Michigan Peer Review
Asphalt Pavement Practice

Local Use of RAP
Three Percent Air Voids
Use of SMA

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Michigan Asphalt Conference
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Local Use of RAP

- Use of RAP is Important!
  - Conserve Energy
  - Conserve Resources
  - Reduce Pollution
  - Stabilize and Reduce Costs
Once upon a time, asphalt was so cheap and plentiful that mastodons could bathe in it!
Local Use of RAP

• Require Volumetric Mix Design
  – Use DOT Approach to Mix Design
  – Specify Maximum Binder Replacement (Typically 0.30)
  – Regress Asphalt Content to 3% Air Voids
  – Follow NCAT Recommended Approach for $G_{sb}$ Allow Mix Designs Approved by MDOT

• Concern About Blending – Not Usually a Problem at Normal HMA/WMA Temperatures

• Concern About Variability – Not Usually a Problem
Local Use of RAP

- QC/QA
  - Require on Medium and Large Projects
  - Concern about $$$: How Much Will It Cost to Not Test?
- Work with APAM
- Conduct Local Field Trials
- Develop Specification
- Implement
Three Percent Air Voids

• MDOT Recognizes There is Nothing Sacred About 4% Air Voids!
• A Good Way to Address Cracking Issues – More Asphalt
• Voids Are Not a Good Measure of Permeability – Depends on Aggregate Size
Three Percent Air Voids

![Graph showing permeability vs. in-place air voids with data points at 25.0 mm, 19.0 mm, 12.5 mm, and 9.5 mm.](image)
Three Percent Air Voids

- Will Serve Well Until a Balanced Mix Design Approach Developed
  - Rutting Test
  - Cracking Test
  - Asphalt Content in Between
  - More Innovation

- Should be Part of Local Implementation of RAP
Use of SMA

• High-Performance Gap-Graded Surface Mix
• Aggregate Structure Provides Rut Resistance
• High Binder Content Reduces Aging and Increases Crack Resistance
• Right Application – Surface on Long-lasting Design
SMA

• Production – Best Practices Always
• Requires a High Degree of Production Quality Control
  – Proportions Are Important
  – Will Not Perform with High Variability
• Placement – Best Practices Always
Use of SMA

• Maryland Experience
  – Little or No Top-Down Cracking
  – Little or No Rutting

• Use of RAP
  – Needs to be Controlled Like Any Other Component
Want to know more about ASPHALT?

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At the 2016 AAPT Meeting:

- Leading Edge Workshop: Cracking Tests
- 5 Presentations on Cracking Tests
- Symposium: Balanced Mix Design
- 5 Presentations on High RAP/RAS
- Implementation of Specifications
- Aging Behavior
- Forum Topic: World Asphalt Market