



HIGHLIGHTER

PROJECT TITLE
DEVELOPMENT OF
GUIDELINES FOR SELECTION
AND EVALUATION OF TACK
COATS IN OKLAHOMA

ODOT SP&R 2273 (First Year)

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MORE INFORMATION

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DEVELOPMENT OF GUIDELINES FOR SELECTION AND EVALUATION OF TACK COATS IN OKLAHOMA

September 2017

Tack coat is liquid asphalt or asphalt emulsion. Asphalt emulsion consists of a paving grade asphalt binder blended with water and an emulsifying agent to keep these dissimilar materials in suspension together.

Tack coat is sprayed on pavement to improve the bond between layers, acting as glue between the existing surface and the new asphalt layer. Proper bonding between pavement layers prevents cracking, de-bonding, and fatigue failure.

Selection of an appropriate tack coat material, applied in the recommended ranges, provides the glue necessary for pavement bonding. A water barrier is a secondary benefit.

Due to the lack of specific guidelines for the selection of tack coat type, application rate, placement, and evaluation, tack coat type is usually selected based on experience or judgment.

However, determining the type of tack coat and optimum amount of tack coat (affects application rate) is vital to performance and service life of pavement.

LABORATORY RESEARCH

In order to conduct the tracking test specified in this study, researchers obtained a Tracking Paint Drying Time Wheel Device.



Figure 1. Tracking Paint Drying Time Wheel



Figure 2. Asphalt Mix Samples Compacted using Card Board and Metal Strips

The research team will be estimating effects of moisture-induced damage and temperature on the overall performance of interlayer shear bond strength for the selected tack coats.

Once the research team tests the performance of tack coat in the laboratory, they will be placing the results into a database. The database will provide optimal application rates based upon different tack coats and various surface conditions.

On 12 April 2017, Shivani Rani presented research from the first year to her colleagues and several ODOT employees from the Materials Division and the Office of Research and Implementation.

TECHNOLOGY TRANSFER WORKSHOP

Technology Transfer means communicating or sharing research knowledge. Technology Transfer includes those activities that lead to the adoption of a new technique or product and can involve implementation, dissemination, presentation, demonstration, and training.

To promote ODOT's technology transfer goals, organizing a workshop at ODOT headquarters encourages broader participation by ODOT employees and members of the Oklahoma Asphalt Pavement Association. A *Summary for Applying Tack Coat* (with a guide for calculating application rate) will soon be distributed to field divisions.

Furthermore, research will eventually be presented at Transportation Research Board Annual meetings as well as Oklahoma Transportation Research Day.

BENEFITS FOR ODOT

Recommendations from this research will benefit ODOT as they develop guidelines and special provisions for future selection and use of tack coat materials.

ODOT has prepared a Field Guide for the use of tack coats in Oklahoma. Eventually, recommendations from the research team will be added to the Field Guide.

Application of tack material in a consistent and uniform manner:

- results in good pavement bonding
- is essential for achieving long-term pavement performance

Each layer of tack coat, if properly applied, increases compression and shear strength between layers of asphalt, resulting in longer durability of pavement.

Once complete, data from the research team will be available to pavement engineers as they select tack coat type and determine application rate. Prior to construction, evaluating the effectiveness of the selected type and application rate of tack coat as a quality-control procedure will help minimize maintenance costs in the future.

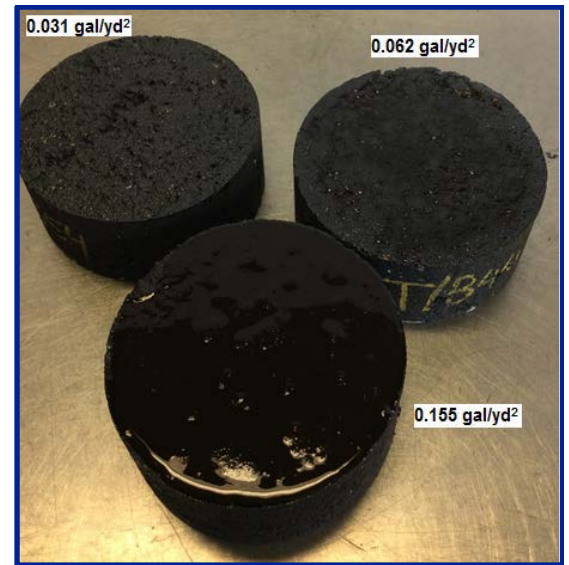


Figure 3. Asphalt Mix Samples after application of Tack Coat

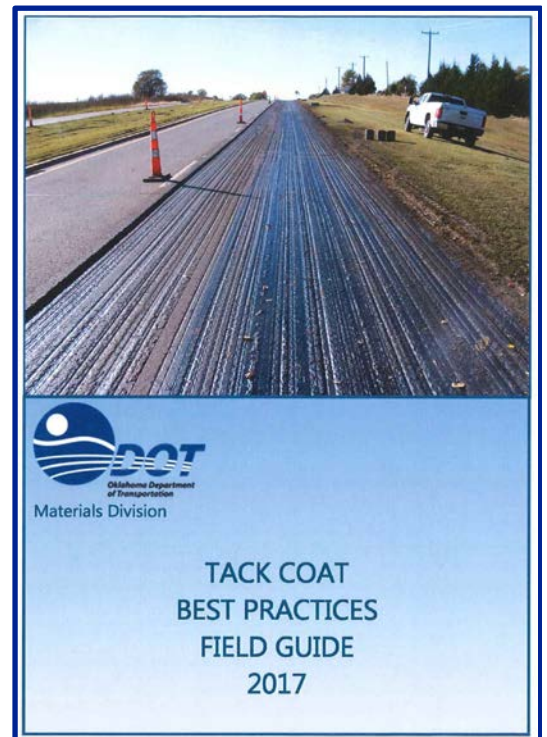


Figure 4. Cover Page for Field Guide Published in 2017



Figure 5. Application Method (affects uniformity)