

28th Annual RPUG Conference

San Diego, CA November 1-4

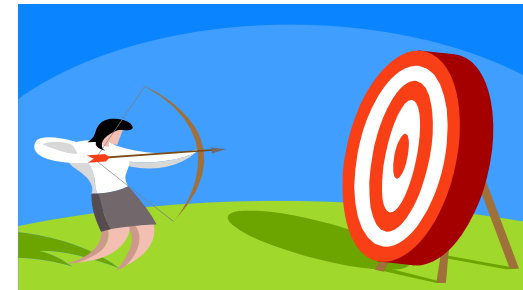


Pavement Surface Properties Consortium – Phase II (TPF-5[345])

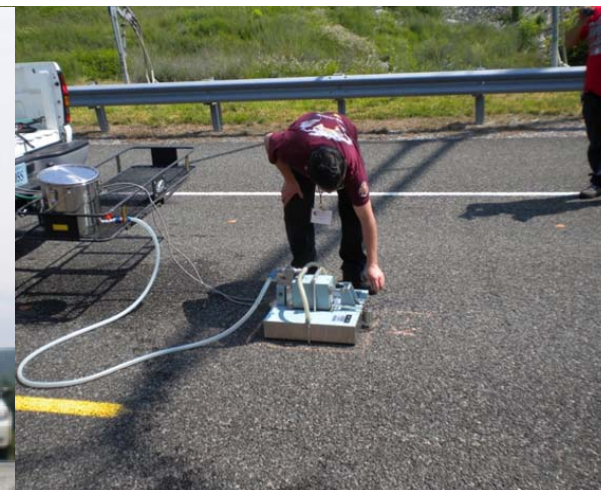


A research program focused on enhancing the level of service provided by the roadway transportation system through optimized pavement surface texture characteristics.

- Equipment Rodeos (at Virginia Smart Road)
- Technology Transfer
- Research on Emerging Topics



