I.D.O.T. Update
- 2007 Version -
RUBBLIZATION
Rubblization with HMA Overlay

- Rehabilitation method for deteriorated concrete pavements
  - Alternative to extensive patching or reconstruction
- Pavement in effect becomes a high-quality aggregate base
- Eliminates virtually all reflective cracking
Project History

- First project in 1990
  - I-57 south of Champaign
  - 6” & 8” thick

- Approximately 150 lane-miles
  - Used on local roads to high-volume interstate routes
  - Also used by Tollway

- 17 projects to date
Performance

- Overall performance has been good
- Surface cracking is primary distress
- Rutting has been minimal on most projects
- Rubblization is both reliable and cost-effective
Future Efforts

- Rubblizing remains a specialized design requiring approval for use
- Two projects already planned for construction in 2007
  - One interstate and one local road project
- Future use is likely as system continues to deteriorate
PAVEMENT WARRANTIES
Pavement Warranties

Mandated by the Legislature

- "The Department shall implement a demonstration project, under which 20 of the contracts ... for fiscal years 2000 through 2004 shall have a performance-based warranty of at least 5 years…"

Transfers risk from the Department to the contractor.
Warranty Specifications

- Full-depth Bituminous Pavements
- Bituminous Overlays
- Concrete Pavements (Jointed and CRC)
- Concrete Bridge Decks and Bridge Approach Pavement
- Extended Life Pavement Specifications
## Warranty Projects by Project Type

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Number of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bituminous Overlay</td>
<td>3</td>
</tr>
<tr>
<td>Bituminous (20-yr.)</td>
<td>2</td>
</tr>
<tr>
<td>Bituminous (30-yr.)</td>
<td>7</td>
</tr>
<tr>
<td>Concrete (20-yr.)</td>
<td>3</td>
</tr>
<tr>
<td>Concrete (30-yr.)</td>
<td>12</td>
</tr>
<tr>
<td>Concrete (40-yr.)</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>28</strong></td>
</tr>
</tbody>
</table>
Warranty Project Status

- Construction complete on all projects.
- 5 out of 28 (18%) projects have reached the end of the 5-year warranty period.
- 2 of the 5 required corrective action at the end of the warranty period.
  - Crack sealing done on one other project.
- Repair work also performed on other projects where warranty has not expired.
Future Efforts

- Two projects with warranties expiring in 2007.
- Majority of warranties do not expire until 2010 or 2011.
- Examine the warranty specifications to see if any revisions need to be made.
- Future use dependent on results of this demonstration project.
ASPHALT USAGE
Other news....

Additional Certified Sources

- Emulsicoat at Saline Court, Urbana, IL (PG 64-22)
- BP at Lemont, IL (PG 64-22)

Loss of Sources/Products

- Closed - SemMaterials, L.P. at Lemont, IL (PG 58-22 and PG 64-22)
- Closed - BP at Davenport, IA (PG 64-22, PG 58-22, PG 58-28, PG 46-28, and MC-30)
- Cutback asphalts no longer available from Flint Hills at Dubuque, IA
STEEL PRICE ADJUSTMENT
Statewide 4/04 Letting

Posted each month

– Average of
  No. 1 Heavy Melt
  Shredded Scrap

Contractor option
Adjustment based on
– Letting month
– Steel invoice month
Monthly Scrap Index
Bid Items $\geq$ $10,000$

- 674 eligible to date
  - 44 of 33 Nov. 2006
  - 0 of 46 Jan. 2007
## History of Adjustment

<table>
<thead>
<tr>
<th>Contract $</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>+ $6,590</td>
<td>1.46 M</td>
</tr>
<tr>
<td>+ $40,000</td>
<td>5.23 M</td>
</tr>
<tr>
<td>+ $5,500</td>
<td>.67 M</td>
</tr>
<tr>
<td>+ $4,100</td>
<td>.69 M</td>
</tr>
</tbody>
</table>
Bituminous Price Index
Bituminous Price Index

Month:
- Jul-06
- Aug-06
- Sep-06
- Oct-06
- Nov-06
- Dec-06
- Jan-07
- Feb-07

PG64-22 Dollar/Ton:
- Jul-06: 380
- Aug-06: 370
- Sep-06: 360
- Oct-06: 350
- Nov-06: 340
- Dec-06: 330
- Jan-07: 320
- Feb-07: 310
Projects ≥ 1,200 tons total mix
  – Contractor option
Adjustment applied to months tonnage
How many took option?
  – 2 of 21 Nov. 2006
  – 8 of 19 Jan. 2007
RAP
## 2007 Max RAP %

