

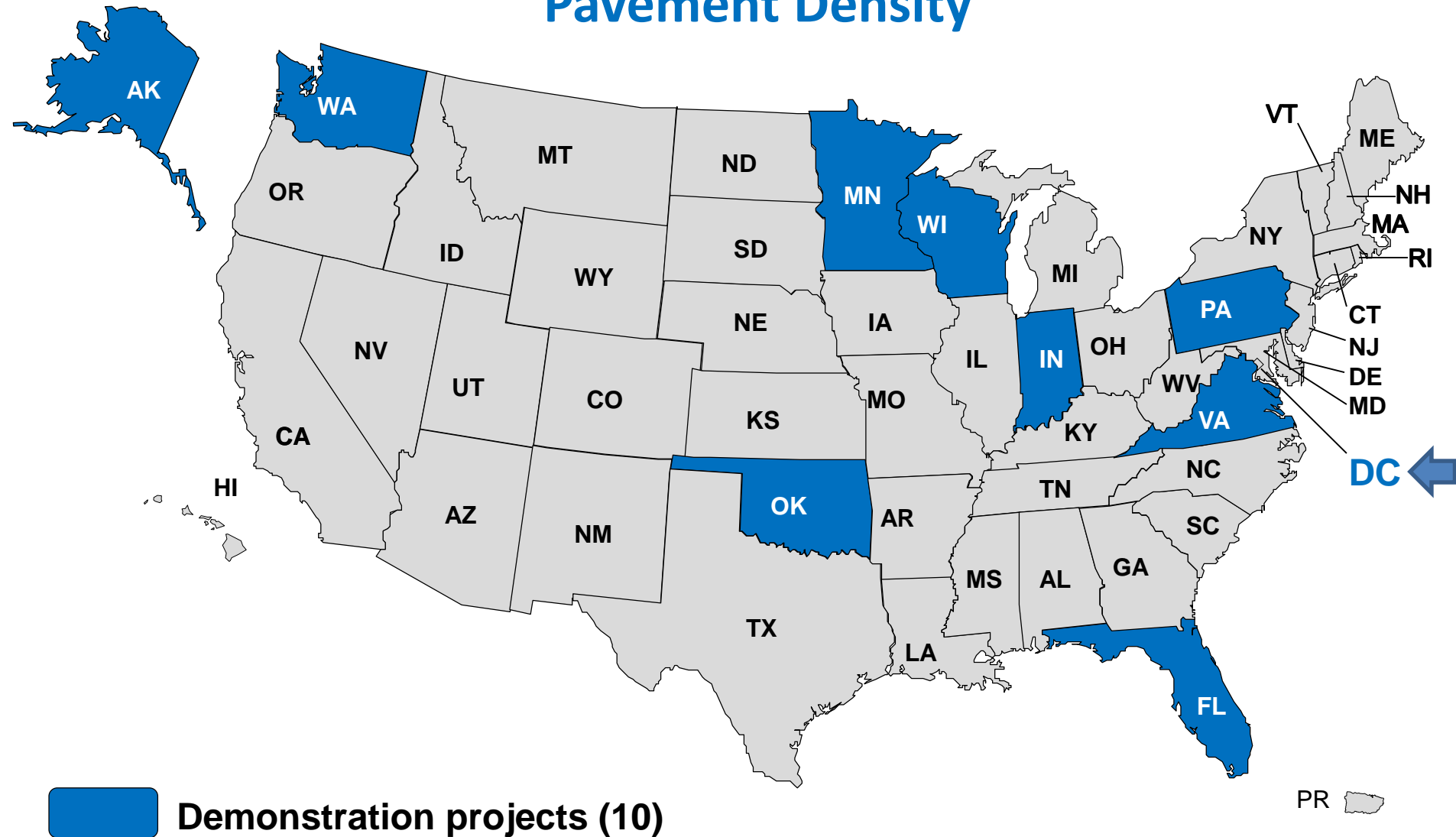
Enhanced Durability of Asphalt Pavements through Increased In-Place Pavement Density Demonstration Project

Neal Fannin P.E.
Pavement Materials
CMD

FHWA Demonstration project

- Demonstrate the claim that an increase of 1% in field density will increase service life by 10+%.
- States given \$50,000.00 incentive to participate.
- PA along with 9 other states applied and were selected for the demonstration project.

