OVERVIEW

• Promotion of Asphalt - Marketing and Communications

• Technical Issues - Pavement Economics Technologies & Innovation

• Health & Safety

• Environment & Sustainability EPD Update

• Legislative

• Competition & Life-Cycle Cost Analysis
Pavement Economics Committee
Four Task Groups

Other Research
• NCAT
• Asphalt Institute

Research Road Map

Market Research & Communications
Go to Market Task Group
• Research Communications
• Market Research
• Brand Management

Deployment Activities
Deployment Task Group
• National Initiatives
• Regional Councils:
  • Northcentral
  • Northeast
  • Southeast
  • Pacific

Market Research Efforts
PEC Strategic Areas

Mixture Quality & Performance

Legislative

Life-Cycle Cost Analysis

Life Cycle Assessment
Financial status
- $2.4 Million Approved
  - $1.778 Million Spent
- 38 SAPAs Supported in 2017

Deliverables status
- 38 Projects Total
- 27 Projects are Complete or Near Completion

www.AsphaltPavement.org
Life-Cycle Cost Analysis

- PaveXpress
- ME Guidance
- PerRoad
- Porous Pavement Design
- ASCE Flexible Pavement Design Course
- LCCA Projects

NAPA
SAPA
PAVEMENT DESIGN
Simplified

Web-Based Pavement Design Tool

Designing the right pavement for the job just got easier thanks to PaveXpress, a free web-based pavement design tool for roadway and parking lot pavements.

Projects created in PaveXpress can be printed, shared, and saved, and design options can easily be evaluated in a side-by-side comparison. As a browser-based tool, PaveXpress is always up to date and can be accessed from any computer or mobile device, regardless of screen size or operating system.

PaveXpressDesign.com
Approach: Technical

Provide technically sound designs using:

- Flexible: AASHTO ’93
- Rigid: AASHTO ‘93 w/ ‘98 Supplement
- Parking lot guidance (Flexible only)

Use industry accepted standards and guidance

Linkages to State and Local guidance

Linkages to Pavement Interactive
The evolution of PaveXpress...

- New Flexible
- New Rigid
- Parking Lots
- Cost Module
- LEA Module
- UI/UX Update
- Overlay design
- Condition Survey
- NDT

Upcoming modules
Integration with PerRoad
LCCA framework (ie: RealCost)
Porous Asphalt Pavement Design
Over 26,000 users with 1/3 returning
Users from every state in the U.S.
Users from 157 countries -> 66% from U.S.
Mechanistic-Empirical Pavement Design

- How best to implement M-E Design?
  - Perpetual Pavements?

- How do advanced and sustainable materials fit into pavement design?
Scope of Work

- Pavement Design
  - State of the Practice

- Need for local validation and calibration of ME Design software

- Evaluate Performance Criteria and Reliability in ME Design Software

- Develop Recommendations for Maximum Thickness and Recalibration of 1993 Design Guide

Advancements in Flexible Pavement Design

http://eng.auburn.edu/research/centers/ncat/info-pubs/technical-reports.html
PerRoad Update (v4.4)

- Implement strain distribution design criteria within PerRoad
  - Layered elastic analysis with a statistical analysis procedure to estimate stresses & strains within a pavement.

- Revise PerRoad to include mechanistic design of ALL pavements.

http://www.eng.auburn.edu/users/timmdav/PerRoad44.msi
This award honors asphalt pavements that were designed and built with outstanding care and exceptional quality. The result is a long-lasting pavement, one that serves the traveling public well, provides true value to the taxpayers, and demonstrates both the convenience and the quality of asphalt pavements.

Criteria:
- 35+ years old
- 13+ years between overlays (average)
- No increase > 4"

Awards:
- 117 Pavements
- 31 States
Porous Asphalt

- Recommended Layer Coefficients
  - OGFC Surface 0.40-0.42
  - ATPB 0.30-0.35
  - Stone bed 0.10-0.14
Flexible Pavement Design Course
Seminar Benefits

Learn to use PaveXpress, a free web-based tool for new and overlay asphalt pavement design

Understand the inner workings of AASHTO empirical pavement design procedures

Develop better structural pavement designs

Gain insight into asphalt material properties

Understand asphalt pavement distress types and how to identify them

Develop a practical knowledge of real-world production & construction limitations

Target Audience

• Pavement design professionals
  • All experience levels

• Engineers, architects, designers, contractors, inspectors and other pavement professionals in both private and public practice will benefit.

• Scottsdale—June 2018
• Saint Louis — August 2018
• NAPA Position Paper on LCCA by Dr. Audrey Copeland (Complete)

• LCCA Guidance Report (March 2018)
Review of Initial Service Life Determination in LCCA Procedures and In Practice – *DRAFT*

Summary of Middle 90% of Pavement Ages at Time of 1\textsuperscript{st} Rehab

<table>
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<tr>
<th>Pavement Type</th>
<th>No.</th>
<th>Avg</th>
<th>Min</th>
<th>Max</th>
<th>Std Dev</th>
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<tbody>
<tr>
<td>AC</td>
<td>206</td>
<td>17.68</td>
<td>7.09</td>
<td>28.93</td>
<td>5.51</td>
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<tr>
<td>PCC</td>
<td>121</td>
<td>23.84</td>
<td>12.88</td>
<td>35.44</td>
<td>5.79</td>
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Ride Quality (IRI) Prior to Rehabilitation

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<tr>
<th>Pavement Type</th>
<th>Percent of Total Pavement Sections</th>
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<tbody>
<tr>
<td></td>
<td>Very Good** &lt; 60</td>
</tr>
<tr>
<td>AC Pavements</td>
<td>9.6%</td>
</tr>
<tr>
<td>PCC Pavements*</td>
<td>1.1%</td>
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</tbody>
</table>

*sum is not 100% due to rounding
KEY MESSAGES

• Lower Life-Cycle Cost
• Longer Lasting
• Smoother Ride
• Enhanced Structural Capacity
• Module 1: Basic LCCA concepts, steps, and inputs (60 min.)
• Module 2: Concrete marketing myths and reality (20 min.)
• Module 3: Example LCCA (30 min.)
What is an LCCA and how is it used?

