WELCOME

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Best Practices for Commercial and Industrial Parking Lots

2019 63rd Annual Asphalt Paving Conference
APAM

How to Build Considerations for Constructing Quality Pavements
How to Maintain Maximize the ROI of Your Pavement Investment
How to Rehabilitate Proactive Pavement Rehabilitation Options
What Lies Ahead The latest in Asphalt Technologies

SCHEDULE
Wednesday, April 10
9:00 am - Registration
9:30 am - Open Session
10:30 am - Keynote Speaker
11:30 am - Luncheon and Industry Updates

Thursday, April 11
9:00 am - 12:00 pm - Technical Sessions
12:00 pm - Luncheon
1:00 pm - Awards Banquet & Industry Update

Drinks, transportation, and beverages included with registration

Cost:
$450
$425 after March 15, 2019

Join us:
April 10-11, 2019
Commercial and Industrial Parking Lot Training
Research & Technology

Pavement Economics Committee
- 4 Task Groups

Other Research
- Asphalt Institute
- NCAT

Future Research

Market Research & Communications

Go-To-Market Task Group

Deployment Activities

Deployment Task Group

ASPHALT PAVEMENT ALLIANCE

NAPA
NATIONAL ASPHALT PAVEMENT ASSOCIATION

SAPA
State Asphalt Pavement Associations

ASPHALT INSTITUTE
To establish asphalt pavement as the preferred choice for quality, performance and the environment.
<table>
<thead>
<tr>
<th>State</th>
<th>Tons, Millions Reported</th>
<th>Reported % of Estimated</th>
<th>State</th>
<th>Tons, Millions Reported</th>
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<td>Total</td>
<td>379.4</td>
<td>83.0+</td>
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</table>

NCR: No Companies Responding
* Fewer than 3 Companies Reporting
† Total Reported Tons includes values from state with fewer than 3 Companies Reporting
SAPA Estimated Tons
Numbers do not add up exactly due to rounding
Commercial Tons

Figure 2: Estimated Total HMA/WMA Asphalt Mixture Production by Sector, 2009–2017

Asphalt.
Big NEED

• As of 2015, the Bureau of Transportation Statistics estimates that there are over 250 million registered light vehicles (car, light trucks and motorcycles) in the United States. While estimates of parking totals have varied, most studies conclude that we have between 4 and 8 parking spaces per vehicles in this country. Perhaps that number isn’t terribly surprising. After all, we park our cars at home, at work, at church, at the shopping mall, etc. But combined, that means we have between 1 billion and 2 billion parking spaces in America alone.

• Billions of parking spaces is a lot, but it can be tough to wrap your head around that number. So, if we were to build 1 billion parking spaces side by side, it would cover an area equivalent to the size of Connecticut.

https://av-future.com/impact/parking/
Have you ever heard this?

It’s just a parking lot!

It is a parking lot!
Handout

• Pick your Mix
• Dig Deep
• Drain the Rain
• Build a Base
• Trucking Along
• The Green Scene
• Pave and Save

Pay attention to details
Pick your Mix

- Parking vs. Highway
  - Static
  - Rolling
The Glue that Binds!

- Asphalt Cement Binder - **Important**
  - What is PG
  - What grade and Where?

Viscoelastic = Materials that are time and temperature susceptible.
Pick your Mix

- Understand Asphalt Cement – Binder
  - Proper % Binder
  - Performance Grade (PG)
  - Ask for guidance!
    - Physical Location of Use
    - Base or Surface
    - Polymer additives

- **Warning**: Improper Selection can result in:

Just Right!
Mix Targets

- Start with trials to learn best fit.
- Learn from variations
- Monitor and QC Checks

<table>
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<th>NMAS</th>
<th>VMA</th>
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<th>1% ABS</th>
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<td>15.5</td>
<td>5.0%</td>
<td>5.6%</td>
<td>6.2%</td>
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<td>12.5 mm (1/2”)</td>
<td>14.5</td>
<td>4.6%</td>
<td>5.2%</td>
<td>5.8%</td>
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<tr>
<td>19mm (3/4”)</td>
<td>13.5</td>
<td>4.2%</td>
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<td>5.4%</td>
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</table>

Typical AC Values @ 4% Air Voids

Add 0.2% to above AC values to achieve 3.5% Air.
- Possible use in lower lifts.
- Surface = Performance testing?
Rap Percent Use

- Manage Percentage
- Liquid Binder
- Mix Design = Performance

Figure 5: Average Percent RAP Used by Sector
Dig Deep

- Subbase Platform
  - Understanding Support = Critical Part of Design
  - Investigate
Drain the Rain

- Moisture Bad
  - Subgrade
  - Surface >1%

- Drainage System

- “Pay me now or Pay me later”

- Success starts from the ground up!
Build A Base

- Structural Platform
- Paving Platform
- Type and Technique
Critical Pavement Design
Loading and Pavement ESAL’s
Trucking Along

• Nothing Temporary - Plan and design for the long term...
  
  • 1 Loaded Semi = 3000 Cars
    - ESAL Calculation Pavement Interactive
  
• Cars Minimal Impact –
  - Design Minimum (See SAPA)
Thicknes Design Guides

PaveXpress
A Simplified Pavement Design Tool

PaveXpressdesign.com

Learning Pavement Design with PaveXpress

The PaveXpress module is a web-based pavement design education system with video instruction by leading industry experts. PaveXpress accompanies Pavewirexpress, a web-based software created to design flexible and rigid pavements using AASHTO R-96. The education modules within Pavewirexpress correlate with the design modules in PaveXpress and provide technically sound pavement design and instruction.

