“We have run out of money; now we have to think”

Sir Winston Churchill

Center for Environmental Excellence by AASHTO

One Stop Source of Environmental Information for Transportation Professionals

Environmental Considerations of In-Place Recycling

Virginia Pavement Recycling Conference

November 26, 2012 **Glen Allen, VA**

Jim Pappas
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*.
- National and state 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 Asphaltic Conversion	$225,000
Asphaltic Overlay	$300,000
Mill + Asphaltic Overlay	$500,000
FDR + Asphaltic Overlay	**$370,000**

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 …

Sustainability and DelDOT

- 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

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Thank you for your time and attention

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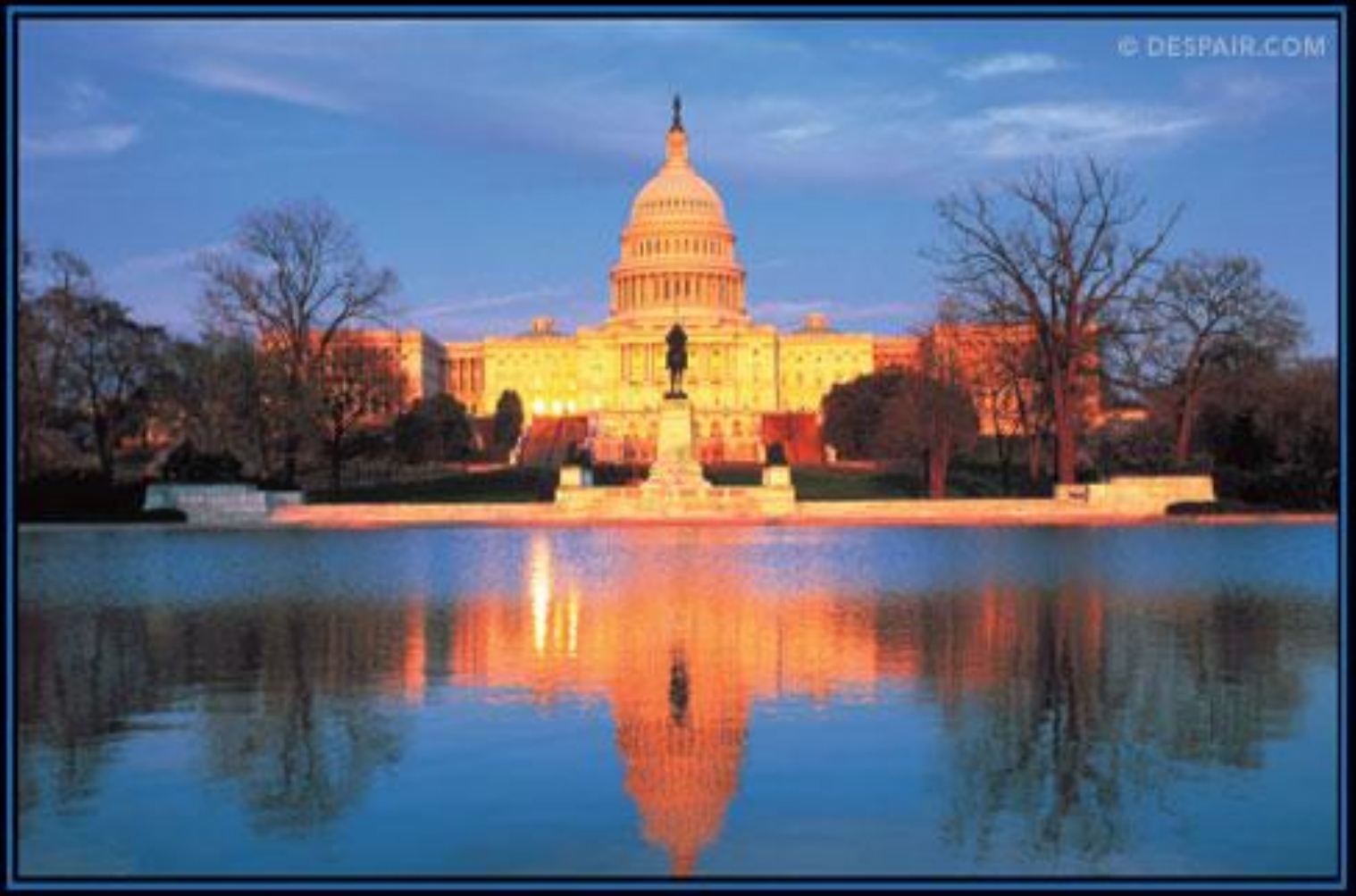
TEAM DelDOT

Transparent Efficient Accountable Measured

“Obstacles are meant to be overcome; fear is meant to be conquered; success is meant to be achieved”

Jon Gordon



GOVERNMENT

If You Think the Problems We Create Are Bad,
Just Wait Until You See Our Solutions.