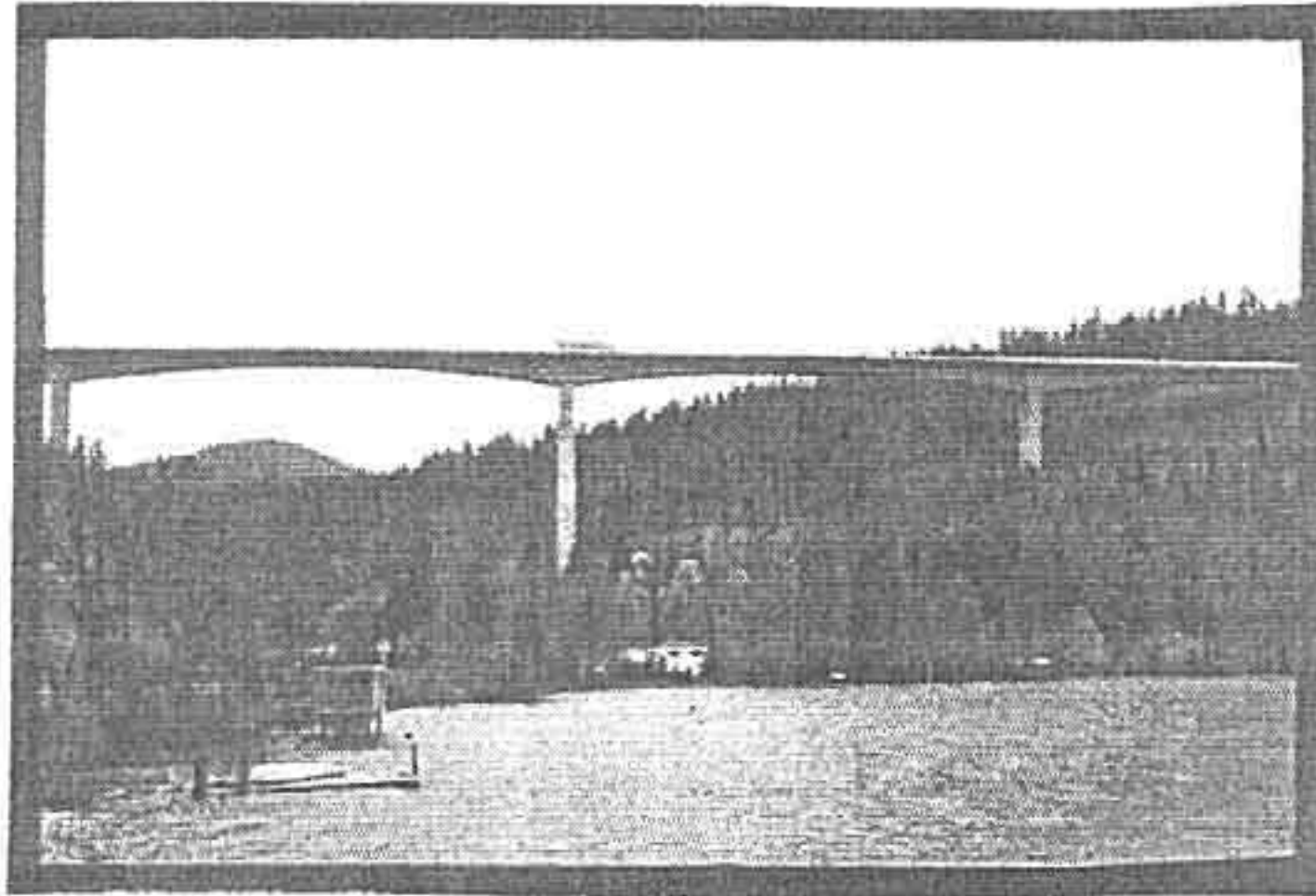


MODIFIER A LATEX AND RAPID SET® CEMENT



RE: Tensile Bond Study of LMC to RAPID SET® mortar

A study was initiated in our laboratory to measure the bond strength of latex-modified concrete (LMC) to fast-setting repair materials. The test method used was the Tensile Bond Test, developed by Dow Chemical Co. and now in the final stages of becoming an ASTM Method.

The test results of LMC bonded to RAPID SET® mortar (152.4, 414.8 & 429.7 psi for 1, 7 & 28 days, respectively) were quite good and comparable to results experienced with LMC bonded to conventional concrete. The coefficients of variation were quite low, giving credence to the numbers. The fact that there was an increase in Base Failure, with Cure Time, is indicative that bond strength was continuing to increase with time.

These laboratory tests, combined with the successful field installations that have been experienced, indicate that LMC overlays on RAPID SET® cement patches is a viable combination of materials and should continue to be used in the field.

A Laboratory Study of the Bond Strength of Latex-Modified Concrete to RAPID SET® Mortar

Fast-setting repair materials are increasingly being used on highways and bridge decks, particularly in urban areas with high traffic volume. These repair materials are frequently used to patch bridge decks prior to being overlaid with LMC. This initiated a laboratory study of the bond strength between LMC and cured mortar made with RAPID SET® Cement. The test method was the 'Tensile Bond Test' (described in ACI Materials Journal) where the repair materials were the bases, and LMC the overlay.

The mortar bases (3-in. dia. Cylinders) were made with the following proportions:

	RAPID SET®
Cement	1.0
ASTM C-33 Sand	1.0
Water	0.44

The cylinders were cured for 1 day covered, in the mold, 27 days at 72°, 50% R.H., then cut in half and assembled for the test. The cut surface became the surface to which the LMC overlay was applied.

The LMC was Larkin Lab's standard laboratory mix:

Cement, Holnam Type I	1.00
ASTM C-33 Sand	2.60
Limestone, 2NS	1.70
Water	0.37
Latex solids	0.15

slump = 10.5 inches, air = 3.5%

The results of the tensile bond test were:

Age, days	Tensile Stress, psi	<i>Mode of Failure, % Area</i>		
		Base	Bond	LMC Overlay
1 (COV)	152.4 (22.5)		100	
7 (COV)	414.8 (4.9)		70	30
28 (COV)	429.7 (3.7)	25	73	2

data are average of 3 samples