Concrete Pavement Industry Update

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Organizational
- Focus, market, etc.

Vision2040
- Future of Concrete Pavement

Technical Efforts
- PavementDesigner.org
- Training, Resources
Organizational Focus...

- Effective and valued technical leadership/support and advocacy
- Good stewardship - sound engineering and economic decision-making: ME Design, LCCA, COMPETITION...
- Life cycle thinking – design, economics, AM, environment...
Leveraging COMPETING industries...

- This is the **RIGHT MESSAGE**!
- Resonating with agencies… and competing industry.
- About stewardship… not about one being better than another
- FHWA and State DOTs
  - eg WV ADAB…
Strength through Partnerships

ACPA National
- Issue/Technical leadership
- Federal legislation/policy
- Define industry standards

International Grooving & Grinding Assn.
- Surface smoothness
- Tire/Road Noise
- Pavement Preservation

ACP chapters & State Assn.
- State support/policies
- Contractor lead

CP Tech Center
- Research and Implementation
- DOT support
- National Resource
What is the Outlook?

Much to be Optimistic About...

- Contractor membership – near an all-time high
- Overall membership growing
- Added a new chapter – Florida!
- 2018 projection strong!
  - 57M SY - 6yr high
  - Market share growing ~18%
  - Concrete Overlays ~12%
Investing in the Future

- Emerging Leaders Group
- Interns for the Future
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THE FUTURE OF CONCRETE PAVEMENT
Vision 2040...

- Assembled 28 experts to serve on a Blue Ribbon Panel (Sep 2017)
  - DOTs, FHWA, TRB, Academia, Equipment, Materials, Consultants
- Challenged panelists to look ahead to 2040 – given broad latitude
  - What will transportation look like?
  - What are public agencies’ future needs for pavement solutions?
  - What role will concrete pavement play?
Change is Coming!

Population Increase
2015: 320 million people
2045: 390 million people

In 30 years our population is expected to grow by about
70 million
... that’s more than the current populations of

NY + TX + FL

Truck Freight Up 43%

[Source: USDOT]
The majority of US population lives in **mega regions**, comprised of urban areas surrounded by growing suburban and exurban areas.

Urban areas are reimagined as livable communities with open spaces, plazas, and greater and more flexible mobility options.
In urban areas...

- Open and adaptable pavement design options for multi-functionality and ease of utility access
- Incorporate new and emerging technologies related to energy generation, energy storage, charging, LED arrays etc…
Freight Movement...

- Freight moves on dedicated freight corridors largely via autonomous connected trucks.
- Designed for max. longevity and min. service disruption
- Axle loads, Tires, Platooning?

[Source: USDOT]
Embrace resurfacing solutions that extend service life in a cost effective and sustainable way...

Capitalize on equity in existing structure...
Pavement design considers **resilience**, to more effectively survive and function under more frequent and intense climate events.
Vehicle fatalities reduced through improved safety with autonomous and connected vehicles.
To cope with the enormous challenges of the future...

- Agencies will need better, adaptable, resource efficient pavements that have reliable long-term performance... accommodating variety of sensing and measurement technologies needed for connected vehicles of the future.
Concrete Pavement’s Role...?
Performance Engineered Mixtures (PEM) will help ensure that concrete pavement mixtures deliver on the durability promise every time.
Improved concrete pavement design methods

- Allow for more efficient pavement structures
  - New materials
  - Composite structures
  - Innovative subgrade treatments
- Thin concrete resurfacing...
  - Innovative designs?
  - New cementitious materials?

Sustainable concrete for optimized resource use

- Concrete Pavement increasingly constructed/reconstructed of recycled and repurposed materials
- Agencies regulate raw-material usage and use this to optimize infrastructure sustainability.
Equipment and Paving Innovations

- Enhanced 3D integration
- BIM (Building Information Modelling)
- Faster (one-pass) paving with more efficient operations
- Auto-pilot paving systems tie mixture to paving speed, vibration & smoothness
- Minimize user impact
Disruptive forces...

- Unpredictable developments that disrupt evolution...
  - E-mail, Amazon, Drones, Uber, etc...
  - For pavements and infrastructure...???
A Shared Responsibility to Get There

- To fully marshal innovation and cost efficiencies, agencies must actively facilitate healthy and spirited **competition**
- If successful, both industries accelerate and public benefit!
- Industry’s responsibility to **innovate**
- Agencies’ responsibility to **implement** the advancements…
About SHAPING the future… informing our path forward

“If we don’t know where we’re going, we’ll end up someplace else…”

- Yogi Berra
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TECHNICAL EFFORTS

WikiPave.org
Developed jointly with NRMCA, PCA & RCC Council

- Streets (JP, CRC, RCC, overlays, FDR), Parking, Industrial (StreetPave/PCA Pave, BCOA –ME, AASTO93, Layered Elastic)
- **FREE**, web-based application
Technical Resources

- Resource Center – 1,400+ pubs
- Recent ACPA Specifications
  - Smoothness Specs
    - Guidelines for all markets
  - Dowel Alignment Spec
    - Guideline for how to evaluate DBI
    - Revisions from field experiences
  - RCC Spec
    - Guideline for bare-surface RCC
    - Fully commented
  - Sponsor 3rd Edition Overlay Guide
    - CP Tech Author
- Fabric Interlayer Spec
Technical Resources

- New Technical Bulletins
- Web Explorers
  - Concrete Overlays
    overlays.acpa.org (~1250)
  - RCC
    rcc.acpa.org (~300)
  - Historical
    explorer.acpa.org (<20)
New Training Courses – Preservation of PCCP

- FHWA sponsored work with CPTech Center
- 5 courses...
- Practitioner focused
- Interactive content
- Spanish translations

Available through NHI online learning management system