollins of BYU is the Principal Investigator for this research project. |

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| **Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**  Dr. Kyle Rollins of BYU and UDOT personnel contacted several states about possibly participating in the pooled fund study. Dr. Rollins also contacted contractors and suppliers who will be participating in the pile installation and wall construction. Based on available funding and availability of contractors and suppliers, a target date of spring or summer 2013 was set to start the wall construction.  The study was cleared by FHWA. Kansas DOT committed funds to the study, bringing the total funding commitments for the project to $150,000. |
| **Anticipated work next quarter**:  Dr. Rollins will prepare a draft work plan for the project. Additional states will be contacted about possibly participating in the pooled fund study. The technical advisory committee will be established with the study partners and will participate in reviewing the project work plan. The approved work plan will be utilized to establish a UDOT research contract with BYU. A tele-conference or web meeting will be held with the technical advisory committee. |

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| **Significant Results:** |
| **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:** |