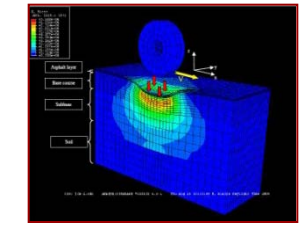
FHWA
Surface Characteristics Program

23rd Annual RPUG Meeting

September 27, 2011

Pavement Surface Characteristics



Key Areas

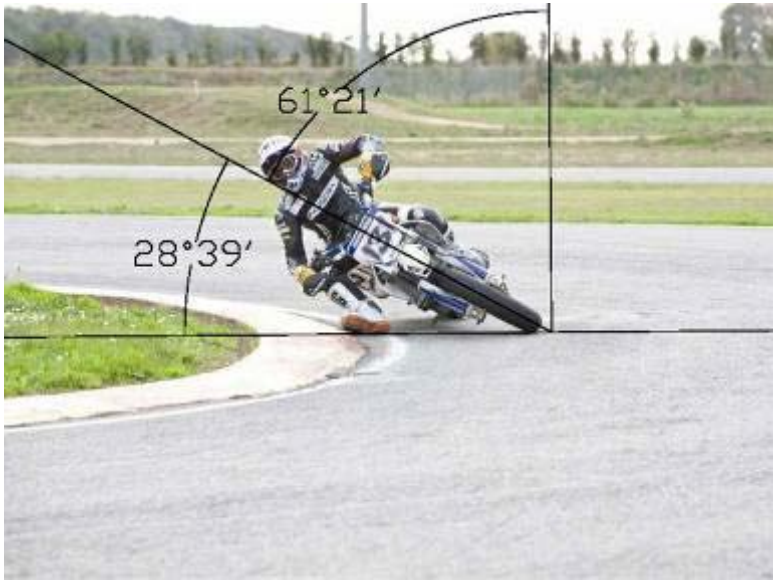
- Friction / Texture
- Rolling Resistance
- Noise
- Splash and Spray
- Smoothness / Ride Quality

FHWA Coordination

- TPF 5(063) “Improving the Quality of Pavement Profiler Measurement”
- TPF 5(134) “PCC Surface Characteristics”
- TPF 5(135) “Tire/Pavement Noise Research Consortium”
- TPF 5(139) “PCC Surface Characteristics: Tire -Pavement Noise Program Part 3 - Innovative Solutions /Current Practices”
- TPF 5(141) “Pavement Surface Properties Consortium: A Research Program”

Friction Thresholds

- Investigating most suitable equipment
- Working with States on data collection
- Develop Pavement Friction Management Programs with States



Integrated Texture-noise Model

- Task initiated in the fall of 2009 to develop a work plan for a Texture-noise model
- Collecting a sample of synchronized texture (1-D and 2-D) and noise (OBSI) data to support an approach to define a noise prediction method using macrotexture
- Compiling a database of existing texture and noise data (accessing raw data is essential)

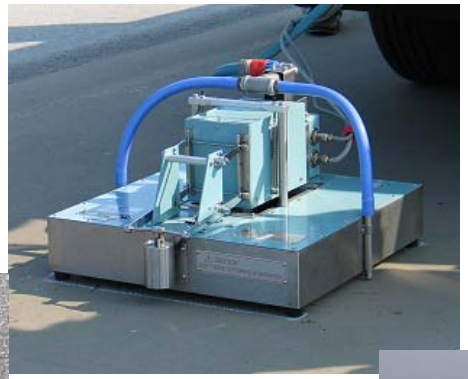
Source: Caltrans/UCPRC OBSI equipment

FHWA Toolkit

Materials Technology

Friction/Texture

- Equipment loan program: GripTester (2), Circular Texture Meter – CTM (3), Dynamic Friction Tester – DFT (3), Dynatest Highway Friction Tester (HFT)
- Draft Technical Advisory on Skid-Crash Reduction Program under development



