First Western States Regional In-Place Recycling Conference June 3-5, 2008 Salt Lake City, Utah

The Road to Environmental Stewardship
Via
In-Place Pavement Recycling



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By AASHTO

Presentation Objectives



- Highlight the Wissian, Vision, & Services of the Center for Environmental Excellence
- Highlight the Drivers for Environmental Stewardship in In-Place Pavement Recycling
- Highlight the Environmental Aspects of In-Place Pavement Recycling
- Highlight the Industry Response& Potential Next Steps

Center for Environmental Excellence by AASHTO

- Mission: Promote environmental excellence in the efficient delivery of transportation services.
- Vision: Member organizations have the tools and awareness necessary to be excellent stewards of the environment in carrying out their missions.



Center for Environmental Excellence by AASHTO

Primary Customer Service Areas

- Information Sharing -Website, Transportation/ Environmental Alert Newsletter, Meetings, Conference Calls, Conferences, & Peer Exchanges
- Training –Web Casts, Webinars, & Seminars
- Technical Assistance —On-call Technical Experts, Practitioner's Handbooks, & Problem-Solving Sessions



Drivers for Environmental Stewardship in In-Place Pavement Recycling

- National & International Focus on Energy & Climate Change & Sustainability
- State & National Focus on Waste Reduction, Pollution Prevention, & Recycling-"No Waste Philosophy"
- Rapidly Escalating Costs of Energy, Labor, & Materials
- Traffic Congestion & Delays
- Environmental Effects of Mining, Processing,
 Storing, & Transporting Virgin Materials

Definitions

- Environment -the aggregate of surrounding things, conditions, or influences.
- Stewardship –to hold something in trust for another or accountability without control or compliance.
- Sustainable -to create & maintain conditions, under which humans & nature can exist in productive harmony, that permit fulfilling the social, economic, & other requirements of present & future generations of Americans.

Key In-Place Recycling Process Activities

- Identify highway sections to pave;
- Develop pavement design;
- Develop, let, & award paving contract;
- Purchase materials & supplies;
- Mobilize equipment & personnel;
- Pave highway & maintain equipment;
- Perform quality control/assurance;
- Correct deficiencies; &
- Measure & document costs & benefits.

Key Environmental Considerations While <u>Doing Pavement Design</u>

- Maintain emergency & public utility services;
- Protect sensitive receptors from vibration, dust, noise, water, & light pollution;
- Select bio-based, environmentally preferable, energy-efficient, waterefficient, & recycled-content products; &
- Eliminate & minimize waste materials.

Key Environmental Considerations While Developing, Letting, & Awarding Paving Contract

- Incorporate environmental stewardship measures into contract;
- Specify energy efficient & low-emission construction equipment & fuels; &
- Present environmental stewardship measures at pre-bid & pre-construction meetings.

Key Environmental Considerations While Measuring & Documenting Costs & Benefits

- What are the cost of the environmental measures of in-place pavement recycling in comparison with other paving methods?
- What are the environmental benefits of inplace pavement recycling as compared to other paving methods?

Potential Environmental Benefits of In-Place Pavement Recycling

- Reuse & conservation of pavement materials & reduced waste;
- Reduced transport of pavement materials & associated construction vehicle traffic impacts(air & noise) on neighbors & highway system;
- Lower emissions of volatiles with use of non-volatile materials; &
- Avoid/minimize environmental impacts of batch plants, quarries, & stockpiles.

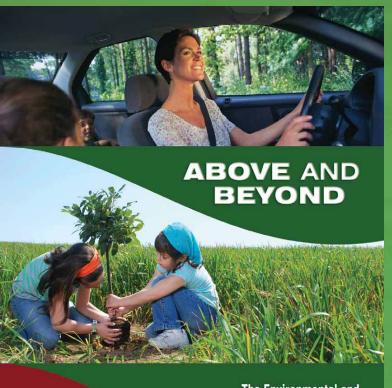
The Industry Response to the Opportunities & Challenges

- FHWA Pavement and Materials Strategic Plan;
- FHWA Pavement Recycling Policy;
- Environmental Stewardship FALCON Team
- ARRA & Other Paving Industry Meetings, Seminars, Webcasts, Pilot/Demonstration Projects, Peer Exchanges, Technology Transfer, and Partnering;
- First Western States Regional In-Place Recycling Conference & Future Regional Conferences; &
- Research to continuously improve processes, materials, & equipment.

