Pavement Surface Characteristics Program Overview

AASHTO Subcommittee on Materials

Lincoln, NH

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Mark Swanlund

Office of Pavement Technology

U.S. Department of Transportation
Federal Highway Administration

Plant ID

Plant ID

Presentation Outline

- Program structure
- Current activities
- Future directions

PSC Program Structure

- Pavement smoothness
  - Measurement technology
  - Analysis techniques
  - Specifications
- Tire-pavement noise
  - Policy support
  - Measurement technology
  - Pavement technology development
- Texture-friction
  - Policy support
  - Measurement technology
  - Pavement technology development

Pavement Smoothness

- Measurement Technology
  - ULIP-G
  - ULIP-S
  - Reference profiler TPF-5(063)
- Analysis Techniques
  - ProVAL Software
- Specifications
  - Specification development/refinement
  - R&D to support specs
  - Implementation support

Ultra-Light Inertial Profiler (ULIP)

- Inertial profiler mounted on Segway
- Testbed for advanced technology
- Sample interval of 0.5mm
- ULIP-G includes a gyro
- Federal Lands to use for testing
- Sidewalk inventory, Bellevue, WA

ProVAL Software

- ProVAL 2.7 released September, 2006
- Features
  - Simplified Interface
  - User defined set-ups
  - Profile editor
  - Export facilities
  - Improved reports
- Technical support and software available at http://www.roadprofile.com

ProVAL Workshops

- Implementation workshops available -10
- Focus:
  - Familiarize with current version
  - Fundamentals of profiling and analysis
  - Knowledge sharing
- Types
  - Essential ProVAL Workshop
  - Advanced ProVAL Workshop
- Contact: Bob Orthmeyer 708-283-3533

Smoothness Specifications
AASHTO Provisional Standards

- MP11 Equipment Specification
- PP49 Certification Program
- PP50 Profiler Operation
- MP17 Smoothness Specification

  - Development and revision through ETG
  - Implementation support
  - Conduct R&D to fill knowledge gaps

Implementation Support

- Developing profiler specs
- Setting up certification programs/sites
- Establishing profiler operation procedures
- Developing smoothness specifications
- Conducting reference testing for certification programs

Contact: Mark Swanlund 202 366 1323 or
Bob Orthmeyer 708 283 3533

Smoothness R&D activities

- Golden Footprint Study - Steve Karamihas
- Smoothness Criteria for Concrete Pavement
- Smoothness Criteria for HMA Pavements
  - How smooth is smooth enough
  - Lower limit of perception
  - Value of smoothness
- Profiler Pooled Fund Study TPF-5(063)
  - Reference profiler
  - ProVAL SAM
  - Single accelerometer study

Tire-Pavement Noise

- Policy Support
  - TNM Pavement Effects Study
- Measurement Technology
  - OBSI test method
  - R&D to support test method
- Pavement Technology
  - Alternative materials
  - HMA
  - PCC
  - Demonstration projects

TNM Pavement Effects Study

- Include more pavement types/textures
- Determine potential to modify TNM
- Simpler approach to baselining

OBSI Test Method

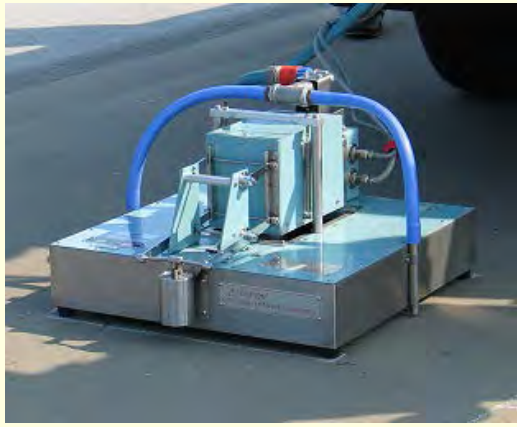
- On-Board Sound Intensity (OBSI)
- Developed by Expert Task Group
- Routinely used by Caltrans and Arizona DOT
- Used in numerous recent and active projects
- NCHRP 1-44 coordination
- Presented to TS 5A

Quieter Pavement Development

- Alternative Materials
  - Slags
  - Lightweight aggregates
- HMA
  - Porous asphalt
  - Thin surfaces
- PCC
  - Variations on current textures
  - Innovative surfaces
  - Establish long-term performance trends

Pavement Texture-Friction

- Policy Support
  - Technical Advisory -Skid Crash Reduction
- Measurement Technology
  - Equipment loan/demonstrations
- Pavement Technology
  - Alternative materials
  - HMA
  - PCC
  - Demonstration projects

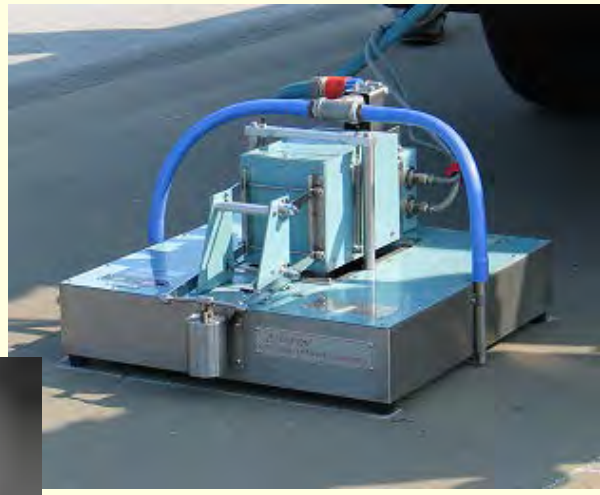


Technical Advisory – Skid Crash Reduction

- Guidance on establishing skid-crash reduction programs
- Friction design, management, monitoring
- Last updated in 1980
- Potential revisions
  - Consider results of NCHRP 1-43
  - Additional test equipment
  - Fixed & variable slip devices

CTM/DFT Equipment Loan Program

- Showcase equipment
- Circular Texture Meter (CTM)
- Dynamic Friction Tester (DFT)
- Griptester



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Splash and Spray Technology

- Feasibility study completed
  - Past work in area
- Past work not suitable for roadway application
- Recommended approach
  - Predictive model
    - grade
    - cross-slope
    - transverse profile
    - texture
    - rainfall

High Friction Surface Development

- Alternative Materials
  - Slags
  - Lightweight aggregates
- Thin surfaces
- Open surfaces
- Demonstration projects

Future Directions

- Confluence of smoothness, texture, and friction
- Unified model to relate all texture-related parameters

Thank You

Mark Swanlund
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