PennDOT’s 2017 Construction Program & Initiatives

George W. McAuley Jr., P.E.
Deputy Secretary for Highway Administration
Introduction

- 30 year Career
- Deputy Secretary Role
- Goals & Objectives
  - Strengthen Relationships
  - Improve Diversity
  - Asset Management approach
  - County Transformation
  - Innovation
Partnering – Culture Change

• Relationships
  – Re-institute Partnering Concepts – TQI initiative
  – Recognize shared vision, common goals
  – Respect each other
  – Issue Escalation Process

• PENNDOT Connects
  – Enhanced interaction during planning stage
  – Costs still a factor, but result will better align with community
Diversity

- Equal Employment Opportunity
  - Hiring and Recruitment

- DBE contracting requirements
Asset Management

- Developing better predictive models
- Proper cyclical preventative maintenance
- Rehabilitation with the right treatment at the right time
- Quality of design and construction drives durability
County Transformation

- County Transformation and Accreditation
  - Best Practices and Opportunities for Improvement
  - Proper business model
  - Establish baseline and consistency
  - Asset management tools and principles
PennDOT Maintenance

- Budget
- Winter Services
- Automatic Vehicle Locators (AVL)
- Summer Productivity
Pennsylvania State Police (PSP) Funding

Preserving Transportation Funding
- Capping Motor License Funding (MLF) transfer to PSP
- Alternate revenue must be identified to fund PSP

PSP Funding Options White Paper
- Transportation Advisory Committee (TAC) developed report to:
  - Identify possible revenue options to close gap
  - Evaluate a shortlist of funding options
- Provide policymakers with a range of alternatives
- STC accepted report
- Legislative Budget & Finance Committee (LB&FC) further evaluating PSP funding
Innovation & Improvement

- PA Asphalt Improvement Network (PASIN)
- P3 Rapid Bridge Replacement
  - Quality Management Systems
- Continuous Improvement
  - Quality Control and Quality Acceptance
  - Process and product consistency
  - Risk Transfer and Contracting Mechanisms
• Driving Innovation – R&D
  - More aggressive with new products and innovation
  - Risk assessment
  - Pilot efforts
  - Linkage of industry to department research efforts

• Recycled Asphalt Shingles (RAS)
Collaboration

- State Transportation Innovation Council (STIC)
- Technical Advisory Groups (TAGs)
- Pavement Advisory Group (PAG)
- Transportation Quality Initiative (TQI)
Project Letting Trends

Dollars (Billions) # of Projects

- 2008: $1.97B, 747
- 2009: $2.72B, 1143
- 2010: $2.22B, 915
- 2011: $1.93B, 846
- 2012: $1.92B, 764
- 2013: $1.63B, 566
- 2014: $2.56B, 832
- 2015: $2.52B, 608
- 2016: $2.40B, 789
- 2017*: $2.40B, 675

* Projections for 2017
# Contract Distribution

## Cost Based Percentage

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017*</th>
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<tbody>
<tr>
<td>Paving</td>
<td>56%</td>
<td>63%</td>
<td>63%</td>
<td>59%</td>
<td>69%</td>
<td>56%</td>
<td>65%</td>
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<tr>
<td>Bridge</td>
<td>31%</td>
<td>29%</td>
<td>25%</td>
<td>36%</td>
<td>24%</td>
<td>33%</td>
<td>21%</td>
</tr>
<tr>
<td>Misc.**</td>
<td>13%</td>
<td>8%</td>
<td>12%</td>
<td>5%</td>
<td>7%</td>
<td>11%</td>
<td>14%</td>
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* Projections

** Includes Drainage Improvements, Guide Rail, Pavement Markings, Signing, Signals, Lighting, etc.
<table>
<thead>
<tr>
<th></th>
<th>1-0</th>
<th>2-0</th>
<th>3-0</th>
<th>4-0</th>
<th>5-0</th>
<th>6-0</th>
<th>8-0</th>
<th>9-0</th>
<th>10-0</th>
<th>11-0</th>
<th>12-0</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paving</td>
<td>60.8%</td>
<td>60.6%</td>
<td>64.6%</td>
<td>32.4%</td>
<td>57.2%</td>
<td>46.1%</td>
<td>46.2%</td>
<td>64.4%</td>
<td>52.3%</td>
<td>54.9%</td>
<td>85.8%</td>
<td>56.3%</td>
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<tr>
<td>Misc</td>
<td>5.1%</td>
<td>7.3%</td>
<td>7.6%</td>
<td>32.3%</td>
<td>10.5%</td>
<td>15.5%</td>
<td>8.4%</td>
<td>5.0%</td>
<td>4.5%</td>
<td>10.2%</td>
<td>6.8%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Bridge</td>
<td>34.1%</td>
<td>32.0%</td>
<td>27.8%</td>
<td>35.3%</td>
<td>32.4%</td>
<td>38.4%</td>
<td>45.4%</td>
<td>30.6%</td>
<td>43.2%</td>
<td>35.0%</td>
<td>7.4%</td>
<td>32.4%</td>
</tr>
</tbody>
</table>

