2019 SCAPA Winter Conference
Implementing a Pavement Program After Major Funding Increase
Bobby Lewis, Chief Operating Officer - NCDOT

1/17/2018
Case Study: North Carolina

• 2013 legislative session with major policy change with STI
• 2015 legislative session brought significant change in Motor Fuel Tax Revenue Distribution
• Modified distribution between Highway Fund and Highway Trust Fund
  – Highway Fund: Maintenance and Operations
  – Trust Fund: Capital Projects
• Also increased the percentage of state transportation revenues that were returned and used for transportation
2015 Legislative Changes

Prior to Session
- MFT Distribution (variable rate)
  - 75% Highway Fund
  - 25% Highway Trust Fund
- DMV rates set in statute
- Revenues Returned
  - 85%

After Session
- MFT Distribution (flat rate with annual energy index)
  - 71% Highway Fund
  - 29% Highway Trust Fund
- DMV rates indexed
- Revenues Returned (GF transfer stopped)
  - 99.5%
Immediate Challenges

• STIP Impacts
  – Increase of $1.5B to 10-year Capital Program
  – Over 70 new projects

• Operations and Maintenance Impacts
  – Bridge Program increases of 35 and 60 percent
  – Contract Resurfacing increases of 15 and 20 percent
  – Maintenance activities must be prioritized

• Cash on Hand: $1.4B (estimated 18 months to < $1B)
Long Term Challenges

• Lack of program delivery resulted in buildup of cash
  – $2.3B by April 2017
  – Only delivery ~78% of TIP on schedule

• Revenue/Cost conditions were not adequately adjusted for (inflation/interest rates)

• Planning and Environmental Document Management
Increasing Project Delivery is Crucial

• Reshape Policy
  – State Money v. Federal Money
  – Planning and Environmental Documents
    • Prioritize Delivery
    • Cannot continue to be “one size fits all”
  – Right of Way / Procurement Process
    • Are there alternative ways?
  – Design
    • Must be strategic and prioritize delivery
  – Project Let to Construction: NO DELAYS!
Delivery Effort going forward

• Capital Programs
  – Division Managed vs. Centrally Managed
    • 70% projects and 30% of dollars are Division Managed
    • 30% projects and 70% of dollars are Centrally Managed
  – Reset of I, R and U projects (2018 to 2022)
    • P3.0 STIP = 383 projects
    • P4.0 Draft STIP = 441 projects
    • P4.0 Draft STIP with adjustments = 513 projects
Delivery Effort going forward

• Capital Programs (5 years)
  – Preliminary Engineering Expenditures
    • From $200M annually to over $250M
  – Right of Way Expenditures
    • From $325M annually to approaching $400M
  – Construction Lettings
    • From $1.66B annually to $2.55B
  – Partnering with Contractors on existing projects to put the capital project in use as fast as possible
Delivery Effort going forward

• O&M Programs (HF)
  – Contract Resurfacing to improve pavement condition and quality
    • From $500M in 2018 to $600M
  – Bridge Program
    • Increase bridge replacements by 150 over 5 years to reduce the numbers of aging structures (710 to 860 bridges)
    • Evaluating the efforts of “Express DB” to smaller traditional bundling's to maximize limited dollars

– Aviation Program
  • Increase GA activities by $25M
TIP Project Advancements

$ in Millions

- Draft STIP
- Accelerations

- 2018
- 2019
- 2020
- 2021
- 2022
# NCDOT Asphalt Tonnage

<table>
<thead>
<tr>
<th>Let Year</th>
<th>Resurfacing</th>
<th>Other</th>
<th>Total Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>4,484,125.13</td>
<td>2,297,213.37</td>
<td>6,781,338.50</td>
</tr>
<tr>
<td>2017</td>
<td>6,429,483.77</td>
<td>3,239,273.38</td>
<td>9,668,757.15</td>
</tr>
<tr>
<td>2018*</td>
<td>5,512,744.50</td>
<td>3,282,038.80</td>
<td>8,794,783.30</td>
</tr>
</tbody>
</table>

*Data not complete for 2018.*
Closing Cash Balance Scenarios 3 Years
Assumes Maintenance Spending in FY 2018-19 Conforms to Original Spending Plan

- Does not show impacts of Storms
- Assumes little to no delays in project schedules

A - With Annual Build NC issuances and $600 million GARVEE issuance in April 2019

Statutory Reporting Threshold
Statutory Target
Statutory Minimum
Cash Balance Challenges

- Declared and Non-Declared storms
- Snow & Ice
- Have to make adjustments with Operations activities to stay within plan
Innovative Tools (Previously Existing)

- Design Build
- Advance Construction (FHWA)
- GARVEE
Innovative Tools (New)

