U.S. Department of Transportation
Federal Highway Administration

ENHANCED IN-PLACE DENSITY:

DEMONSTRATION PROJECTS

In-place density of asphalt pavement mats and joints is an important factor in building cost-effective, long-lasting asphalt pavements. Recognizing the importance of in-place density, the FHWA recently completed a demonstration project for "Enhanced Durability of Asphalt Pavements through Increased In-place Pavement Density" to assist State Departments of Transportation (DOTs) in reviewing and updating, as needed, their current field density acceptance criteria.

DENSITY DEMONSTRATION PROJECTS

were conducted in three phases from 2016 to 2019 with DOTs partnering with contractors to show that density could be increased through improved techniques. Each participating DOT workshop included the use of existing practices as well as "new" materials and technologies. A total of **29 workshops** were delivered with over **1,800 attendees** at locations shown in Figure 1. This effort followed a series of State DOT site visits of projects pursuing improved joint density, and a series of over **75 longitudinal joint workshops** across the country between 2012 and 2016. As a demonstration project, each State (the contractor and agency) focused on the most beneficial changes for its situation to improve density. Variables evaluated by States included mixture type, mix adjustments, lift thickness, construction equipment and procedures, and new technologies.

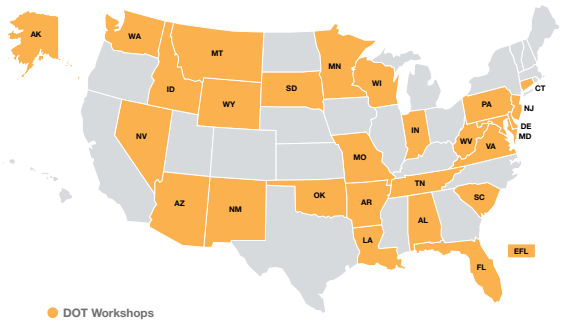

Figure 1. Map of DOT Workshop Locations.

LESSONS LEARNED

- The suggested minimum in-place density of an asphalt mixture should be 92 percent and 94 percent was frequently achieved on projects.
- There are several materials and technologies useful for improving in-place density.
- The most common frequency of density testing was every 250 to 500 tons.
- With proper identification, obstacles to achieving in-place density can be overcome.
- Longitudinal joint density can be improved by using various techniques and tools.

In the **29 field demonstration** projects performed, **26 DOTs participated** with **121 experimental sections** constructed, comprised of 35 control sections (existing practices) and 86 test sections (new materials and techniques). In 24 of 29 projects density was increased at least 1 percent from the Control Section or the Test Section achieved at least 94.0 percent density. Twenty-four of the 26 DOTs have changed or are in the process of changing their density specifications. Key observations of the demonstration projects are documented in 4 FHWA TechBriefs.

Density Demonstration Projects and Related Specifications

Techniques and Tools for Improving Density

Overcoming Obstacles to Achieving Density

Improving Longitudinal Joint Performance

CONTACT FOR MORE INFORMATION:

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