

Concrete Pavement Roadmap: Mix Track Update

AASHTO Subcommittee on Materials
Meeting



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Michael E. Ayers
Director of Highway Pavement Technology

Concrete Pavement Road Map

- 12 strategic and coordinated research tracks are contained in the CP Road Map – The Long-Term Plan for Concrete Pavement Research and Technology.
- This document represents a comprehensive plan for research and implementation with input from all major stakeholders.
- Approximately 250 defined research statements designed to “strategize and coordinate ” concrete pavement research efforts.



Track 1: Performance-Based Concrete Pavement Mix Design System

The final product of this track will be a practical yet innovative concrete mix design procedure with new equipment, consensus target values, common laboratory procedures, and full integration with both structural design and field quality control – a lab of the future.

Why is This Important?

- We have no choice!
 - Shift of responsibilities (risk management)...
 - Loosing expertise...
 - Performance specs...
 - Current tools are not good enough...
- **An easy to use and reliable method to design and proportion concrete paving mixtures is critically needed!**



What Has Been Accomplished To Date?

- Mix Track Forum (Oct 06)
- Resolution BOD (Dec 06)
- MCC Meeting (Feb 07)
 - Approach endorsed...
- Paper accepted on "*Design and Proportioning of Concrete Paving Mixtures*" for CPTP Conference in Atlanta (May 07)

International Conference on Optimizing Paving Concrete Mixtures and Accelerated Concrete Pavement Construction and Rehabilitation

November 7 to 9, 2007 – Atlanta, Georgia

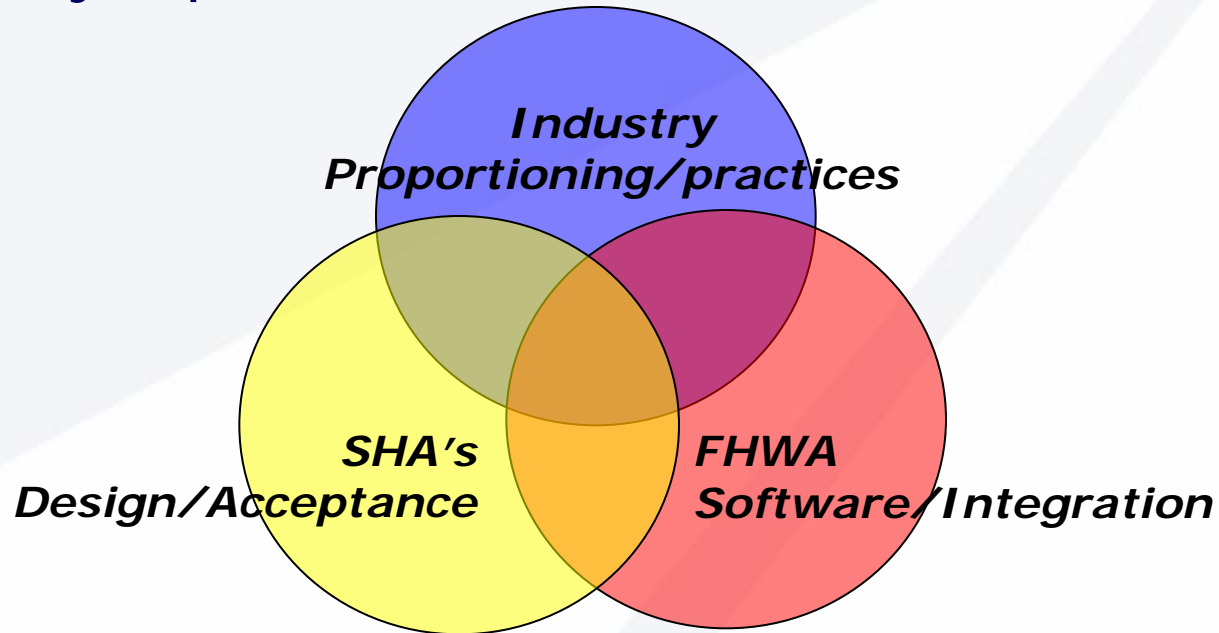


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What is the Approach...?

- Track led by a consortium of SHA, FHWA and Industry representatives.



