**MoDOT/MTI Structures Research Program**

**Progress Report – 3/31/2022**

**Title: Developing Implementation Strategies for Risk Based Inspection**

**Project Number: TR201910**

**Principal Investigator (PI): Glenn Washer**

**Co-PI(s): Henry Brown**

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| **Award date:**  | 11/01/2018 |
| **Scheduled completion date:** | 6/30/2023 | **% of project completed to date:** | 57.0% |
| **Total budget:**  | $850,000.00 | **% of budget expended to date:**  | 54.3% |
| **Draft report due:** | 3/31/2023 | **Final report due:** | 5/31/2023 |

Provide a short description of the **work currently underway**.

*Use* [*additional notes section*](#notes) *if you need to provide more information.*

The Risk Models have been developed along with the backcasting for four of the six participant states. These models include a description of the attributes associated with the deterioration for estimating inspection requirements. The backcasting activity is ongoing using historical data (e.g., database, bridge inventory, inspection reports, Structural Inventory and Appraisal sheets) to evaluate the effectiveness of the risk models. This task includes detailed review of records for a sample set of bridge in each state.

Statistical analysis of NBI data is being conducted toward developing data for use in the Consequence Factor for risk assessment. These efforts are toward developing resource data for states to utilize in assessing consequence attributes. The Research Team has included the detour length, the redundancy, feature bellow and the Load Rating for estimating consequence factors that contribute to the risk assessment for bridges. Models were developed across the entire US inventory and individually for participating states.

A RAP meeting was held with the state of Connecticut this quarter. Due to travel restrictions, the meeting was held virtually. New exercises for expert elicitation had to be developed to function as an on-line exercise rather than the conventional in-person meeting. This new form of the elicitation excercises, which included on-line polling for expert elicitation, worked effectively and will be included in the final report as an option for conducting future RAP meetings in other states.

Work is also ongoing documenting new attributes identified through the research to be included in the handbook for implementing RBI being developed through the research. The additional RAP meeting with Connecticut provided some different attributes specific to their policies and practices that will be additions to the attribute previously developed in the research.

For the upcoming quarter: The Research Team will commence the works on the Risk Models for Connecticut and continue working with Illinois, which is the only pending state for collecting inspection data on past bridge performance. In addition to this, the Research Team will continue working on the Reports for each state that document the risk models developed through the RAP and backcasting results that verify the models.

Provide a short description of the **noteworthy activities/accomplishments** during this reporting period.

*Use* [*additional notes section*](#notes) *if you need to provide more information.*

A Reliability Assessment Panel (RAP) meeting with Connecticut was conducted on February 28, 2022 and March 4, 2022. This meeting was conducted virtually as requested by Connecticut DOT and focused on the steel multi-girder bridge family. The outcome of the RAP meeting was successful and provided new attributes to be considered for a state with a policy of membrane/asphalt wearing surfaces on bridge decks.

Identify **issues or problems** that need to be addressed.

*Use* [*additional notes section*](#notes) *if you need to provide more information.*

Provides dates for when the **next progress report or presentation** due:

* June 30, 2022 (Quarterly report)

**Additional notes**:

A contract amendment with a revised scope of work was approved to revise the contract amount to $850,000 and contract end date to June 30, 2023. The numbers shown for “% of project completed to date” and “% of budget expended to date” reflect the increased funding and expanded scope of work.