

Guidance for Selection of Proper Asphalt Binder Grade

Research Team: National Center for Asphalt Technology and WAP Sustainability Consulting
Sponsored by: AAPTP, in partnership with FAA and NAPA

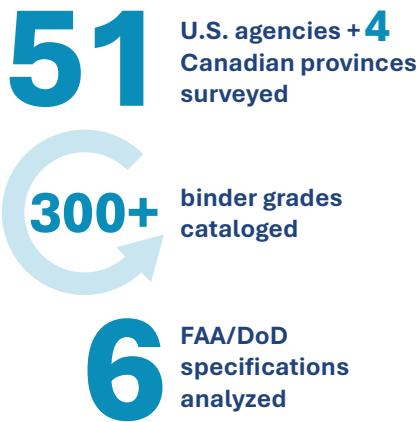
Selecting the right asphalt binder for airfield pavements has long been a challenge for design engineers. Unlike highways, airfields must withstand heavier aircraft loads, slow or stationary runway and taxiway movement, and strict Federal Aviation Administration (FAA) and Department of Defense (DoD) specifications. Choosing the wrong binder can cause pavement to resist one type of damage but fail prematurely from another or drive-up costs if the binder is difficult to source.

To address these challenges, the Airport Asphalt Pavement Technology Program (AAPTP) sponsored the Guidance for Selection of Proper Asphalt Binder Grade research project. The project's goal was to transform complex and sometimes inconsistent binder requirements into a standardized process and tool—saving engineers time, reducing errors, and improving pavement performance.



Source: NAPA

By the Numbers



Benefits

- Streamlined Design:** Integrates FAA and DoD binder requirements into one user-friendly, web-based tool.
- Improved Consistency:** Reduces specification conflicts and review delays by standardizing binder selection across agencies and regions.
- Cost Savings:** Prevents costly rework and communication gaps between designers, suppliers, and contractors.
- Broad Accessibility:** Free to use, mobile-friendly, and accessible industry-wide—ensuring that all practitioners can apply research-based guidance.

Approach

The research team surveyed State highway agencies in all 50 States and Puerto Rico as well as four Canadian Provinces, to document commonly specified binder grades and validate them against Asphalt Institute standards. They reviewed FAA (P-401, P-403, P-404) and DoD Unified Facilities Guide Specifications to identify when binder grade adjustments are needed for aircraft weight, tire pressure, reclaimed materials, or climate.

From this information, the team developed clear flowcharts and incorporated them—along with the binder database and specification requirements—into the Airfield Asphalt Binder Selection Tool, a web-based resource that guides engineers step by step through binder selection.

Results

This research produced two key outcomes: the *Guidance for Selection of Proper Asphalt Binder Grade* report and the Airfield Asphalt Binder Selection Tool. The report compiles survey data, specification reviews, and decision flowcharts into a clear, consistent framework for binder selection. The web-based tool applies this guidance in practice, allowing engineers to identify a base binder grade by State and county, adjust for aircraft loading, tire pressure, and pavement location, and verify regional binder availability. It also provides alerts for required testing and directs users to resources for specialty binders. The tool's one-page printable reports document each selection step, giving agencies and contractors a transparent, efficient method for selecting the correct binder and improving project communication.



Source: NAPA



Source: NAPA

Implementation

The FAA supports the tool, recognizing its value in improving consistency in binder selection and stream-lining the design and review process. Although use of the tool is not mandatory, it closely aligns with FAA and DoD specifications and offers engineers a reliable shortcut through a complex procedure. By adopting the guidance and tool, agencies, contractors, and consultants can reduce submittal errors, shorten review times, and extend pavement life through better binder selection. Maintaining an up-to-date database is a program priority to ensure the tool remains a trusted resource as standards and binder availability evolve.

The **Airfield Asphalt Binder Selection Tool** is free to use at: airfieldasphaltbinder.org.

Additional Resources

For more details, visit: airportasphalt.com

Watch the “Guidance for Asphalt Binder Grade Selection at Airfields” webinar at go.asphaltpavement.org/web-172

Read the Guidance for Selection of Proper Asphalt Binder Grade final report go.asphaltpavement.org/air-002

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About AAPTP

The Airport Asphalt Pavement Technology Program (AAPTP) is a cooperative agreement effort between the National Asphalt Pavement Association (NAPA) and the Federal Aviation Administration (FAA) to advance asphalt pavements and pavement materials. The AAPTP advances solutions for asphalt pavement design, construction, and materials deemed important to airfield reliability, efficiency, and safety. The program leverages NAPA's unique technology implementation capabilities with assistance from the FAA and industry to advance deployment and adoption of innovative asphalt material technologies.



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