

APA Unleashed

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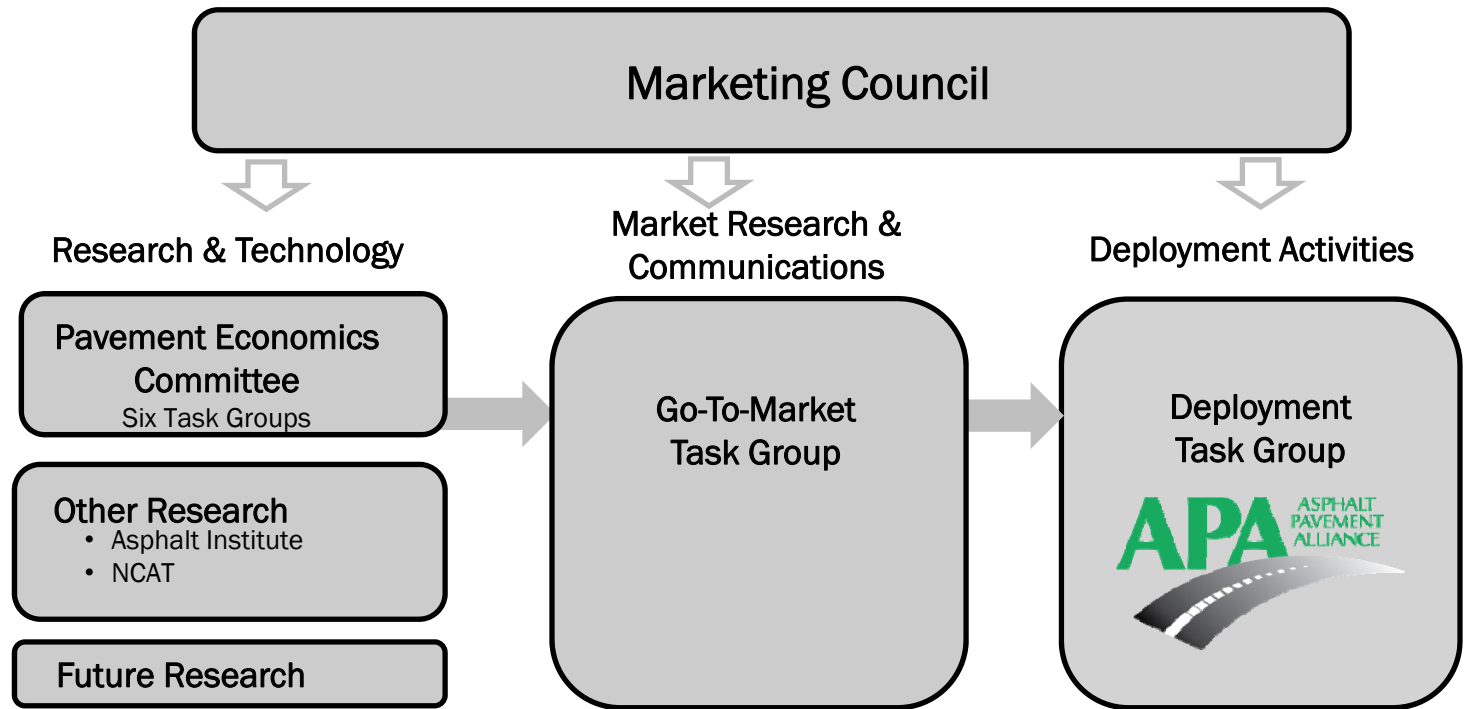
The APA is a partnership of the Asphalt Institute, National Asphalt Pavement Association, and the State Asphalt Pavement Associations. We were formed nearly 10 years ago to promote the increased use of asphalt.



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Market Organizational Structure



**Best Quality &
Competitiveness**



**Pavement Type
Selection**



**Environmental
Sustainability**



**Pavement
Design**



Legislative



**Pavement
Preservation**



**Private Sector Markets
& Local Roads**



**NATIONAL ASPHALT
PAVEMENT ASSOCIATION**

PEC Task Groups

Pavement Economics Committee

Technology & Innovation



Best Quality &
Competitiveness



Pavement
Design



Pavement
Type
Selection

PaveXpress



Environmental
Sustainability



Pavement
Preservation

THINLAY

SAFE. SMOOTH. DURABLE.



Legislative



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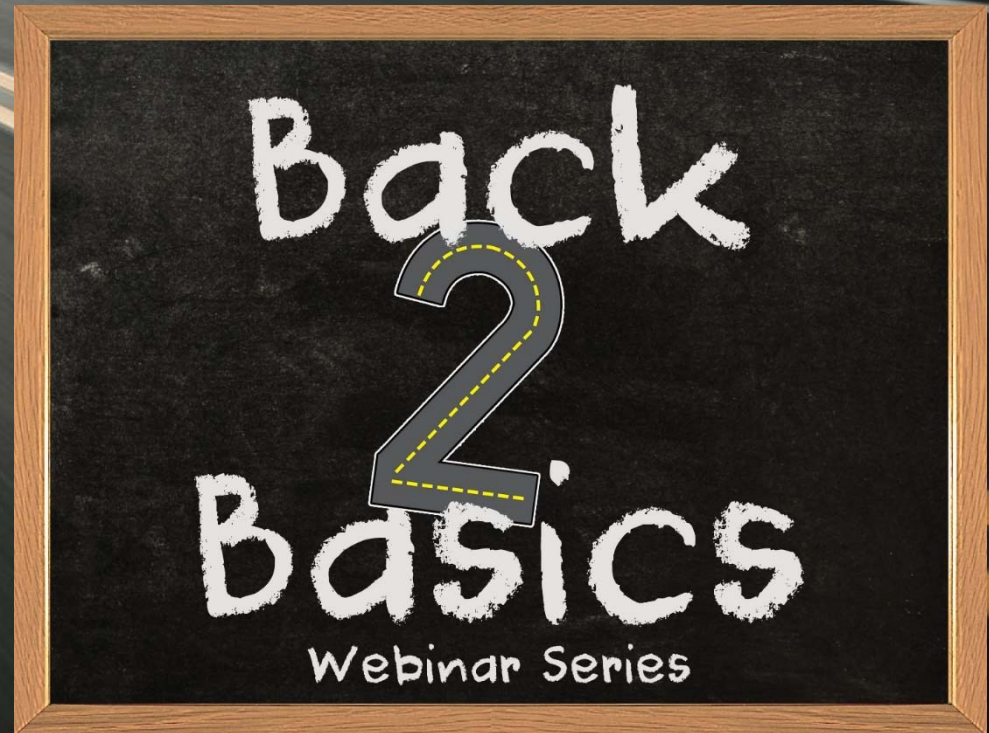


