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14. Supplementary Notes			
1. Abstract Purpose and Need The North Dakota Department of Transportation (NDDOT) has placed WMA overlays on sections near Valley City using Evotherm 3G chemical additive.. The primary purpose of this proposed research is to evaluate the rut resistance performance of the NDDOT WMA overlays. Field core samples representing the WMA and the control HMA sections near Valley City will be tested for rut resistance under dry and wet conditions using the asphalt pavement analyzer. The field specimens' rut resistance evaluations will give insights into the usefulness of the using warm mixes in North Dakota.			
Objective and Scope The main objective and scope of this proposed study are: <ul style="list-style-type: none"> To evaluate the rut resistance of North Dakota's WMA field samples as well as HMA control samples from a trial section near Valley City, North Dakota using the Asphalt Pavement Analyzer for dry and wet conditions. To assess the performance of the WMA specimens by comparing their rut resistance results to the control HMA specimens' rut resistance results for both dry and wet (moisture resistance) conditions. 			
Summary At this juncture, the PI is cautious about the use of WMA in North Dakota on a large scale without further testing. Future tests may include additional APA rut testing, other strength tests, or field monitoring to make a definitive decision on the utility of warm mixes in North Dakota. The potential to extend the paving season into cold weather, see savings in fuel cost, and realize reductions in harmful emissions are very strong incentives to continue researching warm mixes in North Dakota. The APA results indicate that the WMA mixes generally exhibited higher rut values in comparison with the HMA control specimens. As reported, the average WMA rut values were 13 percent and 29 percent higher than the average rut values of the HMA mixes under dry and wet conditions, respectively. Since the premise of wet testing using the APA is done 15 to somewhat represent durability performance, this research results confirm the earlier fears of reduced durability when using the warm mixes. The APA rut results show that 5 specimens out of the 32 have failed the 9.0 mm rut criterion. Six out of the 7 WMA specimens that did not fail exhibited rut values close to the 9.0 mm criterion. Granting that the WMA failure rates are high, one should be cautioned that those results are based on a small sample size. To be able to come up with definitive conclusions, more WMA samples should be tested. Although no HMA specimens failed the rut test, nearly half of them had rut values between 8 and 9 mm. While there was no specific trend between the calculated air voids and the rut values, the air voids percentages were mainly on the low side.			
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