Request for Proposals (RFP)
Re: Innovative Asphalt Materials for High-Stress Pavements

I. BACKGROUND

Asphalt pavements in high-stress applications—such as airports, seaport container yards, logging yards, and heavy-traffic intersections, face performance challenges. These settings subject pavements to extremely heavy, slow-moving loads, including rubber-tire gantries at ports and high-volume heavy vehicle traffic at intersections and land ports of entry. Under such conditions, conventional asphalt mixtures often suffer from rutting, shoving, and shear failures, resulting in premature, unplanned maintenance or removal. As a result, facility owners often default to concrete pavements. However, advancements in asphalt materials and mix designs now offer high-performance alternatives capable of meeting these demands.

II. OBJECTIVE

The purpose of the project will be to demonstrate to facility owners the options available with innovative asphalt materials. By demonstrating proven performance, speed of initial construction and of future repair, the project will provide facility owners, engineers, and contractors with evidence-based guidance to support the use of high-performance asphalt as a practical alternative to concrete.

III. PROJECT SCOPE

The project will be executed in three phases:

Phase I Stress Characterization, Stakeholder Input, and Technologies Screening:

- **Stress and Distress Characterization:** Identify and categorize the specific types of stresses and associated pavement distresses in high-load environments. In addition to heavy, slow-moving traffic, these may include punching shear, static loading from stacked containers, dynamic impacts from specialized equipment (e.g., stackers, cranes, forklifts), and chemical damage from oil or fuel leaks.
- **Assessment of Stakeholders Concerns:** Document concerns from facility owners and contractors. For owners, long-term performance and maintenance expectations. For contractors, assess issues related to mix design, small quantities production, constructability, and acceptance criteria in limited-scale, high-performance applications.

- **Literature and Technology Review:** Conduct a comprehensive survey of current technical solutions for asphalt in high-stress applications. This includes advanced binders, polymer-modified asphalt, Stone Matrix Asphalt (SMA), reinforcement technologies, specialized additives, and innovative aggregate structures. Prepare a catalog of these materials and technologies, summarizing their theoretical and documented benefits.
- **Panel Review and Selection:** Present findings to the panel, which will evaluate and select the most promising technologies for detailed case study investigations in Phase II.

Phase II In-depth Case Study Analysis:

Phase II shall focus on detailed documentation and analysis of selected innovative asphalt materials and technologies

- **Detailed Case Studies:** Conduct in-depth evaluations of real-world projects using the panel-selected asphalt technologies from Phase I. Include case studies where these materials have performed well in high-stress environments. Each case study should document pavement structure, material specifications, construction methods, environmental conditions, stress types and magnitudes, observed performance over time, maintenance history, and, where available, life-cycle cost comparisons.
- **Draft White Paper and Technical Brief:** Develop a white paper and a technical brief synthesizing key findings and recommendations, addressing stakeholder concerns and providing practical guidelines.

Phase III Outreach and diffusion:

Phase III shall include outreach activities:

- **Final White Paper and Technical Brief:** Finalize the white paper and technical brief, incorporating feedback from the panel.
- **Webinar and Outreach Activities**: Conduct a webinar presenting the findings, conclusions, and practical recommendations. Develop materials to support outreach activities, including presentations and summary documents.

IV. PROJECT REQUIREMENTS

The project must be completed within the proposed timeframe and within the proposed budget. NAPA will be responsible for the final design of the research report.

AVAILABLE FUNDS: $75,000

CONTRACT PERIOD: 12 Months

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 June 13, 2025. Please include "Re: Innovative Asphalt Materials for High-Stress Pavements" in the email subject line.