NATIONAL ASPHALT PAVEMENT ASSOCIATION

September 1, 2023

Harold Honey
Federal Aviation Administration
Office of Airport Safety & Standards
Airports Engineering Division | Design and Construction Branch (AAS-110)
800 Independence Avenue SW | Washington DC 20591

Mr. Honey,

Thank you for the opportunity to provide comments for consideration on Advisory Circular (AC) 150/5370-10H. With more than 1,100 member companies, the National Asphalt Pavement Association (NAPA) is the only trade association that exclusively represents the interests of the asphalt pavement producer/contractor on the national level with Congress, government agencies, and other trade and business organizations. NAPA's membership also includes companies and individuals that support the asphalt pavement industry, such as construction equipment manufacturers and material suppliers.

NAPA has worked with its members to prioritize comments regarding the current version of the AC. We hope that the comments will provide not only context regarding some industry concerns, but also potential outcomes for the upcoming revision. In many cases, the item is not specified in the comment because the comment applies to all the asphalt mixture items in the AC. It will be noted when a comment only applies to one specific item.

NAPA also understands that the FAA is considering language regarding the use of Warm-Mix Asphalt (WMA). NAPA would appreciate the opportunity to review that language once it is complete.

NAPA and Federal Aviation Administration (FAA) Partnership – Airport Asphalt Pavement Technology Program (AAPTP)

Before we address our comments, NAPA would like to thank the FAA for the continued partnership through the AAPTP program. This program allows industry and agency to work collaboratively on issues that impact both groups. We want to identify that there are numerous projects underway as a part of this program. These projects pertain to longitudinal joint construction, use of reclaimed asphalt pavement (RAP) in P-401 mixtures, Superpave gyratory compaction levels, balanced mix design, aggregate gradation bands, and more. This letter will not be used to address changes the industry would like to see in the advisory circular that the ongoing research efforts may influence. NAPA asks that as research is completed, the advisory circular be updated to reflect the research results.

Marshall and Superpave Mix Designs Are Not Equivalent and FAA Should Consider Transitioning to Superpave

The AAPTP is conducting research that would try to develop an appropriate gyration level for asphalt mix designs for airfields. However, having two allowable mix design methods leads to larger issues in practice. Asphalt producers have been asked by specifying engineers to use Superpave for P-401 mixtures and Marshall for P-403 mixtures on the same job. This makes quality control and project management more difficult when a contractor is asked to use multiple methodologies requiring different sets of skills and equipment. While Marshall has been a standard of practice for many years on airfields, using the Superpave methodology is more repeatable, less dependent on human subjectivity, safer and has become the standard of practice by most of the industry. Marshall hammers require engineering controls and personal protective equipment (PPE) to prevent hearing loss, and the automatic hammers have pinch points and moving chains that can expose lab technicians to potential injury. Many laboratory technicians in the industry today have never used the Marshall method of mix design, or only on airfield projects. Familiarity with the Superpave method of mix design improves repeatability and confidence in the design and test results.

Based on these concerns, NAPA recommends that when the AAPTP project looking at gyration levels is completed, the FAA should transition to a single compaction method for all asphalt mixtures in this AC.

Are Asphalt Content Ranges Required in Table 2?

Table 2 under the asphalt mixture standards provides a range of allowable asphalt contents based on aggregate type. NAPA is not familiar with how the ranges were developed and thinks they are not necessary. The table seems to assume that slag is more porous than stone or gravel, which is not always the case. There are some slag sources with higher bulk specific gravities than some stones and gravels.

Minimum asphalt contents are commonly used to prevent dry mixtures prone to cracking or raveling. The minimum voids in mineral aggregate (VMA) requirement should be set to prevent this from occurring. Maximum asphalt contents are usually considered protection against rutting. However, the FAA already has the Asphalt Pavement Analyzer or the Hamburg Wheel Tracker to evaluate the mixture's rutting potential. As mixtures are required to meet a minimum VMA, air voids target, and rutting test requirement, the allowable asphalt content range is redundant.

NAPA recommends the removal of asphalt content ranges from Table 2 since the minimum VMA requirement sets the minimum asphalt content and the rutting test requirement protects against rutting potential for mixtures.

Clarification on Control Strips and Table 5

For projects greater than 3,000 tons, a control strip using the approved job mix formula (JMF) is required. The advisory circular states that "the control strip will be considered one lot for payment based upon the ***average*** of a minimum of three samples (no sublots required for control strip)." Yet, some engineers

specify that all tests in the test strip must fall within the tolerances specified. This can be difficult to achieve and adds risk to the contractor. The language should also clarify that air voids are "laboratory air voids."

