Pavement Preservation & Maintenance

Presented to
Rocky Mountain Pavement Preservation Partnership

Boise, ID
October 20th.
2010
Without pavement, we are stuck
Statistics We Should Know:

Federal = 3%
State = 20%
Local = 77%

2/3 are Paved (1/3 Unpaved)
94% have an Asphalt Surface
Challenges

• Gain Support from the Elected Officials.

• Novi residents have been waiting for Novi Road improvements for many years. Now it is becoming a reality, thanks to my relentless lobbying efforts. The litigation is near completion. Tri-Party funding is still available to assist Novi residents with a majority of the costs associated with the construction of Novi Road improvements between Ten Mile Road and Grand River Avenue, over the railroad tracks. Watch for construction to start in the near future. Oakland County, CA

• During the past four years, Commissioner Birkman has helped to lower the County’s tax rate, increased county services, and improve traffic congestion with new roads within the County. Instead of empty campaign promises, Commissioner Birkman delivered. Williamson County, Texas

• But I believe more needs to be done to improve the roads in Precinct 2. The citizens of Kyle, Buda, Uhland, Niederwald, and the rest of the Precinct need better roads to link up with the improvements that are now underway to IH-35, FM 1626, SH 21, and FM 150. Hays County, Texas

• “We need to focus on infrastructure needs in this country,” Barela declared. New Mexico
Challenges

- Public Demands on Government.
- Funding Constraints.
- Select the right treatment for the road.
- Show early benefit.
Road Failures
Factors contributing to road failures

Main Structural Elements
- Skid Resistant Surface
- High Stiffness
- Crack Resistant
- Deformation Resistant
- Well Drained
ESAL’s?

- One 18 Wheeler = Almost 2 ESAL
- Less than 500,000 ESAL
- Less than 35 trucks/day
- One Truck = 8400 cars
OUR Roadways

ESAL’s?
Drainage

Water ponding at the edge of roadway.
Roadway Section
The Challenge

- Preservation & Maintenance Plan.
Experience shows that spending $1 on pavement preservation before that point eliminates or delays spending up to $28 dollars on future rehabilitation or reconstruction costs.
Pavement Preservation has to think outside the box

- It’s not about just about doing the right action at the right time AFTER the pavement is built
- It’s about being an advocate for the right action from the very start of the process through the end of the life-cycle
The Challenge

- Customer Inconvenience.
- Right Material and Product to use.
- Budget Constraints.
# Cost-Effectiveness of Treatments

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Unit Cost</th>
<th>Unit</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crack Sealing</td>
<td>$2,740</td>
<td>lane-mile</td>
<td>*Crack sealing items only</td>
</tr>
<tr>
<td>Micro Surfacing</td>
<td>$23,713</td>
<td>lane-mile</td>
<td>*Micro surfacing items only</td>
</tr>
<tr>
<td>Fog Sealing</td>
<td>$1,697</td>
<td>lane-mile</td>
<td>* Mobilization not included</td>
</tr>
<tr>
<td>Chip Sealing</td>
<td>$19,881</td>
<td>lane-mile</td>
<td>****state contract</td>
</tr>
<tr>
<td>Overlays</td>
<td>$15,894</td>
<td>lane-mile</td>
<td>*Per one inch mat thickness</td>
</tr>
<tr>
<td>Hot In situ Repaving</td>
<td>$43,648</td>
<td>lane-mile</td>
<td>* Pavement resurfacing and hot mix only</td>
</tr>
<tr>
<td>Plant Mix Wearing Course/Overlay</td>
<td>$34,249</td>
<td>lane-mile</td>
<td></td>
</tr>
<tr>
<td>Cold Milling</td>
<td>$6,336</td>
<td>lane-mile</td>
<td>*per one inch depth of milling</td>
</tr>
</tbody>
</table>

**Note:** Unit costs do not include items such as mobilization, traffic control, hauling.
<table>
<thead>
<tr>
<th>Pavement Treatment</th>
<th>Extended Service Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fog Seal</td>
<td>2 to 5 Years&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Crack Filling</td>
<td>Up to 2 Years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Crack Sealing</td>
<td>Up to 3 Years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Chip Seal</td>
<td>3 to 7 Years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Slurry Seal</td>
<td>3 to 7 Years&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Microsurfacing</td>
<td>3 to 6 Years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Thin Hot Mix Overlay</td>
<td>3 to 5 Years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>1.5” Hot Mix Overlay</td>
<td>5 to 10 Years&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
Fog Seal
Crack Filling
Chip seal
Sandwich Seals

- Emulsion sandwiched between two layers of aggregate.
- One-sized aggregate applied at 70%-80% of coverage rate, then rolled.
- Emulsion 1.2 to 1.5 times normal chip seal rate.
- Second course of smaller aggregate applied & rolled.
Mike Wade Modified SS

- Prime and open to traffic the same day
- Thicker more durable seal
- Longer service life
Scrub Seal with Millings
Scrub Seal with Millings
Scrub Seal with Millings
Scrub Seal with Millings
Sand Seals

- application of asphalt binder followed by sand cover aggregate
- rapid or medium setting emulsions
- most common on low-volume roads
  - some moderate- to high-volume roads
Sand Seals
Cape Seals

• name from Cape Province of South Africa
• chip seal followed by slurry seal or micro-surfacing
  – chip seal allowed to cure
  – broomed
  – slurry or micro applied
Micro-Surfacing
Micro-Surfacing
Micro-Surfacing
Hot Mix Warm Lay
Overlay with Millings
Cold In-Place Recycling
Cold In-Place Recycling
Full-Depth Recycling

FDR’s Pulverization and Mixing Process

- Milling drum
- Deep recycled layer
- Granular material
- Injection of water and/or fluid stabilizing agents
- Operating direction
- Distressed pavement
Full-Depth Recycling
Full-Depth Recycling
Hot In-Place Recycling
Now what?
Tools

• NMDOT State Contracts
Resources

- [http://www.pavementpreservation.org/](http://www.pavementpreservation.org/)
- NMDOT Maintenance Manual
- Holly Asphalt Company
- Rocky Mountain Pavement preservation Partnership.
Holly Asphalt Company
Albuquerque, New Mexico

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Chips fall where they may……
but we make them stick!

Thank You