Performance-Based Asphalt Mixture Design (PBD) for Arkansas

The overall objective of the project is to develop procedures for implementing performance-based asphalt mixture design in Arkansas. Specific objectives include:

1. Identify and develop/adapt tests for cracking resistance and moisture damage, to accompany the currently-used APA test for rutting resistance, for inclusion in the asphalt mixture design system;
2. Establish appropriate acceptance criteria for cracking and moisture damage tests;

Key deliverables from the proposed project include:

1. Recommended changes to applicable sections of AHTD's Standard Specifications for Highway Construction (e.g. Sections 404, 407, 410);
2. Laboratory test methods, in AASHTO format, for cracking and moisture damage tests;
3. A Performance-Based Mixture Design Handbook, to provide guidance to AHTD and contractor personnel regarding design procedures and test methods. The Handbook will also form the basis of a Webinar series on Performance-Based Mixture Design.

The research is needed to develop/adapt and implement a 'cracking test' for asphalt mixture design - and to use this test in conjunction with the current APA rutting test (AHTD Test Method 480) to shift mixture design in Arkansas to a performance basis, rather than a volumetric basis. In addition, the research should re-evaluate the effectiveness of the current method for estimating resistance to moisture damage (AHTD Test Method 455A) - and develop/adapt alternate methods as appropriate. A performance-based mixture design system will provide a much higher degree of confidence that Arkansas roadways will not experience materials-related premature distresses and failures.