National Association of County Engineers
“The Voice of County Road Officials”
What is NACE?

- Nonprofit, non-partisan professional association
- Representing over 1,900 members since 1956.
- Roads - about 1.74 million miles by counties.
- Bridges - counties also own 231,000 bridges and operate 1/3 of the nation’s transit systems.
NACE – More Than Engineers, County Road Professionals Titles:

* County Engineer * Highway Superintendent
  * Road & Bridge Superintendent
  * Parish Engineer * Road Supervisor
  * Commissioner of Public Works
* Highway Administrator * Transportation Director
  * Road Operations Manager
* Public Works Director * Highway Commissioner
  * Engineer-Manager Road Commission
* Road Master * Road Administrator
Annual Buying Power of NACE Members

<table>
<thead>
<tr>
<th>Item</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation (Total Budget)</td>
<td>$11.2 B</td>
</tr>
<tr>
<td>Road Construction</td>
<td>$3.5 B</td>
</tr>
<tr>
<td>Road Maintenance</td>
<td>$3.5 B</td>
</tr>
<tr>
<td>Equipment Purchasing</td>
<td>$772 M</td>
</tr>
<tr>
<td>Equipment Repair/Maintenance</td>
<td>$736 M</td>
</tr>
<tr>
<td>Signage/Traffic Control</td>
<td>$195 M</td>
</tr>
<tr>
<td>Engineering Consultants</td>
<td>$257 M</td>
</tr>
<tr>
<td>Equipment Fleet</td>
<td>&gt; 350k Pieces</td>
</tr>
</tbody>
</table>
NACE Officers 2015-2016
NACE Board of Directors
Regions & State Affiliates
(31 State Affiliates Shown in Green)
Conferences

Delivering best practices and the latest technology at national and regional meetings.

- General sessions and technical sessions on issues important to you.
- Acquire information to optimize your county’s resources.
- Exhibit show – latest & greatest.
What we do

• Networking
• Advocacy
• Professional Development
Advocacy

Representing county engineers and professional road managers nationally.

- Legislative Priorities - NACE and NACo
- Testimony before Congress
- Visits on the Hill and Legislative Fly-ins
- Information and Alerts for individual call to action
NACE LEGISLATIVE PRIORITIES

Funding
Streamlining
Safety
FAST ACT

- Fixing America's Surface Transportation Act
- Signed into Law December 4, 2015
- 5 Year, $305 B
FUNDING

• Modest Increases in Funding
• Potentially more funding for locals
• Increases sub-allocation to locals
• Maintains off-system bridge set aside
• More transparency on where funds are spent.
STREAMLINING

• Attempts to expand MAP-21 Reforms
• FAST requires lead agencies to establish project schedules for environmental impact statements and environmental assessments after consultation with and the concurrence of each participating agency for the project; currently, project schedules are not required.
SAFETY

Funding – Good
• FY16 - $2.45 billion
• FY17 - $2.51 billion
• FY18 - $2.56 billion
• FY19 - $2.6 billion
• FY20 - $2.66 billion

Bad
• Doesn’t fix HRRR
• Limits Use of HSIP Funds
• Gives States way out for collecting Unpaved Road data which prevents using HSIP on those roads
NACE 2017: April 9-13
Cincinnati, Ohio
Contact NACE

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Infrastructure Asset Management

Lowest Life-cycle Cost Pavement Maintenance and Preservation
Pierce County is home to 830,000 residents, 24 cities and towns, each with an array of qualities.

- **1,700 square miles, from Key Peninsula to Mount Rainier**
- **Urban, suburban and rural areas**
- **Sea level to 14,410ft**
- **3,190 lane miles of pavement** (unincorporated county)
Replacement Model

Determines the optimal time, scope of action and method to replace an asset consistent with its lowest lifecycle model.

Typically displayed over a deterioration curve, the replacement model considers the optimal balance of repair and maintenance typically required over time until replacement or reconstruction of the asset is required to avoid reaching a point of diminished return on investment. This model also serves to evaluate various MOP strategies and the associated costs of each.
Avoiding unnecessary deferred maintenance and preservation costs

- It can be tempting for decision makers and elected officials to fund road improvement projects over maintenance and preservation programs
  - Impacts of deferred M&P program are felt and compound over long term
  - Improvement projects typically garner greater short term public interest
    - “Our road condition looks fine...today”
    - The important elements of a pavement deterioration curves typically extend beyond term limits

- The costs of maintenance and preservation are exponentially higher than capital construction over the functional life of a pavement
Avoiding unnecessary deferred maintenance and preservation costs

- It can be difficult to communicate the complex cause and effect relationship between deferring costs today and perhaps insurmountable M&P program needs in the future
  - Models rely on forecasting of somewhat technical content
  - Difficult to establish credibility and support for what could be considered short term sacrifice, especially if you’ve been doing a good job
Pavement Preservation Modeling

