

Quiet Pavement Research Program

MnROADS Open House

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Technology



Major Concrete Pavement Surface Characteristics Research

- Field Research and Development-ISU
- Laboratory Development--Innovation Workhorse (Purdue University)
- ACPA Field Implementation and Promotion
- FHWA Innovative Textures

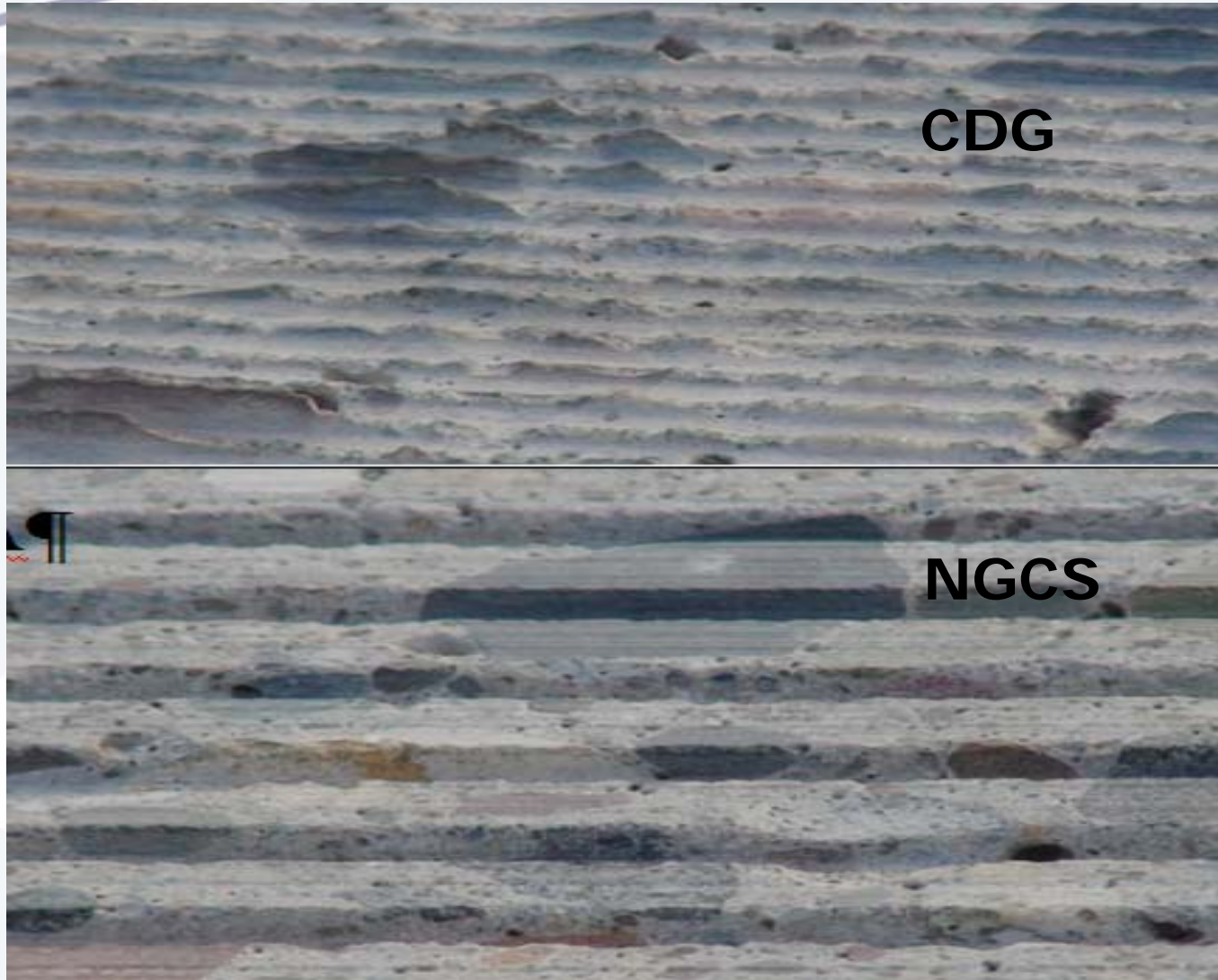
Next Generation Concrete Surface (NGCS)

- Term used to describe a category of texture (s) that have evolved through current research. The term may apply to several textures that evolve for both new construction and rehabilitation
- The Journey is only Beginning

Purdue Research-- Tire Pavement Test Apparatus (TPTA)



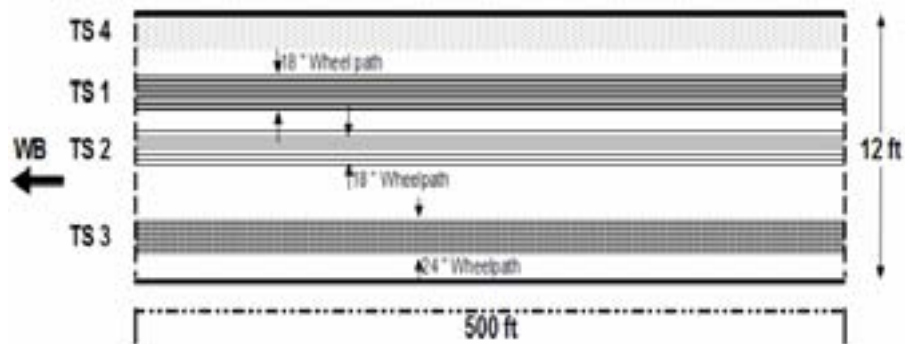
NGCS Compared to CDG



NGCS Up Close- Looking From Above



Four Test Tracks



Legend

- TS 1 Triple Chopper Blades with 125 blades
- TS 2 Flush Grind with Texture Grooving on 1/2" centers with 0.125 blades
- TS 3 Diamond Grind with 0.125 blades & 0.120 spacers
- TS 4 Existing Random Transverse Tining Texture (e.g. Unmodified)