FHWA Toolkit

Rolling Resistance: Coordinated with Minnesota Department of Transportation & TPF 5(134)

- Brought European technology to the MnROAD facility near Albertville, MN (Professor Jerzy Ejsmont)
- 18 pavement surface types at MnROAD facility
- Testing conducted September 11 – 15, 2011

FHWA Toolkit

- Noise
  - AASHTO Provisional Standard on Tire/Pavement Noise Measurement PP-76 using On Board Sound Intensity (OBSI)
  - Noise 101 Workshops
  - TPF 5(135) “Tire/Pavement Noise Research Consortium”
    - Develop lower cost OBSI system
    - Conduct equipment demonstration rodeos

Splash and Spray

- Splash – spray assessment tool development study
- Objectives: development of a model to predict water film thickness and splash and spray occurrence on pavement surfaces
- Develop recommendations for threshold criteria to classify the impact of splash and spray on highway users .

Outcome

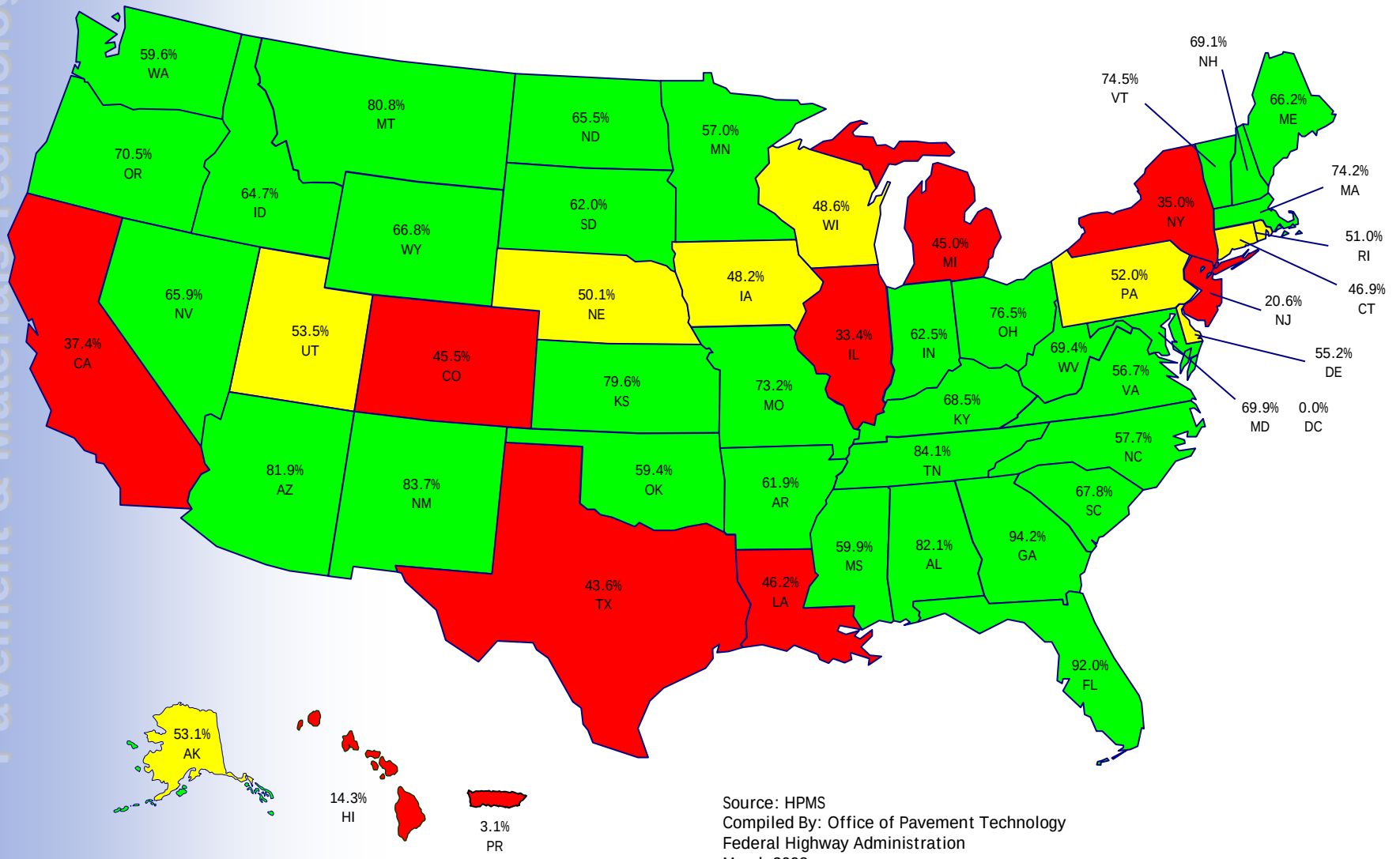
Pavement & Materials Technology

Smoothness (IRI), National Performance Measure

- Highlight team efforts in establishing national/AASHTO standards in pavement smoothness, rutting and cracking – need these for pavement condition performance measures.

2007 Pavement Condition on the National Highway System (NHS)
National Average = 56.7%, Target 57% in 2009
Good/Very Good (IRI of <95"/mile)

≥ National Average
≥ 1-10% below National Average
> 10% below National Average



Source: HPMS
Compiled By: Office of Pavement Technology
Federal Highway Administration
March 2008

Pavement & Materials Technology

Inertial Profiler

FHWA Toolkit

- Smoothness
  - ProVAL software (www.roadprofile.com)
  - ASTM E2560-07: Standard Specification for Data Format for Pavement Profile
  - NHI 131100 “Pavement Smoothness”
  - AASHTO Ride Quality Standards Implementation Contract
    - M328 Equipment Specification
    - R54 Accepting Ride Quality using an inertial profiler
    - R56 Certification of Inertial Profilers
    - R57 Operation of Inertial Profilers

