“A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty.”

Winston Churchill
AASHTO Environmental Considerations for In-Place Recycling

Western States Regional In-Place Recycling Conference

September 11, 2012
Ontario, CA

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DelDOT
Topics

- Center of Environmental Excellence by AASHTO
- Drivers for Environmental Stewardship
- Roadway Construction Options
- Environmental Benefits of In-Place Recycling
- Next Steps to Increase Implementation
- Challenge
Center for Environmental Excellence by AASHTO

- Developed in cooperation with FHWA.
- A resource for transportation professionals seeking technical assistance, training, information exchange, partnership-building opportunities, and quick and easy access to environmental tools.

Mission – to promote environmental stewardship and to encourage innovative ways to streamline the transportation delivery process.

http://environment.transportation.org/
Center for Environmental Excellence by AASHTO

Assistance Available

- Information Sharing – website, Newsletter, Meetings, Conferences, Conference Calls, Peer Exchange
- Training – webcasts, webinars, seminars
- Technical Assistance – technical experts, handbooks, problem solving sessions
Drivers for Environmental Stewardship

- National and International Focus on energy and climate change and *sustainability*.
- State and National focus on waste reduction, pollution prevention, and recycling.
- Escalating costs of energy, labor, and materials.
- Traffic congestion and delays.
- Environmental effects of mining, processing, transporting materials.
Recycling of metal, paper, plastic, glass, textiles, rubber, electronics is up 40% since 2009 according to the Institute of Scrap Recycling Industries, Inc.


In 2010, 130 metric tons of scrap worth $77 billion was manufactured into spec grade commodities.
2012 Summer Olympics

Olympic Delivery Authority (ODA) goals for site work (former brownfield area):

- 80% soil reuse.
  - 2 million tons of contaminated soil was treated and reused.
- 90% reuse/recycling of other construction materials
  - 98% from demolition and site clearance were reclaimed (including 8 buildings dismantled and reused elsewhere and reuse of RCA in new bridges).
2014 World Cup (Brazil)
- 12 stadiums to be constructed
  - Targeting LEED standards
  - Collecting rainwater and treating for re-use
  - *Goal: 25% recycling of construction materials*
Roadway Construction Options

- New Construction
- Rebuild existing
- Rehabilitate existing
- Maintain existing
- Preserve existing

Each has some positive and negative aspects.
Which Option to Choose?

Some Factors to Consider:

1. Cost of project
2. Time for completion (time of year)
3. Traffic disruptions
4. Right-of-Way impacts
5. Environmental implications
6. Utility involvement
7. Contracting capacity
8. Sustainability
Which Option to Choose? (cont)

- No “one option fits all projects”
- Balance all options
- Finding best fit…

We have found in-place recycling (IPR) has been a very good fit for certain situations.
IPR Checklist

Factors:

1. Cost of project – **minimized***
2. Time for completion (time of year) - **coordination**
3. Traffic disruptions - **minimized**
4. Right-of-Way impacts - **none**
5. Environmental implications – **beneficial***
6. Utility involvement - **none**
7. Contracting capacity – **available**
8. **Sustainability** – **absolutely!***
IPR Checklist (cont)

Environmental Implications

- Within existing footprint (no new ROW needed, no utility involvement, no new storm water, etc)
- Utilize existing materials (no new mining, no removal of existing materials, no transportation costs for import/exporting materials, less trucking)

Cost of Project

- Rehab Costs…
## Pavement Preservation Costs

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>Cost per Centerline Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Treatment*</td>
<td>$10,000</td>
</tr>
<tr>
<td>* Utilize Department forces for placement</td>
<td></td>
</tr>
<tr>
<td>Microsurfacing</td>
<td>$50,000</td>
</tr>
<tr>
<td>Surface Treatment to Asphalt Conversion</td>
<td>$225,000</td>
</tr>
<tr>
<td>Asphalt Overlay</td>
<td>$300,000</td>
</tr>
<tr>
<td>Mill + Asphalt Overlay</td>
<td>$500,000</td>
</tr>
<tr>
<td>FDR + Asphalt Overlay</td>
<td>$370,000</td>
</tr>
</tbody>
</table>
IPR Checklist (cont)

Engineering

- Quality of existing, in-place materials; new road material = old road material
- Recycled material ≠ inferior material
- Good performance (to date)
- Some “challenges”

Sustainability …
What does sustainability mean to DelDOT?

- Depends on who you ask – Planning or Operations.
- Implementing pavement preservation practices and specifying materials that meet the **3E’s benefits** – engineering, economic, and environmentally sensitive.
- “Easily” implemented due to known benefits of 3E’s.
(Environmental) Benefits of IPR

Recycling:
- Savings –
  - Excavation, mining, importing, removal of materials, transportation
  - Time

Performance:
- Short-term acceptable; long-term?

Cost:
- Stabilized base (perpetual pavement)
- Only overlays in the future
AASHTO’s Vision for the 21st Century

- Triple Bottom Line to encourage sustainable development
  1. Robust economic growth
  2. Better-than-before health of the environment
  3. Improved quality of life
Next Steps …

- Market/showcase success
- Admit difficulties/learning experiences
- Champion the cause
- Reach out
- Challenge…

“A failure teaches that something can’t be done … that way.”

Thomas Edison
Challenge......

- Take something you’ve heard today, and try to implement it in your state.

- Don’t research something to death trying to find a reason for something not to work.

“It is hard to fail, but it is worse never to have tried to succeed .... he who makes no mistake makes no progress.” — Theodore Roosevelt
Thank you for your time and attention

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