Training

Back to Basics Series:
Binder —
Thursday, February 16

Back to Basics Series:
Aggregate —
Tuesday, March 14

Back to Basics Series:
Volumetrics —
Tuesday, April 4



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Go To Market

GETTING THERE ON TIME IS ALWAYS IMPORTANT DRIVABILITY MATTERS



"When I'm meeting my girlfriend for dinner, roadway construction means missing that reservation. It's frustrating. Not only an inconvenience. When I'm on the job, a delay can be the difference between life and death. With asphalt, construction typically happens at times when fewer cars are on the road, and the delays are counted in minutes. That matters."

-Lou Lusk / Fireman / Bayfield



SPEED OF CONSTRUCTION
It's just one of the ways asphalt delivers drivability.



The Asphalt Pavement Alliance is a partnership of the Asphalt Institute, National Asphalt Pavement Association, and the State Asphalt Pavement Association.

SAFETY AND CONTROL ARE ESSENTIAL DRIVABILITY MATTERS



Professional stunt drivers manage risks for a living. But when they drive with their family, hazardous road conditions are a risk to avoid. With asphalt, smoother surfaces mean better control, less surface water, and safer driving on wet roads.



A SAFE RIDE
It's just one of the ways asphalt delivers drivability.



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SUSTAINABILITY IS YOUR GOAL DRIVABILITY MATTERS



In the lab, zero-emission vehicle designers are developing the sustainable cars of the future. But on the weekends, they're going cycling, which combines sustainability with fun. Asphalt pavements tend to be built and maintained to ensure a smooth surface, that helps improve fuel economy and reduce emissions. It also makes for better cycling. That matters.



SUSTAINABILITY
It's just one of the ways asphalt delivers drivability.



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NOISE IS ONE PASSENGER TOO MANY DRIVABILITY MATTERS



Whether you're a tactical driving instructor training a Hollywood stunt man, or a dad helping his daughter prepare for her first driving exam, the ability to be heard can make the difference between success and failure. Because asphalt roads produce less pavement-to-tire noise, you'll get quieter rides when you need them the most. That matters.



A QUIET RIDE
It's just one of the ways asphalt delivers drivability.



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SMOOTH ROADS ARE SAFER ROADS DRIVABILITY MATTERS



We all get in the car for different reasons. But whether you're trying for a record fast lap or a record long nap, a smooth ride means a safer, more comfortable ride. Asphalt pavements offer a smoother ride, allowing you to relax and focus on your dreams. That matters.



A SMOOTH RIDE
It's just one of the ways asphalt delivers drivability.



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Messaging

WHEN IT COMES TO A SMOOTH RIDE DRIVABILITY MATTERS

ASPHALT DELIVERS DRIVABILITY

What's drivability? It's what makes a road the one you want to take. When you're out driving, **SMOOTH** is your top priority. It should be the top priority in road construction, too. Compared to other pavement types, asphalt is smoother, skid-resistant, and provides better visibility of roadway markings. That means asphalt roads are safe, especially at night and in poor weather. Asphalt is also quick and easy to maintain, keeping roads in the safe condition drivers need without causing traffic delays. That matters.

53% **\$2 MIL**

Asphalt is the most recycled material in the U.S. — more than 98% of asphalt is recycled. That means it's a green choice for road builders. And it's a green choice for taxpayers, too. Recycling asphalt costs less than building new roads from scratch. That means less money for taxpayers. That matters.

-7dB

Asphalt is the quietest pavement type. It absorbs sound, reducing noise by up to 7 decibels. That means less noise for drivers and residents. That matters.

3mi

Asphalt is the most durable pavement type. It lasts up to 3 miles longer than other pavement types. That means less money for taxpayers. That matters.

81%

Asphalt is the most sustainable pavement type. It's made from 81% recycled materials. That means less money for taxpayers. That matters.

APA drivability.org

WHEN IT COMES TO A SAFE RIDE DRIVABILITY MATTERS

ASPHALT DELIVERS DRIVABILITY

What's drivability? It's what makes a road the one you want to take. When you're out driving, **SAFETY** is your top priority. It should be the top priority in road construction, too. Compared to other pavement types, asphalt is smoother, skid-resistant, and provides better visibility of roadway markings. That means asphalt roads are safe, especially at night and in poor weather. Asphalt is also quick and easy to maintain, keeping roads in the safe condition drivers need without causing traffic delays. That matters.

\$3B **20%**

Car accidents cost the U.S. almost \$3 billion annually in property damage, health care, legal fees, and lost wages. That's a lot of money. That matters.

55%

Half of the "top" drivers and 55% of emergency response drivers believe asphalt is the most important factor when it comes to building new roads. That matters.

20%

Nearly 20 percent of all accidents occur when the pavement surface is wet. That matters.

5'

Asphalt increases the visibility of pavement markings, making it easier for drivers to see at night and during rainy weather. That matters.

APA drivability.org

WHEN IT COMES TO A SMOOTH RIDE DRIVABILITY MATTERS

ASPHALT DELIVERS DRIVABILITY

What's drivability? It's what makes a road the one you want to take. When you're out driving, **SMOOTH** is your top priority. It should be the top priority in road construction, too. Compared to other pavement types, asphalt is smoother, skid-resistant, and provides better visibility of roadway markings. That means asphalt roads are safe, especially at night and in poor weather. Asphalt is also quick and easy to maintain, keeping roads in the safe condition drivers need without causing traffic delays. That matters.

72% **\$109B**

72% of top drivers prefer the smooth ride of an asphalt pavement. That matters.

7/10

Nearly 7 out of 10 annual road users say a smooth pavement makes a difference in their performance. That matters.

58%

58% of drivers prefer asphalt for its smoothness. That matters.