Unsustainable Pavement Preservation Model
Arterials/Collectors

Crack Filling $2,600 LM
Wheel Path Grind $11,300 LM

Crack Filling $2,600 LM
Wheel Path Grind $11,300 LM

Chip Seal $17,500 LM

Chip Seal $17,500 LM

Crack Filling $2,600 LM
Wheel Path Grind $11,300 LM

Crack Filling $2,600 LM
Wheel Path Grind $11,300 LM

Pavement Re-construct $250,000 LM

Unsustainable Model
Maintenance and Repairs - $55,600
Pavement Preservation - $70,000
Pavement Reconstruction - $250,000

34 Year Estimated Costs - $375,600
(failed pavement condition)

Cost per year per LM = $11,047.06
Pavement Preservation Modeling

Sustainable Pavement Preservation Model
Arterials/Collectors

- Crack Filling $2,600 LM
- Wheel Path Grind $11,300 LM

Crack Filling $2,600 LM
Wheel Path Grind $11,300 LM

Crack Filling $2,600 LM

HMA Overlay $150,000 LM

Sustainable Model
Maintenance and Repairs - $44,300
Pavement Preservation - $35,000
Pavement Reconstruction - $150,000

34 Year Estimated Costs - $229,300
(failed pavement condition)

Cost per year per LM = $6,744.12
Pavement Preservation “Decision Tree”
How to determine what to do, when to do it, and to which pavement segments to achieve lowest lifecycle cost

Consideration Factors
- Pavement category
  - Arterial, collector, local access, multilane, etc.
- Average traffic volume
- % heavy truck traffic
- Last maintenance/preservation year
  - Last maintenance/preservation treatment
Decision Tree
5,001-8,000 ADT

5,001-8,000 ADT

- Under 8% Trucks
  - Chip Seal
    - 9 Years
  - Chip Seal
    - 15 Years
    - Overlay

- 8-15% Trucks
  - Chip Seal
    - 8 Years
  - Double Chip Seal
    - 10 Years
    - Overlay

- Over 15% Trucks
  - Overlay every 15-18 years

The decision tree provides a list of pavement segments that are likely to benefit optimally from routine maintenance/repairs and a preservative application within a given budget cycle

• Ideally produce a list of candidates that is 110% of capacity (budget, resources) to support change management

• Field assess this list of candidates to produce repair work orders
  – Work order information provides clear understanding of pavement condition, and the type, severity and extent of pavement defects (far superior condition assessment tool to PCI score alone)

• List is prioritized by:
  – Severity and extent of existing defects
  – Logistics considerations
  – Potential conflicts with planned construction activity (private or public)
  – Repair and pavement prep schedules
Determine optimal preservation action

• HMA overlay/inlay
  - These candidates populate HMA overlay/inlay contract as part of annual Transportation Improvement Program (TIP)
    - Typically higher traffic volume arterials & collectors (>12K ADT and/or multi-lane)

• Chip seal
  - These candidates populate annual chip seal program performed by county staff
    - Typically moderate to low traffic volume arterials & collectors (<12K, two lane)
      - 3/8” pre-coated aggregate @ 20lbs/sqyd.; AC15P @ .38gal/sqyd

• Cape/slurry/micro-surface
  - These candidates completed by private sector contractor (small works) managed by Road Operations Division
    - Typically low traffic volume, curvilinear local access roads (<1K)
Program Scheduling and Execution
Program Scheduling and Execution
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County Chip Seal Program
Program Scheduling and Execution

Cape Seal / Micro Surfacing
Cape Seal Results AR Type II Chip w/ Micro Surfacing

2014

2016

Cape Seal – Before & After
Resurfacing Accomplishments 2014-2016

HMA Overlays/Inlays = 42.75 Lane Miles

County Chip Seal Program = 459.58 Lane Miles

AR Type II Chip/Micro Surfacing Cape Seal = 36.49 Lane Miles

Micro Surfacing/Slurry Seal = 58.39 Lane Miles
Save Money and Improve Effectiveness

Pavement Expenditures
(adjusted for actual inflation)

Pothole Complaints
Arterials & Collectors:
2014 = 39.05 LM
2015 = 40.42 LM
2016 = 13.76 LM

Local Access:
2014 = 144.90 LM
2015 = 148.45 LM
2016 = 97.92 LM

Lane Miles Rated in Poor Condition

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Percentage of Pavement Segments in Good – Fair – Poor Condition

Pierce County’s Yearly Pavement Rating Distribution
Lane Miles By Pavement Condition

**Arterials/Collectors**
- 2014: 62.91% Good, 34.44% Fair, 2.65% Poor
- 2015: 64.48% Good, 32.76% Fair, 2.76% Poor
- 2016: 72.44% Good, 26.58% Fair, 0.98% Poor

**Local Access**
- 2014: 37.90% Good, 53.60% Fair, 8.50% Poor
- 2015: 40.27% Good, 50.96% Fair, 8.77% Poor
- 2016: 47.72% Good, 46.48% Fair, 5.80% Poor
Questions?

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