Annual Equipment “Rodeos” – since 2007



Virginia Smart Road

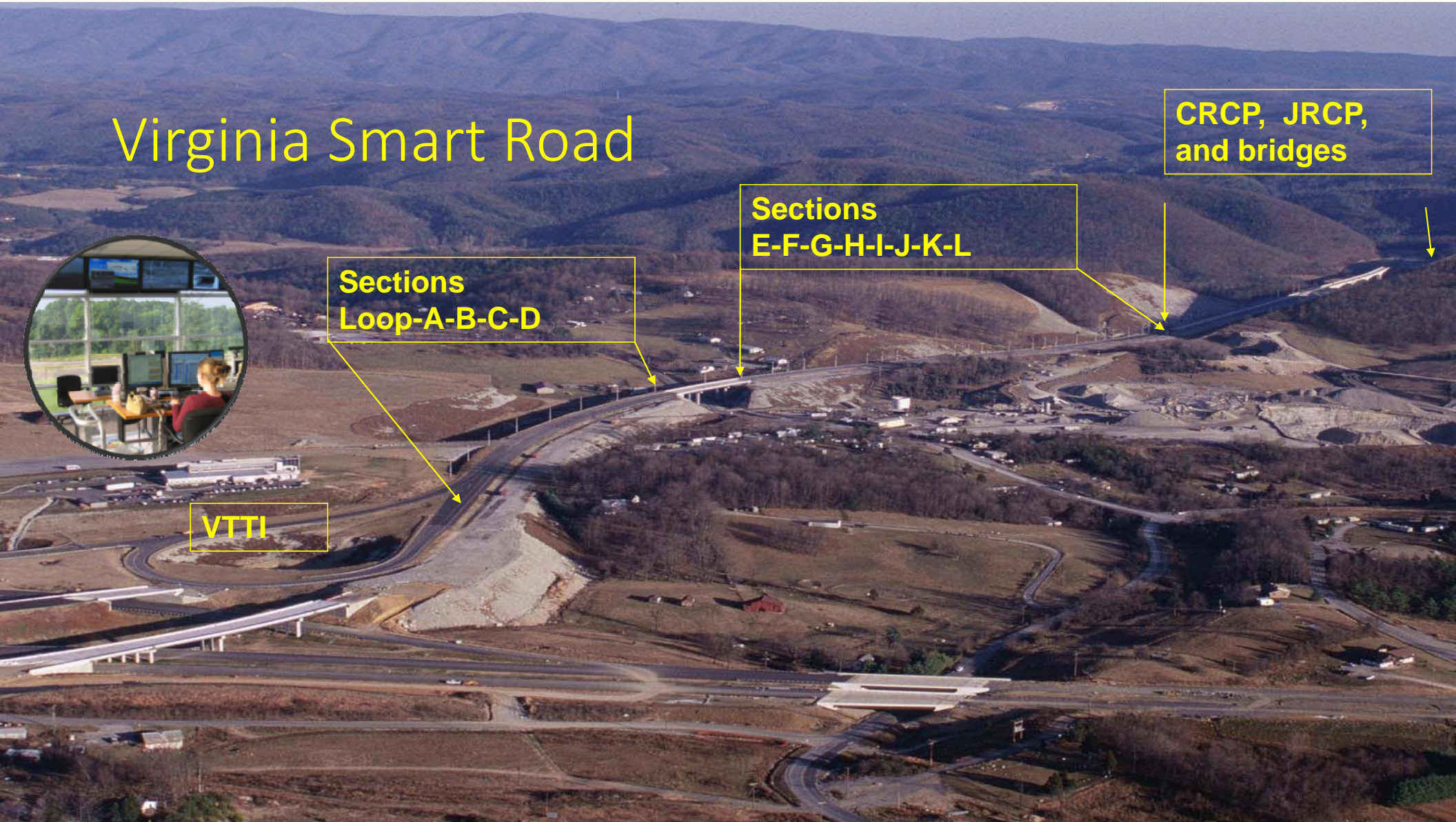


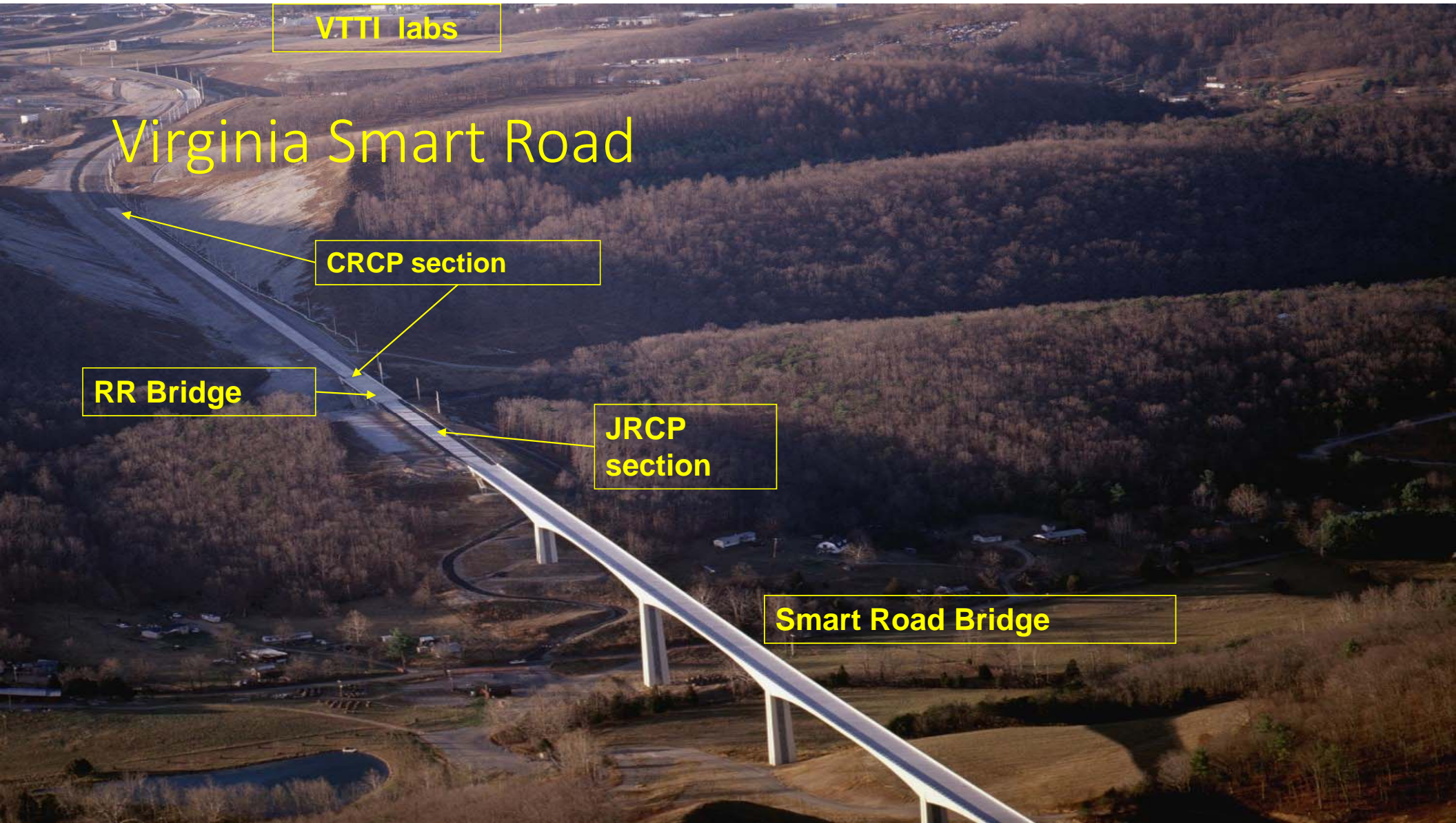
Sections
Loop-A-B-C-D

VTTI

Sections
E-F-G-H-I-J-K-L

CRCP, JRCP,
and bridges





VTTI labs

Virginia Smart Road

CRCP section

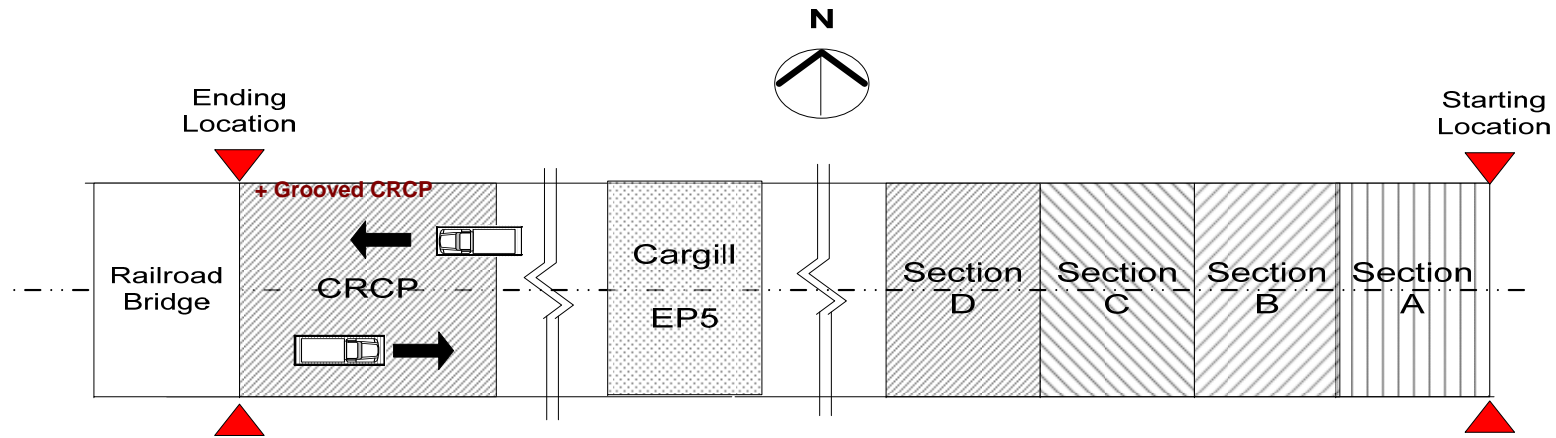
RR Bridge

JRCP section

Smart Road Bridge

TEST SURFACES

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SM 9.5 D SUPERPAVE

OGFC

SMA 9.5 D

Cargill SafeLane™



Tined CRCP

Tined JRCP

Ground JRCP

VDOT EP5LV



**Pavement Surface Properties Consortium: A
Research Program - TPF-5(141)**

**Final Report
2007-2015**

Submitted To: Technical Advisory Committee



MAY 17, 2016



- Chronicles Annual Equipment Rodeo activities from 2007 thru 2015
 - Smart Road Test Surfaces
 - Surface Property Measurement Systems
 - Evaluation and Comparison of Systems
 - Special Studies
- Phase 1 “Products”
 - 28 journal articles and conference papers/ 2 final reports
 - Contributions to 9 other publications
 - Presentations at 10 national and international conferences



