

# Dielectric Profiling System (DPS) 101

March 31, 2021

- 11:00 am - Welcome – Stephen Cooper, FHWA
- 11:05 am – Importance of In-Place Density – E. Ray Brown
- 11:15 am – Overview of DPS – Shongtao Dai, MN DOT
- 11:45 am - Advantages of DPS: State Perspectives
  - Kyle Hoegh, MN DOT
  - Rich Giessel, AK DOT
  - Craig Landefeld, OH DOT
- 12:30 pm - Questions

# Announcements

- Please turn off video cameras to save band width.
- Please put computer/phone on mute.
- Questions will be answered at the end of the webinar.
  - Please type questions in chat box.
  - Any questions that cannot be answered in the allotted time will be answered in writing.
- The webinar is being recorded and presentations will be made available.

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# **Importance of In-Place Density of Asphalt Pavements**

Ray Brown

# Need for Good Compaction

- Minimize additional compaction
  - Rutting
- Minimize water permeability
  - Stripping
- Prevent excessive oxidation of the asphalt mixture
  - Cracking, raveling, loss of fatigue life
- Provide adequate shear strength
  - Rutting

# Must Provide Good Compaction in all Areas

- Asphalt to asphalt joints
  - Longitudinal and transverse joints
- Asphalt to concrete joints
  - Bridges
  - Curbs and gutters
- Mat

# Rutting Issues due to Densification under Traffic



# Permeability due to High Voids





# Stripping Adjacent to Joint



# Density Related Performance Problems at Concrete Structures such as Bridges and Curbs/gutters

- Bump due to Densification
- Cracking
- Raveling



# Longitudinal Joint issues




- Cracking
- Raveling

# Inadequate Compaction Increases Oxidation Resulting in Premature Cracking



Density is often Good in Mat Areas but low adjacent to joints

I think the 10/90 Rule Applies: 10 percent of the area (joints) produces 90 percent of the performance issues



Good Compaction of the Asphalt  
Mixture is Essential in all Areas of  
the Asphalt Pavement for Good  
Performance



**The End**  
**Thank You!**