Additionally, while percent within limits (PWL) is the standard practice for determining pay factors on projects, control strips use much tighter tolerances than those included in Table 5 for the PWL system. This again increases the risk to contractors using much tighter tolerances than those included in Table 5 for the PWL system.

NAPA recommends that FAA clarify that the average of a minimum of three samples must fall within the tolerances for control strip acceptance when those tolerances are stated. Additionally, NAPA recommends considering relaxing the control strip tolerances to align closer to Table 5. If FAA thinks this is not an appropriate action, this could be an appropriate study for the AAPTP to consider.

Natural Sand Limitations Are Redundant Controls for Stability with Rutting Test Requirements

For asphalt mixtures, the tables for Fine Aggregate Material Requirements place limits on natural sand usage between 0 and 15 percent to ensure the inclusion of natural sand does not lead to mixture stability issues. This requirement assumes that all natural sands are the same, yet some are rounded and fine while others are angular.

FAA has requirements in place to test mixture stability using either the Asphalt Pavement Analyzer or Hamburg Wheel Tracking Test as noted on page 2. Limiting natural sand usage is redundant as these tests will ultimately prove or disprove a mixture's ability to be stable under loading.

NAPA recommends forgoing the limitations placed on natural sand due to the additional testing of mixture stability.

Current FAA Job Mix Formulas (JMFs) Only Last One Construction Season

Many agencies including state departments of transportation (DOTs) allow asphalt JMFs to span the length of multiple construction seasons. This practice is especially pertinent due to the nature of certain projects that extend beyond a single season. Allowing JMFs to be approved for multiple construction seasons would reduce costs for contractors who are regularly completing FAA work. Contractors could complete a verification of the mix to ensure properties are still met and check the aggregate properties to show the job mix formula is still in specification.

NAPA recommends that FAA consider allowing job mix formulas to be valid beyond one construction season.

The Engineer Should Not Determine if RAP Is Allowed in P-403 Mixtures

Item P-403 in the AC states "Engineer will determine if RAP is/is not allowed and make appropriate selection" and that RAP can be very effectively used in lower layers or for shoulders. The discrepancy between FAA's endorsement of RAP and the engineer's discretion to allow RAP poses a challenge. If the JMF meets the requirements, RAP should be allowed in these mixtures at all times. When properly incorporated into the mix design process and field production and placement, RAP has been shown to

provide many environmental and cost benefits without sacrificing mixture quality and performance in the field.

NAPA recommends removing "Engineer will determine if RAP is/is not allowed and make appropriate selection" from the AC.

Item P-403 Mat Density Requirements Are Too Stringent

Most of the items in the current advisory circular have been moved to PWL for determining pay factors. However, item P-403 does not have a deduction-based system. Once a mixture falls outside the limits, it moves directly to remove and replace. The requirements for air voids match the requirements for item P-401; however, the mat density requirements for item P-403 are much more stringent than item P-401.

NAPA recommends revising the mat density acceptance criteria for Item P-403.

FAA Should Consider Additional Tack Coat Materials

The current AC relies on the ASTM D3628 specification that only allows for slow-setting emulsified asphalt tack coats. NAPA agrees that tack coats are vital for bonding asphalt pavement layers together; however, research such as NCHRP 9-46 has shown that other tack coat materials besides emulsified asphalt can be effectively used to encourage bonding. Emulsified asphalt must break for it to bond pavement layers; however, there are times when the weather, project schedule, or limited windows to complete paving activities while the airport is not active make it difficult for tack coats to break. Additional materials such as hot applied asphalt binders or rapid-setting emulsions should be considered as viable tack coat materials when project schedules or environmental conditions negatively impact breaking conditions of the emulsions. Additionally, polymer modified emulsions could improve the shear resistance at the pavement layer interface in areas of high shear stress.

NAPA recommends that FAA consider additional tack coat materials be allowed in the AC.

We again thank you for the opportunity to provide information regarding the update of the advisory circular. We hope this can be a starting point for a larger conversation regarding some of these topics. Please do not hesitate to reach out to me at rwillis@asphaltpavement.org with any further inquiries.

Sincerely,

J. Richard Willis, PhD

Vice President, Engineering, Research, & Technology