Corrosion Rates of Steel in Concrete

Neal S. Berke, Victor Chaker, and David Whiting, editors
Foreword

The symposium on Corrosion Rates of Steel in Concrete was held in Baltimore, Maryland, on 29 June 1988. The symposium was sponsored by ASTM Committee G01 on Corrosion of Metals and ASTM Committee C09 on Concrete and Concrete Aggregates and its Sub-committees C09 03 08 on Admixtures and C09 03 15 on Concrete’s Resistance to Its Environment. Neal S. Berke, W R Grace and Company, Victor Chaker, Port Authority of New York and New Jersey, and David Whiting, Construction Technology Laboratories, Presided as symposium cochairs and are editors of this publication.
Contents

Overview 1

The Threshold Concentration of Chloride in Concrete for the Initiation of Reinforcement Corrosion—C M HANSSON AND B SØRENSEN 3

Influence of Blast Furnace Slags on the Corrosion Rate of Steel in Concrete—C VALENTINI, L BERARDO, AND I ALANIS 17

An Initial Effort to Use the Corrosion Rate Measurements for Estimating Rebar Durability—C ANDRADE, M C ALONSO, AND J A GONZALEZ 29

Comparison of the Polarization Resistance Technique to the Macrocell Corrosion Technique—N S BERKE, D F SHEN, AND K M SUNDBERG 38

Corrosion Rate Determination on Repaired Reinforced Concrete Specimens—H G WHEAT 52

Corrosion Measurements of Reinforcing Steel in Partially Submerged Concrete Slabs—A AGUILAR, A A. SAGUIÉS, AND R G POWERS 66

Measuring the Rate of Corrosion of Steel in Concrete—E. ESCALANTE AND S ITO 86

Corrosion Monitoring for Reinforcing Bars in Concrete—K MATSUOKA, H KIHIRA, S ITO, AND T MURATA 103

Study of the Corrosion of Concrete Reinforcement by Electrochemical Impedance Measurement—L. LEMOINE, F WENGER, AND J. GALLAND 118


Potential Mapping and Corrosion of Steel in Concrete—B ELSENER AND H BOHNI 143

The Use of a Potential Wheel to Survey Reinforced Concrete Structures—J P BROOMFIELD, P E. LANGFORD, AND A. J EWINS 157

Mechanisms of Corrosion of Steel in Concrete—B BORGARD, C WARREN, S. SOMAYAJI, AND R HEIDERSBACH 174

Author Index 189

Subject Index 191