



Maine's Efforts to Improve Asphalt Pavement Quality

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U.S. Department of Transportation
Federal Highway Administration



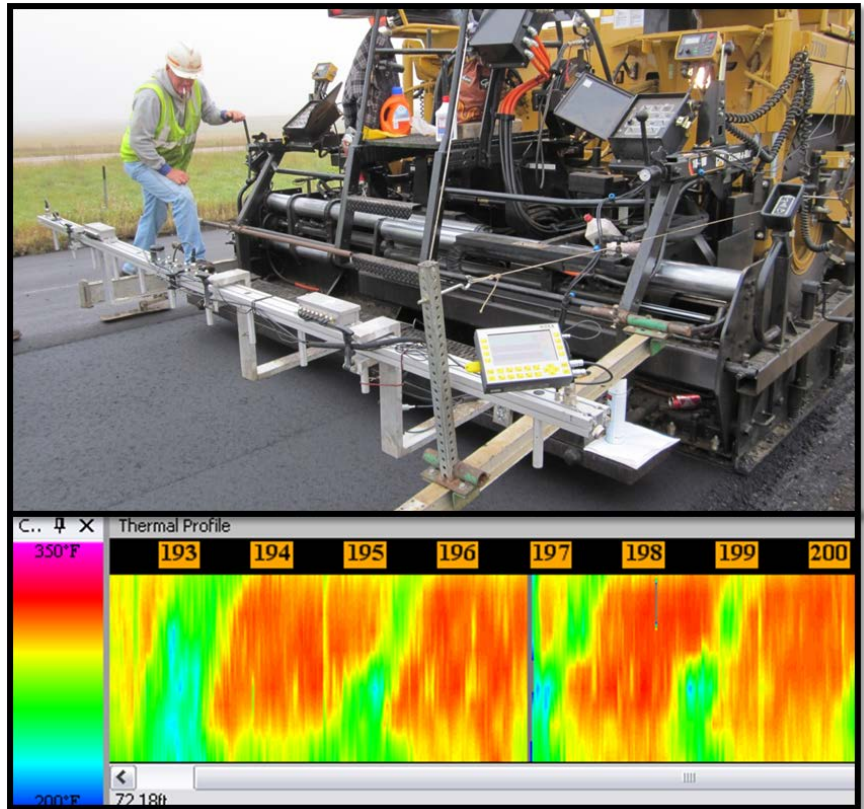
MaineDOT

AMERICAN ASSOCIATION
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AASHTO

Presentation Overview

- Maine's need for improved asphalt evaluation
- Testing of Infrared scanner technology
- Interim results
- Next steps



Maine's Transportation Needs



- Concern about quality of asphalt pavement construction
- Between 4,000 – 12,000 tons of pavement replaced annually due to defects
- Substandard practices cannot always be identified with current random sampling
- Tool needed to improve consistency of laydown practices





Quality Characteristics



- Smoothness
 - Easily measured with current technologies
- In-place density
 - Density gauges or core samples
 - Random sampling; not complete evaluation
- Surface uniformity (seldom measured)
 - Difficult to measure with current methods

Rapid Technologies to Enhance Quality Control on Asphalt Pavements (R06C)

Non-destructive techniques for evaluating asphalt pavements during construction

- Infrared thermal scanning
- Ground Penetrating Radar
- Measures uniformity and potential defect areas in asphalt pavements during construction.
- Offers real-time testing of potentially 100 percent of the pavement area.

