Moving Towards Design and Construction Integration Through Performance-Related Specifications (PRS)

Expert Task Group (ETG) on Asphalt Mixtures
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**The Issue:**
Pavement “Life”

- **Structural Design** (materials/thickness)
- **Mixture Design**
  Material Characterization
- **Construction**
  (QA; QC)

*In terms of pavement performance / life:*

**THAT** these elements are interrelated is not questioned;
The extent to which we *intentionally* relate them...?
Near Term: Performance Mix Design

Structural Design (materials/thickness)

Rutting: Hamburg; APA; others

Index Tests
Go/No-Go criteria;
Acceptance criteria based on empirical relationships to “performance”
Optimize mixes’ resistance to distress mechanisms

Mixture Design Material Characterization

Cracking: TxDOT; SCB; DCT; others

Construction (QA; QC)

ETG BMD Task Group

Richard Kim
Near Term: Performance Mix Design

Field Acceptance Processes

1. Volumetric
   - Volumetrics
   - Field Density

2. Volumetrics + Performance
   - Volumetrics
   - Field Density
   - Performance

3. Performance
   - Field Density
   - Performance

Note: “Performance” Tests may include fundamental tests and/or empirical tests.

Initial Verification (Go / No Go)

Ongoing Verification (Go / No Go AND/OR Index-type tests)

Significant work to relate performance/index tests to mixture volumetrics.

Index-type tests related to ‘performance’ still lack direct predictive capabilities for pavement life...

Note: “Performance” Tests conducted during mix design may vary from those used during field verification.

Discretionary Frequency And Actions

Required Frequency; Specified Actions
Long Term: PRS

**Structural Design (materials/thickness)**

**Mixture Design**
Material Characterization

**Rutting**

**Construction (QA; QC)**

**Cracking**

FlexPAVE Platform
Exhibited potential for integration, PRS
Material characteristics form basis for mixture design and structural design
Through materials database, performance database, and pay tables, can set up a PRS
Comprehensive materials database relates mixture volumetrics and predicted performance

Long Term: PRS; FlexPAVE Platform

Ongoing mixture field verification (QA) relies on the strength of the volumetrics/performance prediction relationship (no field performance tests)

Initial mixture field verification could include both volumetrics and performance tests

Note: "Performance" Tests conducted during mix design may vary from those used during field verification