1. Annual equipment “rodeos” + verification

- ✓ Profiler/IRI comparison testing
- ✓ Friction/SN comparison testing
- ✓ SURPRO training – as requested?

2. Seasonal monitoring for friction - **COMPLETED**

3. Evaluation & development of new technologies

- ✓ Macrotexture , tire-pavement noise, etc.

4. Evaluation of high-friction surface (HFS) systems - **COMPLETED**

5. CFME/GripTester Technology Demonstration – **COMPLETED?**

6. Travel Support

- PE 2010 – Roanoke
- SURF 2012 – Norfolk
- RPUG 2013 – San Antonio
- PE 2014 – Blacksburg
- RPUG 2015 – Raleigh



SURF 2012

CFME = Continuous Friction Measurement Equipment



6. Travel Support (cont'd)

- RPUG 2016 – San Diego
- RPUG 2017 – Colorado?
- RPUG 2018 – South Dakota?

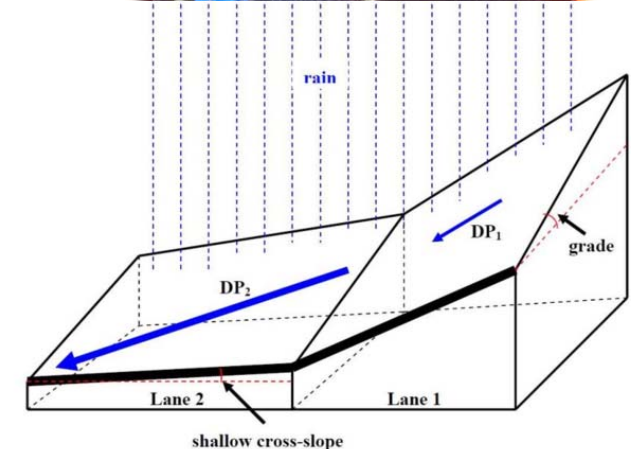
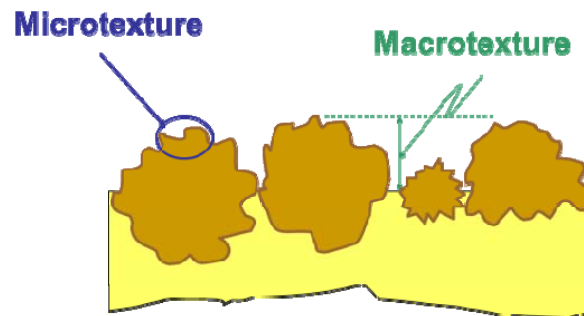
7. Friction technology transfer

- ✓ Locked-wheel calibration
- ✓ **Pavement Friction Management**

8. Related Research

- Splash-Spray Assessment Tool Development (FHWA)
- Acceptance Testing and Demonstration of CFME's (FHWA)
- Dynamic Hydroplaning on Roadways (NCHRP 15-55)
- Protocols for Network Macrotexture Measurement (NCHRP 10-98)

