

# Promoting Sustainability – Without Compromising Performance

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# Pavement Sustainability Aspects

- ▶ Pavement design
- ▶ Reclaimed and recycled materials
- ▶ Construction procedures
- ▶ Pavement preservation
- ▶ Promoting awareness

# Improved Pavement Designs

- ▶ Updated Mechanistic-Empirical Pavement Design
  - ▶ Full-Depth Hot-Mix Asphalt (HMA) Pavements
  - ▶ Jointed Plain Concrete Pavements
- ▶ Monitoring performance to update life-cycle cost analysis models
  - ▶ Distresses, patching, and overlays
  - ▶ Physical Research Report (PRR)165: *2012 - 2015 Performance Monitoring of Mechanistically Designed Pavements*

<http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Research/Physical-Research-Reports/PRR%20165%20-%202012-2015%20Performance%20Monitoring%20of%20Mechanistically-Designed%20Pavements.pdf>

# Improved Pavement Designs

- ▶ Added supplemental designs
  - ▶ Rubblized Concrete with HMA Overlay
  - ▶ Unbonded Concrete Overlay

# Reclaimed/Recycled Materials

- ▶ Reclaimed Asphalt Pavement (RAP)
- ▶ Reclaimed Asphalt Shingles (RAS)
- ▶ Recycled Concrete Aggregate (RCA)
- ▶ Other Aggregates
  - ▶ Air-Cooled Blast Furnace Slag
  - ▶ Steel Slag
  - ▶ Wet-Bottom Boiler Slag

# Construction Procedures

- ▶ Longitudinal Joint Seal (LJS)
  - ▶ Placed along centerline prior to lift of HMA
  - ▶ Reduces permeability of centerline joint
  - ▶ Reduces deterioration and improves performance
- ▶ Updating pavement smoothness index
  - ▶ Transition from Profile Index to International Roughness Index
  - ▶ More closely resembles ride experienced by driver
  - ▶ Better long-term performance and safer
  - ▶ Promote \$avings for everyone
    - ✓ Less maintenance for the owner-agency
    - ✓ Better fuel economy for the traveling public
    - ✓ Less vehicle maintenance for the traveling public

# Pavement Preservation

- ▶ Increasing use of preventive maintenance treatments on state system
  - ▶ Cape Seals
  - ▶ Chip Seals
  - ▶ Micro-Surfacing
  - ▶ Slurry Seals
- ▶ Monitoring performance to determine potential addition to life-cycle models
- ▶ Conducting research to review performance and create deterioration curves

# Promoting Awareness

- ▶ Department policies
- ▶ Specifications
- ▶ Research projects
- ▶ Material usage monitoring
  - ▶ *Illinois Highway Materials Sustainability Efforts of 2015*  
<https://apps.ict.illinois.edu/projects/getfile.asp?id=5016>

# Questions

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