Sustainable Concrete Paving: Industry Initiatives

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Key Initiatives

- Sustainable development
- Paving
- Advocacy

What?
Why and why now?
What are we doing?
What is sustainable development?

- "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." World Commission on Environment and Development’s Report Our Common Future (Oxford University Press, 1987).

Paradigm shift –
We have not inherited the world from our forefathers – we have borrowed it from our children – ancient proverb
Why Sustainable Development?

ENVIRONMENTAL  SOCIAL  ECONOMIC

PEOPLE – PLANET - PROFIT
Why Now?

Natural Drivers

- Global warming
- Limited resources
  - Water
  - Energy
  - Land

“There is no away”
Concrete - Essential in every Market
Big Industry Footprint

After water, concrete is most widely used material in the world

2x more than plastic, steel, aluminum, and wood, combined

CO₂ from cement mfg:

- Global = 5%
- U.S. < 1.5%
How Big Are We?

What have we done and what are we doing?


1. Health and Safety
2. Reduce emissions (land, water and air)
3. Responsibly manage wastes
4. Energy and material conservation
5. Alternative fuel and material solutions
6. Mine in an environmentally sound manner
7. Collaborate with stakeholders
Industry Improvement Results

Energy Use: 37%
Cement Kiln Dust: 75%
Improvement Results

Alternative Fuels
65% of plants

Alt. Materials
45% of plants
Continuous Improvement Goals

- By 2020 the following reductions:
  - Reduce carbon dioxide - 10% *
  - Reduce energy use – 20% *
  - Reduce cement kiln dust – 60% *

- Environmental Management Systems
  - 75% of member plants by 2010

* from a 1990 benchmark
Annual Reporting

REPORT ON SUSTAINABLE MANUFACTURING 2008

www.cement.org/smreport08
Joint Industry Sustainability Initiative

- Develop common vision of industry sustainability
- Pool resources and minimize duplication to implement vision
- Back-up sustainability messages with facts
- Coordinate communication
8 Social Values of Concrete Structures

1. Resource Efficiency
2. Safety/Protection
3. Financial Responsibility
4. Operational Continuity
5. Longevity/Durability
6. Byproducts Reduction
7. Esthetics
8. Societal Connectivity
Why Concrete Paving?

Concrete is the economical and sustainable choice to meet our growing demands for transportation infrastructure.
“Concrete Roads and Roast Beef”

Advertising campaign for streets and roads brought concrete benefits home for dinner

Saturday Evening Post, 1919
“The Sweetest Ride Yet”

Celebrity spokespersons pitched concrete for the Interstate system

Bob Hope, Saturday Evening Post, 1959
Concrete Paving: Why Now?

- Infrastructure renewal
- Asphalt pricing
- Sustainable public works
What are we doing?

- Sustainable Paving Strategies
  - Longevity and Lifecycle Cost
  - Reduced Energy Use
  - Reduced Greenhouse Gas Emissions
  - Use of In-Situ Materials
  - Recycling and Waste Reduction
  - Reduced Land Disturbance
  - Water Quality and Stormwater Runoff
Durable = Sustainable

- Optimal material utilization—less waste from replacement
- Lower maintenance costs and construction congestion
- Lower total cost of ownership
- Long life = smaller eco-footprint
Sustainable Benefits Beyond Longevity

- **Renewal**
- **Light Colored and Cool**
- **Improved Fuel Economy**
- **Lower Energy Footprint**
- **Less Fuel Consumed During Construction**
- **Industrial By-Product Use**
- **Recycling**
  - Use of in-situ materials
  - Reduce cement intensity
  - Reduce export/import
  - Reduce mining & processing
- **New Quiet Surface Textures**
- **Improved Stormwater Quality**
More than a surface solution

- Roller-Compacted Concrete
- Full-Depth Reclamation
- Cement-Treated Base
- Cement-Modified Soil
- Pervious
- Pavers
- Parking Decks
Advocacy

- Global Climate Change
- NESHAP
- Surface Transportation Authorization

Why and Why Now?

Legislative/Regulatory Issues Impact Our Future
Role of Cement Standards and Technology

Enhance Cement and Concrete Performance and Use

Advance our Sustainable Development Goals

Enable Optimization of Manufacturing Technology
Questions ?