Pavement Design Breakout Session Overview
“Long Life Pavements with Asphalt”

Dr. Marshall Thompson—University of Illinois

Long Life Philosophy
- Very Low Probability of HMA Fatigue
- Mill and Fill Rehab
- Surface Weathering
- Top-Down Cracking

Do Your Homework on Materials

There is No Unique HMA Fatigue Relationship

Fatigue Endurance Limit
- Damage and Healing Concepts and Test Data Support a Strain Limit Below Which Damage Does Not Accumulate
- Limit for Different Mixes and Binders

Mechanistic Design Requirements
“Long Life Pavements with Portland Cement Concrete”
Jerry Voight, ACPA

- Long-life Pavement Perspective
  - How Long is Long Life
  - How is it Measured
  - What Must be Done

- Where to make biggest improvements?
  - Concrete Durability -- Paste and Aggregates
  - Joints -- Dimensions and Dowels
  - Subgrade/Subbase
  - Specifications/Process Control not Strength-Based

- Long-life has different meanings

- Getting there requires improving design, materials and construction
Why This Project?

Not Design-Build >>> Design, Low Bid, Build
- Professional Services Contract with Warranty
  created uncertainty and apprehension

“X-Y-Z” Warranty Terms
- X Years (20)
- Y Traffic (4 million ESAL)
- Z Total Expenditures ($110 million)

Address each specific problem at the most effective location in the system.

Materials and Specifications Overview

Bidding/Re-Engineering Process -- 7 packages to 3 packages

Public Relations
“Missouri’s Experience with Developing a Pavement Type Selection Process”
Dave Nichols, Missouri DOT

Why Now!
- Funding
- Change in Department Emphasis (Expansion to R & R)

Process Review Team
- Provide Public Best Product Available
- Develop a Clear Process that is Understandable to all Stakeholders

Decision Milestones
- Mechanistic Design
- Will include FHWA LCCA Methodology
- Moving Toward Alternate Bids as Standard

Remaining Challenges
- Delivery of NCHRP 1-37A
- Determination of Predicted Treatment Intervals
“Overview of Pavement Warranty Applications”
Brian McWaters—KOCH Materials

- **What is a Long-Term Warranty**
  - A change in the business model/change in the project delivery system

- **What is the Agency Need**
  - May not be for Everyone

- **Design Build Warrant/Design Bid Build Warrant**
- **Agency Expectations, Commitment and Resources**
- **Warranty Must Be Specific -- Terms Thresholds, Etc.**

- **Bottom Line**
  - Allow for innovation
  - Be specific about performance expectations
  - Transfer risk
  - Define limits and scope of the warranty

- **Three Legged Stool -- Cost - Quality - Time**

Clark Graves and Paul Looney—UK & KYTC

- Kentucky’s Warranty Experience
  - Optional Warranty Period
  - Why Warranties

- Contract Incentive/Disincentive Innovations
  - A+B -- $/day or $/hr
  - Fixed Completion Date

- Alternate Pavement Type Bidding

- Long Life Pavement Concepts
  - Limiting Strain
  - Construction and Materials
  - Functional vs. Structural Life