**Assessment criteria:**
- Consideration: evaluate the different options, considering the impact on the environment, economic factors, and social aspects.
- Decision-making process: determine which option is the most suitable based on the assessment criteria.

**Step 7:**
- Evaluate the long-term costs and benefits of each option.
- Assess the sustainability of the chosen project.
- Ensure compliance with environmental regulations.

**Step 8:**
- Implement the chosen project:
  - Monitoring and evaluation: track the performance of the project to ensure it meets the expected outcomes.
  - Continuous improvement: continuously evaluate and adjust the project as needed.

**Step 9:**
- Review the results:
  - Assess the effectiveness of the project.
  - Identify areas for improvement.

**Step 10:**
- Communicate the findings:
  - Share the results with stakeholders.
  - Use the information to inform future decisions and projects.
Recycled Materials and Warm Mix Asphalt

Environmental Product Declarations

Pavement-Vehicle Interaction
Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage 2016

Information Series 138
WMA Usage

Percentage of Total Asphalt Production in US

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<tbody>
<tr>
<td>Usage</td>
<td>5%</td>
<td>11%</td>
<td>19%</td>
<td>24%</td>
<td>30%</td>
<td>31%</td>
<td>33%</td>
<td>31%</td>
</tr>
</tbody>
</table>
Current Survey

• FHWA continues to support

• Recycle/WMA Survey
  • 2017 Construction Season Data
  • Survey responses due between 01/01/2018 and 04/01/2018
  • Available on SurveyMonkey @ https://www.surveymonkey.com/r/RMWMASurvey2017
  • 2017 report completed 4th quarter of 2018

• Report accuracy counts on strong industry support / participation
Green Codes & LCA

• Affecting product selection decisions now...and more into the future

• Concrete industry advocating pavement deflection / reflectivity

• Asphalt Industry working to dispel myths and promote real science

• Life cycle assessment (LCA) & Environmental Product Declarations (EPDs)
NAPA EPD Program

- Released April 2017
- Compliance with International Standards
  - ISO 14025-2006
  - EN-15804
- Training Webinars

www.asphaltpavement.org/epd
- **Product Category Rule (PCR): The Framework**
  - “Set of specific rules, requirements, and guidelines for developing Type III environmental product declarations for one or more product categories” (ISO 14025)

- **Life-cycle Assessment (LCA): The Process**
  - “Compilation and evaluation of the inputs, outputs, and potential environmental impacts of a product system throughout its life cycle” (ISO 14040)

- **Environmental Product Declaration (EPD): The Declaration**
  - “Providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information” (ISO 14025)
EPD’s Cradle-to-Gate
Quantify potential environmental impacts

❖ Meet material credit requirements of green rating systems affordably
❖ Meet public agency requirements to quantify a pavement’s sustainability
❖ Identify opportunities to improve operational efficiencies
❖ Streamline collection process for corporate sustainability reporting
❖ Ensure an even playing field in the green construction sector
❖ Tool is available now

www.asphaltpavement.org/epd
• Rolling resistance influences emissions
• Pavements have a small impact on rolling resistance
• Pavement properties impacting rolling resistance
  • Smoothness
  • Megatexture
Pavement–Vehicle Interaction
• MAP-21 – MEPDG, Alternative Bids, LCCA, GAO Report
• FY12 Commerce Appropriations Bill — Material-Specific Discount Rates
• FAST Act – Alternate Bids
• FY16 Transportation Appropriations Bill — Alternate Bid Guidance
• FY17 Transportation Appropriations Bill — MEPDG + LCCA Incentive
• FY18 Transportation Appropriations Bill — MEPDG + LCCA Incentive
• U.S. DOT INFRA Grant Program — LCCA Requirement
• FHWA LCCA Guidance Update
• Open Competition Proposal — Alternate Bids
• P3 Performance Warranties

LCCA on the National Level
ACPA “Competition” Campaign

How the Concrete Paving Industry is Advancing by Promoting the Value of Competition

Leif G. Wathne, P.E., and Glenn Oehmenreiter

As a spring 2015 Concrete InFocus article, Jim Mack, P.E., of CEMEX described how the concrete paving industry is incorporating sustainability into everyday practices, including the use of research and tools coming out of MIT’s Concrete Sustainability Hub. Understandably, many in this industry are adding these newly documented concrete attributes and benefits in more emphatic—over-traditional promotion efforts to convince suppliers of the opportunity of concrete. This article suggests a variation on this approach for expanding market share in the urban and rural market.

At the pavement research and tools from MIT have evolved over the past few years, a consensus for a new approach to success and tools promotion has developed among PCA, ACPA and NRMCAC to concern with many industry companies. The new approach

sustainability

ALLIANCE FOR PAVEMENT COMPETITION
NAPA Adds Perspective

Perspective: Competition in the Pavement Industry
Prepared by Audrey Copeland, PhD, PE
Vice President – Engineering, Research, and Technology
October 2016

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FEATURED IN 2018

PERFORMANCE UNDER PRESSURE

Today's economy relies on pavements that can take the pressure of heavy vehicles carrying tons of goods.

Learn about the materials, design, testing, construction, and more required for heavy duty pavements in the 2018 NAPA Webinars series “Performance Under Pressure.”

www.AsphaltPavement.org/webinar
THANK YOU!

Brett Williams
bwilliams@asphaltpavement.org