Construction of NGCS- First Pass



NGCS Construction - Second Pass



Results of MnROAD's LVR Sections

- Validated that the Purdue TPTA
- NGCS produced the quietest surface
- Validated that Surface Could be Produced in both a Single Pass and Double Pass Configuration
- 18 Inch Wide Pass by 500 ft long, no traffic

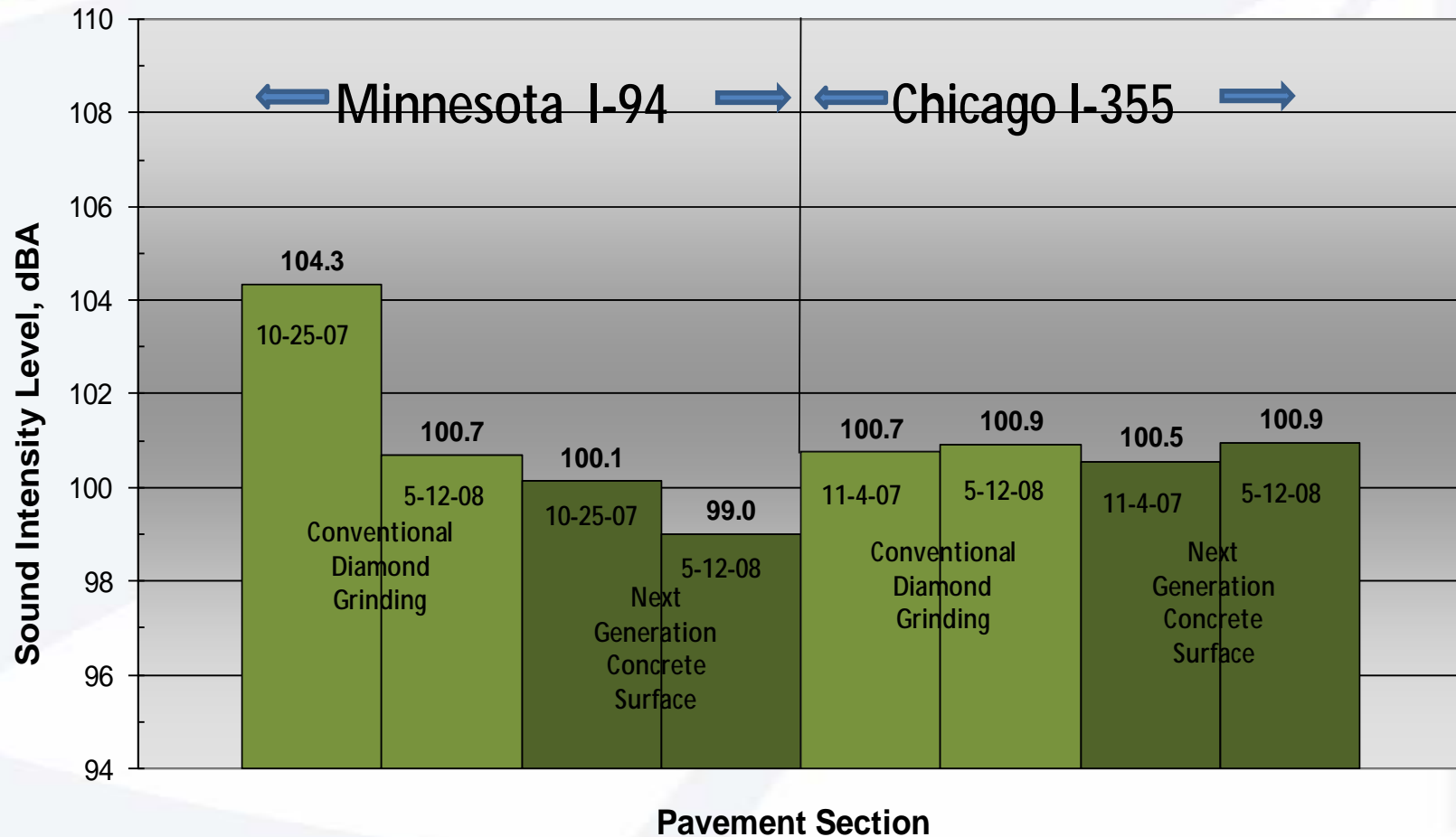
All Test Sections Constructed To Date

- MnRoad LVR 18" by 500 ft
- MN I-94 Two Lanes by 500 ft
- IL I-355 One Lane by 1200 ft