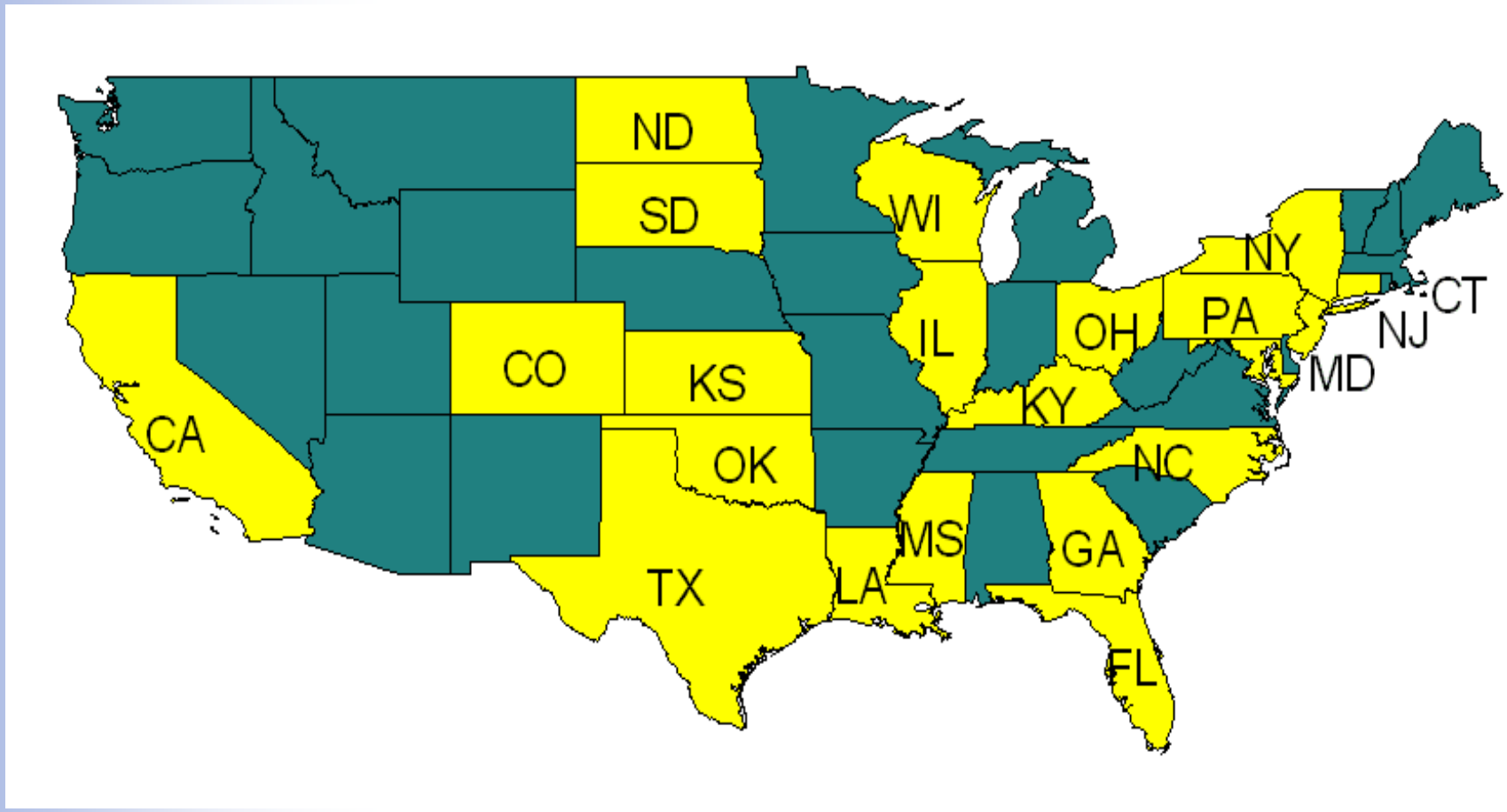
Overview TPF 5(063)

- FHWA is lead agency with 21 participating State Highway Agencies (SHA's)
  - FHWA Office of Pavement Technology (HIPT)
  - $1.8 Million 12 Year Study
  - FHWA Long Term Pavement Performance (LTPP)
  - FHWA Federal Lands

Participating State Agencies (21)

- Ohio
- Louisiana
- Kentucky
- California
- Colorado
- Florida
- Georgia
- Kansas
- Mississippi
- New Jersey
- New York
- North Dakota
- South Dakota
- Illinois
- North Carolina
- Maryland
- Oklahoma
- Connecticut
- Texas
- Wisconsin
- Pennsylvania

Participating State Agencies



Priorities (reviewed annually)

1. Build Reference Profile Device
2. Critical Requirements - complete
3. Bumpfinder Software - complete
4. Certification/Validation Sites
5. Evaluating Upper Limits of Single Accelerometer – Phase I complete
6. Emerging Technology that Enhances Profile Measurement