- **Paving**: 60.8% - 64.6% - 32.4% - 57.2% - 46.1% - 46.2% - 64.4% - 52.3% - 54.9% - 85.8% - 56.3%
- **Misc**: 5.1% - 7.3% - 7.6% - 32.3% - 10.5% - 15.5% - 8.4% - 5.0% - 4.5% - 10.2% - 6.8% - 11.3%
- **Bridge**: 34.1% - 32.0% - 27.8% - 35.3% - 32.4% - 38.4% - 45.4% - 30.6% - 43.2% - 35.0% - 7.4% - 32.4%
2017 Program Distribution By District*

<table>
<thead>
<tr>
<th>District</th>
<th>Paving</th>
<th>Misc</th>
<th>Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0</td>
<td>79.9%</td>
<td>8.8%</td>
<td>11.3%</td>
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<td>2-0</td>
<td>35.4%</td>
<td>0.0%</td>
<td>64.6%</td>
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<tr>
<td>3-0</td>
<td>88.1%</td>
<td>9.0%</td>
<td>2.9%</td>
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<tr>
<td>4-0</td>
<td>68.4%</td>
<td>8.8%</td>
<td>22.8%</td>
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<tr>
<td>5-0</td>
<td>47.8%</td>
<td>9.8%</td>
<td>42.4%</td>
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<tr>
<td>6-0</td>
<td>80.5%</td>
<td>8.2%</td>
<td>11.3%</td>
</tr>
<tr>
<td>8-0</td>
<td>67.4%</td>
<td>12.0%</td>
<td>20.6%</td>
</tr>
<tr>
<td>9-0</td>
<td>87.9%</td>
<td>2.8%</td>
<td>9.2%</td>
</tr>
<tr>
<td>10-0</td>
<td>47.6%</td>
<td>1.7%</td>
<td>50.7%</td>
</tr>
<tr>
<td>11-0</td>
<td>38.3%</td>
<td>38.4%</td>
<td>23.4%</td>
</tr>
<tr>
<td>12-0</td>
<td>94.9%</td>
<td>1.9%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total</td>
<td>65.1%</td>
<td>13.9%</td>
<td>21.0%</td>
</tr>
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</table>

* Projections for 2017
Bituminous Quantities

Asphalt Tonnage
(Construction and Department Force Work)

* Projection for 2017

* * *

Tons (Millions)

2011: 6.10M
2012: 5.30M
2013: 4.10M
2014: 6.10M
2015: 6.75M
2016: 6.20M
2017*: 6.20M+
Bituminous Quantities

Asphalt Tonnage (Maintenance Work Only)

- **2014**: Delivered to Paver - 808,095 Tons, Picked up at Plant - 228,737 Tons
- **2015**: Delivered to Paver - 991,321 Tons, Picked up at Plant - 294,811 Tons
- **2016**: Delivered to Paver - 1,395,228 Tons, Picked up at Plant - 362,819 Tons

www.dot.state.pa.us
Quality – Trends & Targets
Bituminous Lot Payments

Bituminous Lot Payment Percentage – CY 2016

Non-PWT (409)
- Full Payment (%): 96.6
- Reduced Payment (%): 58.5
- Remove & Replace (%): 16.5
- Bonus Payment (%): 76.5

PWT
- Full Payment (%): 96.6
- Reduced Payment (%): 58.5
- Remove & Replace (%): 16.5
- Bonus Payment (%): 76.5

SMA

TOTALS

Legend:
- Green: Full Payment (%)
- Yellow: Reduced Payment (%)
- Red: Remove & Replace (%)
- Blue: Bonus Payment (%)
## CY 2016 R&R Lot Disposition

<table>
<thead>
<tr>
<th>Lot Disposition</th>
<th>409 Std. &amp; RPS</th>
<th>PWT Std. &amp; RPS</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Lots Retested</td>
<td>18</td>
<td>0</td>
<td>27,650.90</td>
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<tr>
<td>Retested Lots = Pass</td>
<td>14</td>
<td>0</td>
<td>21,326.95</td>
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<tr>
<td>Total R&amp;R Lots After All Retests</td>
<td>23</td>
<td>5</td>
<td>32,396.95</td>
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<tr>
<td>R&amp;R Lots Left in Place @ 50%</td>
<td>9</td>
<td>0</td>
<td>5,837.89</td>
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<tr>
<td>R&amp;R Lots Left in Place @ 70%</td>
<td>0</td>
<td>1</td>
<td>1,323.00</td>
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<tr>
<td>R&amp;R Lots Left in Place per Agreement (&gt;70%)</td>
<td>2</td>
<td>0</td>
<td>3,494.88</td>
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<tr>
<td>R&amp;R Lots – Outlier Remvd = 100%</td>
<td>3</td>
<td>0</td>
<td>4,820.89</td>
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<tr>
<td>R&amp;R Lots - TBD (Open)</td>
<td>9</td>
<td>4</td>
<td>16,920.29</td>
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<tr>
<td>R&amp;R Lots Actually R&amp;R'd</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
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</table>
Asphalt Content for 9.5 mm and 12.5 mm Wearing Courses – Individual Box Samples

