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Sacrificial Cathodic Protection of Reinforced Concrete Elements—A State-of-the-Art Report

ABSTRACT

This technical report presents state-of-the-art information on several commercially available galvanic cathodic protection/prevention systems for protecting atmospherically exposed reinforced concrete structures. The information contained in this report has been provided by key manufacturers of these systems and is intended as a technical resource for engineers responsible for the rehabilitation of reinforced concrete structures. It may also be useful to owners, contractors, and other practitioners related to the field of galvanic cathodic protection (CP). All information related to galvanic CP is intended for atmospherically exposed concrete structures and may not be applicable to concrete containing epoxy-coated reinforcing steel, galvanized, or other coated or nonferrous reinforcement..

KEYWORDS

Cathodic protection, galvanic, sacrificial anode, reinforced concrete, metallized coating, TG 557.

Foreword

The purpose of this technical committee report is to present state-of-the-art information on several commercially available galvanic cathodic protection/prevention systems for protecting atmospherically exposed reinforced concrete structures. A summary of these systems is presented in Appendix A. It is beyond the scope of this report to fully address all factors associated with design, criteria, implementation, quality control, cost, maintenance, and monitoring of these systems. The information contained in this report has been provided by key manufacturers of these systems and is intended as a technical resource for engineers responsible for the rehabilitation of reinforced concrete structures. It may also be useful to owners, contractors, and other practitioners related to the field of galvanic cathodic protection (CP). All information as it relates to galvanic CP is intended for atmospherically exposed concrete structures and may not be applicable to concrete containing epoxy-coated reinforcing steel, galvanized, or other coated or nonferrous reinforcement. Galvanic CP has also been successfully applied to buried or submerged reinforced concrete structures; however, this aspect is not addressed in this state-of-the-art report.

This NACE technical committee report was originally prepared in 2005 by Task Group (TG) 047 on Sacrificial Cathodic Protection of Reinforced Concrete Elements, which was administered by Specific Technology Group (STG) 01 on Reinforced Concrete and sponsored by STG 05 on Cathodic/Anodic Protection. It was revised in 2020 by TG 557 on Sacrificial Cathodic Protection of Reinforced Concrete Elements. TG 557 is administered by STG 01 and sponsored by STG 05. This report is issued by NACE International under the auspices of STG 01.

NACE technical committee reports are intended to convey technical information or state-of-the-art knowledge regarding corrosion. In many cases, they discuss specific applications of corrosion mitigation technology, whether considered successful or not. Statements used to convey this information are factual and are provided to the reader as input and guidance for consideration when applying this technology in the future. However, these statements are not intended to be recommendations for general application of this technology and must not be construed as such.

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