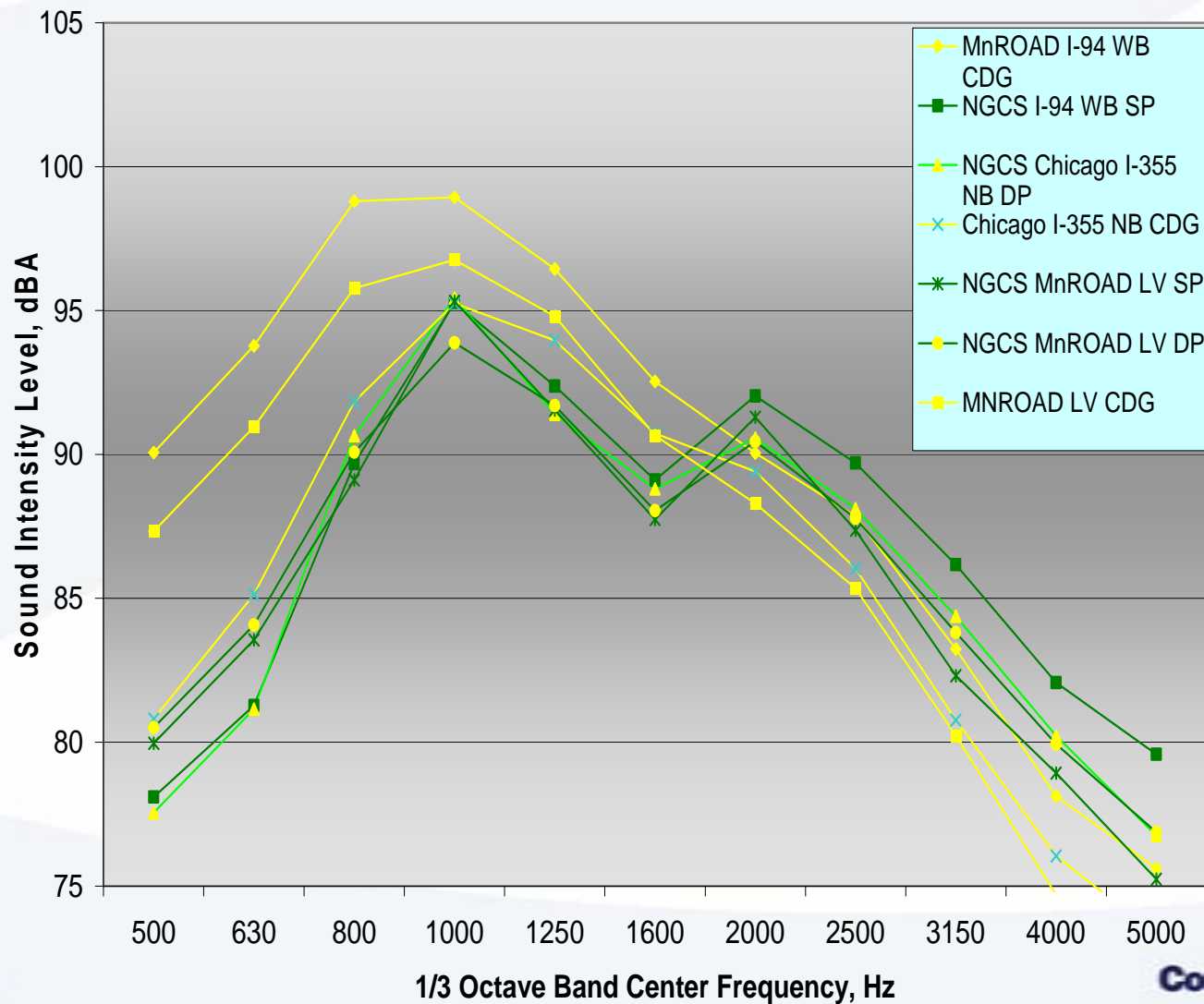
Upcoming Test Sections

- Canada
- Kansas
- Wisconsin
- Seattle?