+4.5%

Driving on smooth asphalt pavements reduces fuel consumption which can lead to a 4.5% improvement in fuel economy compared to other pavements. That matters.

1,300

1,300 smoother from the maintenance. Saving 10 minutes for every 10-mile roundtrip. That matters.

APA drivability.org

WHEN IT COMES TO A SMOOTH RIDE DRIVABILITY MATTERS

ASPHALT DELIVERS DRIVABILITY

What's drivability? It's what makes a road the one you want to take. When you're out driving, **SMOOTH** is your top priority. It should be the top priority in road construction, too. Compared to other pavement types, asphalt is smoother, skid-resistant, and provides better visibility of roadway markings. That means asphalt roads are safe, especially at night and in poor weather. Asphalt is also quick and easy to maintain, keeping roads in the safe condition drivers need without causing traffic delays. That matters.

13,500

Asphalt pavements are 100% recyclable and are recycled at a greater rate than any other material in the U.S. That means 13,500 tons of asphalt are recycled each year. That matters.

3.2M

Nearly 3.2 million tons of waste and by-products from other industries were recycled in asphalt mixtures in 2014. That matters.

4.5%

Smooth asphalt roads provide drivers up to a 4.5% improvement in fuel economy compared to other pavements. That matters.

\$2.8B

In 2014, road asphalt industry saved taxpayers more than \$2.8 billion. That matters.

7dB

Good asphalt mixtures help reduce highway noise by as much as 7 decibels. That matters.

\$3.5B

By 2020, the FHWA estimates the cost of building the nation's road network will be more than \$3.5 billion by reducing the amount of money needed to produce asphalt mixes. That matters.

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WHEN IT COMES TO ROADWAY CONSTRUCTION DRIVABILITY MATTERS

ASPHALT DELIVERS DRIVABILITY

What's drivability? It's what makes a road the one you want to take. When you're out driving, **SMOOTH** is your top priority. It should be the top priority in road construction, too. Compared to other pavement types, asphalt is smoother, skid-resistant, and provides better visibility of roadway markings. That means asphalt roads are safe, especially at night and in poor weather. Asphalt is also quick and easy to maintain, keeping roads in the safe condition drivers need without causing traffic delays. That matters.

1.1 HOURS

The average work zone has been closed for 1.1 hours. That matters.

\$9.2B

Roadway construction adds \$9.2 billion to the cost of transporting materials and goods. That matters.

70% FASTER

Following construction, asphalt roads can be reopened to traffic 70% faster. That matters.

2.5X

Asphalt roads can be reconstructed during a single road closure with asphalt's quick and easy maintenance compared to other pavement types. That matters.

\$160B

Asphalt is the most durable pavement type. It lasts up to 160 billion miles longer than other pavement types. That matters.

48% LESS

Prepared for road closures, asphalt roads can be reopened to traffic 48% faster than other comparable pavement types. That matters.

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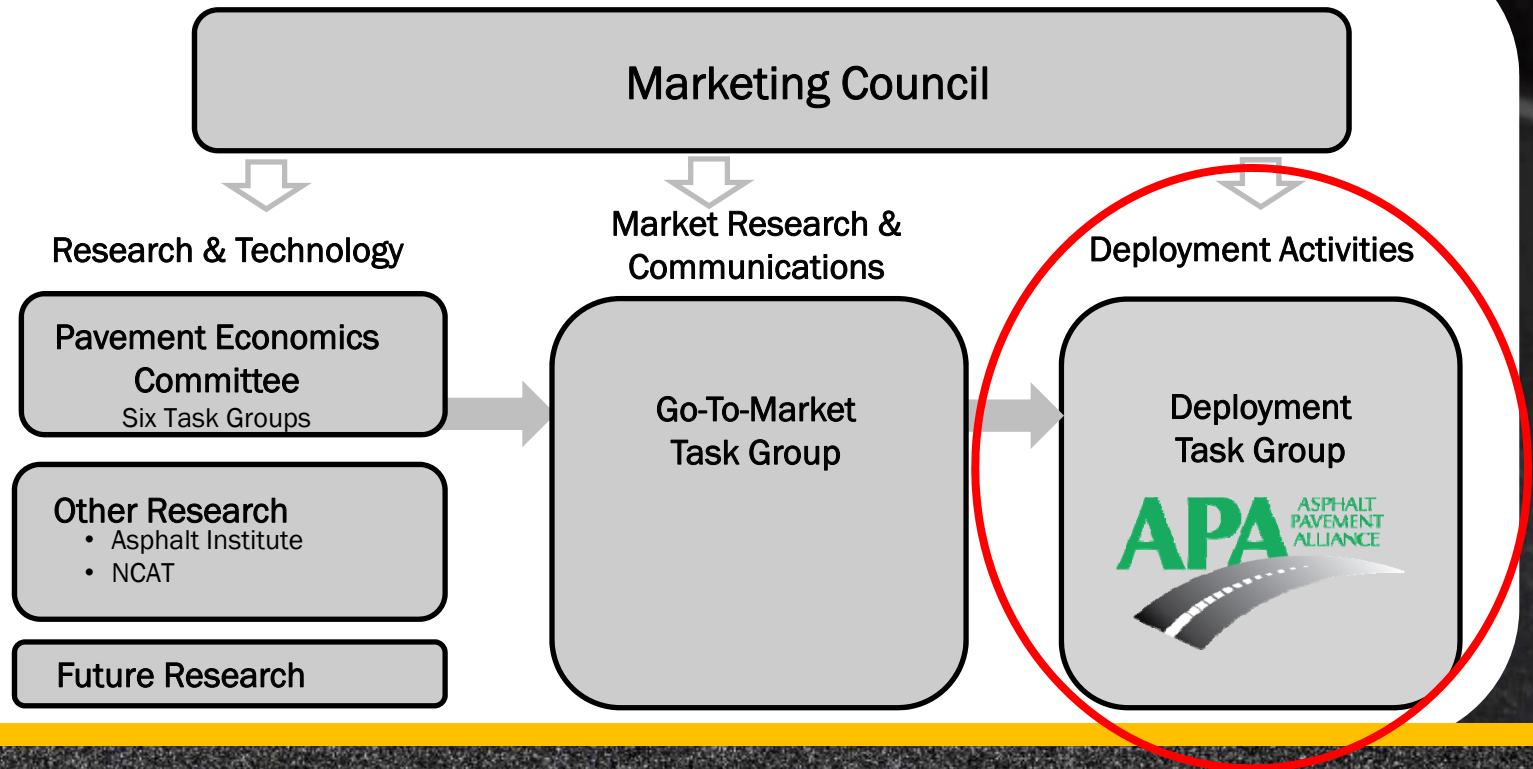


Video

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Market Organizational Structure

To establish asphalt pavement as the preferred choice for quality, performance and the environment.



