KPM Bridges

Corrosion Prevention using a Combined Solution

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Twyford Bridge, Nottinghamshire

Protection to Bridge Deck Slabs

Year of Treatment:	1999
Inhibitor Used:	Sika® FerroGard®-903
Anode Used:	Conductive Ceramic
Monitoring Used:	C-Probe CP101
Management System:	AchillesIES
Additional Treatments:	Impressed Current Cathodic Protection

1. Description

Twyford Bridge carries traffic over the A1 trunk road and is situated in Nottinghamshire.

A pilot corrosion prevention programme was undertaken in 1999 by Cprobe Technologies Ltd as advisors to PL[a]N Area 7 as agents to the Highways Agency. This included impressed current cathodic protection (ICCP) discrete anode systems to half-joints suffering from corrosion of the steel reinforcement (see Case History #16A).

The principal damage to the reinforced concrete was observed around the half-joints, however, the suspended slab soffits were also seen to have minor spalling and exposed reinforcement.

The ICCP systems were installed from the half-joint nib to a 1m extension along the soffit. Inhibitor was applied to the remaining suspended slab areas by spray application using standard aspiration equipment. Although, the worst areas of damage were around the half-joints, the corrosion inhibitor was viewed as a complimentary system in other areas showing less severe corrosion.

The data shown below demonstrates performance of the inhibitor on the steel surface using linear polarisation (corrosion rate) probes embedded in the deck. It is demonstrated that the corrosion inhibitor treatment reduced the initial corrosion rate by 89% after 2 weeks following treatment. It is anticipated that this will continue to reduce before levelling off at a substantially reduced corrosion rate following full penetration of the inhibitor.

2. Inhibitor Performance Data

All data is shown in microns loss of steel per year

Sensor Location	Pre-treatment	Post-treatment
Deck soffit	12.79	1.42

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