IDOT
HMA Update

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Illinois Department of Transportation

Illinois Asphalt Paving Association
PG Binder Used in 2010 (thousand tons)
% Polymer Usage - 2003 to 2010

Percent Polymer

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent</th>
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Polymer Usage from 2003 to 2010 shows a trend of increased usage over the years, peaking in the year marked with an asterisk.
20% = 100,000 tons
• Based upon largest suppliers of previous year
• Prices submitted as of first of each month
• Average = Index
• BMPR Policy Memo 1-08.0
  • PERFORMANCE GRADED ASPHALT BINDER ACCEPTANCE PROCEDURE
AC/Crude/Gasoline Price Comparison
Liquid AC Sampling at HMA Plants
Sampling Points – Let’s Count the Ways

Tanker Unload Line
1. Tanker
2. Tanker Unload Line
3. AC Tank Spigot
4. AC Tank Spigot
5. AC Tank Line
6. AC Tank Line
7. Supply Line
8. Inject Line

Supply Line

AC Pump

NEAT AC

POLY AC

Inject Line

Anti strip Blender

Recirculation Line
Sample at closest point to the mix - at Injection Line

- Tanker Unload Line
- Sample Port Location per Specification
- Supply Line
- AC Pump
- Dryer Drum or Weigh Bucket
- Recirculation Line
- Injection Line
- Anti strip Blender

- NEAT AC
- POLY AC

Sample Port Location per Specification
## District PG Investigative Field Samples
### As of 12/31/10

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<th>District</th>
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FINE MIX ASPHALT
Fine Mix HMA

- Less large stone on large stone
- Relies on crushed fine on fine fractions
- Larger stone floats in matrix to help reduce AC content

Why?
- Better compaction – especially at joints
- Less permeable
- Longer life
Future Roll Out Fine Graded

- Slow – more trials 2011
- Collect data on lay down
  - Permeability
  - Density
  - Hamburg
- Review
- Possible trial project in each District for 2012
Including in new contracts
  ◦ Starting with State Contracts
  ◦ LRS to follow
  ◦ For pavements with no shoulder up to 3’ shoulder

Want to see proven devices used
  ◦ Strike off plates not allowed per spec
  ◦ Must compact and produce consistent durable edge
  ◦ If can’t produce desired edge – deduct tonnage from pay if material is wasted.
Warm Mix Asphalt

Hot  Warm
Pre Exp. Feature Work Plan 7

2008-2009 WMA Projects 7

2010 WMA Projects 7

Total number of warm mix contracts 21

Over 50,000 tons WMA

Hamburg Wheel Testing
Background

Drivers
- Federal Highway Administration
- Every Day Counts Innovation Initiative, Industry, and Environmental Sustainability

Goal:
- Generation of Permissive Use Specification
- Specification to allow use of additives as well as foaming technology
- Additives (mineral, chemical, or organic) to be selected from “Pre Approved” list maintained by BMPR
Permissive Use Specification

- Embrace WMA
- Allow bidding up front
- Allow approved additives plus foam
- Start with $N_{70}$ and below
Time Frame

- Drafting permissive use specification
- May/June - Comments and discussion incorporated from Districts, FHWA, and Industry - BMPR Spec
- July - Submit to Design and Environment
- Effective Jan. 1, 2012
- Bulk of 2011 - Contractor’s Proposal
Reclaimed Asphalt Shingles (RAS)
HB 1326 HA 03
SB 1543 SA 01

• Shingles - No land filling within 30 miles of recycler
• CDD: Credit of 2 for 1 tons shingles recycled for 75% recycle goal
• ILEPA to manage asbestos program
• Requires allowing shingles in state highway construction
• Shall meet or exceed maximum percentage of shingles allowed by Tollway
• Maximize the use of recycled aggregates and other constituents in the mix
More HA 3/SA 01

• Reduce carbon footprint
• Extend the paving season
• Regional Engineers to report at hearings annually
  – Usage
  – Cost savings
  – Performance
• HMA Producer
  – Shall not use shingles unless asbestos tested
  – Must meet ILEPA Section 22.54 if doing own processing
RAS Status

- Specification developed last year for state wide use
  - Revised – Effective March 1, 2011
- Policy developed last year
  - BMPR Policy Memo issued August 13, 2010
  - Requires testing of all tear off material for asbestos
  - Current versions differs from Tollway’s 1 test/250 ton
- Harmonization effort with Tollway
  - Legislation has effort on hold pending outcome
  - Asbestos testing final issue
- Consultant on board to assist IDOT on asbestos
SB 1735
HB 1283
SB 1735/HB 1283

- Department QC/QA training program materials to be available to apprenticeship programs
  - Course curricula
  - Teaching slides
  - And other materials to teach classes
- Third party testers provided with 10 days notice
- Department to certify as able to teach/train own members
RAP/RAS Maximum Shift
Percent AC Replacement

• Specification becoming complex
  – RAP Percent
  – RAS Percent
  – When to grade bump?
• Greatly increasing amount of recycled material
• Changed percent RAP replacement to liquid “binder” replacement
• BMPR RAP spec revised 3/1/11
Old Usage of FRAP

<table>
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<tr>
<th>HMA Mix</th>
<th>N Design</th>
<th>Binder/LB</th>
<th>Surface</th>
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New Binder Replacement

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<tr>
<th>HMA Mix</th>
<th>Level 1 Max % Binder Replacement FRAP+RAS</th>
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<tbody>
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<td>105</td>
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# Increasing usage of FRAP+RAS

<table>
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<th>HMA Mix</th>
<th>Level 2 Max % Binder Replacement FRAP+RAS</th>
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</table>

Use Hamburg Wheel if over Level 1
Hamburg Wheel
Hamburg Wheel

50 Passes/Minute

158 Lbs

50 C

AASHTO T-324
Specimen Prep
SLOW Implementation Schedule

• 2011
  – High Replacement RAP and RAS
  – Permissive use Warm Mix

• 2012 - 2013
  – Other New mixes (fine graded) and Renewals

• 2014 on
  – Full Implementation
Grade Bumping is Critical

• Low amounts of AC replacement can be tolerated with little or no impact

• Around 20% replacement mix properties are impacted
  – Grade bumping policy
    • Above 20% - Double bump down
    • PG64-22 to PG 58-28
  – If not followed – shorter pavement life due to cracking
20% = 100,000 tons
PG Grade vs. Replacement AC

The graph illustrates the relationship between PG Grade and the percentage of replacement AC. The lines represent different PG grades: PG 64-22, PG 58-28, and the Bump Policy. The graph shows how the PG Grade changes as the percentage of replacement AC increases.
Life Cycle Cost Audit
Audit

- 20 ILCS 2705/2705-590
  - Requires Life Cycle Costing (LCC) on all projects over $500,000
  - Award construction to lowest LCC
  - Models based upon data
  - If don’t have data may use other similar states data
- Audit to determine if IDOT following law
The End
Questions??