Summary: JMF Target vs. AC Test Results
Samples Collected From - 1/1/2016 to 12/31/2016
Meets Specifications (409 n=1)

PWT Limits

Number of Results

Result Range
Quality – Trends & Targets
Asphalt Content Test Results

All 9.5 mm Wearing Courses – Std. Dev. for AC

Bars = AC Std. Dev.
Line = % Sublot Results within ±0.2 of JMF Target
Percent Within Tolerance (PWT)

- 100% Implementation in 2017

- Target: Drive product consistency focused on job mix formula

- Tighter adherence to field density spec. requirements
Focus Areas: HMA vs. WMA Standard Const. Individual Core Density

Statewide % of HMA & WMA Cores with X% Density
[Std. Lots (409A)]

Normalized % of Total

- HMA
- WMA

% Density of Individual Cores - Wearing

Wearing Course Density Data from eCAMMS.
Focus Areas: HMA vs. WMA RPS Const.
Individual Core Density

Statewide % of HMA & WMA Cores with X% Density
[RPS Lots (409B)]

Normalized % of Total:
- HMA
- WMA

% Density of Individual Cores - Wearing

Wearing Course Density Data from eCAMMS.
Focus Areas: HMA vs. WMA PWT Standard Const. Individual Core Density

Statewide % of HMA & WMA Cores with X% Density [Std. Lots (409APWT)]

Wearing Course Density Data from eCAMMS.
Focus Areas: HMA vs. WMA PWT RPS Const. Individual Core Density

Statewide % of HMA & WMA Cores with X% Density [RPS Lots (409BPWT)]

Wearing Course Density Data from eCAMMS.
Reclaimed Asphalt Pavement (RAP)

- Beneficial Uses
- Policies
- Plan / Track
- Retainage
  - Quantities
  - Bid Prices

<table>
<thead>
<tr>
<th>Bituminous Pavement Millings 2012-2016 (SY &gt; 2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity Retained (SY)</strong></td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>41,463,278</td>
</tr>
<tr>
<td>72.78%</td>
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</tbody>
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Green Initiatives - RAP

Amount of RAP Milled from Pavements

- **Tons**
- **District**
  - D1
  - D2
  - D3
  - D4
  - D5
  - D6
  - D8
  - D9
  - D10
  - D11
  - D12

- **2014**
- **2015**
- **2016**
Green Initiatives - RAP

2016 RAP Distribution

- Blue bars: RAP Milled from Pavements
- Green bars: RAP given to CONTRACTOR
- Red bars: RAP retained by DISTRICT
Recycled Tire Rubber (RTR)

Asphalt Rubber Gap-Graded Pilot Projects

- A – I-78 in Berks County (ECMS: 87631)
- B – US 15 in Snyder County (ECMS: 87769)
- C – I-376 Lawrence County (ECMS: 81954)
- D – US 15 in Adams County (ECMS: 90201)
<table>
<thead>
<tr>
<th>ECMS</th>
<th>District</th>
<th>County</th>
<th>SR</th>
<th>Status</th>
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<tbody>
<tr>
<td>101922</td>
<td>4-0</td>
<td>Lackawanna</td>
<td>924</td>
<td>Complete</td>
</tr>
<tr>
<td>104237</td>
<td>6-0</td>
<td>Philadelphia/Bucks</td>
<td>63</td>
<td>Complete</td>
</tr>
<tr>
<td>98449</td>
<td>12-0</td>
<td>Westmoreland</td>
<td>366</td>
<td>Complete</td>
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<tr>
<td>93255</td>
<td>2-0</td>
<td>Centre</td>
<td>322</td>
<td>Complete</td>
</tr>
<tr>
<td>90908</td>
<td>8-0</td>
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<td>272</td>
<td>Complete</td>
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<td>105503</td>
<td>10-0</td>
<td>Indiana</td>
<td>954</td>
<td>Complete</td>
</tr>
</tbody>
</table>
Full-Depth Reclamation (FDR)

- Slag FDR Pilot Project
  - SR 46 in McKean County
  - Project completed in 2016

- Pulverized to a depth of ≈12”
Paving Season Extensions

- P3 RBR
- Industry Suggestions
- Date Restrictions
- Temperature and Precipitation
- 5-Year “Guarantee”
Pennsylvania Asphalt Pavement Association
57th Annual Asphalt Paving Conference

We Look Forward to Working with PAPA in 2017!

THANK YOU

PAPA
Pennsylvania Department of Transportation