



Request for Proposal (RFP) – Balanced Mix Design: Rutting Performance Tests

Re: BMD RUTTING RFP – AIRPORT ASPHALT PAVEMENT TECHNOLOGY PROGRAM (AAPTP)

I. BACKGROUND

As airfield traffic increases in volume, weight, and tire pressure, it is critical to ensure that asphalt pavements provide rutting performance to meet the expected service life. Currently, the Federal Aviation Administration (FAA) has developed and implemented criteria for asphalt mixture design rutting performance testing in the P-401 and P-403 specifications. The rutting performance test criteria was established with the Asphalt Pavement Analyzer (APA) utilizing a hose pressure of 250 psi, and now includes alternate criteria using the APA with a hose pressure of 100 psi and the Hamburg Loaded Wheel Tester.

- Asphalt Pavement Analyzer (APA) – AASHTO T340 @ 250 psi hose pressure at 64°C
 - Less than 10mm @ 4000 passes
- Asphalt Pavement Analyzer (APA) – AASHTO T340 @ 100 psi hose pressure at 64°C
 - Less than 5mm @ 8000 passes
- Hamburg Loaded Wheel – AASHTO T324 @ 50°C
 - Less than 10mm @ 20,000 passes

The FAA has completed an additional limited study looking at the High Temperature Indirect Tensile Test (HT-IDT) for evaluating asphalt mixtures rutting potential with data indicating this test may be suitable as well.

As the evolution of mixture performance testing continues to advance, the opportunity to engineer asphalt mixtures to meet facility demands will be paramount. The Balanced Mix Design (BMD) process pairs rutting performance with cracking performance to address the critical asphalt material failure mechanisms which impact pavement service life.

II. OBJECTIVE

The outcome of this project will be to ensure that the FAA has rutting mixture performance tests that correlate to field performance and test criteria that protect against premature asphalt mixture rutting failures on airport facilities. It is expected that this project will not select one performance test but rather provide specifications for multiple tests and/or testing parameters that provide equivalent performance ranking/rating. The project will also provide draft specifications for implementing the test criteria in a BMD system which will include performance testing both at mixture design and construction acceptance stages of the project. The work will also ensure that factors affecting implementation are accounted for, with examples being test equipment availability, test repeatability, ease of testing, analysis of results, correlation of lab mixed and field produced specimens, speed of testing, availability of test standards (ASTM, AASHTO, etc.), and any other factors that may hamper or slow field application. While the project is focused on rutting, a parallel project will focus on asphalt mixture cracking performance and coordination between the projects is expected to ensure the BMD system is uniformly addressed by both performance testing requirements.

III. PROJECT SCOPE

The project will establish which performance tests will be used to identify asphalt mixtures with susceptibility to rutting in the field. Criteria for the rutting tests will be established to ensure asphalt pavements perform under airfield traffic for the expected design life without significant rutting. The project will develop an experimental plan which will include a sufficient number of mixtures to cover all regions of the United States as well as the traffic and size range of airfield facilities that utilize the FAA P-401 specified pavements. The work completed in establishing the rutting performance test criteria using the APA with a 250 psi hose pressure can serve as a baseline for this effort. The project could include testing materials from new test sections at the FAA's accelerated loading facility to collect field performance data on specific mixtures. Coordination with a parallel study investigating cracking performance tests will be required. The coordination will include activities such as which mixes are studied as well as how the BMD system is structured. The budget should not include shipping of materials in coordination with this study. Funds will be available after the projects are awarded to compensate contractors for shipping of materials and mixtures.

IV. PROJECT REQUIREMENTS

The proposal will include a project schedule which identifies completion of all key activities as well as completion of the following project deliverables:

- Virtual Project Kick-Off Meeting
- Quarterly Progress Reports & Virtual Meetings
- Technical Report
- Draft Specification(s)
- Webinar Detailing Project Findings

Project final products must be 508 compliant. The proposal will provide details of any activities reliant on the FAA or others outside of the project team for completion of the project (examples include finding or securing project mixture samples, constructing test sections at the FAA's accelerated loading facility, testing with the FAA's APA with the 250 psi hose pressure, or other activities).

AVAILABLE FUNDS: \$500,000

CONTRACT PERIOD: 24 Months

V. PROPOSAL SUBMISSION

Submissions should include the project team, budget, and project schedule in the proposal. Proposals should be a maximum of 10 pages (not including the title page, budget, project team CVs, and project schedule), with minimum 11pt font, standard margins, and in adobe PDF file format. Proposals should be sent via email to Brett Williams, Director of Engineering & Technical Support, at Engineering@asphaltpavement.org by June 9, 2021. Please include the Re: BMD RUTTING RFP -- AIRPORT ASPHALT PAVEMENT TECHNOLOGY PROGRAM (AAPTP) in the subject line of your email.