

ABSTRACT

In 1994 the Iowa Department of Transportation constructed a 7.2-mile Portland Cement Concrete overlay project in Iowa County on Iowa Highway 21. The research work was conducted in cooperation with the Department of Civil Engineering and the Federal Highway Administration under the Iowa Highway Research Board project HR-559. The project was constructed to evaluate the performance of an ultrathin concrete overlay during a 5-year period.

The experiment included variables of base surface preparation, overlay depth, joint spacing, fiber reinforcement, and the sealed or non-sealed joints. The project was instrumented to measure overlay/base interface temperatures and strains. Visual distress surveys and deflection testing were also used to monitor performance. Coring and direct shear testing was accomplished 3 times during the research period.

Results of the testing and monitoring are identified in the report. The experiment was very successful and the results provide an insight into construction and design needs to be considered in tailoring a portland cement concrete overlay to a performance need. The results also indicate a method to monitor bond with nondestructive methods.

Key Words: PCC overlay, ultrathin overlay, whitetopping