Mission

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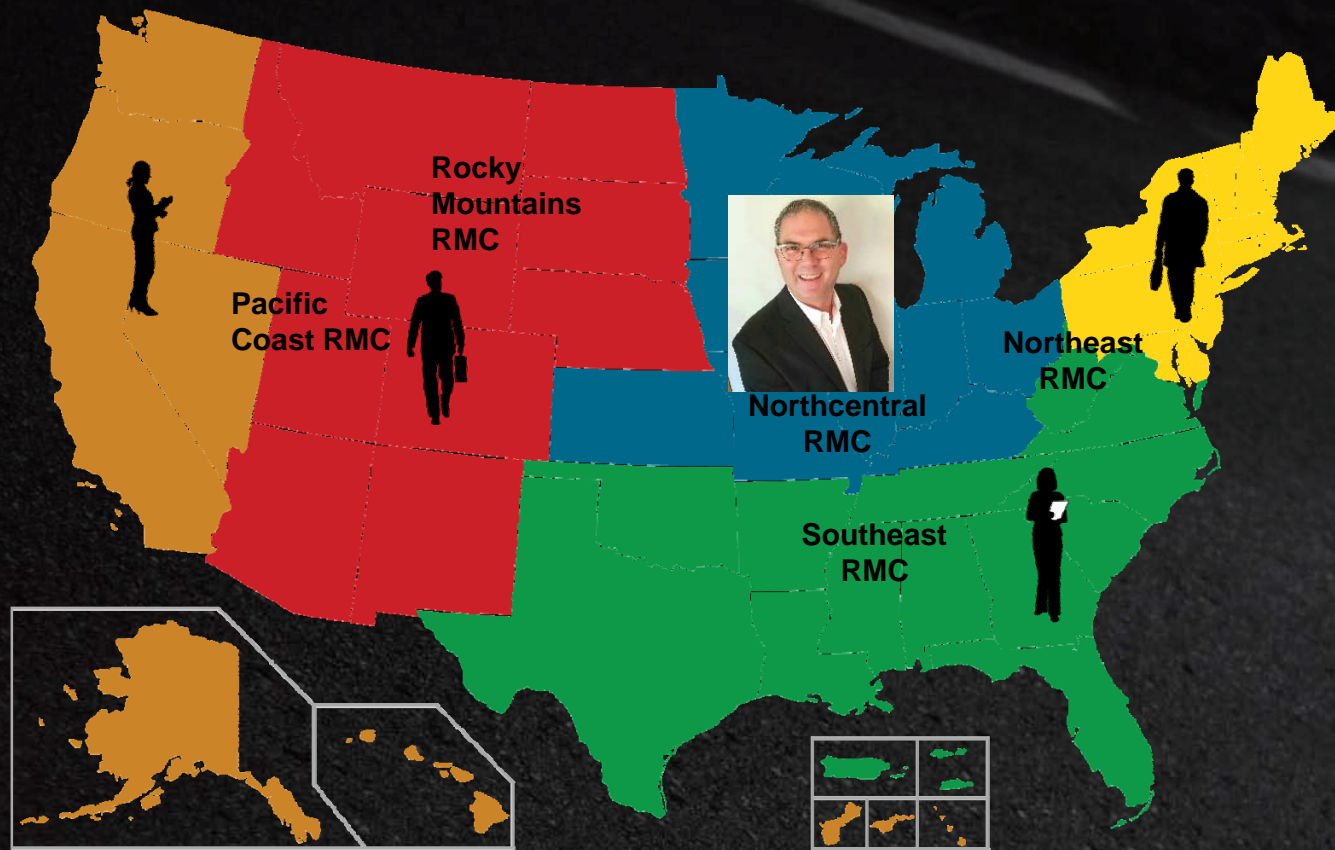
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Amy Miller
National Director



Five regional councils focused on what works in the field to the benefit of the asphalt pavement industry locally and nationally.



