

ABSTRACT

The Iowa Department of Transportation has overlaid 446 bridge decks with low slump dense concrete from 1964 through October 1978. The overall performance of these decks has been satisfactory.

Nineteen bridges that were resurfaced with either low slump dense concrete (LSDC) or latex-modified concrete were analyzed for chloride content, electrical corrosion potential, delaminations or debonding, and deck surface condition. The resurfacing ages of these bridges range from 5 to 13 years.

None of the bridges showed any evidence of surface distress and the chloride penetration into the resurfacing concrete is relatively low. There are delaminations in the original decks below the resurfacing on the majority of bridges examined. The delaminations are concluded to be caused by either (A) reinforcing steel corrosion, (B) not removing all delaminated concrete prior to placing the resurfacing concrete, or (C) creating an incipient fracture in the top surface of the original deck through the use of scarification equipment.

The active corrosion of the reinforcing steel is predominately in the gutter line on the majority of bridges evaluated.

Recommendations for future deck repairs include removal of concrete to the top layer of reinforcing steel in areas where an electrical corrosion potential of $-0.35V$ or more is detected, providing more positive methods of locating delaminated concrete, and treating the curb and gutter line to reduce the potential damage from salt water.