

#### NAPA and APA Updates



Amy Miller, P.E.
National Director, APA and
VP, Member & Industry Alliances



# Advancing Asphalt Pavements: Value, Mobility, & Sustainability

#### About the National Asphalt Pavement Association...

• Our Vision: Asphalt pavements' quality and value pave the way for enhanced mobility and a sustainable transportation network.

• Our Mission: The National Asphalt Pavement Association works to <u>advocate</u>, <u>advance</u>, and <u>support</u> the asphalt pavement industry.



AsphaltPavement.org

#### **Longstanding Pennsylvania NAPA Members**

#### GOLD MEMBERS (50+ Years)

New Enterprise Stone & Lime Co. Inc.

Warden Asphalt Co.

#### 30+ Years

Grannas Bros. Stone & Asphalt Co. Inc.

Joseph McCormick Construction Co., Inc.

Meeker Equipment Co. Inc.

Riverside Materials Inc.

Russell Standard Corp.

Stabler Companies Inc.

#### Pennsylvania State Director



Owen McCormick Joseph McCormick Construction Co.



#### Thank you to all our NAPA Members in Pennsylvania!

- Abatech
- Allan Myers
- Bishop Brothers
   Construction
- Blaw-Knox
- Charlestown Paving & Exc., Inc.
- Cumi America Inc.
- Donegal Construction Corp.

- FORTA
- Glenn O. Hawbaker Inc.
- Golden Eagle
   Construction
- H&K Group
- Highway Equipment Co.
- Liberty Tire Recycling LLC
- Lindy Paving Inc.
- Multitherm, LLC

- Paratherm a division of Lubrizol
- Peter J. Caruso & Sons
- Phoenix Services LLC
- Pine Test Equipment
- Quaker Sales Corp.
- Schlouch Inc.
- Superior Tire & Rubber Corp
- United Employment Associates LLC
- York Building Products



### Industry Values NAPA Strategies

Advocate Advance Support

- OUR NATION: Highways Investment & Smart Regulations
- OUR PEOPLE: Workforce
  - Health & Safety
  - Recruit & Retain
- OUR INDUSTRY: Longevity & Growth
- OUR PRODUCT: Quality & Innovation
- THE POWER OF MANY: Engagement for Advancement

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#### IIJA Funding for Asphalt market

- Provides 5 years of federal <u>funding and policy stability</u> from FY 2022 to 2026
- 55% Growth Above Baseline for Highway, Bridge Programs
- \$40b in Highway, Bridge Grants
- \$15b for Airfield Grants
- \$15b for Private Activity Bonds



#### NAPA Priorities Included In IIJA

- 5-Year Reauthorization and Grows Highway Funding
- Buy America Exemption for Asphalt, Additives, Aggregates
- No Pavement Mandates
- Codifies "One Federal Decision" to Improve Project Delivery
- Reauthorizes Innovative Asphalt Technology Deployment Program (AIDPT)
- Incentivizes Safety Contingency Funds for Safer Work Zones
- No "Green New Deal" Provisions

#### IIJA Implementation

- Mitch Landrieu Appointed Senior Advisor To Oversee IIJA Execution
- FHWA Memo Calls on States to Prioritize Repair and Rehabilitation
- FHWA Issued "Request for Information" on IIJA Implementation
- Guidance and Rulemaking Needed
- Industry Needs to Plan Workforce
- IIJA is the largest public/private programs in the nation's history
- NAPA Worked to Enact IIJA and Will Keep Industry Informed

# Industry Challenge: Increase in regulations

The new reality...

- Carbon emissions reduction
- Environmental Justice
- Increased OSHA enforcement

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# CrewsffeTY

Work Zone Training

#### Workforce Development



**Communicate** a Compelling Story



Collaborative
Network of *Partners* 



Help Fulfill the <u>Promise</u>





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#### **MISSION:**

As a trusted resource, the Alliance establishes asphalt as the pavement of choice by detailing proven advantages of asphalt pavement in the areas of safety, value, performance, and the environment.



#### OUR INDUSTRY: Longevity & Growth

- Engage and educate stakeholders, such as pavement owners and policy makers, to advance asphalt as the pavement of choice for mobility solutions.
- Extensive resources and efforts among 41 Associations
- A trusted resource for asphalt knowledge and solutions.





