

# Research in Progress

## Characterization of Reclaimed Asphalt Pavement (RAP) in Massachusetts

### Research Need

Reclaimed Asphalt Pavement (RAP) is a valuable recyclable material. It is comprised of aged asphalt binder and aggregates that can be utilized in new paving mixtures. The purpose of this study is to determine the RAP properties available throughout Massachusetts; and to develop a guideline to safely maximize the use of RAP without negatively impacting the performance of a paving mixture.

### Goals/Objectives

The goal of this project is to understand the properties of RAP available in Massachusetts and develop a guideline/methodology for increased RAP use in asphalt mixture surface courses. The project has four objectives:

1. Sample RAP being used throughout Massachusetts and characterize RAP binder and aggregates.
2. Sample and characterize the properties of the standard virgin binders being used throughout Massachusetts to determine its ability to accommodate additional RAP.
3. Determine if higher RAP contents can be used in surface course mixtures in Massachusetts.
4. Measure the performance characteristics of hot mix asphalt surface course mixtures produced with higher RAP contents in terms of stiffness, fatigue cracking, thermal cracking and rutting.

### 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.

**Principal Investigators:**

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**Performing Organization:**

University of Massachusetts Dartmouth

**Project Champion:**

Edmund Naras, MassDOT

**Project Start Date:**

September 2017

**Expected Project Completion Date:**

September 2020

### Methodology

The experimental plan designed for this project includes:

1. Sampling RAP from multiple locations throughout Massachusetts that represent all MassDOT maintenance districts.
2. Testing the RAP obtained to determine the physical properties of the aged asphalt binder and aggregates.
3. Determine the properties of the standard grade virgin binder (PG64-28) used in Massachusetts paving mixtures.
4. Determine and validate the maximum allowable RAP percentage for surface course mixtures.
5. Measuring the change in performance characteristics of a paving mixture when incorporating the maximum allowable RAP percentage.

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