2019 Roadway Improvements

City of Manchester, NH
Department of Public Works
Todd D. Connors, PE

June 4, 2019
Objectives of our Pavement Management Strategy:

Using roadway classifications and surface analysis to select the right candidates and the appropriate treatments

- Maximize the life span
- Minimize the cost
2019 Roadway Improvements

So Many Choices... Where do We Start?

- Preserve Good Roads
- Chip Away at the Worst
- Main Arteries
  - Highest Traffic Volumes
  - Biggest Benefit to Citizen

*Keep Good Roads Good!*
Annual Roadway Improvement Plan

- Evaluate/Inventory Network Conditions
- Identify Treatments Based on Distress Conditions
- Establish a Budget and Treatment Allocation
Asphalt Deterioration Curve

The Right Treatment, to the Right Road, at the Right Time...

- Excellent
  - 1. Crack Sealing, Fog Seal/Rejuvenator
- Good
  - 2. Slurry Seal, Single Chip Seal or Micro Surfacing
- Fair
  - 3. Double Chip Seal or Micro Surfacing
- Poor
  - 4. Cape Seal
- Very Poor
  - 5. HMA Overlay
- Failed
  - 6. In-Place Recycling & Overlay
  - 7. Mill & HMA Overlay
  - 8. Full Depth Reconstruction

Time (Years)
So, What are the Alternatives?

**Preservation Treatments:** Maintenance that slows the rate of deterioration due to the elements

- Crack Sealing
- Fog Sealing
- Chip Sealing
- Microsurfacing
- Cape Sealing
- Bonded Wearing Course
Rehabilitation Treatments: Repairing or removing portions of an existing paved surface to reset the deterioration process.

- Structural HMA Overlay
- Cold Plane & HMA Overlay
- Hot-in-Place Recycling
- Cold-in-Place Recycling
- Full-Depth Reclamation
- Reconstruction
What have we accomplished?

## Road Work Completed

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventive:</td>
<td>0.0</td>
<td>26.5</td>
<td>20.7</td>
<td>35.0</td>
<td>38.9</td>
<td>miles</td>
</tr>
<tr>
<td>Preservation:</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>4.0</td>
<td>6.1</td>
<td>miles</td>
</tr>
<tr>
<td>Resurfacing:</td>
<td>6.6</td>
<td>21.2</td>
<td>11.5</td>
<td>14.3</td>
<td>11.0</td>
<td>miles</td>
</tr>
<tr>
<td>Reconstruction:</td>
<td>4.6</td>
<td>5.4</td>
<td>6.2</td>
<td>5.0</td>
<td>3.1</td>
<td>miles</td>
</tr>
<tr>
<td>Total Miles:</td>
<td>11.2</td>
<td>53.1</td>
<td>40.6</td>
<td>58.3</td>
<td>59.1</td>
<td>miles</td>
</tr>
</tbody>
</table>
What have we accomplished?

Main Artery Roadwork Completed in 2018:

- South Mammoth Road
- Bridge Street Extension
- Silver Street
- Lake Avenue
- Amoskeag Circle
- Queen City Avenue
- Wellington Road
Network Service Life

Managing the Life Cycle: Strategy to replace roadway service life lost each year to age, wear, and the elements.

- Length of Road Network: 403 miles
- Annual Loss of Service Life: 403 mile-years
- Program Goal: add 403 miles-years with new treatments

Maintain roads at a lower cost, buy years of life at a discount, and get used to driving on good road surfaces
## Equivalent Annual Costs

<table>
<thead>
<tr>
<th>Treatment Alternative</th>
<th>Cost ($/SY)</th>
<th>Estimated Service Life</th>
<th>Equivalent Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crack Sealing</td>
<td>$0.50</td>
<td>3</td>
<td>$0.17</td>
</tr>
<tr>
<td>Fog Sealing</td>
<td>$1.10</td>
<td>3</td>
<td>$0.37</td>
</tr>
<tr>
<td>Chip Sealing</td>
<td>$2.75</td>
<td>5</td>
<td>$0.55</td>
</tr>
<tr>
<td>Chip Seal (Double)</td>
<td>$5.50</td>
<td>8</td>
<td>$0.69</td>
</tr>
<tr>
<td>Microsurfacing</td>
<td>$5.00</td>
<td>7</td>
<td>$0.71</td>
</tr>
<tr>
<td>Rubber Chip Seal</td>
<td>$8.00</td>
<td>10</td>
<td>$0.80</td>
</tr>
<tr>
<td>Cape Seal</td>
<td>$7.50</td>
<td>8</td>
<td>$0.94</td>
</tr>
<tr>
<td>Bonded Wearing Course</td>
<td>$10.00</td>
<td>10</td>
<td>$1.00</td>
</tr>
<tr>
<td>1.5&quot; HMA Overlay</td>
<td>$8.50</td>
<td>8</td>
<td>$1.06</td>
</tr>
<tr>
<td>Cold-in-Place Recycling</td>
<td>$18.00</td>
<td>15</td>
<td>$1.20</td>
</tr>
<tr>
<td>2&quot; Mill &amp; HMA Overlay</td>
<td>$16.00</td>
<td>12</td>
<td>$1.33</td>
</tr>
<tr>
<td>Full Depth Reclamation</td>
<td>$32.00</td>
<td>18</td>
<td>$1.78</td>
</tr>
</tbody>
</table>

**Cost/Benefit of Preservation – add years of service life at a fraction of the cost**
Network Service Life Added

2014 Season: 153 mile-years
2015 Season: 396 mile-years
2016 Season: 293 mile-years
2017 Season: 385 mile-years
2018 Season: 335 mile-years
2019-2020 Annual Road Construction

Treatment Allocation

- Preventive: 5-10% 30.0 miles
- Preservation: 10-15% 4.0 miles
- Resurfacing: 50-65% 9.0 miles
- Reconstruction: 20-25% 7.0 miles

Proposed FY20 Budget: $4,500,000
- Road Bond: $3,000,000
- Degradation Trust Fund: $1,500,000

Target 2019 NSL = 340

2019-2020 Road Paving Plan on the City website
2019-2020 Annual Road Construction

Road Work for 2019-2020:

- Union Street
- Mammoth Road
- S. Beech Street
- Maple Street
- McGregor Street
- River Road
- Smyth Road
- Chestnut Street
- Wellington Road
- Valley Street
- Bridge Street
- Hanover Street
- Spruce Street
- Cilley Road
- Calef Road
- Main Street
- Putnam Street
- Front Street
Contact Public Works

**Report a Problem:**
Download the App!
*Manchester NH Connect*

**Ask a Question:**

**Road Program Information:**
City Website Homepage - [http://www.manchesternh.gov/](http://www.manchesternh.gov/)

**Sign Up for Electronic Alerts:**
[http://www.manchesternh.gov/e-Services/Alert-Notifications](http://www.manchesternh.gov/e-Services/Alert-Notifications)