The Industry Response to the Opportunities & Challenges-Cont.

- AASHTO Vision for the 21st Century-"Triple Bottom Line" to Encourage Sustainable Development
 - -Robust Economic Growth
 - -Better-than-before health of the environment
 - -Improved quality of life
- "Today, the transportation sector's mission goes beyond ensuring mobility to achieving the larger societal goal of economic, social, & environmental sustainability."

John Horsley, Executive Director



John Horsley, Executive Director AASHTO

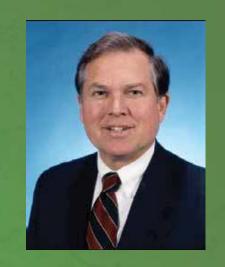


The Environmental and Social Contributions of America's Highway Programs

January 2008

"Today, more than ever before, transportation agencies are going 'Above & Beyond' Toward Sustainable Transportation." "Above and Beyond shows how transportation make a real difference to our quality of life through investments in:

- •Context sensitive solutions,
- •Historic preservation,
- •Recycling,
- •Clean air,
- Integrating transportation & land use
- Walking & biking trails
- Wetlands & water quality
- Wildlife preservation
- Sound barriers
- Scenic byways, &
- •Wildflowers & native vegetation"





Recycling — Transportation Agencies "Go Green"

Did You Know?

Transportation agencies continue to be nationwide leaders in recycling, including reusing road-building materials and incorporating recycled products into the nation's highway surfaces.

Industry Response-Texas DOT Recycling for Roadway

TXDOT Use of Recycled Materials for Roadways in 2006

- Recycled asphalt pavement-3.1 M Tons
- Recycled concrete aggregate-1.1 M Tons
- Fly ash-278,000 Tons
- Crumb rubber-12,700 Tons
- Glass traffic beads-12,000 Tons
- Compost-311, 000 cubic yards

Recycling Opportunities Candidate Materials & Industrial By-Products

- Baghouse fines
- Blast Furnace Slag
- Coal bottom fly ash/boiler slag
- Coal fly ash
- Flue gas desulfurization
- Scrubber material
- Foundry sand
- Kiln dust
- Mineral processing wastes

- Municipal incinerator ash
- Nonferrous slags
- Quarry by-products
- Reclaimed asphalt pavement
- Reclaimed concrete
- Roofing shingle scrap
- Scrap Tires
- Sewage sludge ash
- Steel slag
- Sulfate wastes
- Waste glass

Potential Next Steps to Advance Environmental Stewardship in In-Place Recycling

- Include an environmental stewardship component in the planning, development, & implementation of in-place recycling programs;
- Develop environmental performance measures/indicators for in-place recycling;
- Research & compare the costs, impacts, & benefits of in-place recycling with other paving methods;
- Research & publicize environmental stewardship case studies/success stories;
- Develop a practitioner's handbook on how to plan, design, & construct in-place recycling programs/projects in an environmentally sound manner.

Potential Next Steps to Advance Environmental Stewardship in In-Place Recycling-Cont.

- Engage AASHTO Standing Committee on Environment members/State DOT environmental professionals on in-place recycling teams & in partnering initiatives;
- Incorporate environmental stewardship concepts into in-place recycling training;
- Include an in-place recycling section on the Center for Environmental Excellence Website

AASHTO Commitment

The Center for Environmental Excellence & AASHTO are ready to assist you in making the roads and transportation network and the environment "better than before" through in-place pavement recycling.

On Behalf of the Center for Environmental Excellence & FHWA Thank You

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