Sustainability and Concrete Pavements

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Review of Sustainability

• “…we must find an alternative to our ingrained behaviour of burdening future generations resulting from our misplaced belief that there is a choice between economy and the environment. That choice, in the long term, turns out to be an illusion with awesome consequences for humanity,” Charles Caccia, 1986.
Review of Sustainability

• “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”
  - WCED

• How does that apply to concrete pavements?
Review of Sustainability

• “Green Highways” (www.acpa.org)

1. Longevity
2. Reduced fuel consumption
3. Use of industrial byproducts
4. Recyclability and reusability
5. Limiting use of natural resources
6. Reduced heat island effect and increased light reflectivity
7. Lower energy footprint
8. Improved water quality
9. Improved surface textures
Review of Sustainability

Track #13 = Sustainability

www.CPRoadMap.org
“Sustainability provides a way to balance the various economic, environmental, and social factors”

– Dr. Peter Taylor, National CP Tech Center
Review of sustainability

• Minimizes the use of energy and non-renewable resources.

• Generating a minimum of pollutants.

• Use the most cost effective manner possible.

• Maximize the benefits to society.
Making Sustainability a **Reality**

- **7 Common Sense Principles**
  1. Get Smart
  2. Design to Serve the Community
  3. Choose what you use
  4. Less is More
  5. Minimize the Negative Impact
  6. Take Care of what you have
  7. Innovate

www.CPRoadMap.org
Making Sustainability a Reality

• Quantifying
  – Green Roads, GreenLITES
  – Life Cycle Environmental Analysis (LCEA)

• Factors
  – Emissions
  – Toxicity potential
  – Raw materials consumption
  – Waste generated

www.CPRoadMap.org
Making Sustainability a Reality

Partnering of industry

Goal:
“...to incorporate **environmental streamlining and stewardship** into all aspects of the highway lifecycle”

Three teams:
1. Watershed-driven Stormwater Management
2. Recycle and Reuse
3. Ecosystem Conservation and Protection

www.greenhighwayspartnership.org
• “…we are focused on sustainable transportation with regards to roads, highways. **Roads and highways we know for many years tend to have multiple impacts on the environment** everywhere from water quality to watershed habitat fragmentation, to air, and we thought that in working through ways to solve problems as it relates to these impacts around transportation, in this case highways, **we would ultimately develop models and solutions that could have more universal application.** Roadways traditionally are impervious surfaces.”

Dominique Lueckenhoff
Environment Matters Podcast, October 2008
Making Sustainability a Reality

- Low Impact Development (LID)
  - new approach
- LID Center
  - comprehensive land planning
  - engineering design
- Goal: “maintain and enhance the pre-development hydrologic regime of urban and developing watersheds”

http://www.lowimpactdevelopment.org
Making Sustainability a Reality

A graphic depiction of some of the LID features that can be used in the public right-of-way

Image: The Low Impact Development Center, Inc.
Making Sustainability a Reality

- **Green Highways Initiative**
  - Protocols and management

- **Permeable Interlocking Concrete Pavement (PICP) Outreach and Training Program**
  - Coop with Interlocking Concrete Pavement Institute (ICPI)
  - To demonstrate the effectiveness of permeable interlocking concrete pavement (PICP) at meeting stormwater management water quality regulatory requirements and related resource protection issues

- **Nannie Helen Burroughs Avenue (NHB Ave) Revitalization Project**
  - Working with District of Columbia’s Department of Transportation with creating and implementing a model “Green Street”
Making Sustainability a Reality

Courtesy Robb Jolly and GHP
Conclusion

- Sustainability is not going away.
- Concrete pavements are sustainable and have the potential for being even more sustainable.
- Organizations are making an effort.
- We just need to follow through.
Conclusion

• A final note
  – *International Conference on Sustainable Concrete Pavements*
    • September 15-17, 2010 in Sacramento, Ca
    • FHWA and CP Tech Center

www.ACPA.org
www.CRRoadMap.com
www.greenhighwayspartnership.org
The Future of Sustainability and Pavements

• The big picture
  – Solar Highway
  • I-5 and I-205 in Oregon

http://www.flickr.com/photos/oregondot/sets/72157607911482130
The Future of Sustainability and Pavements

http://www.wsdot.wa.gov/Partners/GreenHighways

Imagine driving down Interstate 5 – all 1,350 miles of it from British Columbia to Baja, California – without using a drop of gas or releasing an ounce of harmful carbon emissions.

There’s no need to imagine much longer. Soon, I-5 will become the first U.S. interstate specifically equipped to carry electric vehicles border-to-border, threading Washington, Oregon and California with recharging stations spaced within the range of standard electric vehicle (EV) technology.