SHRP2 Solution - IR

Tool to Measure Segregation

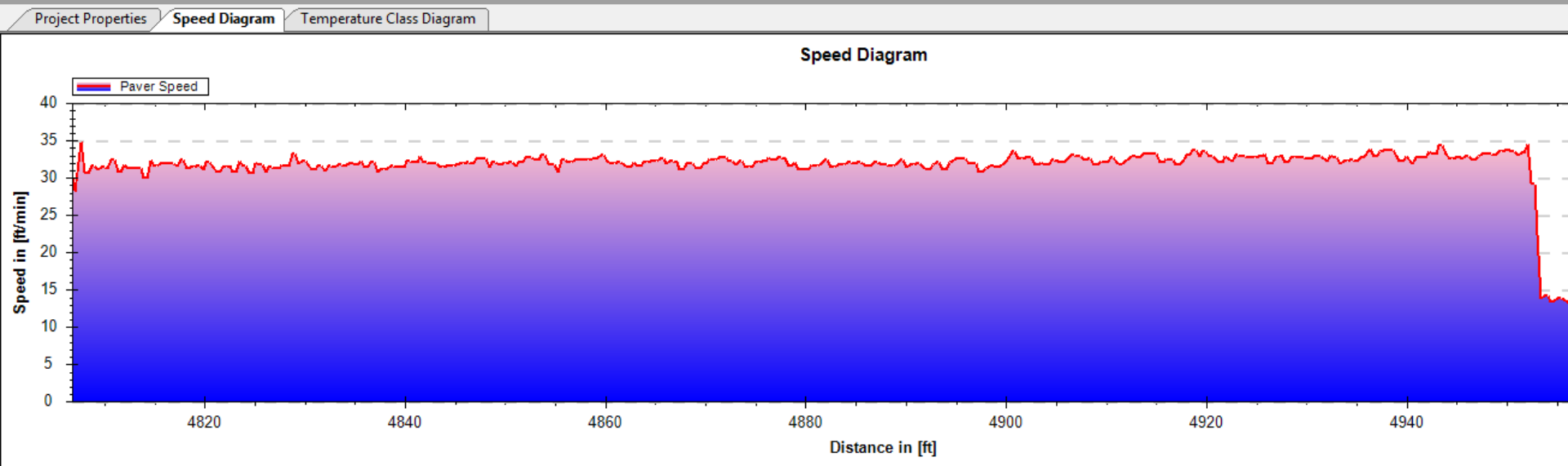
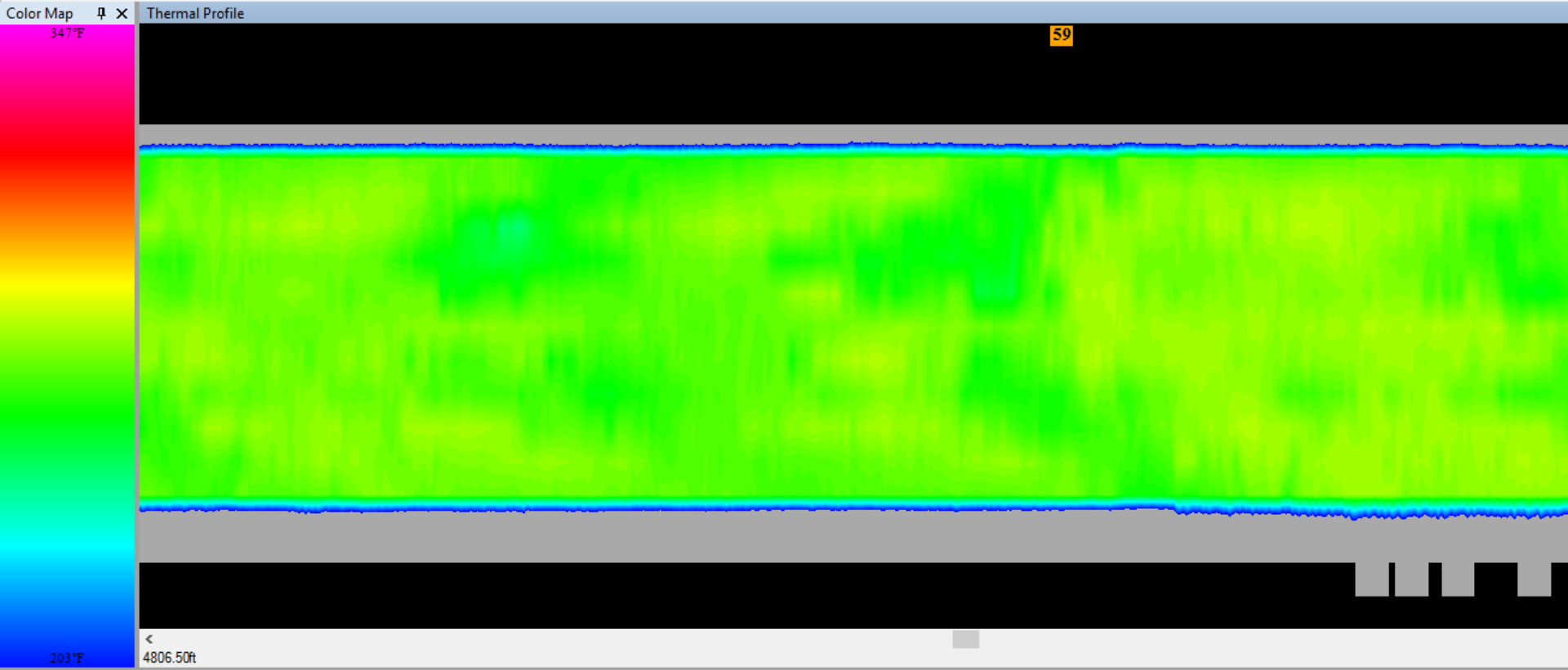
- Segregation has always been a challenge
- Often identified visually; subjective
- Difficult to quantify
- Very difficult to enforce contractually...until SHRP2
- Two types
 - Mechanical
 - Thermal
- **IR scanner helps identify both types**

