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Performance of Stabilized Bases

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*see supplementary notes

North Dakota DOT
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13. Sponsoring Agency Name and Address

North Dakota DOT
Materials and Research Division
300 Airport Road
Bismarck ND 58504-6005

14. Supplementary Notes

15. Abstract

Purpose and Need

Most of the state's flexible pavement systems have been constructed using aggregate base on the existing subgrade and paved with hot bituminous pavement. Today, new pavements must withstand more traffic and heavier loads when compared to earlier pavements.

If a roadway base layer section can be made stronger by stabilization, the thickness of the hot bituminous pavement layer could conceivably be decreased or performance of the roadway increased.

Objective

The objective of this study was to determine if stabilizing the base material would add any significant increase in the structural value of the pavement section and increase long-term performance of the roadway.

Scope

The experimental section was incorporated into project SS-2-001(025)033. The project was located on Highway 1 between the junction of Highway 13 and Highway 46. The pavement performance was evaluated for five years. The following items were evaluated in subsequent years: distresses in the pavement, overall pavement condition, crack pattern in the different base sections, performance of each section, effect on rutting in the stabilized base sections, ride characteristics, base strength as determined by the Falling Weight Deflectometer (FWD).

Summary

Each section is performing excellent at this time. No distresses are noted in each section except for a few transverse cracks. The ride and overall pavement condition remains excellent. No rutting is evident in the test sections.

The most notable difference in performance of the base sections is the base modulus strengths. The lime and cement sections have at least twice the base strength as the control section. The Consolid™ section has the same base strength as the control section.

Recommendation

It is recommended on a future project, primarily in an area with limited aggregate resources, that designs be considered utilizing the findings in this report and also utilizing current design methodologies to calculate if there will be an actual construction cost saving. Estimated costs given in Table 6 indicate that prices are comparable so the benefit would primarily be reducing aggregate consumption. However, long term costs associated with maintenance are not known.

18. Key Words

Cement
Blended Base
Lime
Consolid

19. Distribution Statement

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