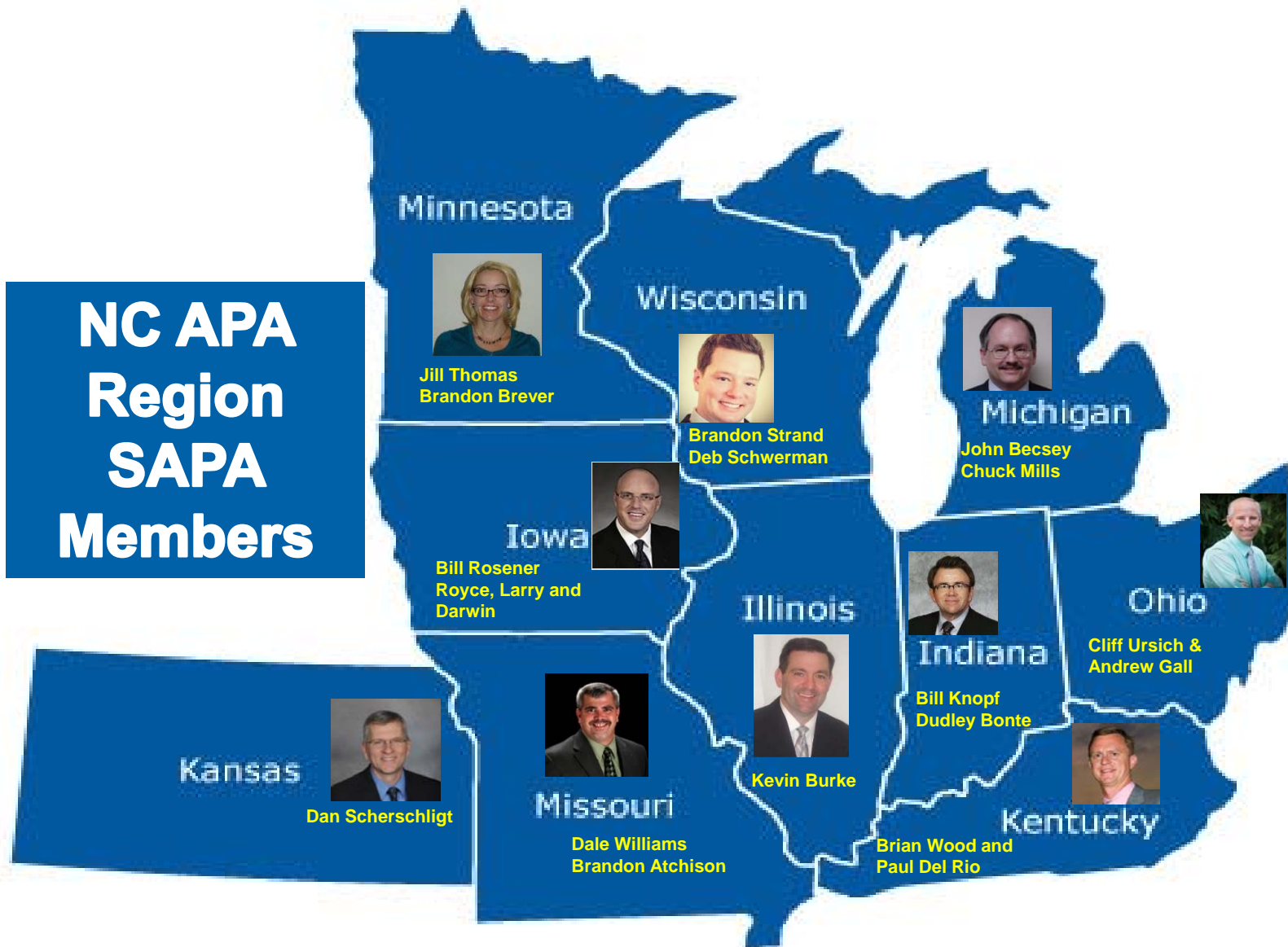
Regional Marketing Councils

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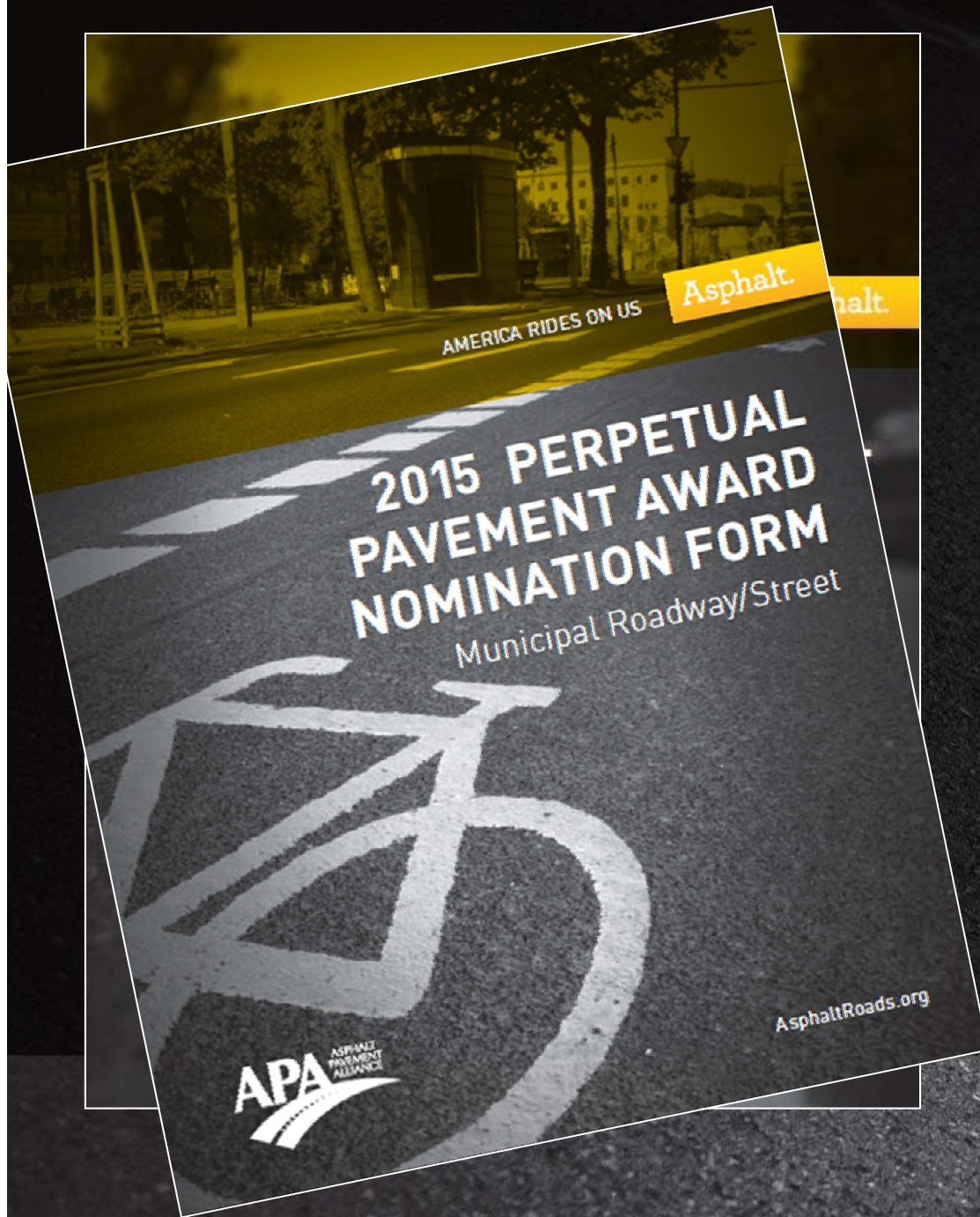
NC APA Region SAPA Members



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Criteria:

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

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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.