Enhanced Durability of Asphalt Pavements through Increased In-Place Pavement Density



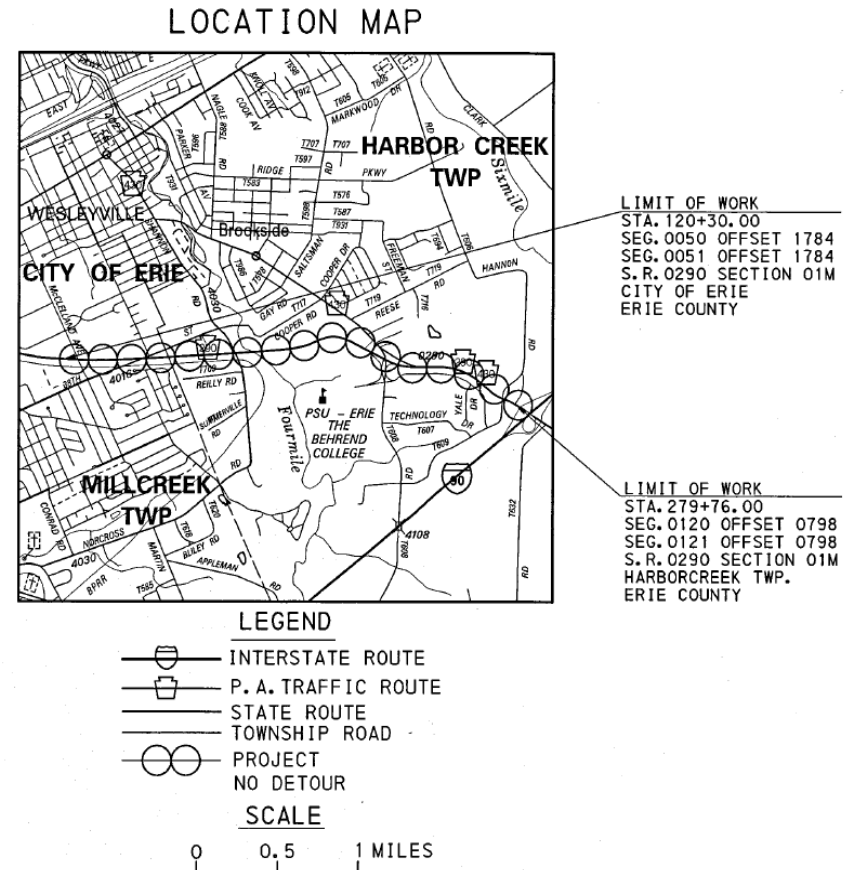
Project Experimental Plan

- Find a PWT project with 3 or more lots.
 - Construct 1 lot in accordance with the current 409 specification. (average 92% of Gmm density)
 - Construct the rest of the lots using the PWT specification. (92.0% to 98.0% limits for PWT computation)
- Project needed to be constructed in 2016 construction season.