9. Exciting new facilities – the “Virginia Automation Park”





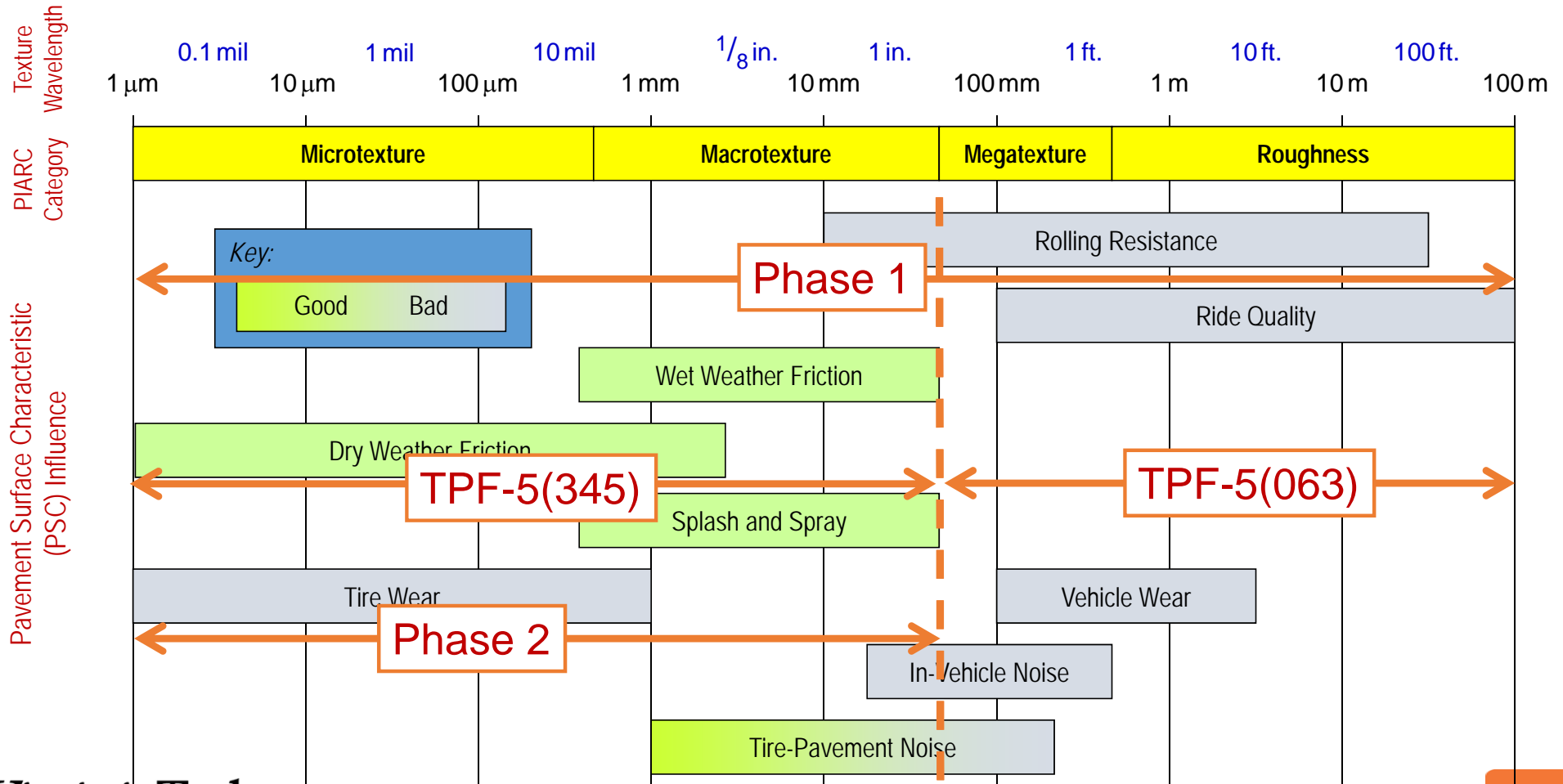
The Automation Park





PHASE 1/PHASE 2

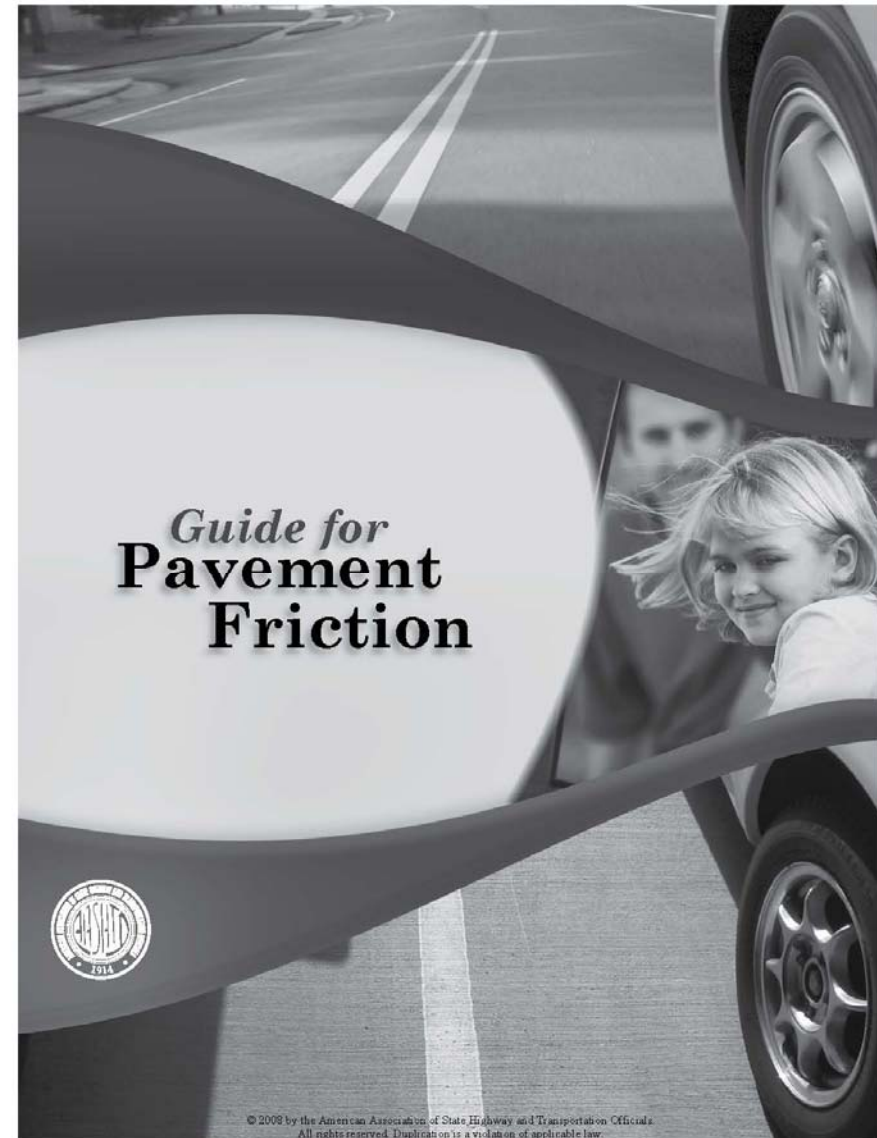
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PHASE 2 PRIORITY

Managing Pavement Friction:

- Reduce highway crashes and related fatalities
