District 1-0
Pavement Quality Task Force (PQTF)

Where We are Today
Route 62
Route 6
Route 948
Route 6
Partnerships

- BOCM/BOPD
- BOMO
- PAPA
- FHWA
- Industry (Bituminous Producers & Contractors)
Top Ten Accomplishments

• Development of a District Longitudinal Joint Special Provision in 2008 that included Piloting projects and Data Collection. Ultimately led to the implementation of a Statewide Longitudinal Joint Density Specification in 2011.
Top Ten Accomplishments

• Pilot of multiple projects in 2008/2009 that reduced gyration levels and lowered design air voids. Ultimately lead to a District Special Provision specifying 65 gyration mixes for all 9.5mm mixes.
Top Ten Accomplishments

- Development of a District verification process for theoretical Specific Gravities which was later replaced by the implementation of a Statewide verification process 3 years later.
Top Ten Accomplishments

- Set-up and operation of a District Lab to verify producer results and assist maintenance operations with various programs.
Top Ten Accomplishments

• Proactive implantation of 100% usage of SMA on all interstate projects.
Top Ten Accomplishments
Pavement Database

Spring Pavement Reviews

Continued Monitoring
Top Ten Accomplishments

• Piloting the first WMA SMA in the State leading the way for State-wide usage of SMA WMA technology.
Top Ten Accomplishments

• Leading the state with 100% WMA usage within the District providing more uniform AC coating of aggregates, thicker film thickness and less aging of the AC binder.
District 1-0 first Warm Mix Project
The Glenn O. Hawbaker Grove City, Pa., plant provided the asphalt mixes for State Route 8
408 Change 5

Table A
Job-Mix Formula
Composition Tolerance
Requirements of the Completed Mix

PG 58-28 Asphalt Cement 215-310
PG 64-22 Asphalt Cement 220-320
PG 76-22 Asphalt Cement 240-330
Decreased binder aging, light oils never reach boiling point (285°F)

WMA Lanes

This Lane: HMA Control

Pavement stays blacker, longer
Absorption

Warm Mix

Hot Mix
FINAL REPORT
District 1-0
2015 Annual Bituminous Paving Project Review using (Modified Superpave Mix Design Criteria)

PREPARED BY:
BILL CARR, Materials Manager I

Field Review Conducted in March 2016
MERCER COUNTY - PROJECT LOCATIONS AND INFORMATION

Mercer County
SR/Section: 76G-01M
Segment: (SR 3307) 0010000 to 0015000
ECMS: 9022
Contractor: Kelle Construction, Inc.
Bit. Plant: Deister asphalt-Wheatland plant
Mix Design: E6501 (3 to 100 g/cm3 / PG 64-22/4.0 Voids / SRL-H)
Notes: WMA, Cold in place recycle project. Limestone/coloursous asphalt course aggregate and limestone fine aggregate mix.
Findings: Mix looks good.

Mercer County
SR/Section: 3906-01M
Segment: 00100000 to 00200000
ECMS: 90326
Contractor: Kelle Construction, Inc.
Bit. Plant: Deister asphalt-Wheatland plant
Mix Design: E6501 (3 to 100 g/cm3 / PG 64-22/4.0 Voids / SRL-H)
Notes: WMA, Limestone/coloursous asphalt course aggregate and limestone/gravel fine aggregate mix.
Findings: pavement looks good.

Mercer County
SR/Section: 19451
Segment: (SR 18) 03100055 to 03700055
(CSR 18) 031000110 to 033100110
ECMS: 104415
Contractor: Sharon Paving & Construction Co.
Bit. Plant: Deister asphalt-Wheatland plant
Mix Design: E6501 (3 to 100 g/cm3 / PG 64-22/3.5 Voids / SRL-H)
Notes: WMA, Limestone/Gravel course aggregate and fine aggregate mix.
Findings: pavement looks good.
REPORT SUMMARY

This year's Spring Pavement Review of the 2015 paving projects is one of the best reviews we have had as durability continues to improve as the result of implementations of the PQIP. There are several key factors contributing to the improved performance of our bituminous pavements: Department Special Provision requiring maximum asphalt content based on the combined aggregate specific gravity. District Special Provision requiring anti-strip to be added to mixes using graded course and/or fine aggregate. District Special Provision limiting the use of high absorbing course aggregate in the wearing course, and the use of warm mix asphalt at the reduced temperature to minimize oxidation of the mix. Both Department and District Special Provisions for Longitudinal Joint Density. In addition, with the cold winter this year’s review of the 2015 bituminous paving projects has resulted in less reflective and thermal cracking. Although durability has improved we continue to see isolated instances of slipage damage to our pavements which is currently under study.

Four (4) State Route (C7, 16, 89, & 3) in addition to the three (3) State Routes from 2014 construction season (301, 322, & 250) have had pavement slipage damage.

CONCLUSIONS & RECOMMENDATIONS

With the exception of SR 301, all pavement slipage distress areas have been patched and currently performing well. SR 301 has had multiple pavement slipage distress areas and has been patched with recurring pavement slipage issues. Core have been drilled and logged for further analysis on these pavements.

It has become District policy to test samples of backoff for testing at LTH on all projects. We will also be evaluating our wearing courses and scratch courses for potential tenderness.

With the majority of our bituminous paving being overlay it is our recommendation to place emphasis on drainage improvements and base structure upgrades that are needed to preserve our pavements.