Project Location

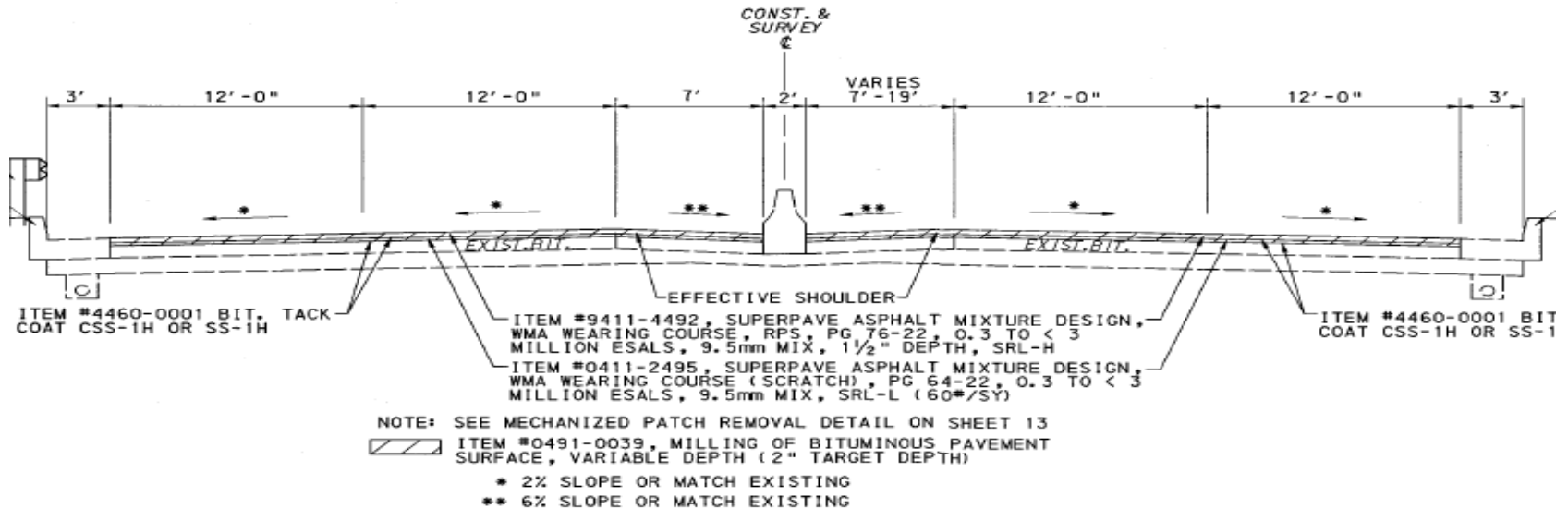
- **District 1**
 - Erie County
 - SR 0290
 - Seg 0050 to Seg. 0120

Bay Front Connector **Penn State Behrend.**



Project Features

- SR 0290
 - 45MPH speed limit
 - Several large intersections
 - ADT 14,354 with 6% trucks
 - Very wide section at intersections.



Project Features

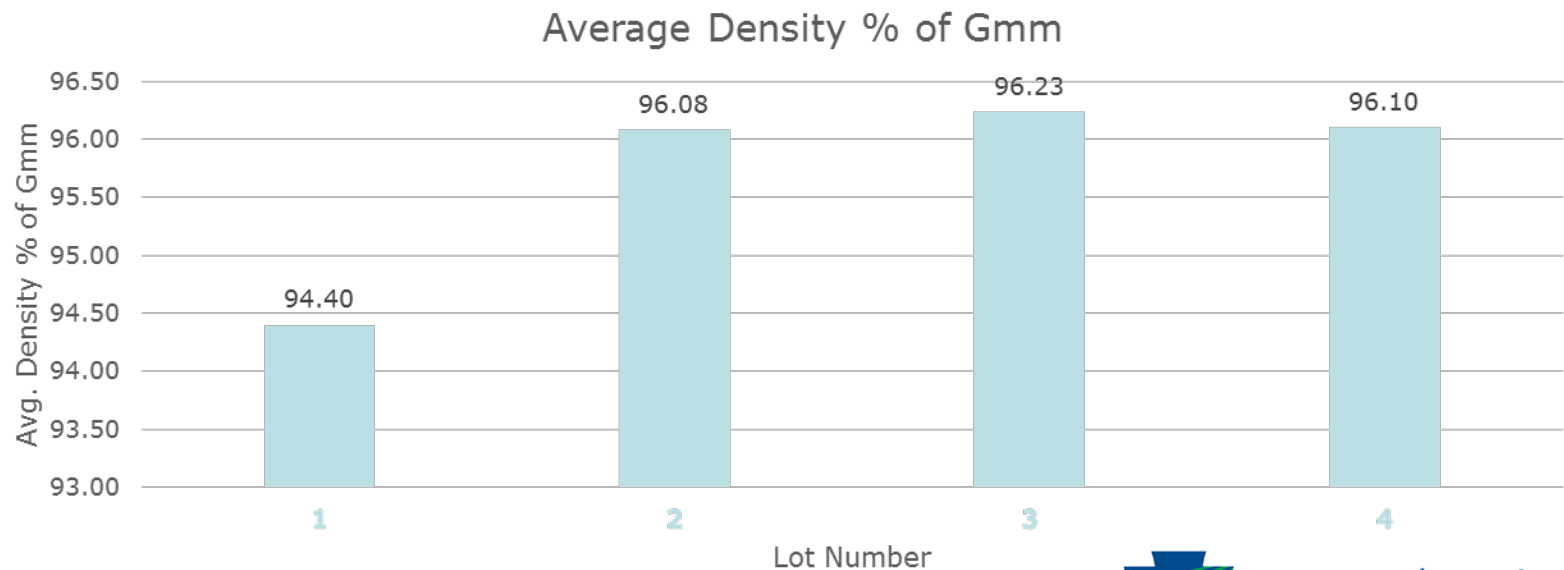
- Mix design
 - 9.5mm NMAAS
 - 0.3 to 3 million ESALs (75 gyration)
 - PG 76-22 polymer modified asphalt.
 - SRL H
 - Very wide section at intersections.
- Surface preparation
 - Milled off 2 inches
 - CSS-1h tack coat
 - Placed 65 Lb./SY scratch course
 - Placed 1.5 inch 9.5mm wearing