- Apply the recommendations from the AASHTO's Guide for Pavement Friction

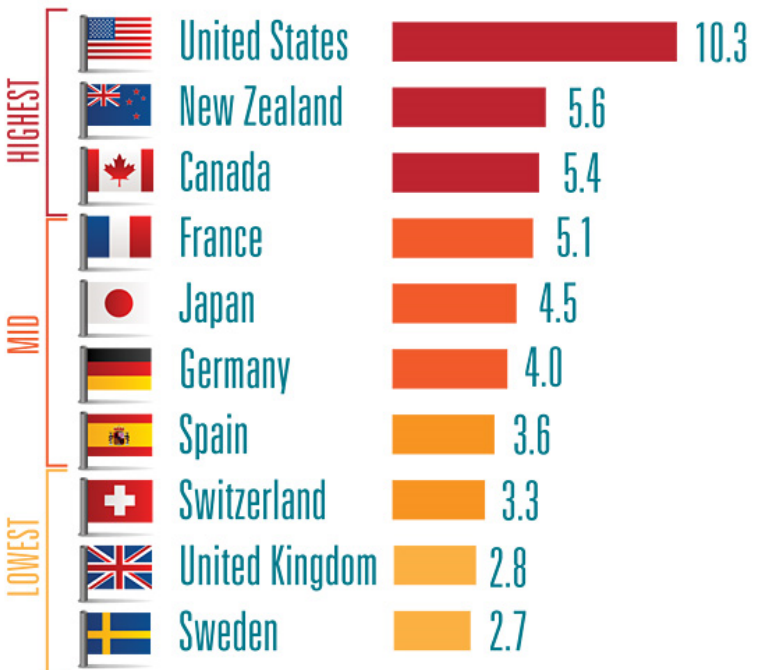


CDC 7/6/2016

- Motor vehicle crash fatalities in the U.S. *could drop by half with proven strategies*
- Lower death rates in high-income comparison countries suggest that progress is possible

