



Session 3 - Pavement Challenges and Best Practices

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Cross Agency Asset Management Forum

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Four Recommended Best Practices

1. Use PCI as communication tool and initial screening data; use your condition survey cracking data to support decision making in your decision trees
2. Get good asphalt compaction
3. Change your unmaintainable low-volume surface treated roads to low-cost maintainable engineered gravel roads
4. Get training

Heavy Vehicle Related Wheelpath Cracking

Only affects the wheelpaths of pavements where there are heavy trucks and buses

Preservation can help some but will eventually need new asphalt (structural capacity)



Age Related Cracking

**Affects all the surface of all asphalt pavements;
Slowed/prevented by preservation seal coats (no additional structural capacity)**

**Preserve all pavement before starts to have much if any cracking;
especially important on pavement where no heavy vehicles**



Condition Survey Variables in the PCI

- **Use these two categories in decision trees**
- **Fatigue cracking and potholes caused by heavy loads:**
 - Alligator cracking
 - Potholes
- **Cracking caused by aging:**
 - Block cracking
 - Joint reflections
 - Longitudinal and transverse cracking

- **Other distresses:**
 - Low ride quality
 - Bleeding
 - Bumps and sags
 - Corrugations
 - Depressions
 - Edge cracking
 - Lane/shoulder drop-off
 - Patching and utility cut patching
 - Polished aggregate
 - Rutting
 - Shoving
 - Slippage cracking
 - Swelling
 - Weathering and raveling

Compaction and the Bonding of Layers

- Compaction and the bonding of layers are keys to the performance of AC/HMA pavements
- Poor compaction:
 - Reduces cracking life about 15% for every 1% more air-voids
 - If the specification requirement is 8% air voids:
 - 11% = half the life
 - 5% = double the life
- Lack of bonding of layers:
 - Can halve cracking life
 - Increase risk of water damage at interface



Unpaving Low-Volume Roads to Create Engineered Gravel Roads

- If have lost control of surface treated or asphalt paved pavement
 - Potholes, patching, dusty, unsafe
- Create safe, smooth, maintainable, low-dust road
- Initial public reaction to conversion to gravel typically negative
 - Turns to positive once project completed



Summary of Technical Resources

CCPIC website: www.ucprc.ucdavis.edu/ccpic

Best Practices & Tech Briefs

Answers to common problems

- [Writing and Enforcing Specs for Asphalt Compaction](#)
- [Writing Concrete Specs for Durability and Sustainability](#)
- [Unpaving to Create Affordable, Safe, Smooth Gravel Roads](#)
- [Pavement Condition Index \(PCI\)](#)

Training Classes

Pavement Training

- [About CCPIC subsidized training](#)
- [Currently offered training classes](#)
- [Subscribe to monthly training update emails](#)
- [Survey on your Agency's pavement training needs. Thanks.](#)

Outreach - Presentations

For Viewing and Downloading

- [Pavement Financial and Environmental Sustainability, Some Best Practices-Technical Advisory Committee, Transportation Agency for Monterey County, March 4, 2021.](#)
- [Pavement Financial and Environmental Sustainability, Some Best Practices, California Asphalt Pavement Association, October 7, 2020.](#)

Sample Specifications

Model Specs

- [Superpave HMA for Local Government Model Specification Language](#)
- [Asphalt Compaction Model Specification Language](#)
- [Concrete Pavement Model Specification Language](#)
- [Tack Coat Model Special Provisions](#)

Guidance

Helpful Documents

- [Chemical Dust Control and Stabilization Treatments on Unpaved Roads](#)
- [Stabilization of Subgrade Soils](#)
- [Guide for Partial-and Full-Depth Pavement Recycling in California](#)
- [Use of RAP in Gap-Graded Asphalt Rubber Mixes](#)
- [Asphalt Concrete Reinforced with](#)

Tools

Pavement Software Tools

- Life Cycle Cost Analysis Comparison Spreadsheet & ChangeLog ([Download](#))
- Unpaved Road Chemical Treatment Selection [Website](#)
- Asphalt Paving Compaction Temperature ([Download & Install](#))

Questions and Follow Up?

Email both at same time

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