<table>
<thead>
<tr>
<th>N-Design</th>
<th>Binder/Level Binder</th>
<th>Surface</th>
<th>With Polymer</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30</td>
<td>30</td>
<td>NA</td>
</tr>
<tr>
<td>50</td>
<td>25</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>70</td>
<td>15/25*</td>
<td>10/15*</td>
<td>10</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>105</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Shoulders up to 50%

*RAP Max Percentage if Crushed to -3/8”

New for 2007
Piles of RAP = Milling – Reuse

- Need to look at all parts of the equation
  - Milling, Reuse and Existing Piles

- **All** agencies need to use RAP in mixes
  - Conserve Resources
  - Cost savings

- Training for locals on RAP usage thanks to joint industry/IDOT funding.
STATE HIGHWAY PROGRAM - History-
State Highway Program

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Miles</th>
<th>Bridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1,600</td>
<td>400</td>
</tr>
<tr>
<td>2002</td>
<td>1,400</td>
<td>600</td>
</tr>
<tr>
<td>2003</td>
<td>1,200</td>
<td>800</td>
</tr>
<tr>
<td>2004</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>2005</td>
<td>1,800</td>
<td>1,200</td>
</tr>
<tr>
<td>2006</td>
<td>1,600</td>
<td>1,400</td>
</tr>
<tr>
<td>2007</td>
<td>1,400</td>
<td>1,600</td>
</tr>
</tbody>
</table>

Fiscal Year
Miles
Bridges
HMA QUANTITIES
## Summary of HMA Quantities

<table>
<thead>
<tr>
<th>Year</th>
<th>HMA (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>8,526,000</td>
</tr>
<tr>
<td>2001</td>
<td>9,229,000</td>
</tr>
<tr>
<td>2002</td>
<td>7,493,000</td>
</tr>
<tr>
<td>2003</td>
<td>7,410,000</td>
</tr>
<tr>
<td>2004</td>
<td>4,285,000</td>
</tr>
<tr>
<td>2005</td>
<td>5,112,000</td>
</tr>
<tr>
<td>2006</td>
<td>3,966,000</td>
</tr>
</tbody>
</table>
MANPOWER
## Manpower

<table>
<thead>
<tr>
<th>Year</th>
<th>Technical DOH</th>
<th>Total DOH</th>
<th>Total IDOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>3,144</td>
<td>6,296</td>
<td>7,428</td>
</tr>
<tr>
<td>2000</td>
<td>3,016</td>
<td>5,695</td>
<td>6,768</td>
</tr>
<tr>
<td>2003</td>
<td>2,865</td>
<td>5,441</td>
<td>6,337</td>
</tr>
<tr>
<td>2006</td>
<td>2,469</td>
<td>4,801</td>
<td>5,602</td>
</tr>
</tbody>
</table>
WARM MIX ASPHALT
Where Should We Go with Warm Mix Asphalt Technology
HOT
Is Not Always BETTER
Goldilocks, circa 1850
What is WMA?

Allows reduction in

• production temps
• placement temps
How is it done?

a) Two Component Asphalt

b) Emulsion Technology

c) Mix Additives
   • Mineral
   • Organic
Hot Mix Asphalt 275 - 325° F

Warm Mix Asphalt 200 - 275° F

Cold Mix Asphalt 60° F
Why Important?

Environment

- Reduced Energy
- Reduced Emissions
Environmentalists

• Heard About
• Read About
• Europe Using
• Want it now!
Contractor Perspective

† Heating Costs
• Favorable Zoning
• Longer Season
• Happier Employees
Late Season Paving

For $\Delta T = 125^\circ F$

HMA Time = 14 min.

WMA Time = 29 min.
DOT Perspective

- Environmentally Sensitive
- Longer Season
- Project Costs
- Improved Product?
Hurdles (unknowns)

- Cost
- Correct Specs
- Mix Design
- Constructability
- Performance
Need to Look at
Control Our Own Destiny
Or Others Will Control It For Us
Status

Demo Projects
- State Initiated
- Contractor Initiated

Lab Studies
- Moisture Damage
- Rutting
- Hardening
Batch Plant of the FUTURE!
THANK YOU