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Regional Initiatives

- **Life Cycle Cost Analysis**
 - GOAL: Adapting standard procedure for LCCA in NC Region that can incorporate state specific input. Gather best practices and deploy best strategies with region
- **Rehab Competition**
 - GOAL: Create competitive industry message promoting best HMA practices.
- **Proper Design Thickness**
 - GOAL: Promote initiatives designed to teach designers how to optimize pavement design while ensuring performance.
- **Commercial Market Strategy**
 - GOAL: Implement tools designed to enhance market share in private sector market.

WARNING!



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Versatility

ver·sa·tile

(vûr'sə-təl, -tīl') *adj.*

1. Capable of doing many things competently.
2. Having varied uses or serving many functions:
3. Variable or inconstant; changeable:

A Miracle Product



while using a process that can also recycle and reuse natural resources. In fact, Thinlays are the most cost-effective pavement preservation option for ensuring the long-lasting performance drivers demand.



LEARN MORE AT WWW.ASPHALTPAVEMENT.ORG/THINLAY

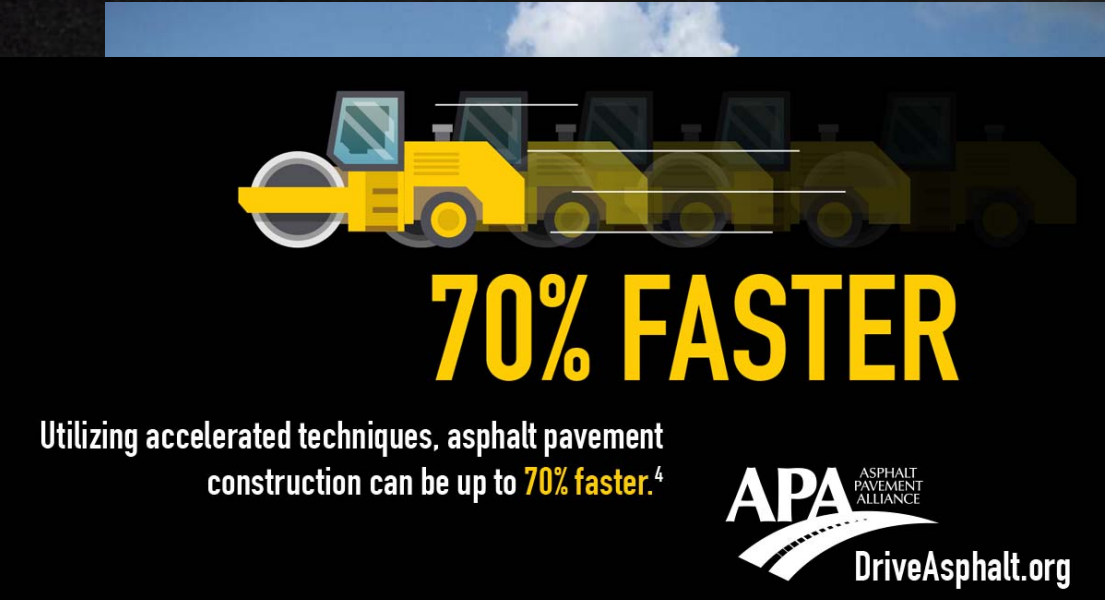
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Placement

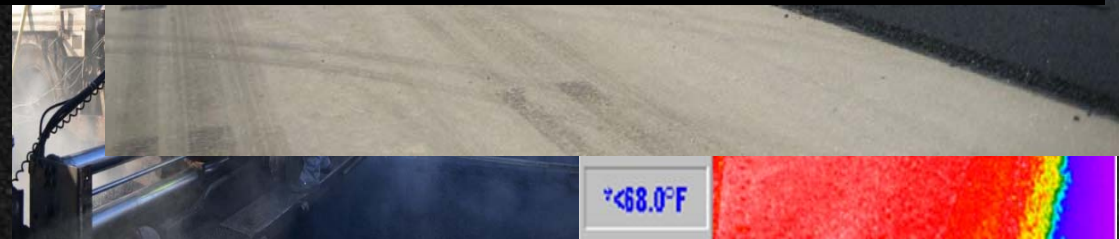
- History
 - Pavers
 - Smoothness
 - Transfer Machines
 - Segregation Understood
 - Mix
 - Heat
- Speed of Construction
 - Get out of the Traffic



70% FASTER

Utilizing accelerated techniques, asphalt pavement construction can be up to **70% faster**.⁴

APA ASPHALT PAVEMENT ALLIANCE
DriveAsphalt.org



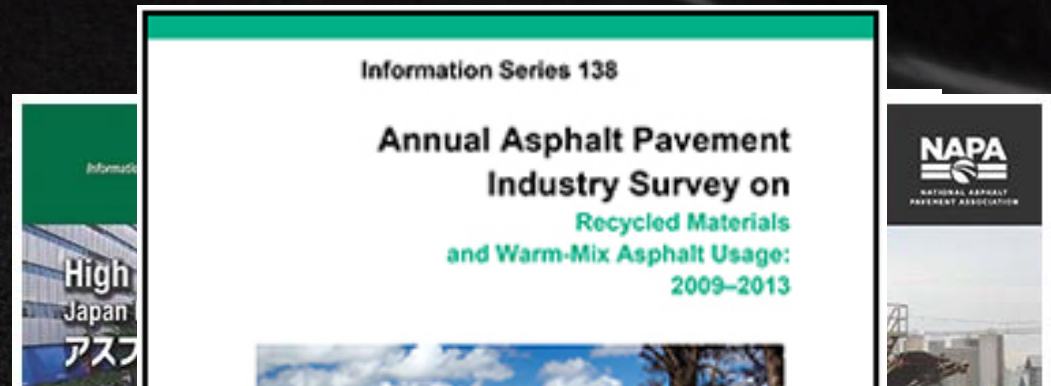
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Recycle

- History
 - 80's – Today
 - NAPA Report
 - 25% Just Be Careful
 - Additional Testing
 - Drivability
 - 2.8\$ Billion Saved Annually



