Pavement Management

Pavement Preservation Strategy
Pavement Performance Curve and Windows of Opportunity

- Do Nothing
- Non-Paving PM
- PM Paving
- Multi-Course
- Major Rehab/Recon

Condition Rating vs. Time
Preservation Strategy

• Give priority for preservation to Interstates and Heavily Traveled Roads (3 Tiers).

• Prioritize segments by cost effectiveness ($/VMT).

• Use the Surface Rating/IRI Decision Matrix to select treatments.
### Interstates and Highways >20,000 AADT
Asphalt and Overlay Pavements

**DRAFT V2.3**

<table>
<thead>
<tr>
<th>Surface Rating</th>
<th>9+</th>
<th>D</th>
<th>D</th>
<th>D</th>
<th>D</th>
<th>D</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>5A</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>5-</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>≤ 60</td>
<td>61-95</td>
<td>96-135</td>
<td>136-170</td>
<td>171-220</td>
<td>&gt;220</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ride Quality (IRI in/mi)**

<table>
<thead>
<tr>
<th>Flexible/Overlay</th>
<th>1 Crack Seal</th>
<th>8 CIPR (Not used on high volume)</th>
<th>3 Thin Overlay</th>
<th>9 Mill &amp; Fill</th>
<th>5 6.3 mm Asphalt</th>
<th>11 Mill &amp; Fill w/ Underlying Pavt Repairs</th>
<th>5A 6.3 mm Asphalt Mill &amp; Fill</th>
<th>12 Major Rehab – 2 Course OL w/ Repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 1 ½” Hot Mix Overlay</td>
<td>13 Reconstruction / 3 course OL w/ Repairs</td>
<td>D Defer Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Features of the Model

• Considers ride quality in the treatment selection.

• “Delays” treatment until close to the end of the window.

• Takes into consideration faster-than-normal deterioration rates.

• Assigns lighter treatments on low volume roads.
“Cost Effectiveness”

$/\text{VMT}$
Cost Effectiveness - Tier 3

Cumulative Lane Miles

$/VMT

Cumulative Cost ($K)

Cost Effectiveness
Cumul_Cost

[Graph showing cumulative lane miles and cost]
Normalized Total Needs - Reg x, y

Year

'08-09  '09-10  '10-11  '11-12  '12-13  '13-14  '14-15

$M/RegLM

$0.00 $0.02 $0.04 $0.06 $0.08 $0.10 $0.12 $0.14

Rx  Ry
## Pavement Surface Rating Based on Frequency and Severity Descriptions

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>SEVERITY</th>
<th>None</th>
<th>Slight</th>
<th>Minor</th>
<th>Moderate</th>
<th>Moderate to Severe</th>
<th>Severe</th>
<th>Very Severe</th>
<th>Travel is Impaired</th>
<th>Impossibly</th>
</tr>
</thead>
<tbody>
<tr>
<td>No distress is present. A single random defect per 0.10 mile is allowed.</td>
<td>None</td>
<td>10 / 9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Most of the pavement is free of distress. One or two cracks or distresses are visible for the next 0.10 mile.</td>
<td>Infrequent</td>
<td>-</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Much of the pavement is free of cracking. Large blocks of distress-free pavement are present.</td>
<td>Infrequent to Occasional</td>
<td>-</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Much (&lt;1/2) to most (&gt;1/2) of the pavement is cracked. Uncracked or undistressed blocks of pavement range from 20-30 ft per lane to 12 ft per lane.</td>
<td>Occasional to Frequent</td>
<td>-</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nearly all the pavement is cracked. Uncracked or undistressed blocks of pavement are 12 ft square or less</td>
<td>Frequent</td>
<td>-</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Mostly cracked. Cracks or distress are continuous and spaced only a few feet apart.</td>
<td>Very Frequent</td>
<td>-</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Slight**
- Cracks are tight, single and only a few feet long.
- Tight, single longitudinal joint cracks, partial or continuous, are included.

**Minor**
- Cracks are generally < 1/8 inch wide, some with minor secondary cracks.
- No or very few connected cracks.
- May have a few small spalls (< 1 ft square).

**Moderate**
- Cracks are generally >1/8 inch wide; secondary cracking is common, some cracks connected.
- May have some minor popouts or small (1-2 ft) to medium (3-4 ft) patching.

**Moderate to Severe**
- Distresses vary from "Moderate" to "Severe."

**Severe**
- Cracks are wide and/or have extensive interconnected secondary cracking.
- Holes, loose material and/or patching are common, patches may have patches.

**Very Severe**
- Cracks are very wide, holes and/or patching is extensive, patches extend across the full lane or extend several feet along the lane, patches on patches are common.

**Travel is Impaired**
- Holes in pavement are large and/or pavement has so many layers of patches that the section can be traveled only at reduced speed.

**Impossibly**
- Travel by ordinary car would risk damage to the vehicle.

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Notes:
- Ratings in blue are the definitions from the original Pavement Rating Manual.
- "Very Slight" from the original Manual = "Slight" here.
- "Slight" from the original Manual = "Minor" here.

7/2/2008