



KANSAS

DEPARTMENT OF TRANSPORTATION

COST EFFECTIVE BRIDGE DECK RECONSTRUCTION IN KANSAS USING HIGH-DENSITY CONCRETE OVERLAYS AND ASPHALT MEMBRANE OVERLAYS

Report Number: FHWA-KS-07-4

By: Jennifer Distlehorst, P.E.
Kansas Department of Transportation

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Introduction

In 1976 the Federal Highway Administration (FHWA) approved federal aid funding for experimental installations of corrosion protection for reinforcing steel in existing concrete bridge decks. Sixteen of the sixty-nine Kansas bridges with Cost Effective Overlays built between 1976 and 1987 were selected for ongoing monitoring of delaminations, cracking and corrosion potential in the reinforcing bars.

Project Objective

As part of an experimental program, the first three installations of any of the Cost Effective applications as well as ten percent of any following installations were declared to be test bridges and were monitored intensely. The FHWA program required complete surveys of the test bridges before and immediately after overlay construction, and every two to three years thereafter. The surveys were to include measurements of corrosion potentials and delaminations on concrete overlays and resistivity readings on asphalt membrane overlays. This report records the results of this program

Project Description

Fourteen bridges with low water-cement ratio concrete overlays and two bridges with asphalt membrane protective systems were monitored annually for the life of the overlays. Eight of the low water-cement ratio overlays were constructed with high-cement-content Iowa System Overlays and six with lower-cement-content Kansas System Overlays. The two asphalt membrane overlays were constructed with a non-woven polypropylene fabric membrane laid onto asphalt cement and overlaid with hot-mix asphalt as a wearing surface.

Project Results

A comparison of service life with initial cost of each type of overlay shows that correctly-installed asphalt membrane overlays may have been the most cost effective, followed by the Kansas System concrete overlays.

Report Information

For technical information on this report, please contact: Jennifer Distlehorst, Kansas Department of Transportation, 2300 SW Van Buren, Topeka, Kansas 66611; Phone: 785-291-3849; fax: 785-296-2526; e-mail: Jennifer.Distlehorst@ksdot.org.

For a copy of the full report, please contact: KDOT Library; 700 SW Harrison Street, Topeka, Kansas 66603-3754; Phone: 785-291-3854; Fax: 785-291-3717; e-mail: library@ksdot.org.