\$2.8B

In 2014, reused asphalt materials, saved taxpayers more than **\$2.8 billion**.¹

APA ASPHALT
PAVEMENT
ALLIANCE
DriveAsphalt.org

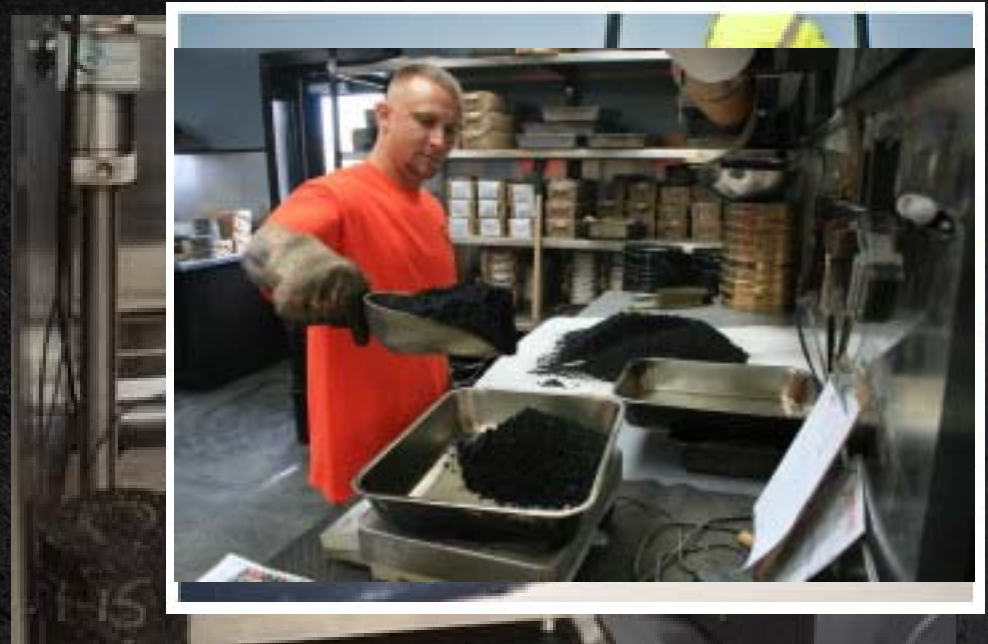
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ALLIANCE

Inspection

- 80's – Today
Quality Initiatives
 - QMA, QC, QMP
- Increased Knowledge
 - Agency
 - Industry
- Performance Testing



Durability & Design

- Durability
 - Density = Life
 - 1% = LCCA savings 8.8%
 - AC Content
 - Understand Rutting
- Optimized Design

In summary, results of increased in-place air voids summarizes these results. Density voids was estimated to improve and 43.8%.

Table 1. Effect of Air Voids on

Study	Lab/Field Experiment
UCB (Epps and Monismith 1969)	Lab
UCB (Harvey and Tsai 1996)	Lab
WesTrack (Epps et al. 2002)	Lab
	Field
AI (Fisher et al. 2010)	Lab
¹ (Seeds et al. 2002)	



NCAT Report 16-02

ENHANCED COMPACTION TO IMPROVE DURABILITY AND EXTEND PAVEMENT SERVICE LIFE: A LITERATURE REVIEW

By
Nam Tran, Ph.D., P.E., LEED GA
Pamela Turner
James Shambley

April 2016

National Center for
Asphalt Technology
NCAT
at AUBURN UNIVERSITY

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Review of Initial Service Life Determination in LCCA Procedures and In Practice – *DRAFT*

Summary of Middle 90% of Pavement Ages at Time of 1st Rehab

Pavement Type	No.	Avg	Min	Max	Std Dev
AC	206	17.68	7.09	28.93	5.51
PCC	121	23.84	12.88	35.44	5.79

Ride Quality (IRI) Prior to Rehabilitation

Pavement Type	Percent of Total Pavement Sections				
	Very Good** < 60	Good 61 – 95	Fair 96 – 120	Poor 121 – 170	Very Poor > 170
AC Pavements	9.6%	34.3%	24.1%	17.5%	14.5%
PCC Pavements*	1.1%	23.3%	26.7%	34.4%	14.4%

Advancements in Flexible Pavement Design

NCAT Report 14-08

RECALIBRATION PROCEDURES FOR THE
STRUCTURAL ASPHALT LAYER COEFFICIENT IN
THE 1993 AASHTO PAVEMENT DESIGN GUIDE

By

Dr. David H. Timm, P.E.
Dr. Mary M. Robbins
Dr. Nam Tran, P.E.
Dr. Carolina Rodezno

November 2014

277 Technology Parkway = Auburn, AL 368

National Center for
Asphalt Technology
NCAT
at AUBURN UNIVERSITY

NCAT Report 14-04

FLEXIBLE PAVEMENT DESIGN –
STATE OF THE PRACTICE

By

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August 26, 2014

277 Technology Parkway = A

National Center for
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NCAT
at AUBURN UNIVERSITY

NCAT Report 15-05

REFINED LIMITING STRAIN CRITERIA AND
APPROXIMATE RANGES OF MAXIMUM
THICKNESSES FOR DESIGNING LONG-LIFE
ASPHALT PAVEMENTS

By

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Dr. J. Richard Willis
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September 2015

277 Technology Parkway = Auburn, AL 36830

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at AUBURN UNIVERSITY

<http://eng.auburn.edu/research/centers/ncat/info-pubs/technical-reports.html>

What does Optimized Design mean?

SN Value .52

SN Value .44

Surface (AC)	2.00"
Binder/Intermediate (AC)	2.00"
Base (AC)	1.50"
Aggregate Base	6.00"
Subbase	

Surface (AC)	2.00"
Binder/Intermediate (AC)	2.00"
Base (AC)	3.00"
Aggregate Base	6.00"
Subbase	

