77th IAPA Annual Meeting, March 2014
Qc Managers’ Committee - Goals, Priorities, & Accomplishments
The Purpose of the IAPA QC Managers Group:

• To identify opportunities to improve Illinois' asphalt specification to promote an appropriate balance of better safety, higher quality & lower cost.
• To communicate the opportunities for improvement to the IAPA Executive Director.
• To meet with agency representatives as directed and coordinated by the IAPA Executive Director.
The Structure of the IAPA QC Managers Group:

• Membership:
  – Open to QC management employees of IAPA producer member companies.
• **Chair & Vice Chair:** Elected by the QC managers to a two year term at the annual convention

• **Leadership Team:** Shall consist of the Chair, Vice Chair and 5 members appointed by the Chair

• **Board Liaisons:** Shall consist of two IAPA Board members appointed by the IAPA Executive Director
• **Chair:** Pat Koester (Howell)

• **Vice Chair:** John Lavallee (Curran)

• **Leadership Team:**
  – John Diel (UCM)
  – Jeff Kern (Open Road)
  – Frank Mathewson (Iroquois)
  – Bill Pine (Heritage)
  – Mike Schilke, (Central Blacktop)

• **Board Liaisons:**
  – John Healy (Arrow Road)
  – Hugh Gallivan (Open Road)
Past Chair Persons:

- Paul Wilson (Civil)
- Frank Mathewson (Iroquois)
- Doug Jury (William Charles Constr.)(Geocom)
IAPA Qc Managers Group - Goals

• Leadership Team
  –14 different issues
• Questionnaire
  –35 Questions
• Narrow down to 5 Goals
IAPA Qc Managers Group - Goals

1) Reduction in Number of Designs
2) ABR & Percent of RAP / FRAP / RAS
3) Edge of Pavement
4) Limits of Precision & Appeal Process
5) Continuing Education
Reduction in Number of Designs / ABR

- 2 % @ 30 Gyrations
- @ 4% Voids
  - 30
  - 50
  - 70
  - 80
  - 90
  - 105
Reduction in Number of Designs / ABR

- 9.5L Surface / 19.0L Binder
- 4.75 Surface / 9.5 Fine Graded
- 9.5 “C” “D” “E” “F” Surface
- 12.5 Binder “E” “F” Surface
- 19.0 Coarse Graded Binder
- 19.0 Binder
- 19.0 Fine Graded Binder
- 25.0 Coarse Graded Binders
- SMA
# Reduction in Number of Designs / ABR

<table>
<thead>
<tr>
<th>HMA Mixtures 1/, 2/</th>
<th>FRAP/RAS Maximum ABR %</th>
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</thead>
<tbody>
<tr>
<td>Ndesign</td>
<td>Binder/Leveling Binder</td>
</tr>
<tr>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>90</td>
<td>40</td>
</tr>
<tr>
<td>105</td>
<td>40</td>
</tr>
</tbody>
</table>
Reduction in Number of Designs / ABR

- Different Aggregates
  - Limestone
  - Dolomite
  - Gravel
  - Trap Rock
  - Slag (Air Cooled / Steel)
  - Sand Stone
  - Concrete

- Different Sources

- Different Asphalt Grades
<table>
<thead>
<tr>
<th>Virgin Designs</th>
<th>Recycle Designs</th>
<th>Allowed ± 5 to ± 10% Recycle Swing</th>
<th>RAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>53</td>
<td>78</td>
<td>103</td>
</tr>
</tbody>
</table>
Reduction in Number of Designs / ABR
Reduction in Number of Designs / ABR

– Committee Formed

• Address Higher ABR

• Reducing Number of Designs
Edge of Pavement

- Issue
  - Potentially High Penalties
    - Even with Best Paving Practices
  - Core Location
    - Shoulder
    - Safety Wedge
  - Base
    - Condition
    - Unmilled Surface
    - Tack Coat
    - Varying Thickness
Edge of Pavement / Future?

- Tack Coat “New Spec”
- Mix Change
  » Gradation
  » VMA
- Pilot Project in District 4
  » Joint Treatment
- Longitudinal Joint Seal
- Rapid Penetrating Emulsion (RPE)
Edge of Pavement / Future?

- Longitudinal Joint Seal for C.L Joints
  - No Longitudinal Density @ C.L.

• Unless
  - Paved against Confined Edge
  - Full Width or Echelon Paving
  - Remove Low Density Mat’l (i.e. 8”)

» Joint treatment
Edge of Pavement / Future?

• Penalties eliminated Provided use of Rapid Penetrating Emulsion Applied
  – Guide will be developed
  – Maximum Permeability allowed
  – May take Multiple Passes
Effect of In-Place Voids on Life
Washington State DOT Study

![Graph showing the effect of in-place voids on percent service life. The graph indicates a downward trend as the in-situ air voids increase, with compaction levels decreasing from 93% to 89%.]
Edge of Pavement / Future?
Surface Mix – Erase Penalties If:

Figure 5. Field Permeability-Density Relationship for 9.5 mm NMAS Mixtures
Edge of Pavement / Future?
Binder Mix – Erase Penalties If:

Figure 3. Field Permeability-Density Relationship for Project 11 (19.0 mm NMAS Mix)
Limits of Precision, Appeal Process, & Continuing Education

– Issue

• Running with Offset
  – Variable
    » Cause Uncertainty
    • Increases Risk
  – Voids / VMA
    » (0 to 1%+)
    • High Offset can Effect Dispute
Limits of Precision, Appeal Process, & Continuing Education

–Variability Caused By:

• Segregated Sample

• Absorption
  – Aging - Oxidizing
  – Handling
  – Ovens

• Gyratory Compactors
  – Troxler – 3  Pine - 2
  – IPC Servopac – 1  Brovold - 1
Limits of Precision, Appeal Process, & Continuing Education

–Round Robin 2014    Voids Offset - 0.4%
Limits of Precision, Appeal Process, & Continuing Education

—Round Robin G\text{mm}

- IDOT G\text{mm} – 2.496
- Contractors G\text{mm} – 2.497
- Average G\text{mm} – 2.496
- AMRL National Std. Dev

- Std. Dev. – 0.0044
- Std. Dev. – 0.0060
- Std. Dev. – 0.0057
- Std. Dev. – 0.0061

—Round Robin G\text{mb}

- IDOT G\text{mb} – 2.347
- Contractors G\text{mb} – 2.338
- Average G\text{mb} – 2.342
- AMRL National Std. Dev

- Std. Dev. – 0.0096
- Std. Dev. – 0.0143
- Std. Dev. – 0.0135
- Std. Dev. – 0.0201
Limits of Precision, Appeal Process, & Continuing Education

Round Robin 2014

$G_{mm}$ Offset – 0.001
Limits of Precision, Appeal Process, & Continuing Education

–Round Robin 2014  $G_{mb}$ – Offset 0.009 / 0.4% Voids
Limits of Precision, Appeal Process, & Continuing Education

—Goal

• Cut Standard Deviation & Offset in Half
  — Standardized Practices with IDOT
  — Continuing Round Robins
  — Bailey Method as a Tool
  — Research & Continued Discussions
  — Continued Education
IAPA Qc Managers Group - Accomplishments

Reduction of Mix Designs
Positive Dust Control
Communication
  ABR / Design Committee
  Qc Software Committee
MTD Low Ground Pressure
Research Projects with ICT
Face to Face Discussions with IDOT
IAPA Qc Managers Group - Accomplishments

"Couldn't we communicate better if we built a bridge?"
IAPA Qc Managers Group

Thank You for Your Time

Open for Questions