Composite Pavement Rehabilitation Techniques

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Pavement Management & Technology
Composite Pavement Rehab Goals

- Improve Pavement Condition
- Improve Ride Quality
- Improve Safety
- Extend Life
- Typically Functional Overlay – Minor Rehab
- Sometimes A Structural Overlay – Major Rehab
- Reduce Life Cycle Costs
- Increase Customer Satisfaction
  - Noise Reducing Surface(s)
Composite Pavement Rehab Strategies

- Slab Stabilization
- Full Depth Repairs
  - HMA
  - Precast Concrete
  - Class V
  - Rapid Set Latex Modified Concrete
- Mill and Overlay with Better Mixes
  - AROGFC
  - HPTO
  - SMA
  - XFB
  - Reflective Crack Relief Interlayer (RCRI) or Strata
  - Rich Bottom Layer (RBL)
Full Depth Repair with HMA (typically before milling)

NOTES:
REMOVAL OF THE JOINT SHALL BE AS DIRECTED.

FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA
Mill & Overlay with HMA

Surface Milling
Why premium mixes?

- Better fatigue life
- Better durability
- Increased skid/safety
- Reduced noise
- Preservation of pavement structure
- Increased customer satisfaction
- Better reflective crack resistance
Asphalt Rubber Open Graded Friction Course
High Performance Thin Overlay
SMA 9.5mm Surface Course
Composite Projects
Rt. 202 SB (MP 13.4-17.03) – Maintenance Resurfacing Contract No. 268 (2007)
**Rt. 202 SB – Maintenance Resurfacing**

**Contract No. 268 (2007)**

- Visual Survey of JRC Pavement
- Rehab. Design of Asphalt Outside Shoulder
  - Roadway Excavation
  - Pave with 3” min. & var. 25M64 Base Course
  - Pave with 4” (2 lifts) of high quality HMA
- Full Depth Concrete Repairs with Very Early Strength Concrete
- Overlay Design with 4” (2 lifts) of high quality HMA
- 3 test sections and 1 control section
Rt. 202 SB – Maintenance Resurfacing
Contract No. 268 (2007)

<table>
<thead>
<tr>
<th>Milepost</th>
<th>Proposed Pavement Design (8/07)</th>
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</thead>
<tbody>
<tr>
<td>13.4</td>
<td>2” 12.5M64</td>
</tr>
<tr>
<td>14.75</td>
<td>2” 12.5H76</td>
</tr>
<tr>
<td>15.25</td>
<td>12.5H76</td>
</tr>
<tr>
<td>15.75</td>
<td>12.5H76+ (SemMat. Flexible Binder)</td>
</tr>
<tr>
<td>17.03</td>
<td>12.5M76+ (SemMat. Flexible Binder)</td>
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</tbody>
</table>

Strata
# Rt.202 SB – Maintenance Resurfacing
## Contract No. 268 (2007)

<table>
<thead>
<tr>
<th>Before Rehab</th>
<th>After Rehab</th>
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</thead>
<tbody>
<tr>
<td><strong>SDI = 2.07</strong></td>
<td><strong>SDI = 5.0</strong></td>
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<tr>
<td><strong>Ride Quality</strong></td>
<td><strong>Ride Quality</strong></td>
</tr>
<tr>
<td>- MP 13.4-14.75, IRI=197.2</td>
<td>- MP 13.4-14.75, IRI=88.3</td>
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<tr>
<td>- MP 14.75-15.25, IRI=154.7</td>
<td>- MP 14.75-15.25, IRI=78.0</td>
</tr>
<tr>
<td>- MP 15.25-15.75, IRI=143.8</td>
<td>- MP 15.25-15.75, IRI=77.7</td>
</tr>
<tr>
<td>- MP 15.75-17.03, IRI=151.5</td>
<td>- MP 15.75-17.03, IRI=75.0</td>
</tr>
<tr>
<td>- Ride Quality for the project, IRI=168.6</td>
<td>- Ride Quality for the project, IRI=80.4</td>
</tr>
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</table>
Rt. 202 SB – Maintenance Resurfacing
Contract No. 268 (2007)

Before Rehab

After Rehab
Rt.70 (MP8.61-12.06) - Maintenance Roadway Repair Contract No. 327 (2007)
Rt. 70 (MP 8.61-12.06) - Maintenance Roadway Repair Contract No. 327 (2007)

- Visual Survey of Composite Pavement
- Cores performed to establish proper milling depth
- Full Depth Repair areas identified by visual survey
- Calculated approximately 5 million ESAL’s

- Quantity for Slab Stabilization estimated from FWD testing
- Overlay Design consisted of milling 2” depth and resurfacing with:
  - 1.5” Superpave HMA 9.5H76 Surface Course
  - 2.5” Superpave HMA 12.5M76 Intermediate Course
Rt.70 (MP8.61-12.06)- Maintenance Roadway Repair Contract No. 327 (2007)

- Located high deflection joints (> 15 mils deflection) with FWD during construction
- Failed joints were successfully (reduced deflection < 10 mils) grouted with HDP by Uretek
- Full Depth Repairs with HMA were performed on high severity joints/areas
Rt. 70 (MP 8.61-12.06) - Maintenance Roadway Repair Contract No. 327 (2007)

Before Rehab

- SDI = 1.56
- Ride Quality IRI = 157

After Rehab

- SDI = 4.9
- Ride Quality IRI = 94
Rt. 70 (MP8.61-12.06) - Maintenance Roadway Repair Contract No. 327 (2007)

Before Rehab

After Rehab
Risk of Removing HMA Overlay
Thank you. Questions?

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