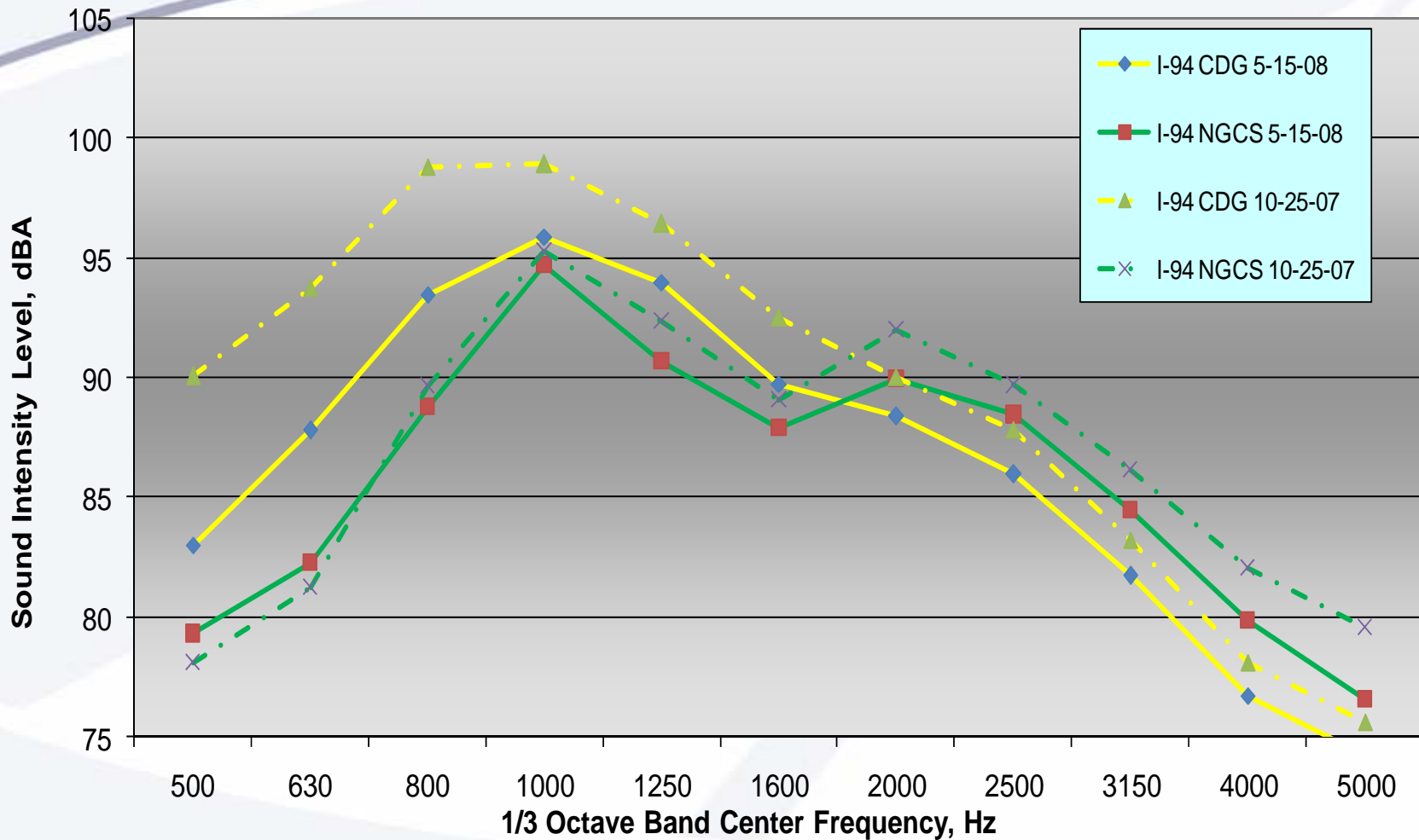
NGCS Results To Date



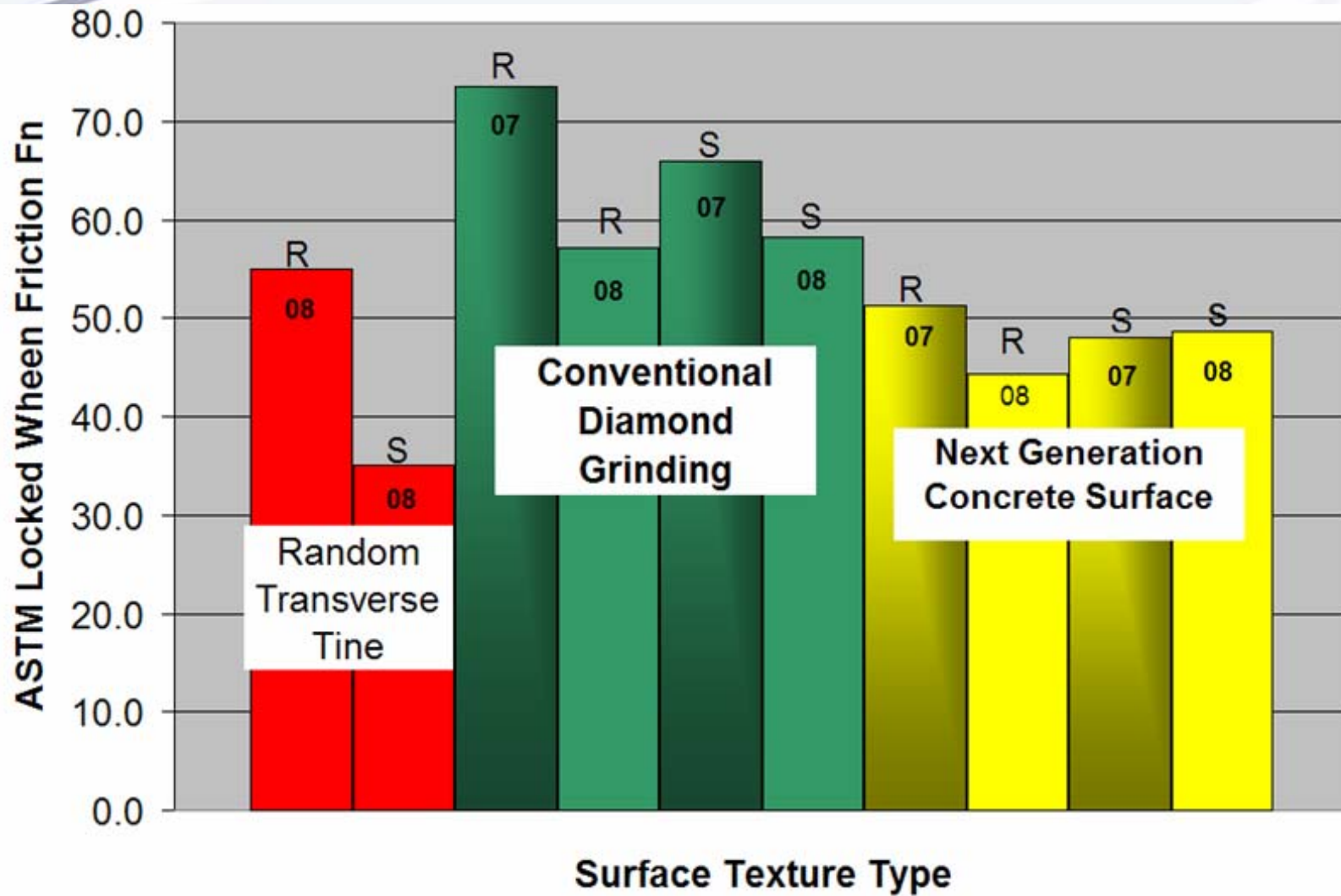
OBSI Frequency Spectrum



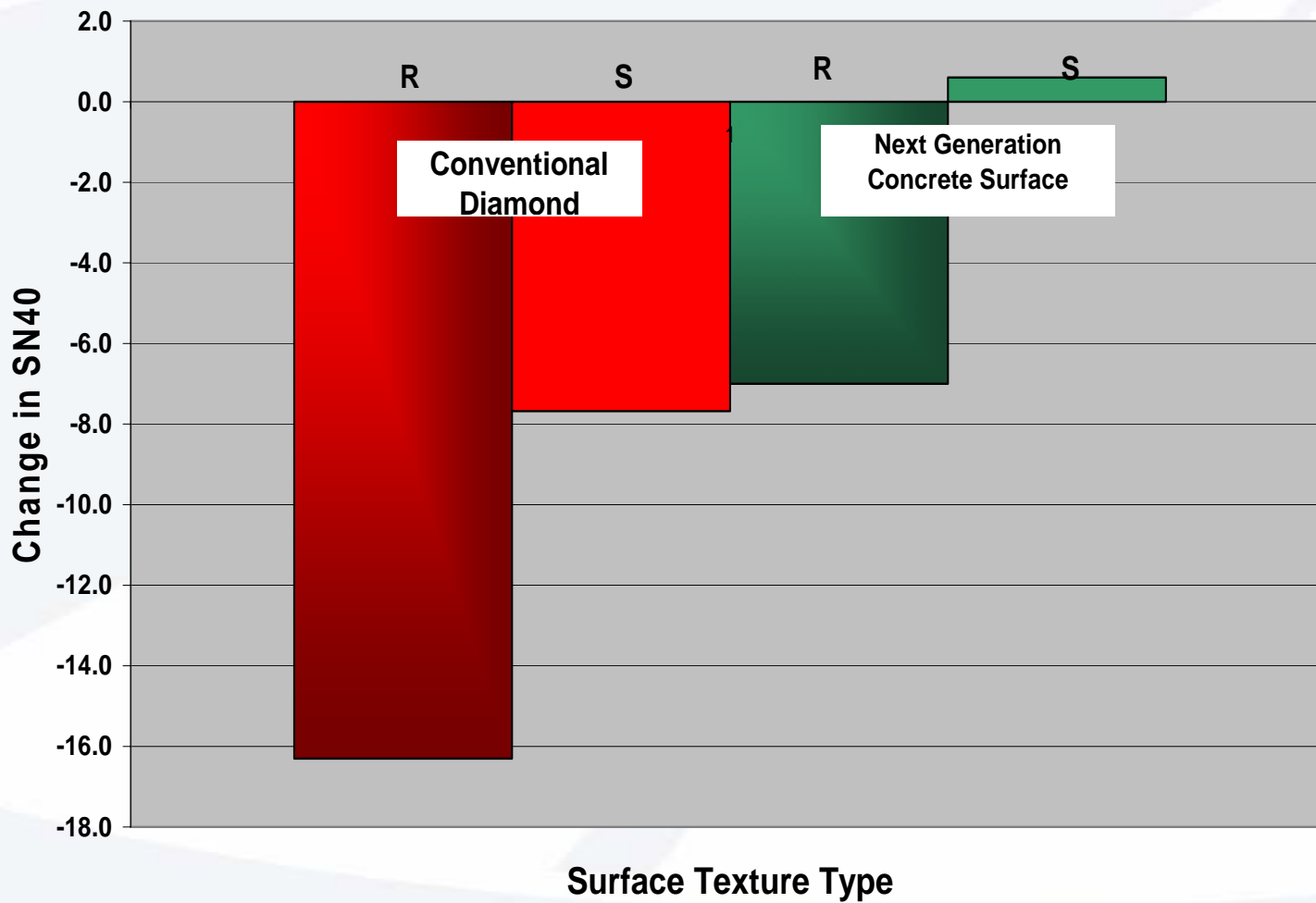
