

WORK PLAN
For
EXPERIMENTAL FEATURE

Rapid Set Latex Modified Concrete Overlay
South Prairie Creek Bridge
(Bridge No. 162/20)

March, 2002

BACKGROUND:

The use of salt in past deicing practices has caused premature deterioration in many of the Department's concrete bridge decks. Mitigation of this problem is accomplished by repairing deteriorated deck areas and applying a protective overlay to prevent advanced deterioration that could require more costly deck or total bridge replacement.

The Department routinely rehabilitates concrete bridges decks as part of the Bridge Preservation (P2) Program. Most P2 deck rehabilitation projects allow the contractor to choose between three different types of modified concrete overlays which include; Latex, Microsilica or Fly-Ash. All of these modified concrete overlays are applied in a similar manner and all have a required cure time of 42 hours.

This project will evaluate a new type of modified concrete overlay, which is called "Rapid Set Latex". This concrete overlay requires the use of two proprietary products; "Rapid Set Cement" produced by CTS Cement Manufacturing Company of Cypress, CA and "Dow Modifier A" latex admixture produced by DOW Chemical Company of Midland, MI. These specific products are used to produce a latex modified concrete overlay, which can cure in six hours, or less.

The rapid cure time can allow a bridge to be restricted for night time construction and then opened to traffic during daylight hours. This type of overlay has been installed on bridges in Virginia, Kentucky, and Pennsylvania. This will be the first use of "Rapid Set Latex" in Washington. The experience gained from this project will be used to determine if this type of modified concrete overlay can be used on future projects, particularly where traffic conditions warrant minimum lane closure times.

Experimental Feature Work Plan for the South Prairie Creek bridge (162/20)

OBJECTIVE:

The objective of this project is to perform a field evaluation of a new type of Modified Concrete Overlay and to verify the in-service performance. If successful, this new modified concrete overlay could be used on bridges with high traffic volumes, decreasing the cure time of the concrete overlay, allowing traffic to use the bridge during daylight hours and performing the construction during night-time lane restrictions.

DESCRIPTION:

The experimental feature portion on the project involves applying a 1.5 inch Rapid Set Latex Modified Concrete Overlay to the South Prairie Creek bridge deck. The South Prairie Creek bridge is a 26' wide x 120' long concrete box girder built in 1956. A chain drag survey in 1997 shows over 172 square feet of delaminations in the bridge deck (5.5% of the deck area).

The project area is located on the South Prairie Creek Bridge (162/20) at milepost 17.70 of SR162. This bridge is located approximately 4 miles east of the town of Orting.

TESTS:

A chain drag survey to determine the bond characteristics will be performed on the Rapid Set Latex Modified Concrete overlay following the completion of the construction and curing. The overlay will be visually inspected every 6 months for the first 2 years.

REPORTING:

The state will provide a written report of the findings and conclusions on construction, problems, problem resolution, and operational tests.

STAFFING:

The Principal Investigator for this evaluation is DeWayne Wilson, Bridge Management System Engineer. DeWayne, will be responsible for developing a post construction report with input from region project personnel. Mike Bauer from the Bridge Office Specifications and Estimates unit developed the Bridge Specifications and Estimates for this project.

DELIVERABLES:

The Post-Construction Report is the deliverable.

QUANTITIES:

The Quantity of Rapid Set Latex Concrete will be approximately 390 cubic feet (14.4 yards).

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CONSTRUCTION COSTS:

	<u>Bridge Item</u>	<u>Total Cost</u>
Apply a Rapid Set Modified Concrete Overlay	\$97,000	\$352,000

FUNDING:

WSDOT Construction Funds (P2 Bridge Preservation: Federal HBRRP participating)

EVALUATION BUDGET:

Report development costs are incidental to routine work of the Bridge Office.