- CMGC
- BUILD NC
Revenue/Funding

Discretionary Grants/Opportunities
• Blue Ridge Road Grade Separation (TIGER)
• I-95/US 70 (INFRA)
• Rural bridges (BUILD)
FHWA
• August Redistribution
Keys to Success

• Capitalize on Partnerships (3I’s)
  – Intergovernmental
    • We cannot say we “need to make them understand”
  – Interagency
    • We must understand their missions, but not forget ours
  – Industry
    • Consultants and Contractors

• Always look for additional ways to improve
January 17, 2019

NCDOT Asphalt Pavement Practices

Bobby Lewis
Chief Operating Officer
## NCDOT – SCDOT Mix Comparisons

<table>
<thead>
<tr>
<th>NCDOT Mix Type</th>
<th>Similar SCDOT Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 4.75 A</td>
<td>Surface E (Seal Course)</td>
</tr>
<tr>
<td>S 9.5 B</td>
<td>Surface D (Low Volume Secondary)</td>
</tr>
</tbody>
</table>
| S 9.5 C        | Surface C (High Volume Secondary)  
|                | Surface B (High Volume Primary)  |
| S 9.5 D        | Surface A (Interstate / Intersections) |
| I 19.0 C       | Intermediate C (Low Volume Primary, Secondary)  
|                | Intermediate B (Interstates, High Volume Primary)  
|                | Intermediate A (New Construction)  |
| B 25.0 C       | Base B (Secondary)  
|                | Base A (Interstates, Primary)  |
| OGFC-FC-1      | OGFC – 9.5mm  
|                | OGFC – 12.5mm  |
# Recycled Content Comparisons

<table>
<thead>
<tr>
<th>NCDOT Mix Type</th>
<th>Maximum Recycled Binder Content</th>
<th>Similar SCDOT Mixture</th>
<th>Maximum Recycled Binder Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 4.75 A</td>
<td>40</td>
<td>Surface E</td>
<td>30</td>
</tr>
<tr>
<td>S 9.5 B</td>
<td>40</td>
<td>Surface D</td>
<td>30</td>
</tr>
<tr>
<td>S 9.5 C</td>
<td>40</td>
<td>Surface C&lt;br&gt;Surface B</td>
<td>30&lt;br&gt;25</td>
</tr>
<tr>
<td>S 9.5 D</td>
<td>18</td>
<td>Surface A</td>
<td>15</td>
</tr>
<tr>
<td>I 19.0 C</td>
<td>45</td>
<td>Intermediate C&lt;br&gt;Intermediate B&lt;br&gt;Intermediate A</td>
<td>35&lt;br&gt;30&lt;br&gt;15</td>
</tr>
<tr>
<td>B 25.0 C</td>
<td>45</td>
<td>Base B&lt;br&gt;Base A</td>
<td>35&lt;br&gt;35</td>
</tr>
<tr>
<td>OGFC-FC-1</td>
<td>Up to 5% RAS Only to Prevent Draindown</td>
<td>OGFC</td>
<td>No Allowance for RAP or RAS</td>
</tr>
</tbody>
</table>
# Minimum Density Requirements

<table>
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<tr>
<th>NCDOT Mix Type</th>
<th>Minimum Density</th>
<th>Similar SCDOT Mixture</th>
<th>Minimum Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 4.75 A</td>
<td>Not Required ¾” or Less</td>
<td>Surface E</td>
<td>Minimum of 2 passes with 8-12 Ton Roller to Seat</td>
</tr>
<tr>
<td>S 9.5 B</td>
<td>90.0</td>
<td>Surface D Surface C</td>
<td>% of Target Gauge Control Strip Density (One Test per 500 feet Placed)</td>
</tr>
<tr>
<td>S 9.5 C</td>
<td>92.0</td>
<td>Surface B Surface A</td>
<td>93.0</td>
</tr>
<tr>
<td>I 19.0 C</td>
<td>Intermediate B</td>
<td>Intermediate A</td>
<td></td>
</tr>
<tr>
<td>B 25.0 C</td>
<td>Intermediate C</td>
<td>Base B Base A</td>
<td>% of Target Gauge Control Strip Density (One Test per 500 feet Placed)</td>
</tr>
</tbody>
</table>
Pavement Design Procedure

SCDOT: AASHTO Guidelines for Pavement Design (1972)

Design Life:

<table>
<thead>
<tr>
<th>Roadway Type &amp; Traffic</th>
<th>NCDOT</th>
<th>SCDOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary &amp; Secondary Routes w/ ADT &gt; 20,000</td>
<td>30 Years</td>
<td>20 Years</td>
</tr>
<tr>
<td>Secondary Routes w/ ADT &lt; 20,000</td>
<td>20 Years</td>
<td>20 Years</td>
</tr>
</tbody>
</table>
Questions?