Opportunities:

Private Market



Competitive Awareness 6x



Pavement Design





#### Pavement Design

#### **EXPERIENCES & BEST PRACTICES** OF LOCAL ROAD OWNERS

September 27 2:00-3:30 p.m. EDT

This webinar is aimed at helping local decision makers, pavement managers, and pavement engineers understand the short and long-term benefits asphalt pavement provides. Attendees will hear first-hand experiences from municipalities as they discuss best practices in owning and maintaining their road

#### **Guest Speakers:**

#### **Dennis Bonds**

City of Tupolity NS City Engineer Judge Gary Moore

#### Judge/Executive

**Dan Roberts** 

Department of Public Works Engineering, Douglas Gourry, CO Missoury of Engineering Permits & Impections

#### Top 3 Reasons to Attend:

- Learn about best practices in local design, materials, and construction
- Hear first-hand from municipalities regarding asphalt pavement solutions
- Learn about the importance of working collaboratively with industry partners to





Up to 1:5 hours of POH credits for



professional engineers will be provided with training

#### **ASPHALT PAVING IN PRIVATE MARKET APPLICATIONS**

A LRUE WUBINAR SUBJECT OR CIVIL AND GEOTECHNICAL ENGINEERS

2:00 PM EDT





#### **Designing a Perpetual Pavement**

#### **FREE Webinar** August 25/2:00 PM EDT

This webinar will discuss material selection and mixture design to optimize Perpetual Pavement performance, discuss current perpetual design practices, and present best practices for construction of high quality, high performance pavements.



#### PARTICIPANTS WILL:

- Learn the chief advantages of Perpetual
- Be able to describe the functions of the various material layers in Perpetual
- Understand the principle design features of Perpetual Pavements



David E. Newcomb. P.E., Ph.D.



#### Pavement Design Perpetual Pavement Design

#### **Perpetual Pavement Cross-Section**

#### FREE Webinar October 13/2:00 PM EDT

This webinar will introduce traditional and conversion Perpetual Pavement design concepts, with emphasis on the development of the design and application using **PerRoad** and **PAVEXpress**. Real world case studies will be presented.



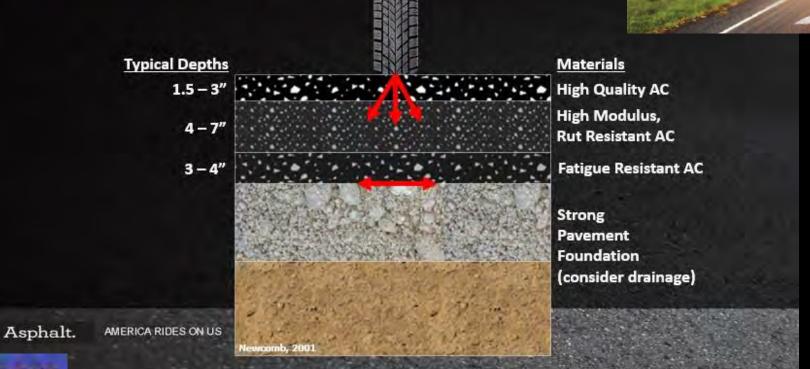
#### **Perpetual Pavements by Conversion**

#### **PARTICIPANTS WILL:**

- Learn the fundamental concepts needed to convert an existing pavement into a Perpetual Pavement
- Understand how PerRoad and PAVEXpress can be used to facilitate Perpetual Pavement design by conversion
- See real-world examples of converted Perpetual Pavements



Dave Timm, Ph.D.
Brasfield & Gorrie Professo
of Civil & Environmental
Engineering at Auburn







#### Perpetual Pavement Awards

This new Perpetual Pavement Award (PPA) celebrates long-life asphalt pavements that reflect the characteristics expected from Perpetual Pavements: excellence in design, quality in construction, and value to taxpayers.