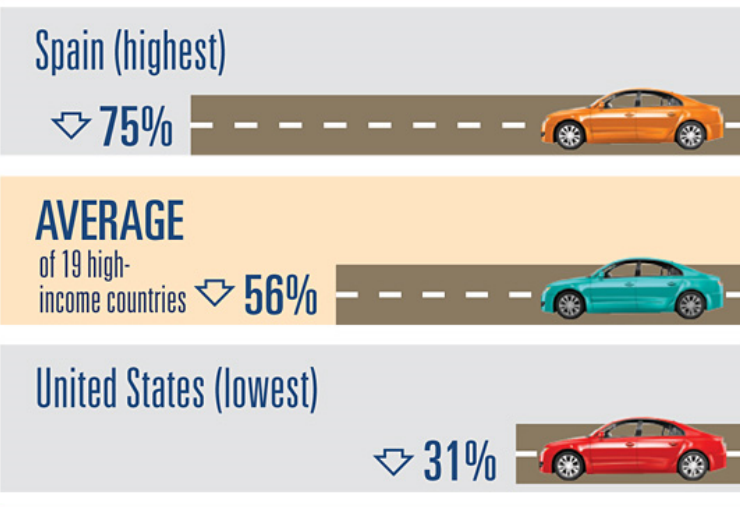
Road traffic deaths in the US and other high-income countries.

Motor vehicle crash deaths in 10 comparison high-income countries, 2013



Deaths per 100,000 people
 SOURCE: WHO Global Status Report on Road Safety, 2015.

Countries with the highest and lowest reductions in crash deaths, 2000-2013



Deaths per 100,000 people
 SOURCE: International Road Traffic and Accident Database (IRTAD) Road Safety Annual Report, 2015.

FHWA's Development and Demonstration of Pavement Friction Management Programs (DTFH61-09-R-00035):

- Assist 4 states to develop Pavement Friction Management Programs (using pavement friction, texture*, crashes, and other data)
- Develop and demonstrate methods
 - Compile friction, texture, crash, traffic, other data
 - Define friction demand categories
 - Set investigatory levels of friction/texture

FHWA Mgt.Team: Katherine Petros, Jim Sherwood, and Andy Mergenmeier



- Friction
- Macrotexture
- IMU + GPS
 - Grade
 - Cross-slope
 - Curvature
- Video (front)
- 2,400 gallons
- 150 miles of continuous data per tank

Sideway-Force Coefficient Routine Investigation Machine



Friction Demand Categories Investigatory Levels

Road classification definitions		Investigatory level 30 mph							
		0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
A	Interstate highways	Light Blue	Red						
B	Divided highways-no event	Light Blue	Red	Red					
C	Two lane road-no event		Light Blue	Red	Red				
Q	Approaches to Intersection (& roundabouts)				Red	Red	Red		
K	Pedestrian crossings and other high risk areas					Red	Red		
R	Roundabout				Red	Red			
G1	Slope 5-10%, longer than 160 feet				Red	Red			
G2	Slope >10% longer than 160 feet				Light Blue	Red	Red		
S1	Curve radius < 1600 feet - divided roads				Red	Red			
S2	Curve radius < 1600 feet - two lane roads				Light Blue	Red	Red		

Acceptance Testing and Demonstration of CFME/ SCRIM:

- Washington 575 miles
- Florida 875 miles
- Indiana 875 miles
- Texas 903 miles

- North Carolina ±500 miles
- Virginia ±2,000 miles?
- Your State? XXX miles?





TRANSPORTATION POOLED FUND PROGRAM

- <http://www.pooledfund.org/Details/Study/594>

Becoming a partner:

- Kevin.McGhee@VDOT.Virginia.gov

Technology, analysis, testing, etc. (i.e., questions too hard for Kevin):

- edeleonizeppi@vtti.vt.edu



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QUESTIONS