NGCS Spectral Plots



I-94 Friction Results



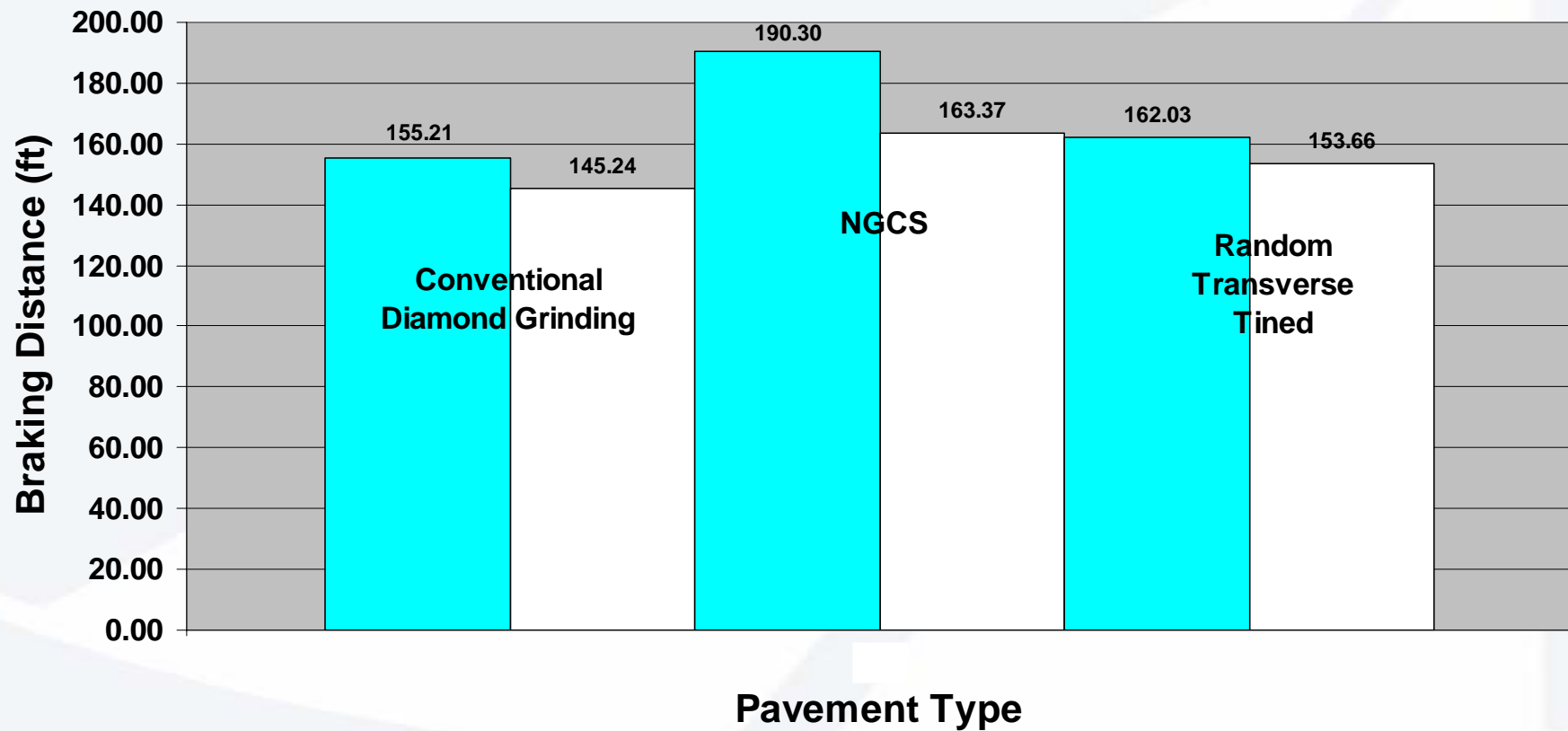
Change in I-94 Friction



UMTRI SUV ABS Braking Testing



