# Research in Progress

# Implementing the AASHTO Mechanistic-Empirical Pavement Design Guide (Phase II)

## Research Need

MassDOT is striving to improve its highway infrastructure's resiliency to climate change, environmental impacts, and traffic loading by implementing new technologies that can provide valuable return on investment. These improvements should begin with the pavement design process which currently utilizes antiquated empirical design methods from the 1960's. AASHTO's new Mechanistic-Empirical (M-E design) pavement design method is currently used or being evaluated by at least 33 state agencies and would be a significant improvement in design. AASHTO M-E design predicts pavement distresses utilizing prediction models that were developed and nationally calibrated using in-service pavements. To accurately predict the design performance in Massachusetts, these models need to be calibrated according to Massachusetts local conditions.

## Goals/Objectives

Due to the complexity of the research problem, a multi-phase (four phase) approach over several years was suggested. The objectives for this second phase are:

1. Develop an AASHTOWare® Pavement M-E user manual & local experimental plan and sampling template.
2. Continue initial testing of already sampled mixtures to accelerate future phases of this research.

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## Project Information

This project is being conducted as part of the Massachusetts Department of Transportation (MassDOT) Research Program with funding from Federal Highway Administration (FHWA) State Planning and Research (SPR) funds.

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**Performing Organization:**
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**Project Champions:**
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**Project Start Date:**
July 1, 2021

**Expected Project Completion Date:**
September 30, 2022

## Methodology

The experimental plan designed for this phase of the project includes:

1. Develop a standalone manual that shows a user a thorough step-by-step procedure on how to use the AASHTOWare® Pavement ME Design software. The manual will guide users on how to generate the data (materials properties, climatic data, and traffic data) as they relate to local locations within the state of Massachusetts.
2. Develop a statistical plan or sampling template to refine the calibration of the AASHTOWare® Pavement ME Design software distress and IRI prediction models based on local conditions, policies, and materials.
3. Continue initial dynamic modulus testing that is required for the M-E design using plant-produced mixtures already sampled.

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