Minnesota Airports Conference
April 15–17, 2015
Airport Pavement Preservation & Maintenance

- Why Pavement Preservation & Maintenance?
- Pavement Assessment & Evaluations
- Preservation & Maintenance Alternatives
- Selecting the Right Alternative
Why Pavement Preservation & Maintenance?

Practical Definition of Pavement Preservation:

*The right treatment*

*At the right time*

*On the right project*

*Done right!*
Pavement Preservation & Maintenance

- **Pavement Preservation (Proactive)**
  - Pavement or Asset management
    - Protects investment - Lower life cycle costs
      - Surface Treatments, Material Selection

- **Corrective Maintenance (Reactive)**
  - After deficiency occurs
    - More expensive approach – distress management
      - Crack Sealing, Patching
Effective Pavement Preservation

$1 for preventive maintenance here

Is 3 to 10 times more cost effective than here

Condition

Time
Pavement Assessment & Evaluations

Thermal Cracking (Transverse)

• Causes
  – Cold temperatures and freeze thaw cycles

• Cures
  – PG Binder Selection
  – Crack Seal/Fill
  – CIR/Reclamation
  – Thick Overlay
Pavement Assessment & Evaluations

Identifying the Distress is the First Step
Pavement Assessment & Evaluations
Preservation & Maintenance Alternatives

- Fog Seal
- Microsurfacing
- Hot in Place Recycling
- Crack Sealing
- Patching
Benefits of fog sealing shoulders

- Most shoulders die of environmental aging
- Seals from water infiltration
  - Shoulders have higher air voids
- Protects from UV damage
- Very fast
- Normally use CRS-2pd
- Economic
- Make pavement marking visible
Preservation Alternatives - Microsurfacing
Preservation Alternatives – Hot in Place Recycling
Preservation Alternatives – Hot in Place Recycling
Maintenance Alternatives – Crack Sealing

1) “Working” cracks- crack sealing [10% of cracks]- “The placement of specialized treatment materials above or into working cracks using unique configurations to prevent the intrusion of water and incompressibles into the crack.” (FHWA-RD-99-147)

2) “Non-working” cracks- performance crack filling [90% of cracks]- “The placement of ordinary treatment materials into non-working cracks to substantially reduce infiltration of water and to reinforce the adjacent pavement.” (FHWA-RD-99-147)
Why you need to crack seal!
Maintenance Alternatives – Patching

1) Asphalt and Concrete have different coefficients of expansion and contraction. Extra care must be given to asphalt patches in concrete.

2) Follow standard fundamentals for quality:

• Square up patch area
• Apply tack to all edges of patch area
• Use high quality materials
• Apply extra care in assuring optimum density
• Consider sealing for better performance
Selecting the Right Alternative

- taxiway with medium severity transverse cracks & minor raveling

- **Determine Rating Factors**
  - Cost
  - How well it “fixes” distresses
  - Traffic Disruption (during maintenance)
  - Traffic Disruption (long term)

- **Assign “Importance Value” to Each Factor**
  - Percentage (must total 100)

- **Rank each of the Available/Applicable Maintenance Treatments**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>FogSeal</th>
<th>Micro</th>
<th>HIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>50%</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15%</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5%</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>3.35</td>
<td>3.55</td>
<td>3.65</td>
</tr>
</tbody>
</table>

- **Calculate Totals**
Minnesota Airports Conference

Questions?