MoDOT/MTI Structures Research Program
Progress Report – 6/30/2022

Title: Developing Implementation Strategies for Risk Based Inspection

Project Number: TR201910

Principal Investigator (PI): Glenn Washer
Co-PI(s): Henry Brown

Award date:	11/01/2018		
Scheduled completion date:	6/30/2023	**% of project completed to date:**	59.0%
Total budget:	$850,000.00	**% of budget expended to date:**	56.6%
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 if you need to provide more information.
Current work is focused in three primary areas: Completing that back-casting activities for partners that had 2021 RAP meetings, examining methodologies to optimize the scoring of attributes in the risk models, and finalizing consequence factor development. Historical data for 10 sample steel bridges in Connecticut are being analyzed for the back-casting procedure. The materials have been received in this quarter and analysis is nearly complete. An additional RAP meeting for the state of Alabama is in the planning stages.

Methods for optimization of the scoring processes for risk models are being explored. Monte Carlo simulations and multi-factor optimization processes are being tested. The Monte Carol simulations are also being developed for the consequence factors. In terms of the consequence factor development, National Bridge Inventory (NBI) data has been analyzed for participating states to determine statistics for quantitative factors such as ADT. These factors are being examined using Monte Carlo Simulations.

Work is also underway to finalize attributes for risk models in order to reduce the number of attributes to make the process for efficient. Descriptions for new attributes for inclusion in the RBI handbook are being completed.

Provide a short description of the **noteworthy activities/accomplishments** during this reporting period.
Use additional notes section if you need to provide more information.

Historical data for 10 sample steel bridges, including compiled inspection reports, original plans, repair / rehabilitation plans, underwater inspection reports (if applicable), and load rating reports (old and recent, if available), were requested and received from Connecticut. These data will be used for the back-casting procedure.
The back-casting procedure and report for several states was completed. The reports are currently being finalized using the developed scoring processes from the original risk models.

Identify **issues or problems** that need to be addressed.
Use additional notes section if you need to provide more information.
There are some challenges in finding a scientific method for scoring attributes. The research team is looking into this issue.

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

- September 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.