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GOVERNMENT

IF YOU THINK THE PROBLEMS WE CREATE ARE BAD,
JUST WAIT UNTIL YOU SEE OUR SOLUTIONS.



Transparent Efficient Accountable Measured

Benefit of In-Place Recycling to State Highway Programs

Midwestern States Regional In-Place Recycling Conference

September 10, 2013

Shaumburg, Illinois

Jim Pappas
DeIDOT

Topics

- ◆ Role of sustainability/recycling
- ◆ Customer wants/needs
- ◆ DOT's mission
- ◆ Benefits/Successes
- ◆ Future challenges

“If you are not failing every now and again, it’s a sign you’re not doing anything innovative.”

Woody Allen

Sustainability ... defined

Economic development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

Recycling ... Drivers for Environmental Stewardship

- ◆ National and International focus on energy, 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.

Customer Wants/Needs

- ◆ Safe
- ◆ Reliable
- ◆ Smooth
- ◆ Efficient
- ◆ Congestion-free
- ◆ With options

DelDOT Response

As a transportation agency, the obligation of DelDOT is to provide a safe and effective transportation network that promotes, and efficiently facilitates, movement of people and goods for the benefit of citizens and commerce.

DeIDOT Mission

◆ Excellence in Transportation (Vision)

- *Every Trip* - Strive to make every trip taken in Delaware safe, reliable and convenient for people and commerce.
- *Every Mode* - Provide safe choices for travelers in Delaware to access roads, rails, buses, airways, waterways, bike trails, and walking paths.
- *Every Dollar* - Seek the best value for every dollar spent for the benefit of all.
- *Everyone* - Engage customers and employees with respect and courtesy to deliver services.

DeIDOT Mission (cont)

◆ Excellence in Transportation (Goals)

- Minimize the number of fatalities and injuries on the system
- Build and maintain a nationally recognized system benefiting travelers and commerce
- Provide every traveler with access and choices to the transportation system
- Provide every customer with the best service possible
- **Minimize the environmental impact of the state's transportation system**
- Achieve financial sustainability through accuracy, transparency and accountability
- Develop and maintain a place where talented and motivated employees love to work and can be national leaders in transportation

Sustainability - Benefits/Successes

◆ Benefits:

1. Engineering
2. Economics
3. Environmental

Ultimate savings to the travelling public, our customers!

Benefits/Successes (cont)

◆ Engineering

- Recycled/reclaimed material \neq inferior material
- Can impart beneficial engineering properties
- Quality of existing, in-place materials; new road material = old road material
- Stabilized base for future preservation treatments

Benefits/Successes (cont)

◆ Economics

■ Saves \$

- ◆ Construction costs
- ◆ Import/export costs
- ◆ Reduces user delay

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
FDR + Asphalt Overlay	\$370,000

Benefits/Successes (cont)

◆ Environment

- Reduce GHG
- 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)

DeIDOT Methodology

- ◆ Recycling/reclamation considered in scoping/planning stage
- ◆ Exploratory work (cores, borings)
- ◆ Final determination (surface area of patching)
- ◆ Design
- ◆ Construct
- ◆ Monitor

DeIDOT's Benefits

◆ 3E's:

- Reduced initial cost
- Reduced environmental impact
- Increased engineering benefits:
 - ◆ More rapid construction
 - ◆ Stabilized base (for future structural overlay's)

◆ Increased usage, increased contractor participation

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

Future Challenges

- ◆ Recycling/Sustainability is NOT going away
- ◆ Life Cycle Cost Analysis (LCCA)
- ◆ Life Cycle Assessments (LCA)
- ◆ New materials, technology, equipment
- ◆ Institutional barriers

“If you’re upset about failing, you haven’t failed enough.”

Meredith Whitney

FHWA's Sustainable Pavement Technical Working Group

- Industry, Government Agencies, Academia
- Reviewing sustainable pavement practices
- DRAFT Report is under review now

REFERENCE DOCUMENT FOR SUSTAINABLE PAVEMENT SYSTEMS

Draft Final Report



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Federal Highway Administration

Office of Asset Management
1200 New Jersey Avenue, SE
Washington, DC 20590

August 2013

Recycling Efforts

◆ Recycling (2011)*:

- Glass: 3 million tons/year
- Aluminum cans: 1.5 – 2.0 million tons/year
- Paper/paperboard: 45 million tons/year (63% recycled rate)
- RAP: 66.7 million tons (99% recycled rate)
- RAS: 1.2 million tons

**Asphalt Pavement Magazine – July/August 2013*

Recycling Efforts (cont)

- ◆ 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.

Recycling Efforts (cont)

◆ 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).

**Civil Engineering Magazine - July/August 2012*

Recycling Efforts (cont)

- ◆ 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*

**Engineering News Record - August 27, 2012*

SHINGLE RECYCLING

From Roof to the Road



The shingles off an average sized house supplies enough material to pave about 200 ft. of highway ...

Trash Talk blog

Thank you for your time and attention

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“Don’t follow the rules. If everybody followed the rules, nothing would change, and without change there is no progress.” Sir Richard Branson