We believe that we are at a point, until more is learned about the slipage issue, no major revisions of our mix design parameters are required. We should continue to monitor our pavements to ensure that the mix design changes are effective and that we continue to produce durable long lasting pavements.
<table>
<thead>
<tr>
<th>Material Source</th>
<th>Material Code</th>
<th>Class</th>
<th>Material Name</th>
<th>% Material</th>
<th>% Total</th>
<th>% Alternative</th>
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**NOTE:** Refer to the attached specifications for further details.

---

### MOISTURE SENSITIVITY DATA

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<th>Sample Time for C.F.</th>
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### COMBINED AGGREGATE OVERSIZED PROPERTIES

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<tr>
<th>AASHTO - 3 in. Gravel</th>
<th>Specimen 1</th>
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**DESIGNED BY:**

- **Nikol J. Cooper**
- **Designated Date:** 08/07/15

**SUBMITTED FOR:**

- **Nikol J. Cooper**
- **Submitted Date:** 08/07/15

**APPROVED:**

- **Lieberz & Aggerman**
- **Approved Date:** 11/15/15
SR 5 – DCL (SR30) approximately 65' in WB PL is unacceptable due to segregation and needs replaced
Pavement Database
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<th>SR</th>
<th>Route &amp; Section</th>
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<th>Begin Offset</th>
<th>End Segment</th>
<th>End Offset</th>
<th>ADT at time of Construction</th>
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## Service Life Summary Report

### Service Life Greater Than 10 Years
### ADT Greater Than 5000

#### Joint Summary
- Maryland: 0 Unsealed Vertical: 0 Unspecified: 38
- Sealed Vertical: 0 Unsealed Notch Wedge: 0
- Sealed Notched Wedge: 0 Other: 0

#### Surface Summary
- HMA: 38 UTFG (Norschip): 0 Unspecified: 0
- Micro Surfacing: 0 Surface Treatment: 0
- SMA: 0 WMA: 0

#### Aggregate Summary
- CS: 3 LS: 3 SS: 0
- CS/GL: 2 LS/CS: 0 Unspecified: 0
- GL: 21 LS/GL: 9

#### Fine Aggregate Summary
- GL: 19 LS/GL: 12 Unspecified: 0
- SL: 7 LS/CS: 0

#### RAP Summary
- Yes: 1 No: 37 Unspecified: 0

#### PG Grade Type Summary
- PG 52-28: 0 PG 64-22: 21 Unspecified: 0
- PG 58-28: 1 PG 76-22: 16

#### Pavement Averages
- AC Content: 6.132 VMA: 15.805
- #200 Screen: 4.095 Effective AC: 5.262
## Average Service Life by Material

<table>
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<tr>
<th>MATERIAL CLASS</th>
<th>(173 detail records)</th>
<th>Average Service Life</th>
<th>(22 detail records)</th>
<th>Average Service Life</th>
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<tbody>
<tr>
<td>HMA</td>
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<td>7.5 Years</td>
<td>MARSHALL</td>
<td>8.0 Years</td>
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Monday, August 01, 2016
## Average Service Life by Nominal Size

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<tr>
<th>Nominal Size</th>
<th>Service Life</th>
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</thead>
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<tr>
<td>12.5 mm</td>
<td>8.33 Years</td>
</tr>
<tr>
<td>(6 detail records)</td>
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<tr>
<td>9.5 mm</td>
<td>7.62 Years</td>
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<tr>
<td>(167 detail records)</td>
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<tr>
<td>102W</td>
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<td>(22 detail records)</td>
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Monday, August 01, 2016
# Average Service Life By Effective AC

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<th>Effective AC Range</th>
<th>Projects That Have Reached End Of Service</th>
<th>Average Service Life In Years</th>
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<tbody>
<tr>
<td>3.9 - 5.0</td>
<td>50</td>
<td>7.84</td>
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<tr>
<td>5.1 - 6.0</td>
<td>141</td>
<td>7.667</td>
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<tr>
<td>6.1 - 7.0</td>
<td>3</td>
<td>8</td>
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</table>
## Project Pavement History

### Contract Information
- **County:** ERIE
- **Contract:** 92056  
- **Construction Year:** 2011  
- **Contractor:** Russell Standard Corp.

### Route Information
- **SR:** 430  
- **Segment:** O  
- **End Segment:** 370  
- **Offset:** 3428  
- **Route and Section:** 430-244

### JMF Information
- **Supplier:** Russell Standard  
- **JMF:** WMS 7  
- **Nominal Size:** 9.9 mm  
- **CLASS:** 5R1  
- **Gradation:** 75  
- **AC Depth:** 9.3  
- **Total AC:** 6.3

### Pavement Review

#### Spring Review
- **Inspection Year:** 2012  
- **Primary Distress:** Transverse Cracking  
- **Primary Distress Severity:** Low  
- **Secondary Distress:** Secondary Distress  
- **Secondary Distress Severity:** N/A

#### 4 Year Review
- **Inspection Year:** 2016  
- **Primary Distress:** Transverse Cracking  
- **Primary Distress Severity:** Low  
- **Secondary Distress:** Secondary Distress  
- **Secondary Distress Severity:** N/A

#### 7 Year Review
- **Inspection Year:** N/A  
- **Primary Distress:** N/A  
- **Primary Distress Severity:** N/A  
- **Secondary Distress:** N/A  
- **Secondary Distress Severity:** N/A

#### 10 Year Review
- **Inspection Year:** N/A  
- **Primary Distress:** N/A  
- **Primary Distress Severity:** N/A  
- **Secondary Distress:** N/A  
- **Secondary Distress Severity:** N/A

**Remarks:**
- 4/28/15: Reflective Cracking
- 9/29/16: N/A

**Inspection Notes:**
- 4/28/15: Reflective Cracking
- 9/29/16: N/A
Thank You.

Questions?