**Introduction**

Open-graded asphalt concrete (OGAC) mixes have been used in the United States for more than 50 years, primarily to reduce hydroplaning, and water splash and spray. They have also been shown to reduce tire/pavement noise. As part of the Quieter Pavement Research initiative of the California Department of Transportation, the University of California Pavement Research Center (UCPRC) is conducting research in the areas of acoustics, safety, durability, and ride quality for different types of open-graded and other asphalt mixes used in California. The preliminary findings presented here are part of a larger project that involves a greater number of pavement sections, from which field and laboratory data are still being collected.

**Methodology**

**Sampling and Testing during Traffic Closures**
- 100 mm & 150 mm diameter cores
- Condition Survey
- Microtexture- British Pendulum
- Permeability- Falling Head Permeameter

**Testing at Highway Speeds**
- Tire/pavement noise, On-Board Sound Intensity (OBSI)
- Macrotexture- High Speed Laser Profilometer (MPD and RMS)
- Roughness- IRI from Laser Profilometer

**Laboratory Measurements**
- Air Void Content
- Aggregate Gradation
- Sound Absorption-Impedance Tube

**Comparison of Surface Characteristics and Pavement/Tire Noise of Various Thin Asphalt Overlays**

**Conclusions from ES sections**
- Sound intensity measurements indicate that open graded mixes are up to 4.5 dB (A) quieter than other asphaltic mixes in terms of tire/pavement noise.
- Open graded mixes typically have higher air-void contents, permeability, and surface macrotexture (MPD) than gap and dense graded mixes.
- Sound intensity level is highly correlated with macrotexture and air void content. Age also seems to affect the noise levels. The larger QP dataset with pavements at different ages is being used to better investigate the aging effects.
- Open graded mixes placed in thicker layers may lower noise, compared to thinner layers with the same material and under same conditions. Further investigation with the larger QP section dataset is needed to quantify the thickness effects on the tire/pavement noise.
- Open graded mixes seemed to be prone to raveling. Rubberized asphalt gap-graded mixes are more likely to show bleeding. Reflective cracking can occur in open-graded mixes within one year after being placed on PCC pavements.
- Air-void content is positively correlated with permeability. MPD is positively correlated with air-void content.

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