ABS Braking Distance

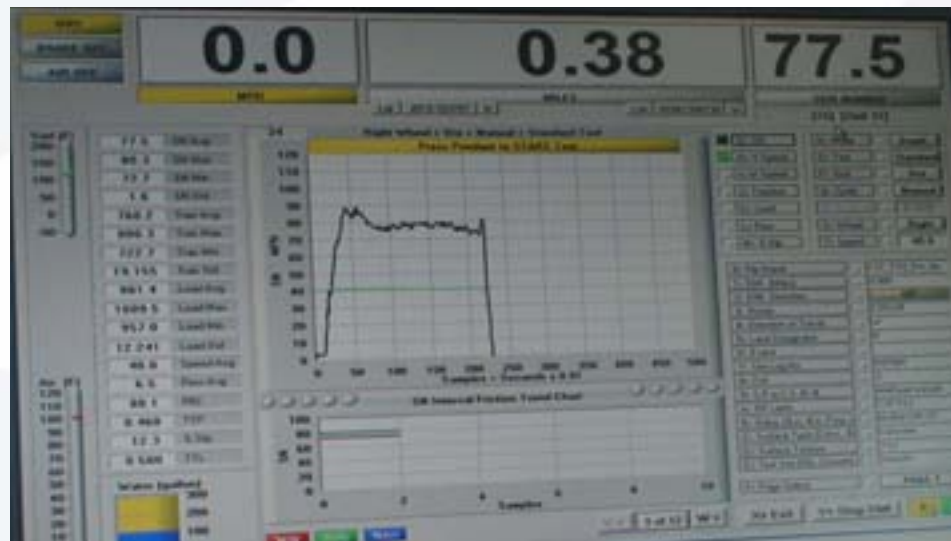


Winter Storm Operations

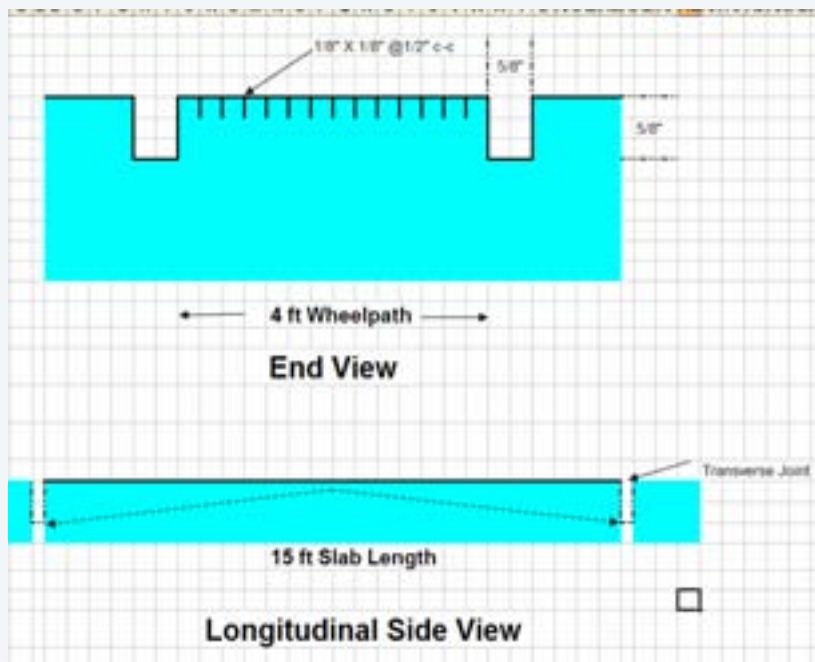


Count on Concrete

Dry Friction Test Results