PAVEInstruct
Instruction
Please click below to enter the PaveInstruct learning module system. Presentations are available in short clips or in full format.

PAVEDesign
Design
Please click below to enter the PaveDesign design system.

Asphalt. America rides on us
The Green Scene

- Asphalt Pavement #1 Recycled Material
- RAP = Recycle Asphalt Pavement
  - Resources Saved / 100% Reusable
    - Aggregate
    - Binder
- LEED v4
- EPD’s = Environmental Product Declarations
LEEDv4 USGBC

- 1-3 Points
- Recycle
- Storm Water
- EPD's

Asphalt Pavements & LEED v4

Asphalt offers sustainability benefits across the entire life cycle of a pavement — from production to placement, during in-use, and at end of life. As the most consistently recycled material in the U.S., asphalt has a proven track record of utilizing post-consumer recycled content. But it’s not just about recycling.
Porous Pavement

Riverjacks open into recharge bed

Uncompacted subgrade is critical for proper infiltration

Filter fabric lines the subsurface bed

Porous asphalt pavement

Uniformly graded stone aggregate with 40% void space for stormwater storage and recharge

interstatetesting.com
Porous Pavement
Pave and Save
Pave and Save

- Select Qualified Contractor
  - SAPA List

- Inspect – Inspect – Inspect
  - Oversight = Sleep like a baby!

- Ask Questions
Handy Checklist

Project Review

Every paving project should begin with a detailed outline of the project's objectives, plans, and specifications. Any questions arising from the review should be addressed at this time.

Asphalt Mixture

Prior to starting this project, the design engineer determined the depth of each pavement layer and the type of asphalt mixtures to be used. Your responsibility is to verify that the correct, specified asphalt mixtures are coming to the site. You can check and verify the truck delivery tickets to verify and document asphalt types and tonnages arriving on the project.

Ask Yourself:

- Is this the correct mix type for the project and the type you are constructing?
- Is the mix type specified being replaced at the minimum life thresholds?
- Does the truck delivery ticket match the approved mix design?
- How many tons are specified to pave the project?
- Does the paving foreman know how many tons his equipment can use?

- How many dump trucks are scheduled to deliver the mix from the plant and how many tons are in each round?
  - The goal is to balance the mix delivery schedule to avoid having to start and stop the paving operation.
  - Any times when trucks are on the run to haul the mix needed to complete the job?
    - If you have 5 trucks, on the round each carrying 35 tons = 175 tons per round.
    - If each round takes 1 hour to make, then the production rate is 1.5 tons per hour.
    - If the job requires 1,000 tons at 125 tons per hour, 8 hours to get the mix to the job.
  - Are the truck drivers trained to handle the product and are they following the way they are assigned to the project?
    - Is an approved release agent being used?
    - DIESEL FUEL is not allowed!
  - Is the temperature of the mix matching at the site within the project guidelines?

Contact us today for your free copy of Construction Checklist
Recap

- Pick your Mix
- Dig Deep
- Drain the Rain
- Build a Base
- Trucking Along
- The Green Scene
- Pave and Save

Pay attention to details
Property Investment – Value

SHOW ME THE MONEY!
Which Approach?

- **Best**
- **Better**
- **Good**

Graph showing:
- **Proactive Approach**
- **Reactive Approach**
- **Do Nothing Approach**

Graph axes:
- **Average Condition**
- **Time**
Property Investment Strategy

- Undervalued Asset
- Define Asset Value
- Parking Lots vs Roadways

According to International Parking Institute stated…

In 2012, a surface lot parking space cost an average of $4,500 to construct.
What Lies Ahead – Techniques

- Joint Construction
What Lies Ahead – Equipment

- Joint Construction
- Intelligent Compaction
- Temperature Monitor
What Lies Ahead - Facilities

• Owners & Developers
  – Online Shopping
    • Heavy Duty Paving - Key
  – Repurpose Buildings
    • Repurpose Parking Lot
    • Adaptability – Flexible - Recycle
What Lies Ahead

- Construction Industry
  - Workforce Development
    - WOA
    - FFA
    - Millennials/Gamers
What Lies Ahead

- Vehicle Changes
  - Electric Vehicles
  - Autonomous Vehicles
    - Cars
    - Trucks
Who Are the Primary Players Behind Next-gen Transportation?

Include:
- Amazon
- Intel
- Tesla
- Google
- Uber
- Lyft
MY POINT – What Lies Ahead!

Build for Today with your EYE on Tomorrow!

• Build Flexible
• Watch for Change
• Understand Performance
• Seek Knowledge
• Look for Information
• Ask Questions
Which One?
Asphalt Benefits

- Versatile
- Adaptable to change
- Fast
- Smooth
- Atheistically pleasing
- Durable
- Rehabilitation Option!
Close Out - Final

- Remember the Keys
- Lessons Learned
  - *It IS a Parking Lot*

- St Louis, April 10\textsuperscript{th} and 11\textsuperscript{th}
Be Safe & Thank You!

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