RESEARCH REPORT DOCUMENTATION PAGE

1. Report No.	2. Report Date	3. Contract No.	4. Project No.
ND 98-01	April 2009	N/A	NH-2-052(012)244

5. Title and Subtitle	6. Report Type	7. Project No.
Evaluation Of Portland Cement Concrete As A Rehabilitation Option For Overlaying An Existing Asphalt Roadway.	***Click on Final to open report*** Work Plan Construction Evaluation ***Final***	8. Project No. 9. Project No. 10. Project No.

11. Author(s)/Principle Investigator(s)
Curt Dunn, John Wolf, Bryon Fuchs and Matt Luger

12. Performing Organization Name and Address		13. Sponsoring Agency Name and Address
NDDOT M+R ☒ NDDOT OTHER* ☐ NDSU ☐ UND ☐ UGPTI ☐ OTHER* ☐ *see supplementary notes	North Dakota DOT Materials and Research Division 300 Airport Road Bismarck ND 58504-6005	North Dakota DOT Materials and Research Division 300 Airport Road Bismarck ND 58504-6005

14. Supplementary Notes

15. Abstract

Purpose and Need

Whitetopping is the process of placing concrete on an existing asphalt roadway. An advantage of whitetopping is the ability to resist rutting and shoving that can cause collection of water on the roadway. Whitetopping impedes structural related distresses such as loss of support, pumping, faulting and corner breaks when constructed on a strong base. Another advantage of this process is to bridge isolated problems that would be reflected through a flexible pavement.

Objective

The objective of this experimental feature is to determine if whitetopping is a feasible option for rehabilitation of an asphalt roadway in North Dakota.

Scope

In order to determine the effectiveness of whitetopping as possible rehabilitation technique, the North Dakota Department of Transportation (NDDOT) elected to set up a test section to collect and evaluate performance data on this type of project. The NDDOT has constructed three test sections of 5", 6" and 7" of PCC to be placed over an existing asphalt section. Each whitetopping test section was approximately 500' in length.

The project is located on US Highway 52 between Pingree and Buchanan, ND. The project will be evaluated on visual distresses and ride for a period of ten-years with reports every two-years.

Summary

Test sections 1 and 3 are showing the most distresses. The primary distress is longitudinal cracking. Test section 1 had a 40' longitudinal crack that appeared immediately after construction. The location of this crack is in the same area as the distresses shown in photo 1 prior to whitetopping the asphalt. These distresses appeared to have reflected through the whitetopping section. Test section 2 is performing well with only minor distresses. The ride was fair to poor in all test sections. The control section is performing well with minor rutting and four transverse cracks. The ride is better on the control section when compared to the test sections. The maintenance costs of the whitetopping sections were considerably less than that of the control section.

Recommendation

Based on the condition of the roadway, whitetopping appears to be a feasible option for rehabilitation of an asphalt roadway. A concrete overlay of 6" appears to be the best performing thickness. The initial cost of the whitetopping was more than the mine and blend, but the maintenance costs where significantly less. At the end of the 10-year evaluation, the whitetopping would benefit from CPR, grinding, or other maintenance work to improve the ride. These maintenance operations could add additional life to the pavement.

16. Key Words	17. Distribution Statement	18. No. of Pages
Pavement Concrete Overlays Whitetopping	No restrictions. This report is a available in PDF by clicking the ***Final*** link above. North Dakota Department of Transportation Materials and Research Division: 300 Airport Road Bismarck ND 58504-6005 Office: (701) 323-6900 Fax: (701) 328-6913	44 19. File type/Size PDF