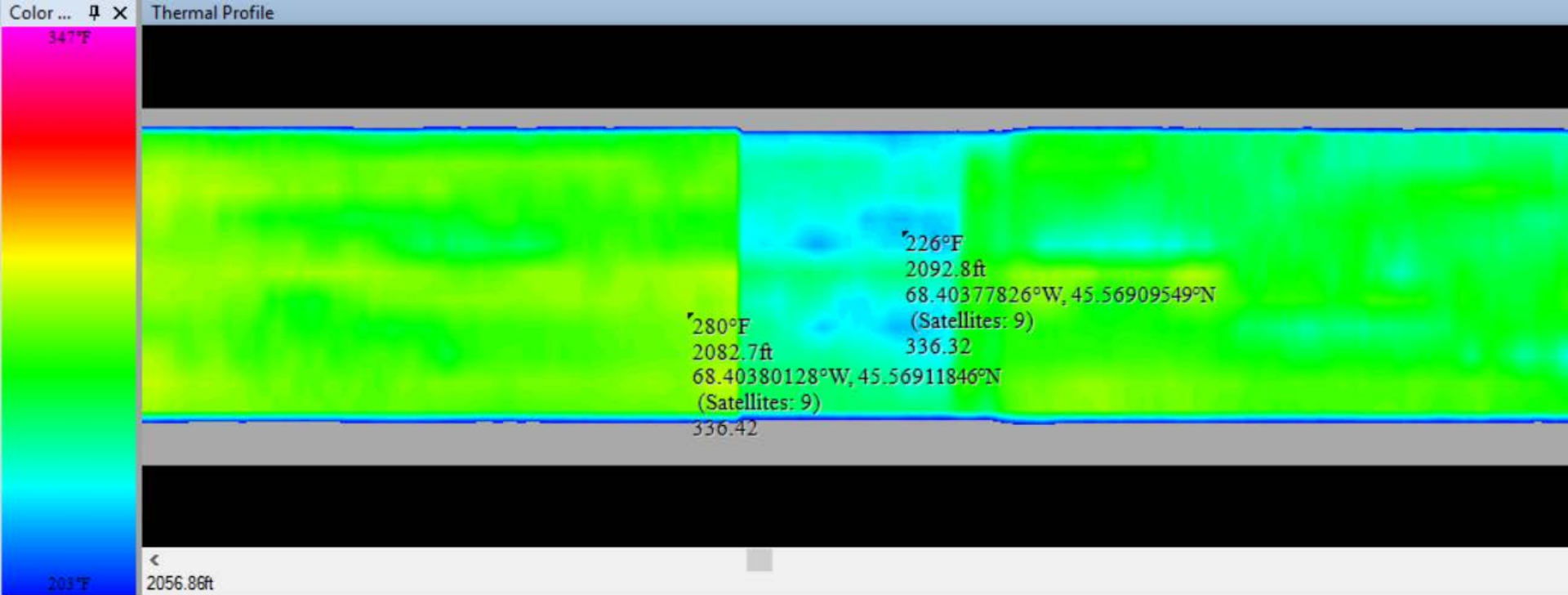
IR Equipment

- Attaches to any paver in +/- 2 hours
- GPS provides location data
- IR thermal camera scans entire width of mat
- Captures paver speed and duration of stops
- Information displayed in real time