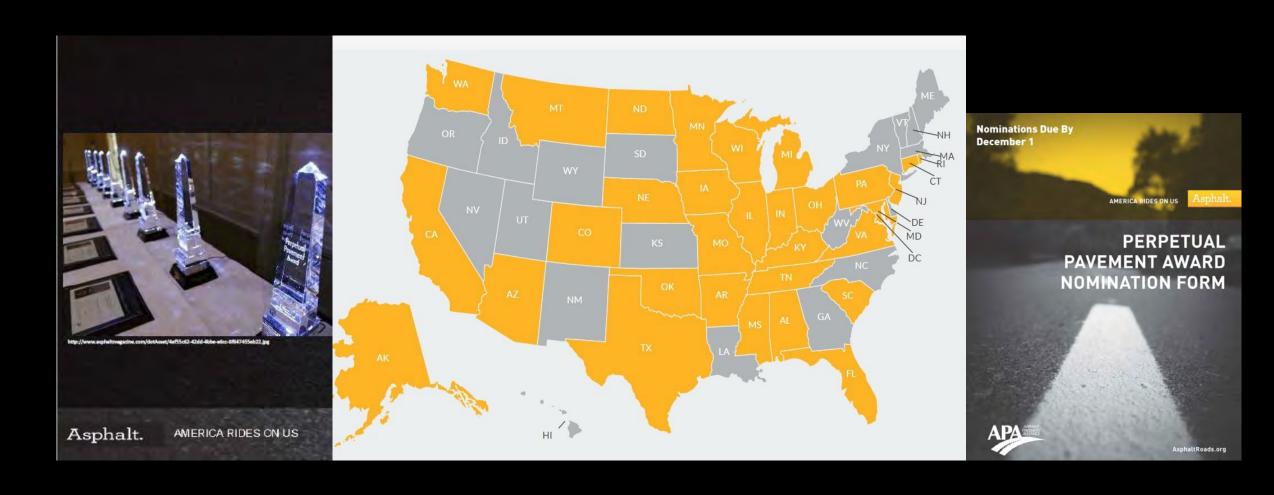






Two New Awards Began in 2021!

#### Perpetual Pavement Award Winners



Oldest award winner to date: 91 years old in Ohio



# PAVEINSTRUCT



www.PAVEInstruct.com

#### **Private Markets**





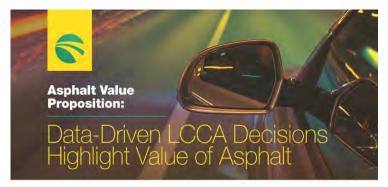


driveasphalt.org/resources/commercial-applications





#### **Industry Longevity**



#### Every year, millions of dollars are invested in the maintenance and improvement of the nation's roads and bridges. When

choosing the most cost-effective design, construction materials, and products for a project, transportation agencies often use life-cycle cost analysis (LCCA), an economic decision-support tool, to help identify costeffective project alternatives. However, challenges in collecting, storing, analyzing, and accessing pavement performance data leave engineers and asset managers making assumptions for several significant LCCA inputs. According to the American Society for Civil Engineers (ASCE), effective use of LCCA is hindered by this lack of consistent data (ASCE, 2014). Similarly, a recent survey of State Asphalt Pavement Associations (SAPAs) revealed that 73.3% of respondents felt that data quality. management, and capture are barriers to effective implementation of LCCA in their state (SAPA, 2019).

Typical LCCA data inputs include initial and future maintenance costs, performance periods, analysis periods, removal and demolition costs, and other agency costs (West et al., 2013). It's common that when assumptions are made about these inputs, engineers err on the conservative side and do not account for specific materials' or mixtures' actual performance. Furthermore, overly conservative assumptions can lead to inaccurate LCCAs that rule out proven innovative materials and mixtures during project selection. For LCCA to truly improve decision-making, actual performance data should be used to determine LCCA inputs.

Asphalt pavements are scientifically engineered for each project where they are constructed, and mixture performance life and maintenance needs vary depending upon these conditions. Furthermore. because asphalt pavements are built in lavers and can avoid complete from-the-ground-up reconstruction in the future, they are easily maintained to high specifications for safety and smoothness. During maintenance, the top layers of pavement are typically reclaimed for reuse in future pavements, yielding significant cost savings compared to the use of all-new materials. By capturing this value, using project-specific data, and analyzing the performance, agencies can discover performance trends and identify winning solutions. In other words, by using real-world data instead of conservative estimates. management of the state's pavement network becomes more effective and efficient.

Many state DOTs use estimated initial performance periods of 10 to 15 years for asphalt pavements; however, a review of Long-Term Pavement Performance program data finds that the asphalt pavements perform for nearly 18 years, on average. before requiring their first maintenance (Robbins &

For example, an analysis of the state of Maryland's Pavement Type Selection process found that



#### When asked, highway agency leaders report that their No. 1 challenge is funding

(Edelman Berland, 2013). As federal funding for infrastructure investment continues to remain inadequate compared to the need, many agencies are looking to prioritize pavement performance, life-cycle cost analysis (LCCA), and pavement durability in their decision-making processes. Simply put, agencies want to ensure they get the most pavement life possible from each precious dollar of public money.

