ABSTRACT

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Fog seal is a type of treatment that uses a dilute asphalt emulsion to seal and protect an existing asphalt surface from different kind of distresses. Fog seal is sprayed on top of an asphalt pavement surface to improve and protect it from further cracking and raveling. Rejuvenator is also a type of treatment agent that penetrates into the asphalt pavement and restores its original viscoelastic property. Similarly, like fog seal, rejuvenator can be sprayed on top of an asphalt pavement surface.

In this study, three different rejuvenating fog seals were compared regarding improving surface friction, the overall condition of existing asphalt pavements, and the rheological and chemical properties of the binder. The rejuvenating fog seals were PassQB (Rejuvenator A), WD 2000 (Rejuvenator B), and BioRestore (Rejuvenator C). These treatments were applied on thirteen different roads in the southern part of the State of Indiana. Pavement Surface Evaluation and Rating (PASER) and Dynamic Friction Tester (DFT) were used for evaluation of the overall pavement condition and to measure the Coefficient of friction (CF) respectively. Rheological properties of the binders were measured using Dynamic Shear Rheometer (DSR) and the chemical properties (Carbonyl Concentration) of the binders were measured using Fourier Transform Infrared Spectroscopy (FTIR). The samples were then aged in Pressure Aging Vessel (PAV) and the same tests (DSR and FTIR) were conducted again to capture the rate of changes

of the rheological and chemical properties. Before and after treatment data for all test methods were collected and analyzed for comparison.

The results from surface friction suggest that Rejuvenator C caused the least surface friction reduction compared to Rejuvenator A and Rejuvenator B, while the results from the binder testing suggest that Rejuvenator A and Rejuvenator C are benefiting the binder more than Rejuvenator B.