National Seminar on Moisture Sensitivity in Asphalt Pavements

Breakout Session No. 2
Testing and Treatments

Testing

- If good mix design, pavement design, and construction practices are followed, is a moisture sensitivity test required?

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Testing

- Current Practices
  - AASHTO T 283-02
  - Hamburg Wheel Tracking Device
  - Loose Mix

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Assumptions

- Well designed / produced mix
- Considering short term initially
- Test that can be used for design and production control

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AASHTO T 283-02

- Issues to address
  - Consolidate successful modifications
  - Reproducibility/Repeatability crucial to insure success (Colorado experience)
  - Specimen preparation
    - compaction method
    - degree of saturation

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AASHTO T 283-02

- More Issues to address
  - Air voids determination
  - Calibrate for local conditions
  - Disadvantage: no repeated load
  - Porosity / permeability
  - Standardization of training / certification

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Hamburg Wheel Tracking Device

- Benefit: includes repeated loading
- Can identify stripping failure by transport of fines from mix into water

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Hamburg Wheel Tracking Device

- Issues to address
  - Test conditions appropriate to environmental and mix characteristics
  - Sample preparation and compaction
  - Equipment improvements (where rut measured)

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Hamburg Wheel Tracking Device

- More Issues to address
  - No standard procedure
  - No precision / bias
  - Repeatability / reproducibility

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Loose Mix

- Consider for screening test (qualitative)
- Potential tests
  - Static boiling
  - Rolling bottle
  - Ultrasonic

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Gaps

- Criteria / protocols for local calibration
  - Data collection that relates to field performance
  - Test correlation with failure mode
  - Define field performance with respect to moisture sensitivity

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Research Needs

- Fundamental property tests
- Long-term aging
- Rapid QC test
- Completion of ECS research
  - Dynamic modulus / fundamental properties (AASHTO 200X)
  - Traffic impacts on pore pressures
  - pH of water

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Treatments

- **Best Practices**
  - **Account for additives in mix design**
    - **Perform mix design with all additives**
  - **Application of lime: dry on damp**
    - **Coated aggregates**
    - **Acceptance based on production data**
    - **Method specification**

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Treatments

- **Best Practices**
  - **Certification of correct product / product quality / amount used**
  - **Test binder with additives to ensure they meet specifications**

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Treatments

- Gaps
  - Verify quantity of additive in mix
    - Lime test method
  - Field performance of various additives over time
  - Compatibility of additives with bitumen, polymers, etc
    - Positive
    - Negative

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Treatments

- Research Needs
  - Field test to determine uniform distribution of additive in mix
  - Field performance of additives over time
  - Aggregate stockpile aging
  - Lime in bitumen
  - Diminished properties over time?