Concrete Pavement as a Hydraulic Structure

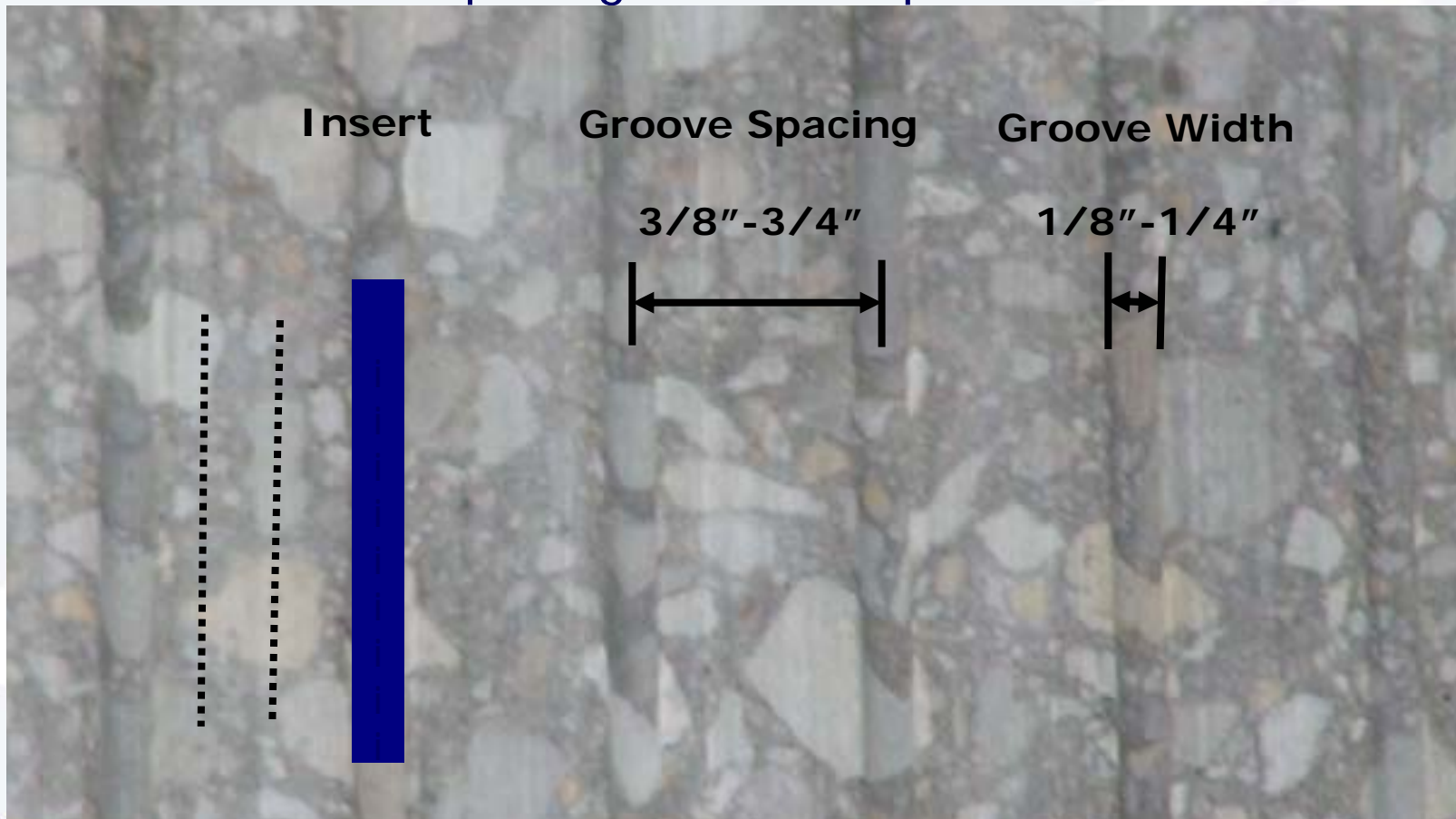


Purdue Innovative Research-- Tire Pavement Test Apparatus (TPTA)

