Laboratory and Field Evaluation of Warm Mix Asphalt Technology to Determine its Applicability for Massachusetts
LABORATORY AND FIELD EVALUATION OF WARM MIX ASPHALT TECHNOLOGY TO DETERMINE ITS APPLICABILITY FOR MASSACHUSETTS

Dr. Walaa S. Mogawer, PE - Principal Investigator
Alexander J. Austerman, EIT - Research Engineer

Department of Civil and Environmental Engineering
University of Massachusetts Dartmouth
285 Old Westport Road
North Dartmouth, MA 02747

Executive Office of Transportation and Public Works
Office of Transportation Planning
10 Park Plaza Suite 4150
Boston, MA 02116

In an effort to achieve consistent field densities with its Gap Graded Stone Matrix Asphalt hot mix asphalt mix, the Massachusetts Highway Department choose to evaluate the organic additive Warm Mix Asphalt (WMA) technology Sasobit® in the laboratory and in a field trial as a compaction aid. A candidate field trial project on a southbound section of Interstate 95 (I-95) in Danvers, Massachusetts, was selected for the WMA trial. The same Gap Graded Stone Matrix Asphalt hot mix asphalt mix with and without the WMA technology additive was produced and placed along or on the roadside on the same production day.

The experimental plan for this research project consisted of: documentation of construction procedures in the field, random sampling of materials, HMA specimen fabrication with the Superpave Gyratory compactor and Marshall compactor, material property testing (binder, aggregates and plant produced mix), and laboratory performance testing of the plant produced mix in terms of dynamic modulus, rutting, and moisture susceptibility. Also included in the study was an investigation into the effect on the specimen volumetric properties of re-heating the plant-produced mix.

Overall, based on this research project, the addition of WMA technology into the Gap Graded Stone Matrix Asphalt mix yielded a mix with similar volumetric and performance characteristics to the control mix (without WMA technology) but with the added benefits of increased compaction at lower temperatures and lower visible emissions.