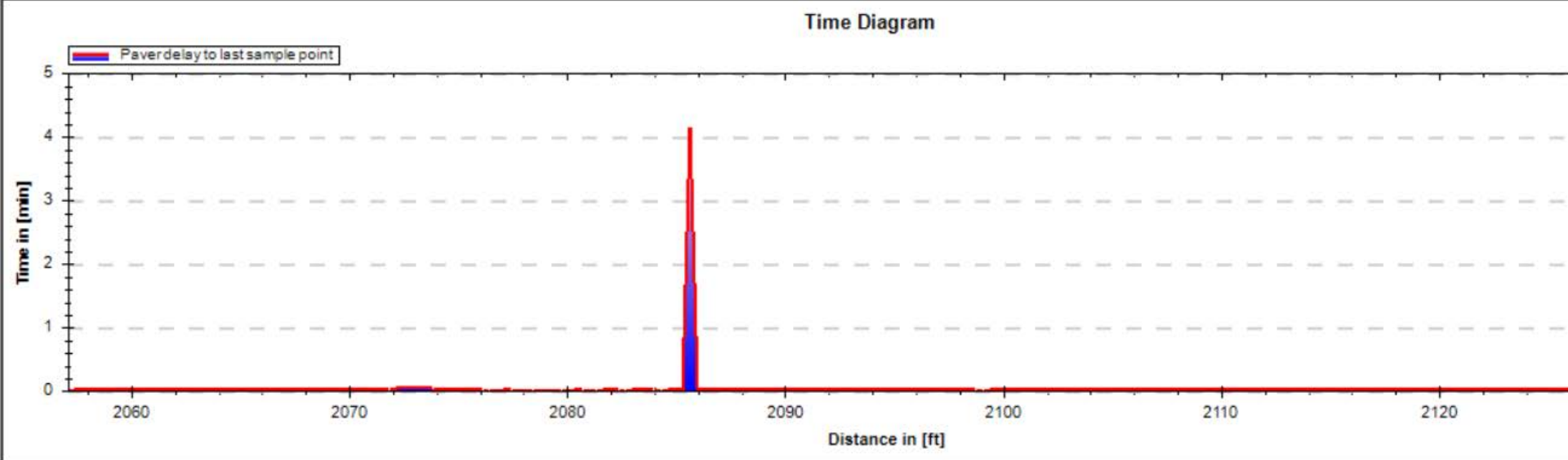


Courtesy of MOBA Corp.