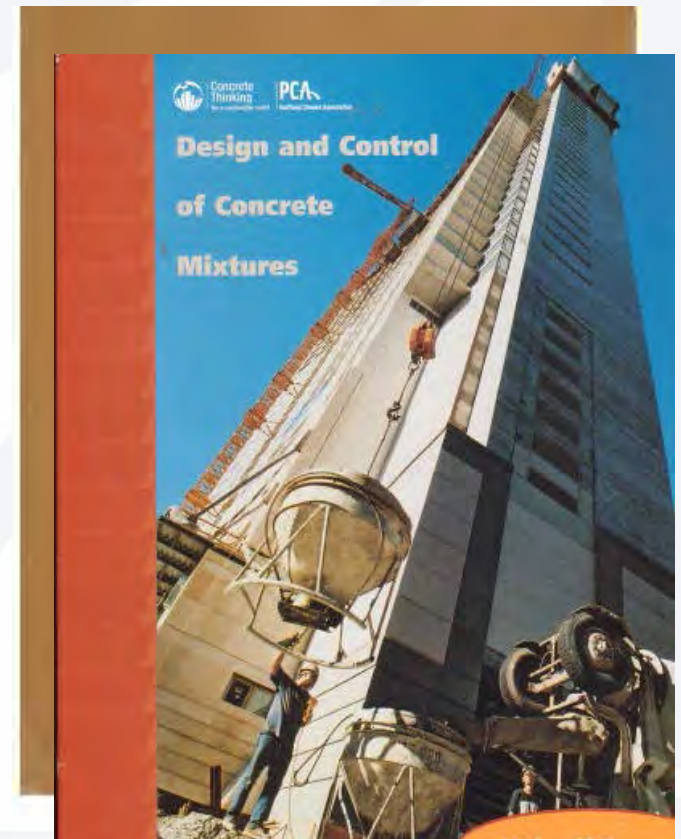
- Collaborative effort!

What is the Approach?

- Six initial projects recommended...
 1. Design and Proportioning of Concrete Paving Mixtures Manual (Industry)
 2. Mixture Testing and Analysis Manual (SHAs)
 3. Evaluation of Emerging Test Procedures (SHAs)
 4. Modeling and Software Assessment (FHWA)
 5. Implementation and Outreach (All)
 6. Framework for Mix Track Research (All/NCPTC)

Design and Proportioning of Concrete Paving Mixtures Manual?

- Cooperative effort between ACPA/PCA/(NRMCA)
- Modeled after PCA's EB-001
- Concise and current guidance
- Timeline 2-3 years...
- Consensus driven!



Consensus Driven Process!

- Industry will take lead, but with input and involvement from FHWA, SHA's, FAA, COE, NCPTC, academia...
- Ad-hoc panels with subject-matter experts will be assembled to review and comment on document
- Most of the pieces are already here...
 - ACI 211.1 and PCA volumetric methods
 - IMCP guidance...
 - Aggregate packing...

Mixture Testing and Analysis Manual

This project consists of developing a comprehensive manual with two discreet elements:

- Identify and describe all relevant concrete design properties/characteristics that an owner may require as part of a concrete pavement specification, as well as the accompanying test procedures to measure those properties.
- Procedures for analyzing concrete pavement mixtures in specific applications and predicting their performance under anticipated placement and service conditions.

Evaluation of Emerging Laboratory Testing and Equipment

This activity focuses on evaluating tests currently under development: the calorimetry heat signature test and coefficient of thermal expansion test. It is anticipated that both of these tests will be included among those considered in the Mixture Testing and Analysis Manual

Modeling and Software Assessment - State of Practice and Future Advancement

This task involves an assessment of available software tools and models, with recommendations for improvements and options for integration. The ultimate goal is to establish the framework for a fully integrated software package that is reliable, flexible, easy to use, and minimizes the required inputs.

Field Evaluation, Coordination, Training and Outreach

This task provides for field evaluations of the mixture tools developed in previous tasks and will result in both specifications and best practices. A series of technology transfer activities will also be included in this task.

Timeline of Activities

- Most of the activities can occur simultaneously.
- The development of the mix design and proportioning methodology (manual) is expected to take 2-3 years.
- Integration of the total package is still undetermined pending development of the final plan.

Questions?