

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

Winston Churchill



Center for Environmental Excellence by AASHTO  
One Stop Source of Environmental Information for Transportation Professionals

# **AASHTO Environmental Considerations for In-Place Recycling**

## *Western States Regional In-Place Recycling Conference*

September 11, 2012

Ontario, CA

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DeIDOT

# Topics

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- ◆ 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.

# July 2011

## *Public Works Magazine*

- ◆ Recycling of metal, paper, plastic, glass, textiles, rubber, electronics is up 40% since 2009 according to the Institute of Scrap Recycling Industries, Inc.
- ◆ US Bureau of Labor Statistics says scrap recycling added 10,000 jobs between first quarter 2010 and first quarter 2011.
- ◆ In 2010, 130 metric tons of scrap worth \$77 billion was manufactured into spec grade commodities.

# July/August 2012 – *Civil Engineering Magazine*

## ◆ 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).



# August 27, 2012 – *Engineering News Record*

- ◆ 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

Treatment Type	Cost per Centerline Mile
Surface Treatment* * Utilize Department forces for placement	\$10,000
Microsurfacing	\$50,000
Surface Treatment to Asphalt Conversion	\$225,000
Asphalt Overlay	\$300,000
Mill + Asphalt Overlay	\$500,000
<b>FDR + Asphalt Overlay</b>	<b>\$370,000</b>

# IPR Checklist (cont)

## ◆ Engineering

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

## ◆ Sustainability ...



# Sustainability and DeIDOT

- ◆ What does sustainability mean to DeIDOT?
  - 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 21<sup>st</sup> 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



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# Thank you for your time and attention

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