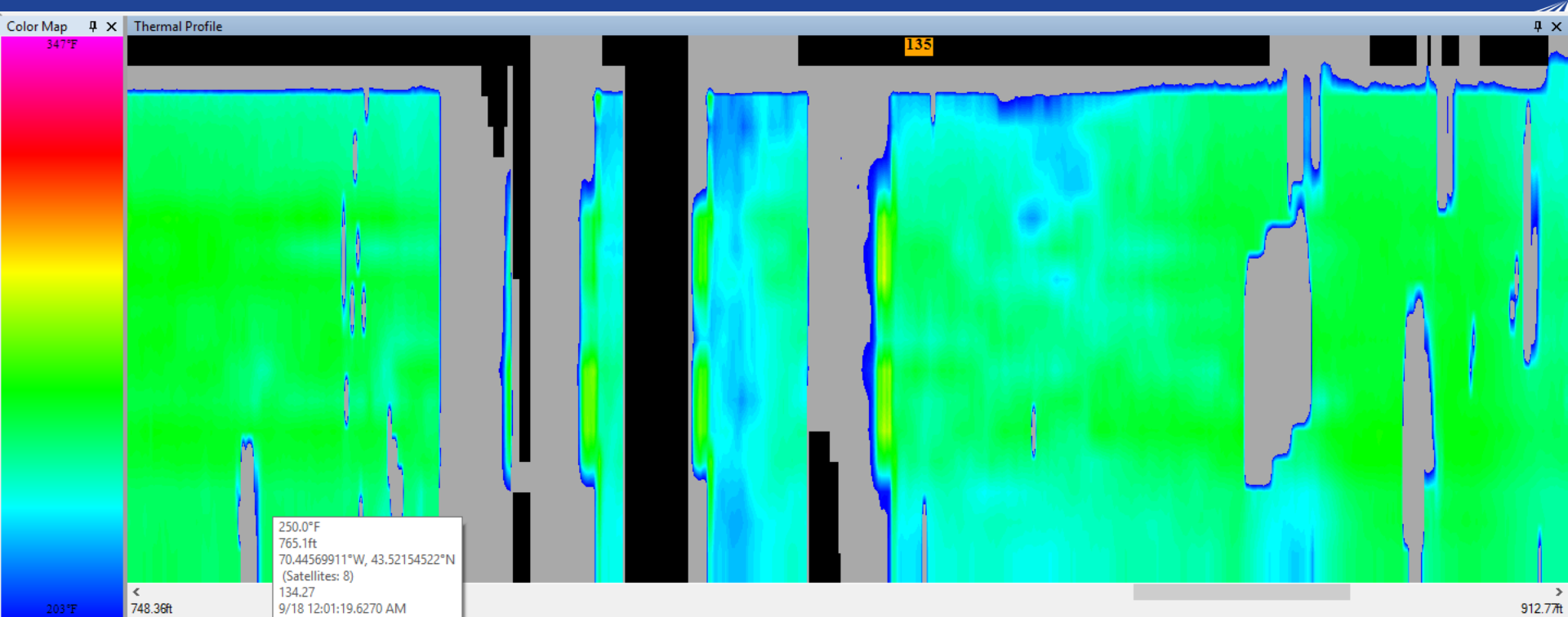




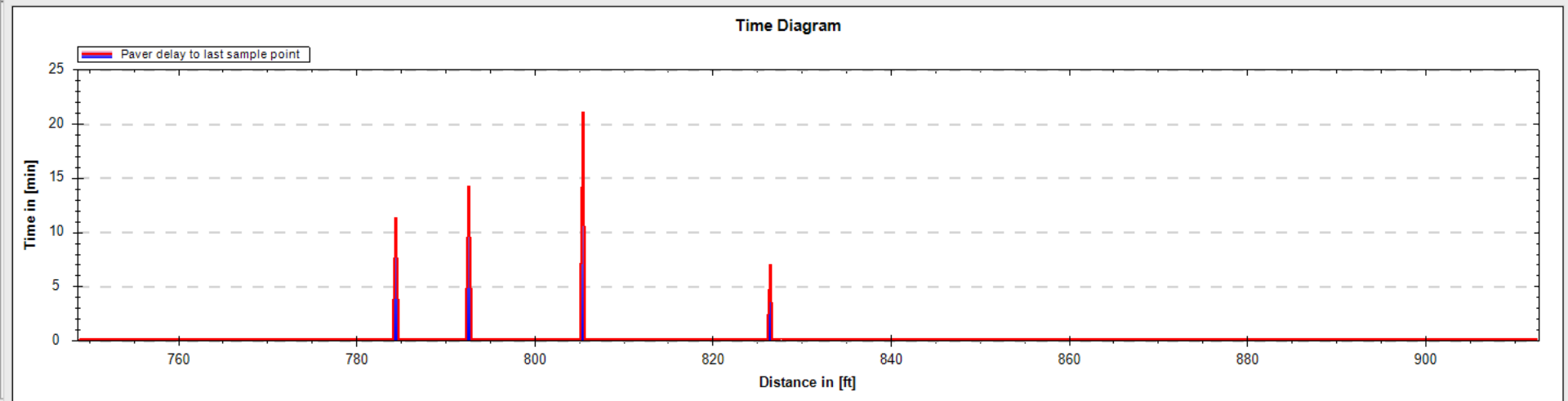
Project Properties | **Time Diagram** | Speed Diagram | Temperature Class Diagram

