VTRC
Virginia Transportation Research Council

We bring innovation to transportation.

Infrared (IR) Technology to Enhance Quality of Asphalt Construction

SHRP 2 Lead Adopter Assistance Program

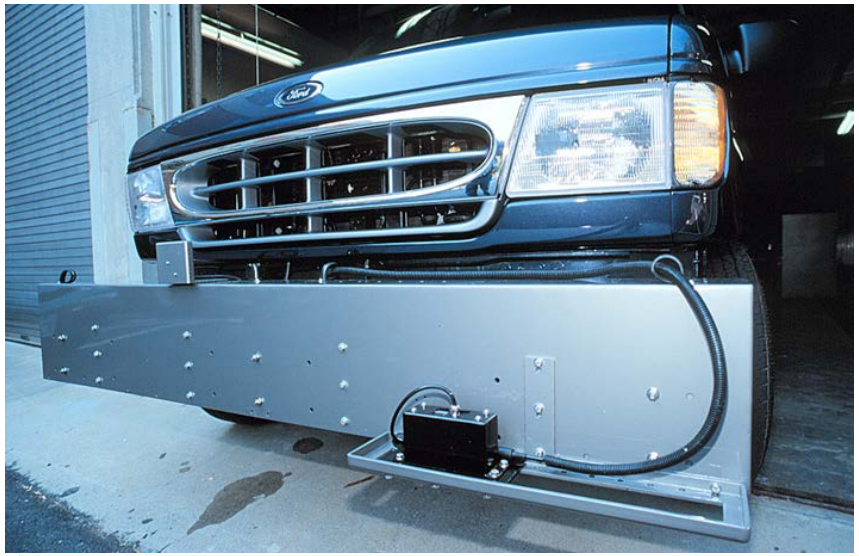
NCHRP 441

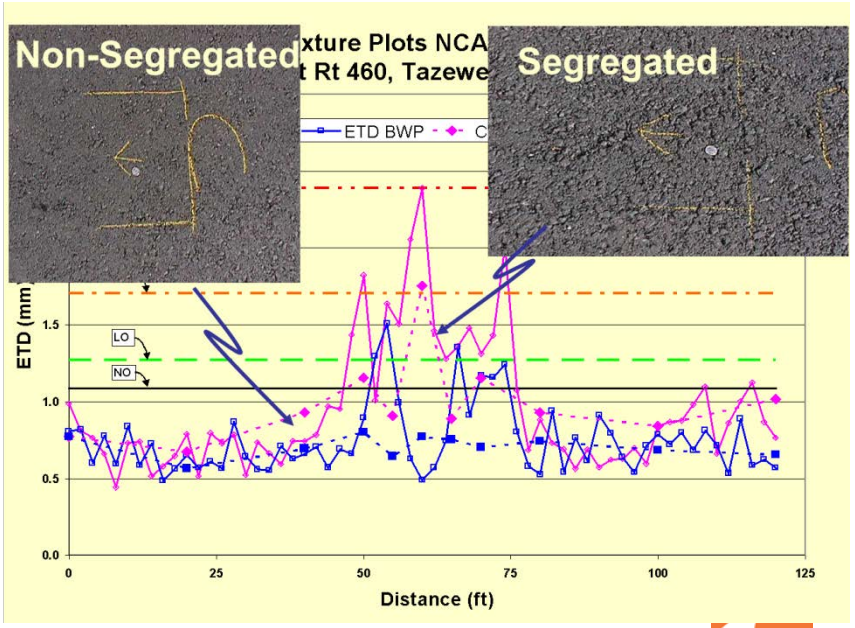
Segregation in Hot-Mix Asphalt Pavements (Stroup-Gardiner and Brown, 2000)

- **infrared thermography** shows good potential for **quality control**
- **dynamic texture** most promising tool for **quality assurance**

Texture for Uniformity

- **VTRC 03-R9**: *High Speed Texture Measurements of Pavements*
  - Apply texture to characterize uniformity
- **VTRC 03-R12**:*Texture Measurement to Improve Uniformity of Asphalt*
  - Proposed Special Provision for Uniformity, March 2003
- **VTRC 05-R34**:*Texture, Ride Quality, and Uniformity*
  - Discontinue development of texture-based uniformity spec.

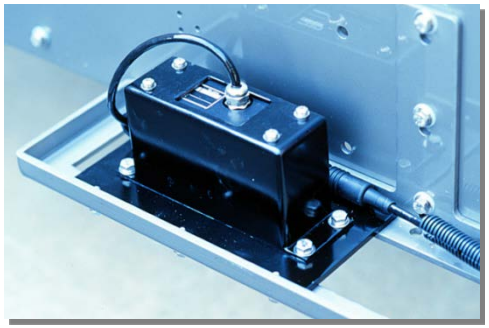


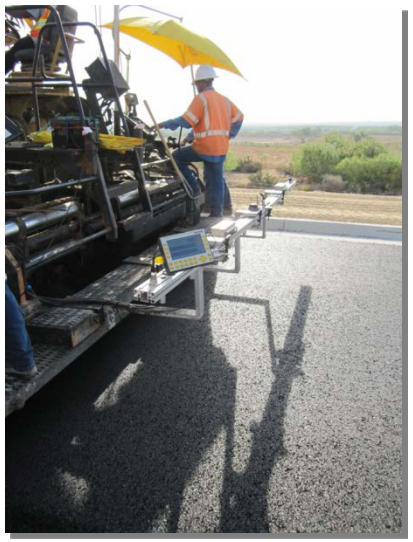


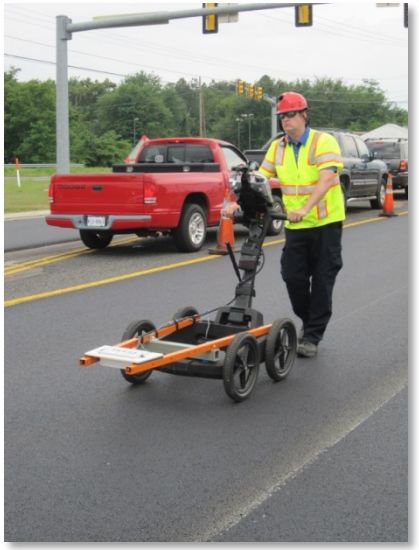
Asphalt Quality Task Force

Report to the Chief Engineer – August 10, 2012 - Rec. No. 7:

"…*study the available technologies to measure surface uniformity and develop a specification*…"







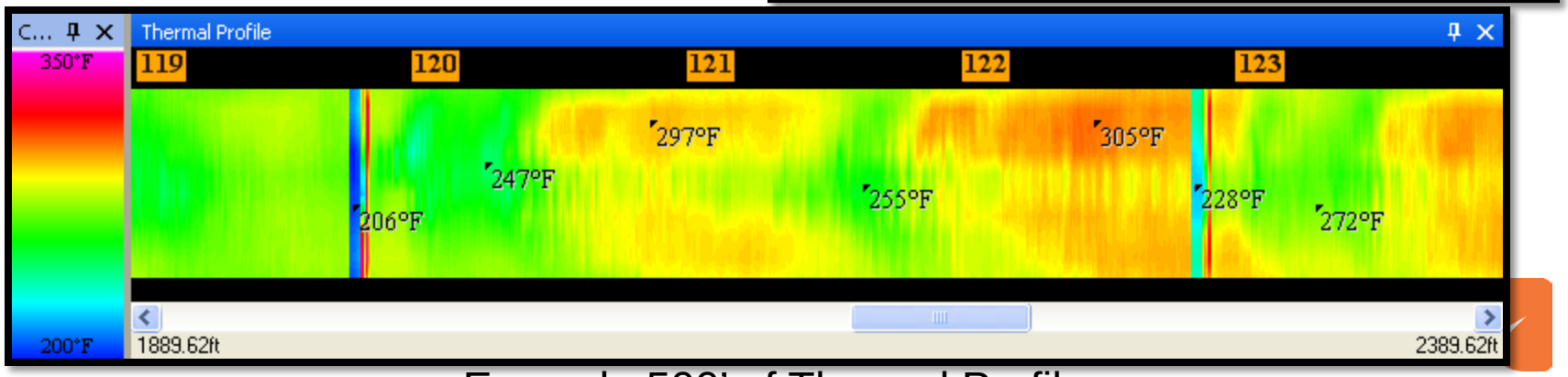
SHRP 2 – Project R06C

Pilot Project Meeting – November 29, 2012

- Pave-IR System
- Measures thermal profile in real-time
- Perform GPR after finish rolling
- Relate dialectrics to thermal profile to in-place voids

Thermal Profile – Central VA

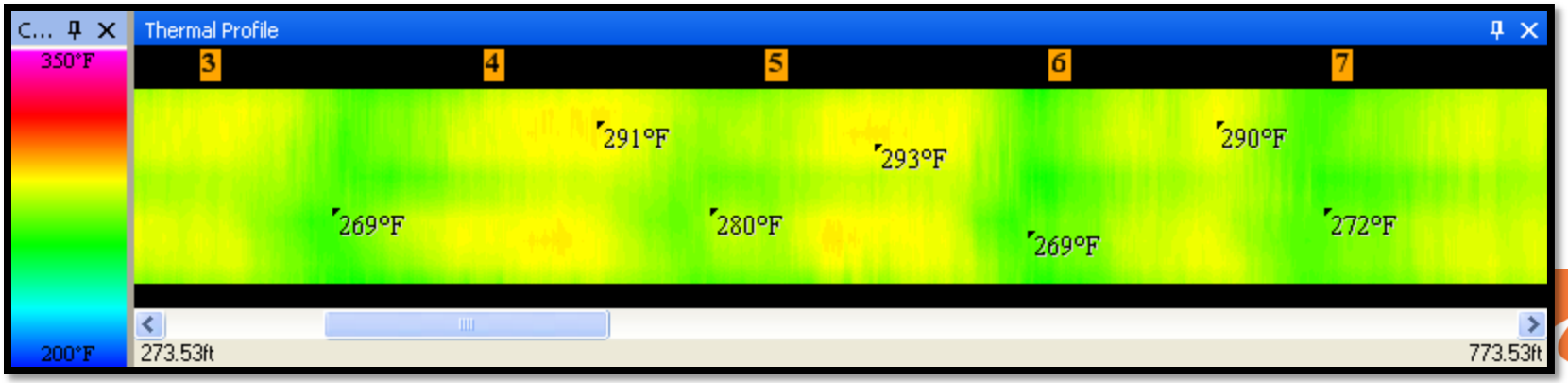
- Truck-end patterns
- Paver ~ 50% idle time
- Temp. diff 40-60 F
- 46% of profiles > 50 F
- W/Evotherm – is this problem?



Example 500’ of Thermal Profile

Thermal Profile – NOVA-ish

- Truck patterns visible
  - MTV capacity ~ 1 truck
- Paver ~ 12% idle time
- Temp diff 23 – 32 F
- 45% of profiles < 25 F
- Foam WMA



SHRP 2 Lead Adopter – 2015/16

SHRP 2 Lead Adopter – 2015/16

- Demonstrate Technology
  - More contractors/paving crews & equipment
- Explore use as:
  - Quality Control Tool for Contractor
  - Quality Assurance/Acceptance Tool for Agencies (incentives for temp control?)
  - Diagnostics Tool for Industry/Agency or Research (FHWA Increased Density?)