

Committee Report: JCI-TC162A Technical Committee on establishing effective operation and management techniques using electrochemical techniques

委員会報告：JCI-TC162A

電気化学的手法を活用した実効的維持管理手法の確立に関する研究委員会

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Abstract

The purpose of this technical committee is to organize the technical information required to use various electrochemical techniques for effective and sustainable operation and management. In this report, the committee has conducted round-robin tests of methods to evaluate chloride penetration resistance of concrete, specifically nonsteady-state electrophoresis tests, and has summarized future outlooks based on the results. Key points and expert know-how on measuring rebar corrosion have been gathered, utilizing examples of real structures. Furthermore, the committee has proposed a performance verification-based design method that may serve as a form of cathodic protection in the future, and has compiled the techniques required for inspection, construction, operation and maintenance, as well as the issues thereof.

1. Introduction

In the operation and maintenance of existing concrete structures, there has been an increase in adopting settings and using techniques developed in other fields. Electrochemical techniques are among those that have been used for a relatively long time. The “Technical committee on the systematization of electrochemical measurement techniques based on physicochemical interpretation,” which is an antecedent to this technical committee, systematically organized the physicochemical theories that ought to be considered when applying various electrochemical techniques to concrete structures, and compiled know-how and other information on implementing highly

reliable measurements and their interpretation. Through this lecture series, the committee recognized the high need for electrochemical techniques in the concrete engineering field, but also simultaneously ascertained the high need for organizing technical issues and compiling measures to more practically and effectively utilize electrochemical techniques in operation and maintenance settings involving real structures.

Considering these needs, the technical committee engaged in activities for two years starting in 2016, for the purpose of organizing the technical information required to use new electrochemical techniques as effective and sustainable operation and management.....