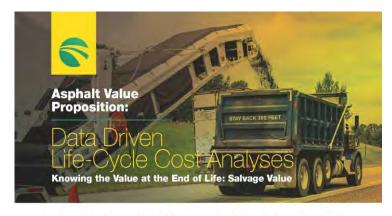
One data point commonly used to measure performance for both asphalt and concrete pavements is smoothness. Smoother pavements provide a quieter, more comfortable ride for drivers, and smoothness is a key factor in ensuring road user satisfaction (FHWA, 2002). Research has consistently cengineers and state highway shown that pavement smoothness has a significant influence on vehicle fuel economy for trucks and passenger cars (Willis et al., 2015), yielding as much as a 4.5% improvement in fuel economy (Sime et al., 2000). Beyond improved vehicle fuel economy. pavements that are smoother from the start require less maintenance, saving road owners \$1,295 annually for every lane-mile resurfaced (McGhee & Gillespie. 2006). One reason asphalt is the pavement of choice for engineers is the level of smoothness it provides. In fact, nearly 80 percent of pavement engineers and state highway agency officials say that

asphalt provides the smoothest pavement (Edelman Berland. 2013). Building high-quality smooth asphalt pavements positively impacts the bottom lines of both transportation agencies and the driving public.

Nearly 70% of state agencies' LCCA processes reportedly do not account for the use of materials or practices that increase pavement service life (SAPA, 2019). However, the Virginia Department of Transportation (VDOT) has studied the economic advantages of specifying and constructing smoother pavements (McGhee & Gillespie, 2006) and used the data gained to validate maintenance and rehabilitation cycles to account for the impact of smoothness on service life and vehicle operations.

Nearly 80 percent of pavement agency officials say that asphalt provides the smoothest payement.

In 1996, VDOT implemented the Special Provision for Rideability to incentivize the construction of smoother asphalt pavements. Projects in the incentive program showed an average increase in material cost of \$1.03 per ton of asphalt mixture. However, VDOT observed that these pavements were on average 8.9 in/mile smoother at initial construction. Over time. this increase in initial smoothness equates to an increase of seven years of functional life compared



"Life-cycle cost analysis (LCCA) is an evaluation technique applicable for the consideration of certain transportation decisions" (FHWA, 2002). This process includes the calculation of upfront development, capital and financing costs, discounted operating and maintenance costs, and end-of-life costs or the value associated with a specific asset or project (ASCF 2014). To provide a reliable analysis of life-cycle costs, it is critical to ensure the right data and inputs are applied. While many states have databases of bid estimates for initial construction costing, the data to accurately estimate pavement maintenance and rehabilitation cycles, salvage value benefits, and end-of-life costs are more difficult to ascertain

Recent guidance has been developed to aid roadway owners in applying a data-driven process to determine the true value of an asphalt pavement at the end of its life (Gu & Tran, 2019). It's estimated about one-third of state agencies currently consider the end-of-life of a pavement in their LCCA processes (SAPA, 2019); however, most agencies only look at the remaining service life of the last maintenance treatment not the salvage value (Gu & Tran, 2019). When considering pavement end of life

in LCCA, Federal Highway Administration (FHWA) supports two primary methods for calculating the value: salvage value (or value of materials that can be recycled) and remaining service life (the amount of life left in the pavement structure) (FHWA, 2002). This document will focus on salvage value.

A recent study showed that the material components of CC an asphalt pavement have a salvage value of approximately \$25.10 per ton

When considering salvage value, asphalt mixtures contain two recyclable ingredients: asphalt binder and aggregate. A recent study showed that the material components of an asphalt pavement have a salvage value of approximately \$25.10 per ton, because both the binder and aggregate can be reclaimed to make new asphalt mixtures. Not only can the old aggregate directly replace virgin aggregates, the asphalt binder can be reactivated to replace a portion of virgin binder (Gu & Tran, 2019). Concrete pavements consist primarily of portland cement powder, sand, water, and aggregate. Once the cement powder is used, it cannot be reactivated;

Asphalt.

AMERICA RIDES ON US



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### Asphalt pavements are critical to future mobility

- Provide clear, distinguishable pavement markings for vehicle sensors,
- The ability to minimize travel time and maintain high speeds by providing a safe, smooth driving surface, and
- Asphalt pavement's ability to be quickly and easily maintained and accommodate technologies.