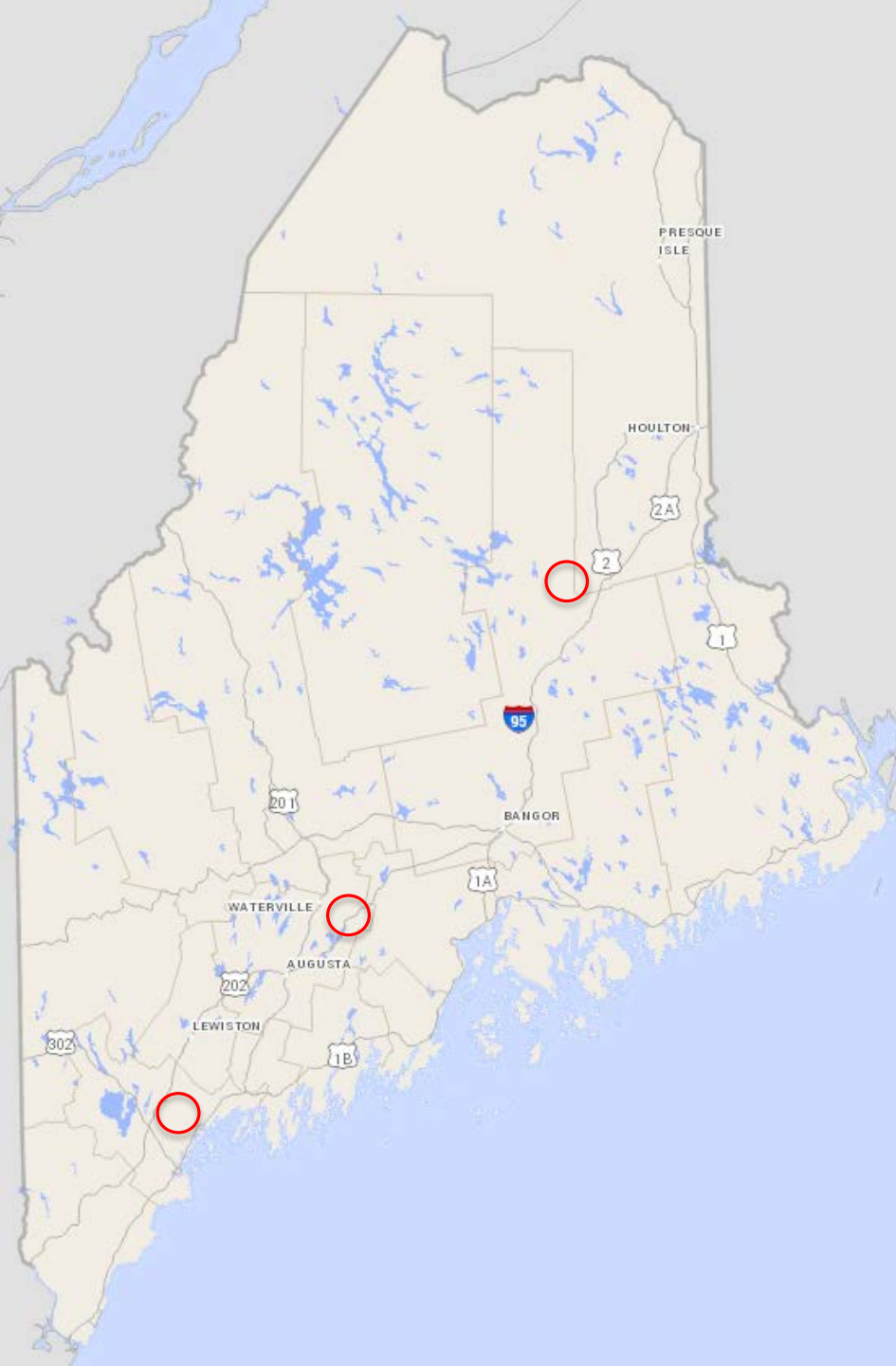






Time Diagram





2014 Projects

Rte. 157 Mattawamkeag

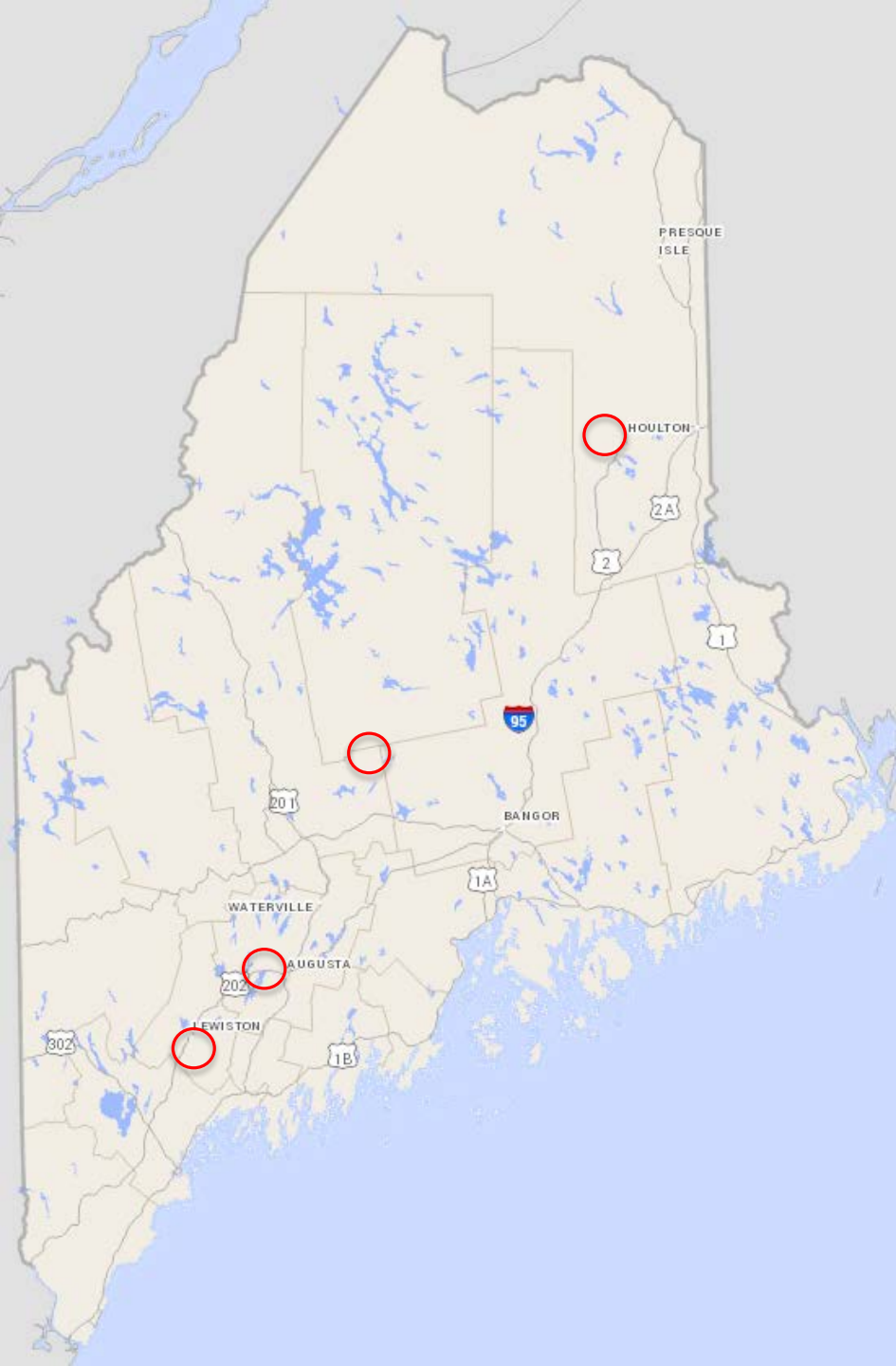
- 6.5 miles
- Mill & fill – 1.25” surface

Rte. 3 China-Palermo

- 6.7 miles
- Shim/Overlay – 1.25” surface

I – 195 Saco

- 1.9 miles
- Mill & fill – 1.5” surface



2015 Projects

I-95 Houlton

- 19.26 miles
- Mill & fill – 1.5” surface

Rte. 150 Cambridge

- 2.3 miles
- Shim & OL – 3/4” surface

Rte. 202 Augusta

- 3.8 miles
- Mill & fill – 1.5” surface

Rte. 196 Lewiston

- 1.5 miles
- Mill & fill – 2” surface

Immediate Benefits



- More uniformly constructed hot- and warm-mix asphalt layers
- Better in-place field density
- Improved communication among paving crews, QC, and DOT personnel
- Improved ride
- Less reliance on visual inspection
- Reduced discrepancies between contractor and agency test data

Long-Term Benefits



- Better inspection coverage helps avoid noncompliance penalties.
- Offers smoother, longer-lasting pavement.
- Real-time temperature data allows for quick corrective action.
- Reduced need for corrective action due to low-density asphalt pavements.
- Reduced construction time; fewer incidents of replacing new pavement.
- Lessens exposure of workers and public to work zone hazards.

Next Steps



- Additional trials in 2016
- Pilot projects specifying use of this technology
- Work with MAPA on full implementation

For more information

For more information on improving the quality of your asphalt pavements through SHRP2 products contact:

- Steve Cooper (FHWA) stephen.j.cooper@dot.gov
- Evan Rothblatt (AASHTO) erothblatt@aashto.org

For more information on Maine's experience, contact:

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