



Request for Proposals (RFP)

Re: Incorporation of Reclaimed Asphalt Pavement (RAP) in P401 Asphalt Mixtures

I. BACKGROUND

In 2021, the United States rejoined the Paris Climate Agreement as a commitment to reduce greenhouse gas emissions and fight climate change. The asphalt pavement industry has responded to this stance by committing to achieve net zero carbon emissions by 2050 in alignment with the Agreement. One method the industry has proposed for reducing emissions associated with asphalt mixtures is the use of reclaimed asphalt pavement (RAP). RAP is commonly used in highways, roads, and parking lots. In 2020, the asphalt pavement industry reclaimed and reused 87.0 million tons of RAP in new asphalt pavements. This resulted in a carbon emission reduction equivalent to taking 510,000 passenger vehicles off the road for one year. The General Services Administration (GSA) has even recently placed higher RAP mixtures as a part of its environmentally preferred asphalt standards.

While the asphalt pavement industry averages approximately 21% RAP in all new asphalt mixtures, current P401-34 specifications for airfield pavements do not allow for the use of RAP beyond base mixtures and shoulders. Similarly, the Department of Defense only allows RAP in base layers and shoulders limiting use to an asphalt binder replacement of 20%. In such cases, binder content and gradation of the RAP must be reported.

Research has shown mixtures designed, produced, and constructed well with RAP can perform as well as or better than virgin mixtures in the field. Performance is even more critical for airfield pavements as airfield repairs are costly, cause airport delays, and foreign object debris can be a safety concern. Developing requirements and standards that allow for RAP but still hold the performance related to foreign object debris, heavy trafficking, and environmental loading with no traffic is paramount for the successful incorporation of this material in airfield asphalt pavements.

II. OBJECTIVE

The objective of this project is to develop standards to optimize the use of RAP in all layers of airfield asphalt pavements while maintaining all performance expectations and aligning with national and industry environmental goals. The team will propose changes to the current P401 standard to meet this objective.

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III. PROJECT SCOPE

Phase I of this project shall include at least the following:

- A synthesis should be completed on the use of RAP in highways (heavy loads and environmental loading with no traffic) and airfield mixtures including current specifications and performance impacts in the US and abroad. FAA published "Test Program for the FAA Accelerated Wheel Load Test Facility to Develop Specifications for Reclaimed Asphalt Materials in New Asphalt Concrete Used on Airfield Pavements" DOT/FAA/TC-18/27 in 2018.
- 2. A revised P401 specification (considering the type and amount of traffic) using volumetric requirements that allows asphalt mix producers to optimize the use of RAP in all airfield pavements. This revised specification will be based on laboratory work and pavement modeling with dynamic aircraft loading since RAP is currently limited in airfield pavements outside of the potential use in general aviation (GA) airports, which may allow the use of highway mixtures and should include RAP characterization and selection requirements.
- 3. Guidance on how balanced mix design (BMD) could eventually be incorporated in such a standard to address performance of mixtures with RAP will also be included in the report.
- 4. An assessment of the economic and environmental impacts of the new specification should be incorporated in the final report, adapting currently available tools to complete the effort.
- 5. The individual team will also develop a work plan that validates the proposed specification as a Phase II activity at the National Airport Pavement and Materials Research Center (NAPMRC) located at William J. Hughes Technical Center in Atlantic City, NJ. Phase II is outside of the current RFP's budget and scope and development of the validation plan should not be included as part of the requested proposal.

IV. PROJECT REQUIREMENTS

The project deliverable will be a revised P401 specification and Phase II workplan based on the results of Phase I. The project must be completed within the proposed timeframe and within the proposed budget. The final report must be 508 compliant. NAPA will be responsible for final design of the research report.

AVAILABLE FUNDS: Phase I – \$400,000; Phase II (Validation using framework from AAPTP BMD test results & FOD & then test at NAPMRC once approved by the project panel) – \$850,000

CONTRACT PERIOD: 18 Months (Phase 1)

V. PROPOSAL SUBMISSION

Submissions should include qualifications of the individual(s) involved in the project, proposed methods for achieving objectives, timeline, and summary of budget for the

project. Proposals should use minimum 11pt font, standard margins, a maximum of 15 pages, and Adobe PDF file format. Resumes, budgets, and timelines will be in addition to the allotted pages and will not count against the 15-page limit. Proposals should be sent via email to Richard Willis, Vice President, Engineering, Research, & Technology, at Engineering@AsphaltPavement.org by July 10, 2023. Please include the "Re: RAP in P401 Mixtures – AAPTP" in the subject line of your email.