

Feasibility of Sacrificial Cathodic Protection as an Effective Corrosion-Control Measure for the Protection of Reinforced Concrete Bridges

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SUMMARY: The Roads and Traffic Authority of New South Wales, Australia (RTA) has installed several Impressed Current Cathodic Protection (ICCP) and Cathodic Prevention systems on its bridge stock. Installation and ongoing management costs are typically high and require extensive planning and resources. As an alternative short-to-medium term solution, RTA is investigating the viability, both technical and commercial, of Sacrificial Cathodic Protection systems. Systems being investigated include; jacket anodes, ribbon anodes, discrete anodes and coating anodes. This paper focuses on the field assessment sacrificial ribbon anodes.

Keywords: corrosion, concrete bridges, sacrificial cathodic protection, zinc anodes.

1. BACKGROUND

Over the past several years, RTA has primarily relied on Impressed Current Cathodic Protection (ICCP) for long-term durability rehabilitation of its concrete bridge stock; ICCP being the only proven technique for long-term protection regardless of the extent of chloride contamination. At present, RTA has ten ICCP systems in operation on reinforced concrete bridges. However, due to the relatively high cost of ICCP and the high demand on internal resources, RTA is presently investigating the viability, both technical and commercial, of Sacrificial (Galvanic) Cathodic Protection systems, as a potential interim measure. As a minimum, it is anticipated that such systems may offer some form of corrosion control,