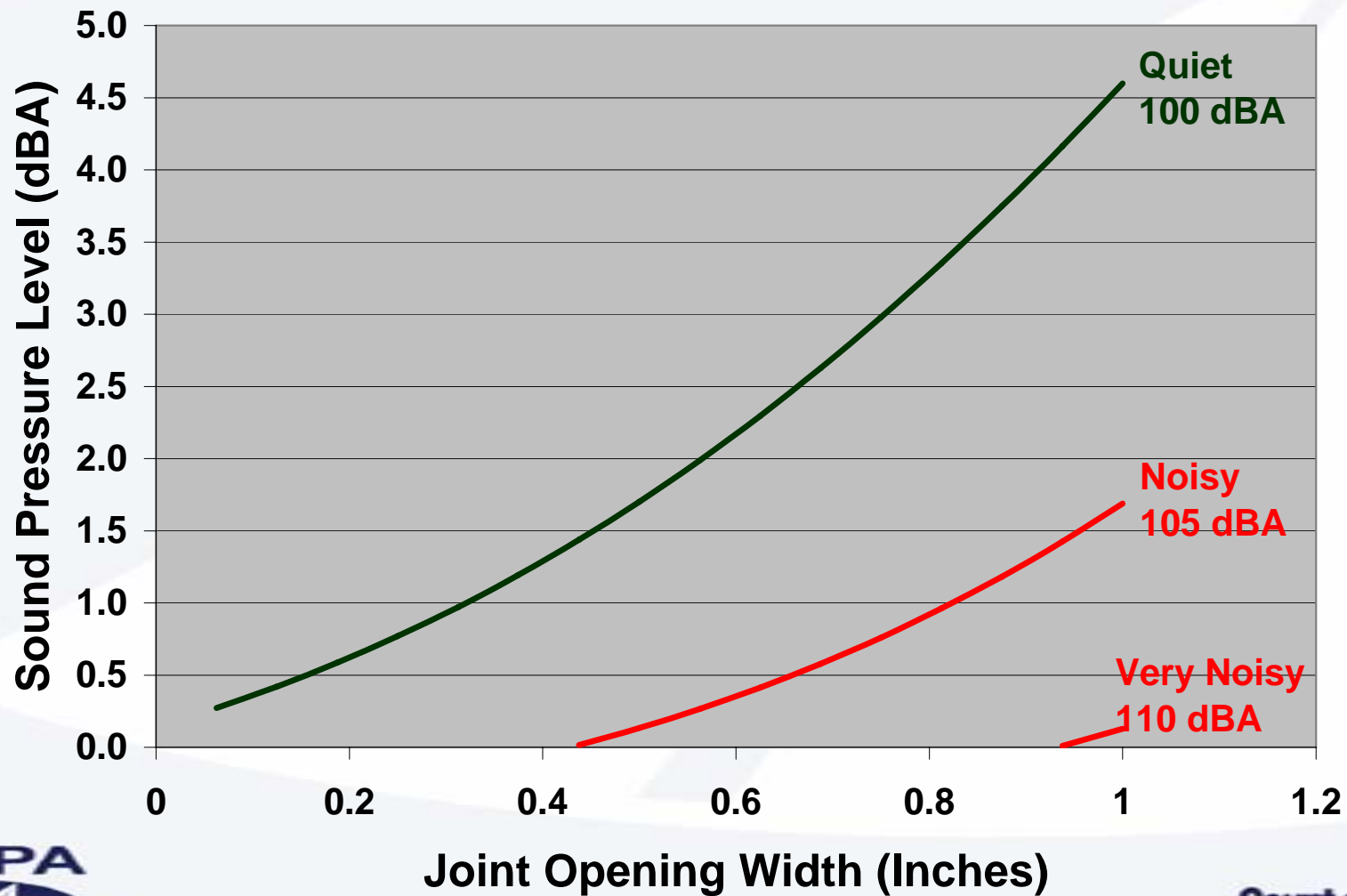


Current NGCS Research

- Effect of Groove Spacing, Width, Depth, Insert



Establishing Joint Effects



Arizona ARFC

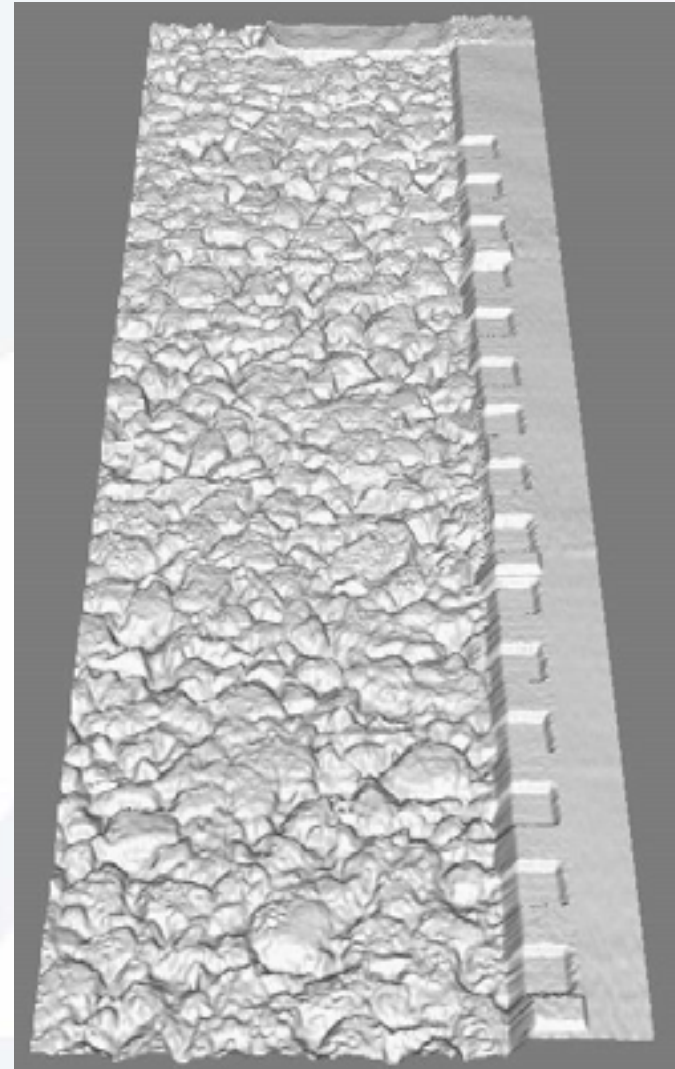


RoLine Laser Texture Measurement

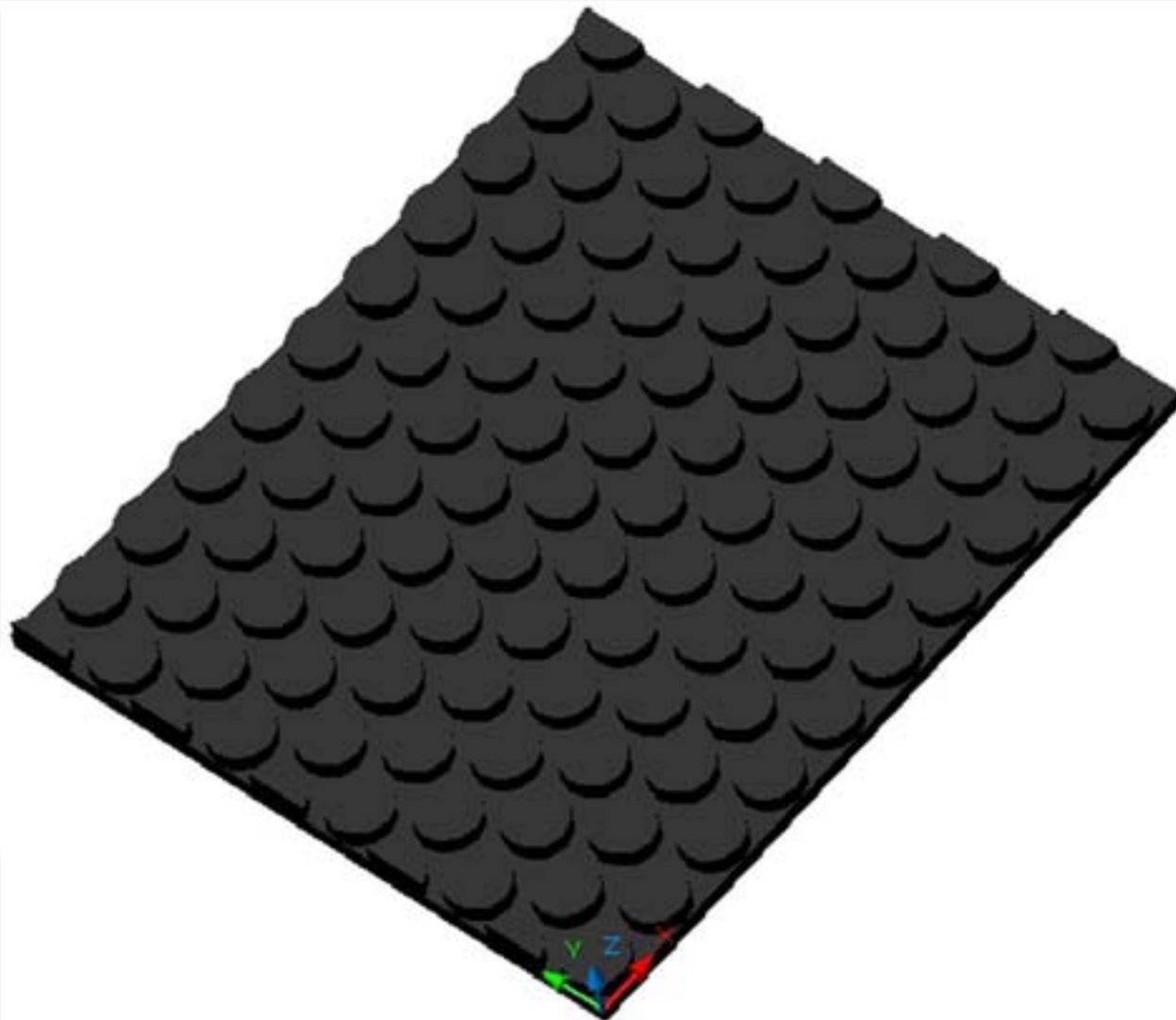


Purdue Research

- Innovative Textures for New Concrete-Imprinting
- What Gets Built Today Gets Rehabbed Someday



Potential Innovative Texture



Questions?



Count on Concrete