20% Savings

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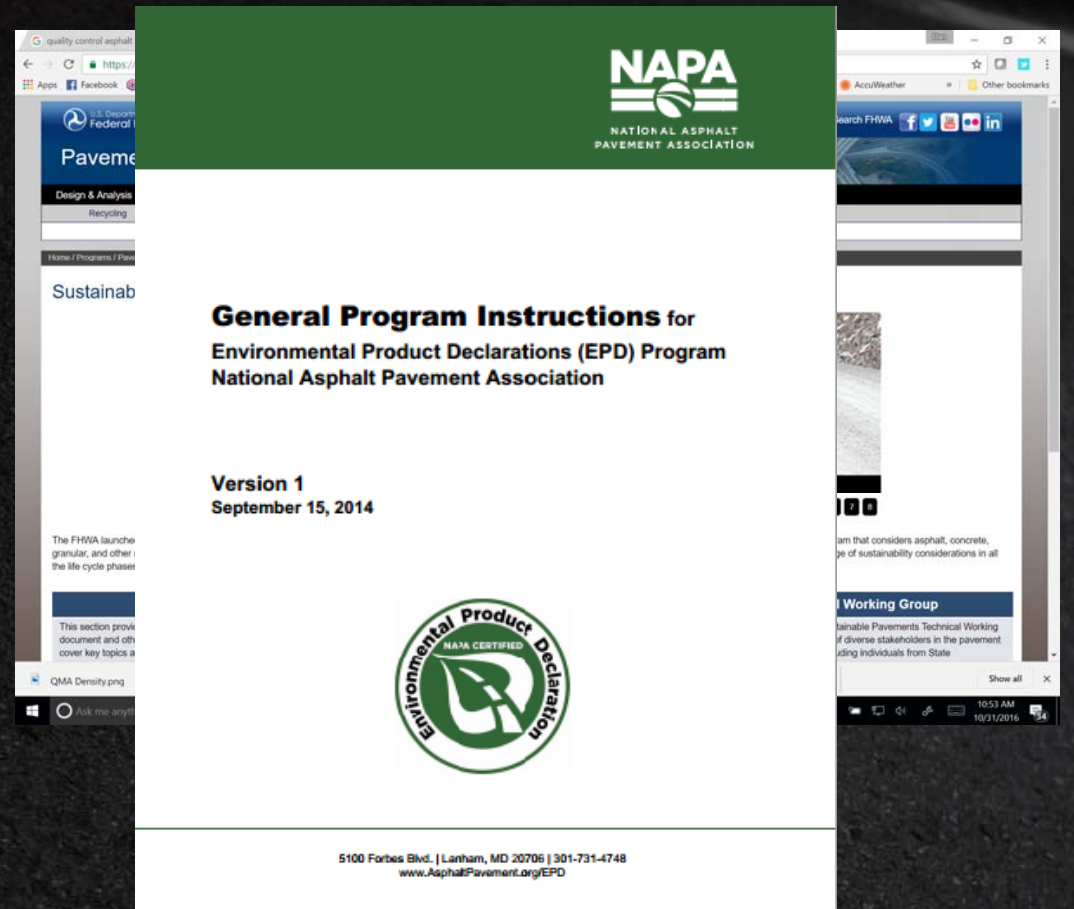
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PaveXpress



Environment

- Sustainability
- Can't improve what we do not measure
- LCA
- EPD's
 - NAPA
 - Industry ready



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Emerald ECO LABEL



Environmental Product Declaration for Asphalt Mixtures

Company

[[company_name]] is a plant asphalt mixture producer.

[[Company logo]]

[[plant_name]]

[[plant_street_address]]

[[plant_city]], [[plant_state]] [[plant_zip_code]]

Product Description

This EPD reports the impacts for [[mix_product_code]] a [[mix_type]] asphalt mixture which can be incorporated as part of the structure for a roadway, parking lot and recreational pavement and meets [[mix_spec]] mix specifications provided for its application. This asphalt mixture is categorized as a (warm-mix asphalt/hot-mix asphalt) and (does/does not) use a (chemical/foaming) warm-mix technology. This asphalt mixture was produced within a temperature range of [[production_temp]].



This declaration is an environmental product declaration in accordance with ISO 14025:2006 Type III environmental performance labels which transparently describe the potential environmental impacts of the described product caused during the identified stages.

The data specific to this product can be found on page 3 of this document.

Declaration Number: [[Software Output no]]

Date of Issue: [[xx/xx/xxxx]] Period of Validity: [[12/31/2022]]

Environmental Product Declaration for Asphalt Mixtures

[[Company logo]]

Environmental Impacts

The life cycle impact assessment results are relative expressions and do not predict actual impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.

IMPACT ASSESSMENT RESULTS

	IMPACT CATEGORY	UNIT	TOTAL	MATERIALS	TRANSPORT	PRODUCTION
	Global Climate Change (Global Warming Potential)	kg CO ₂ -eq				
	Ozone Depletion Potential	kg CFC-11-eq				
	Acidification Potential	kg SO ₂ -eq				
	Eutrophication Potential	kg N-eq				
	Smog Formation Potential	kg O ₃ -eq				
	Hazardous Waste	kg				

Interpretation

The information presented in this EPD can be used to model the environmental impacts of asphalt mixtures purposed to be part of (but not limited to) roadway, parking lot or recreational pavements. This EPD alone does not provide the environmental impacts of the entire pavement structure itself and does not make any statements that the product covered by the EPD is better or worse than any other product.

Comparison of the environmental performance of asphalt mixtures using EPD information shall be based on the product's performance and function, and therefore EPDs shall not be used for comparability purposes when the asphalt mixture performance and functions are not the same. NAPA verified asphalt mixture EPDs that are expected to meet the same performance and function can be compared. EPDs of other programs may not be comparable because they could be calculated using a different PCR.

Additional Environmental Information

[[plant_name]] is a [[xxx]] Diamond Achievement Sustainability Commendation Recipient. Visit <http://goaspha.it/26d24qT> to see current status.

[[None]]

Declaration of Limitations

This EPD reports the results of a cradle-to-gate LCA for asphalt mixtures. This EPD may be used as a data input for full life cycle assessments to compare the environmental impacts of different asphalt roadway, parking lot, or recreational pavement design alternatives.

DATA GAPS

[[This mix uses additives such as fibers, crumb rubbers (if it is added at a plant), liquid antistrippers, recycling agents, stabilizers, etc., which no known public data source exists. The upstream impacts associated with the process of extraction, manufacturing/production, and transportation of the materials listed have not been accounted for in this EPD.]]

[[This mix uses a (polymer/GTR/polymer + GTR) modified asphalt binder. The upstream impacts associated with the process of extraction, manufacturing/production, and transportation of the materials used in the modification process have not been accounted for in this EPD.]]

[[The impact of recycling asphalt shingles was estimated using data for processing reclaimed asphalt pavement. The source of the shingles (tear off or factory rejects) is not being accounted.]]

[[None]]

Recap

- Placement
- Recycle
- Inspection
- Durability
- Environment

= **P R I D E**

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Thank You

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