



ASPHALT COMPLETED RESEARCH PROJECT

PROJECT NAME: DATA ANALYSIS OF NEBRASKA PAVEMENTS CONTAINING RAP
PROJECT NUMBER: SPR-P1(20) M112

RESEARCHERS

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FINAL REPORT

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NDOT RECOMMENDATIONS BASED OFF RESEARCH

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PROJECT ABSTRACT

“Nebraska has used reclaimed asphalt pavement (RAP) materials (in a range of 20-50%) over more than 10 years in pavement construction. Despite the immediate economic and environmental benefits, it has been reported that incorporating RAP may reduce pavement durability and crack resistance.

This study used NDOT’s database to investigate the effect of RAP amount on the overall behavior of pavement performance. Toward that end, we collected data of pavement performance, mixture design, traffic, and environment of a total 254 pavement projects constructed between 2009 and 2012. Using the data, several analyses (such as descriptive, inferential, and life cycle cost) were conducted by interrelating field performance (for the last 10 years) with mixture design where RAP contents vary. Results showed that sections with high RAP content (up to 45%) presented no significant difference regarding IRI and rut depth when they were compared with other RAP sections. However, projects constructed with 45% RAP in northern Nebraska reached the cracking limit (40%) and severity limit (0.4) after around 5-6 years in service. Projects constructed with 25-45% RAP in southern Nebraska showed satisfactory performance in both cracking and severity up to 8 years in service. The LCCA results showed that SPR sections with RAP up to 45 percent could reduce costs by approximately 14% due to the reduced mixture costs compared to SP4/SP5 mixtures with lower RAP content, and it can further reduce costs when it is constructed in southern Nebraska due to lower aggregate costs. Mixtures in northern Nebraska indicated a slightly increased cost compared to mixtures in southern Nebraska. It is to be noted that the collected projects are subjected to traffic levels of ADT less than 1600 and truck traffic less than 200.”

As quoted by P.I. Jiong Hu, in the December 2020 final report abstract –



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