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14. Supplementary Notes

15. Abstract

Purpose and Need

Water on the surface of pavement markings typically reduces the marking's retroreflectivity and may cause pavement markings to become nearly invisible during wet conditions at night. Water on the surface of pavement markings reflects light away from its source and doesn't allow the beads in the pavement marking to reflect light back towards its source. This condition is referred to as "wet-night" and the retroreflectivity during this condition is referred to as "wet-night retroreflectivity". To improve a marking's wet-night retroreflectivity, some states have experimented with placing markings on rumble strips. This may improve wet-night retroreflectivity by providing a slanted surface that quickly drains water off the surface of the marking. The placement of pavement markings on rumble strips has been referred to as "rumble stripes".

Objective

The objective is to determine if placing pavement markings on rumble strips will improve the marking's wet-night retroreflectivity.

Scope

To test the effectiveness of rumble stripes, the NDDOT has constructed a test section as part of project AC-NH-2-281(025)049. This project was a rehabilitation of a two-lane US Highway that serves as an interregional corridor across North Dakota. The rehabilitation consisted of a new asphalt surface constructed on a blended base. The entire project had rumble strips ground into both shoulders. A three mile test section was selected by the Valley City District. The test section was constructed using a modified location of the rumble strips on both shoulders. The edge lines were placed on the rumble strips.

Summary

The position of the markings on the rumble strip doesn't appear to greatly affect the day-time appearance of the marking. The application of marking paint on incompletely cured fog seal material may have caused adhesion and durability problems. Materials and Research personnel have observed that rumble stripes appear to have better visibility than the usual edge marking in both wet and dry conditions. Comments collected from Jamestown Section personnel support Materials and Research observations. Wet-night retroreflectivity readings were mostly inconclusive in showing improvement in retroreflectivity. Further research is needed to make definite statements based on retroreflective data.

It is recommended to further evaluate rumble stripes by placing markings within the rumble strips of an existing roadway. This could be used to do a side-by-side comparison of rumble stripes with the usual edge markings and to evaluate if this configuration may be used on existing roadways. Chip seal projects are a good opportunity to install the replacement edge line striping in a rumble strip, thereby creating a rumble stripe.

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