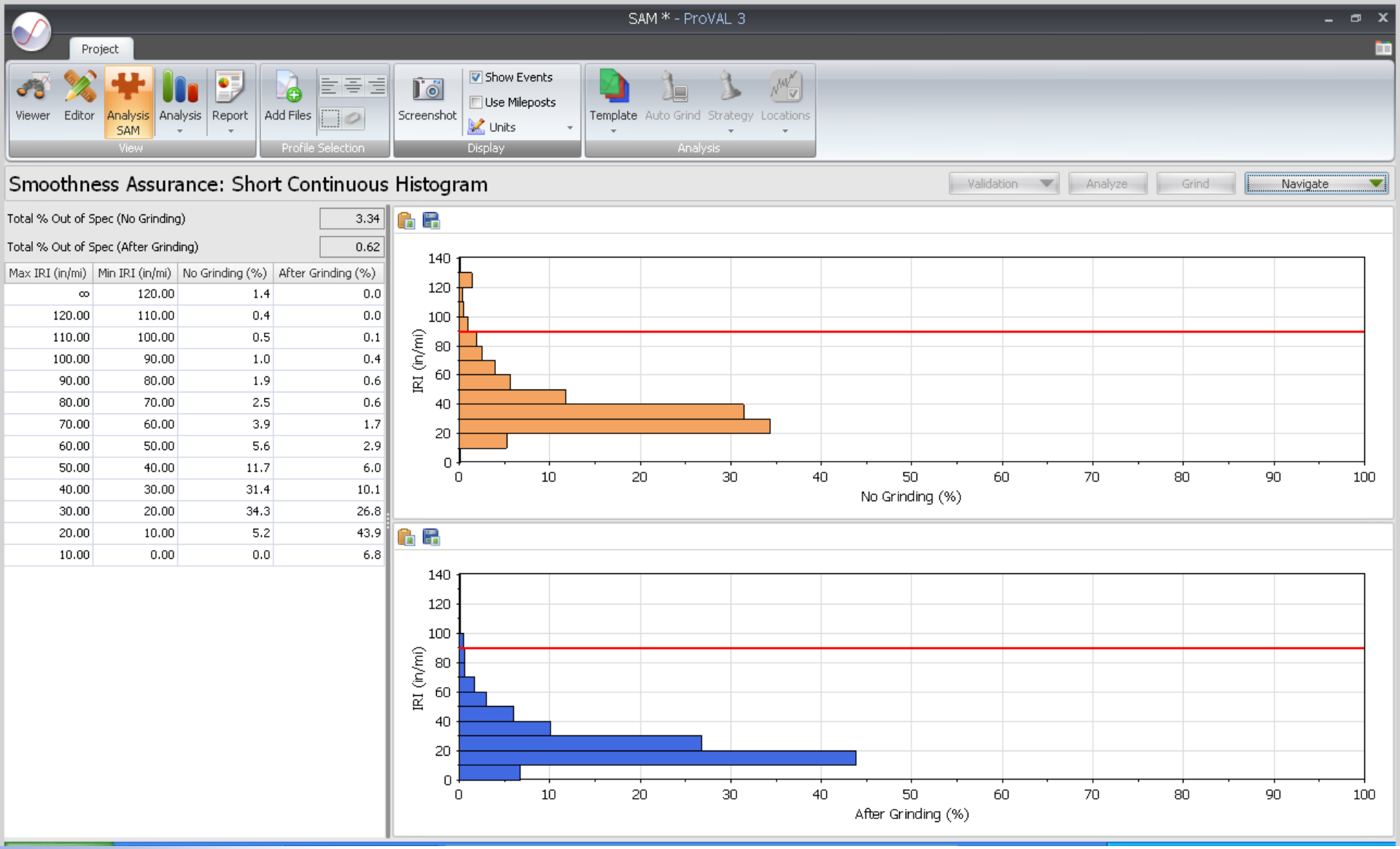
Progress on Priorities

1. Build a Reference Profile Device (underway): Two parts -
   i. Benchmark Testing – UMTRI
   ii. Reference Devices – four potential
2. Critical Requirements (completed): UMTRI; final report on pooled fund study website – “Critical Profile Accuracy Requirements” (CPAR)

Priorities

3. ProVAL Software: The Transtec Group, Inc. – www.roadprofile.com
    - ProVAL 3.2 released in December 2010
    - ProVAL 3.3 release in December 2011
    - Multiple workshops – 10 annually

ProVAL 3.2 software & workshops



Priorities

4. Certification/Validation Site
   i. On hold until reference device complete?
5. Evaluating Upper Limits of Single Accelerometer
   i. Phase I: Starodub, Inc. – complete
   ii. Phase II: to be completed Oct. 2011
6. Emerging Technology that Enhances Profile Measurement
   i. Automated Faulting Measurement
   ii. Urban IRI measurement

Questions?

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