Project Features

- Paving Train
 - MTV – Roadtech SB 1500
 - Paver – Cat AP 1055F
 - Break down roller – CAT CB 54B
 - Intermediate roller – CAT CB 54B
 - Finish Roller – Sakai WS800

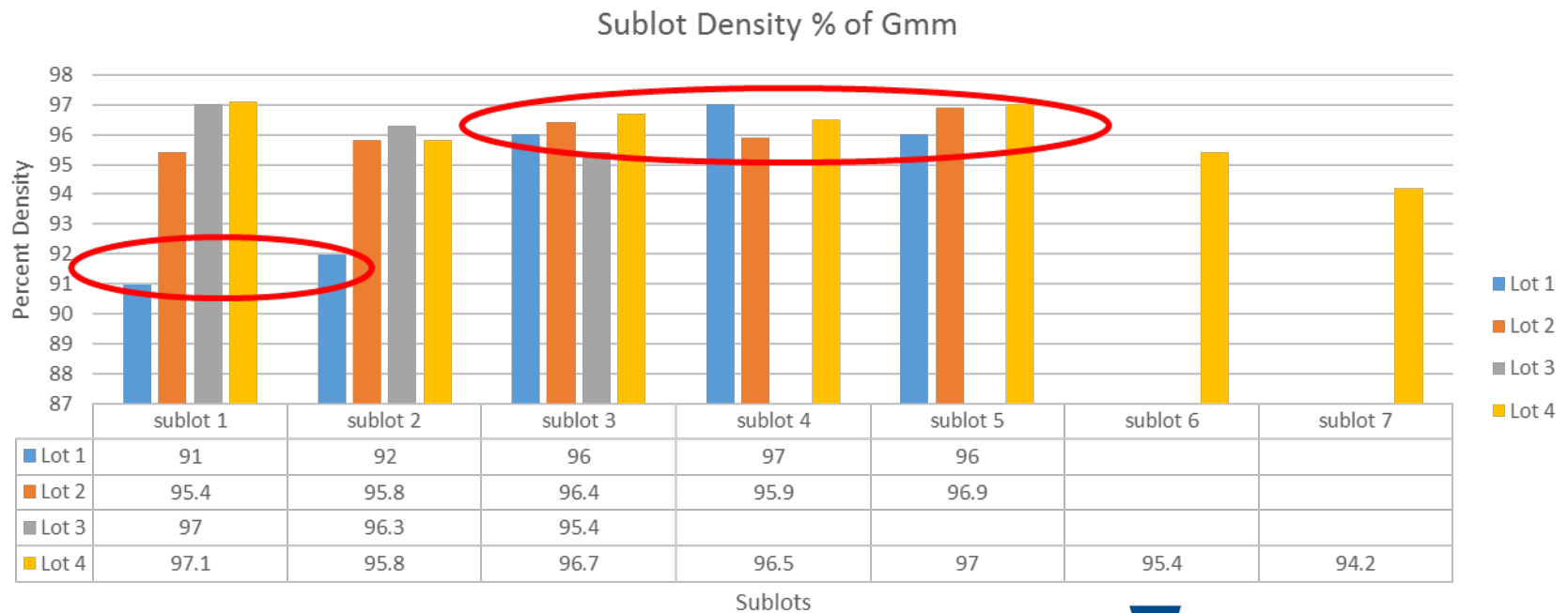
Project Results to date

- Lot 1 is the control constructed under old specification with average 92% of Gmm requirement. Other lots constructed under PWT specification with 92.0% to 98.0% PWT limits.
- **Looks like there was a large increase in density results with the PWT Spec.**



Project Results to date

- Looking at the individual subplot results of the first lot (in blue) it becomes clear that the first 2 sublots pulled down the rest of the lot results.