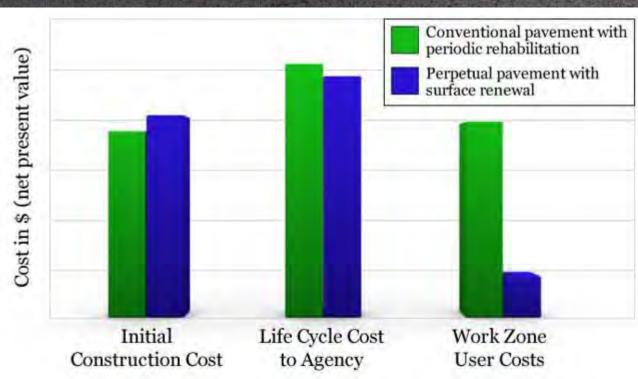
# Asphalt's Role in a Low Carbon & Resilient Transportation Network

- Speed of Construction
- Smoothness
- Perpetual Pavements
- Porous Pavement

- Reuse and Recycle
- Warm MixAsphalt
- Stabilized base and subgrades

# Climate Innovation: Perpetual Pavements















# The Impact of RAP Use from 2009-2019

**Telling our story** 

#### What is an EPD?



- Environmental Product Declaration
  - Quantified environmental information
     on the life cycle of a product
     to enable comparisons between products
     fulfilling the same function\*
- "Nutrition label" for environmental impacts
- Independently verified



EPD "Nutrition" Label		
Your Building Product		
Amount per Unit		
LCA IMACT MEASURES	TOTAL	
Primary Energy (MJ)	12.4	
Global Warming Potential (kg CO <sup>2</sup> eq)	0.96	
Ozone Depletion (kg CFC: 11 eq)	1,80E-08	
Acidification Potential (mol H* eq)	0.93	
Eutrophication Potential (kg N eq)	6.43E-04	
Photo-Oxidant Creation Potential (kg 03 eq)	0.121	

https://westcoastclimateforum.com/cfpt/concrete/strategy1

\*Source: ISO 14025:2006. EPDs from different Product Categories should NOT be compared to each other.

#### What is Emerald Eco-Label?



- NAPA's web-based software tool for asphalt mix producers to develop verified EPDs
- EPDs are plant-specific & mixspecific
- Can be used for **asphalt plants** located in the U.S.
- Simplified process that saves mix producers time and money



# Towards the Future:

NAPA's Climate Stewardship Task Force

#### **VISION**

Sustainable communities and commerce, connected by net zero emission asphalt pavements.

#### **MISSION**

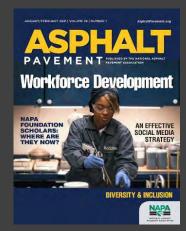
Engage, educate, and empower the U.S. asphalt community to produce and construction net zero emission asphalt pavements.

#### **GET MORE FROM NAPA**

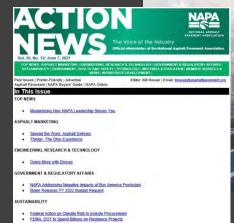
#### Webinars



#### Magazine

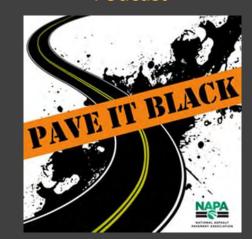


#### e-Newsletter

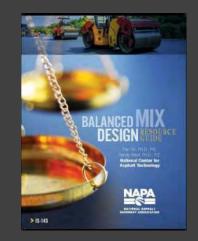




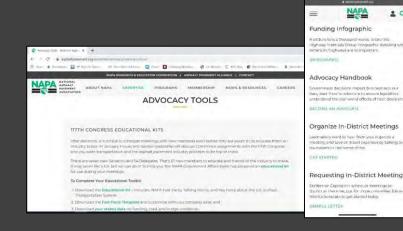
#### **Podcast**



#### **Technical Resources**



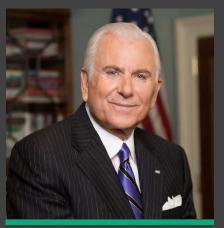
#### **Tool Kits**











**Dr. Nido Qubein**President, High Point
University, Host of PBS
Side by Side



**Andrew Winston**Bestselling Author
Green to Gold





















#### Women of Asphalt

# Thank you! Amy Miller amiller@asphaltroads.org