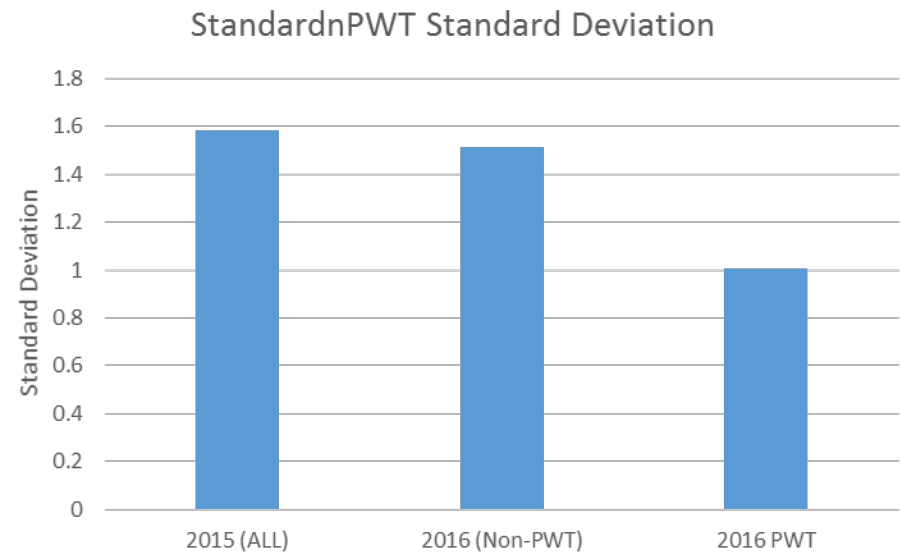
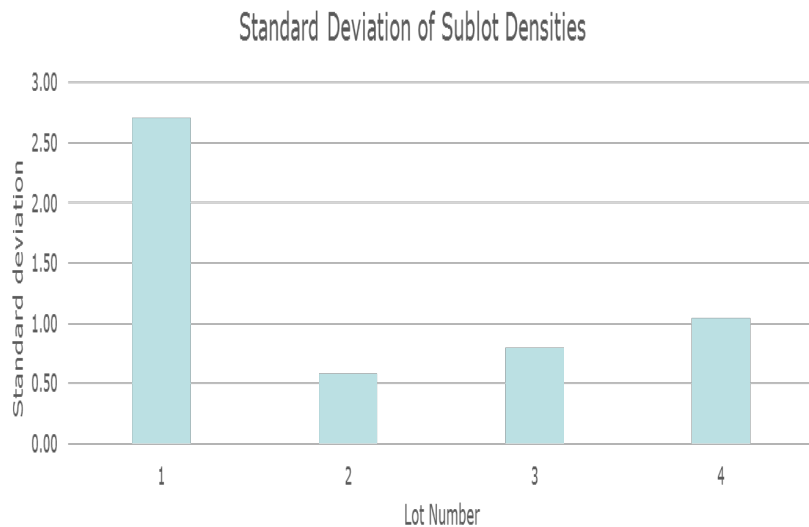


Project Results to date

- The first 2 sublots will be monitored separately over the next several years to see if the lower initial density will result in shorter service life or more deterioration over time.

Project Results to date

- Standard deviations on this project seem to follow the trend for PWT specification projects state wide.
 - Lower SD being generally achieved for PWT specification material.



Project Results to date

- No concrete conclusions can be made but results appear to support the decision to implement the PWT specification.
 - Average densities seem to be about the same or just slightly higher.
 - Standard deviations for PWT lots seem to be lower.
- **No hard conclusions can be drawn from this one demonstration project.**

Thank You to Participants

- District 1
 - **John Murcavage**
 - Steve Snyder
 - Doug Fry
 - Mike Dibert
- Joseph McCormick Construction
 - Joe Hosey

Questions?

