This is a free page sample. Access the full version online.

National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 12696:2000

ICS 77.060
91.080.40

National Standards
Authority of Ireland
Dublin 9
Ireland

Tel: (01) 807 3800
Tel: (01) 807 3838

CATHODIC PROTECTION OF STEEL IN CONCRETE

This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on:

June 30, 2000

NO COPYING WITHOUT NSAI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

© NSAI 2000

Price Code M

Údarás um Chaighdeáin Náisiúnta na hÉireann

This is a free page sample. Access the full version online.

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12696

March 2000

ICS 77.060; 91.080.40

English version

Cathodic protection of steel in concrete

Protection cathodique de l'acier dans le béton

Kathodischer Korrosionsschutz von Stahl in Beton

This European Standard was approved by CEN on 12 December 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

© 2000 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 12696:2000 E

This is a free page sample. Access the full version online.

Contents

Page

Foreword 2

Introduction 2

1 Scope 3

2 Normative references 3

3 Terms and definitions 4

4 General 4

5 Structure assessment and repair 5

6 Cathodic Protection System Components 8

7 Installation procedures 18

8 Commissioning 22

9 System records and documentation 25

10 Operation and maintenance 26

Annex A (informative) Principles of cathodic protection and its application to steel in concrete 29

Annex B (informative) Design process 34

Annex C (informative) Notes on Anode Systems 36

Bibliography 39

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 219 "Cathodic protection", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This is a free page sample. Access the full version online.

Introduction

This European Standard is limited to cathodic protection of steel in atmospherically exposed concrete. Many atmospherically exposed reinforced and prestressed concrete structures incorporate foundations or lower elevations which are buried or submerged. Because the technology for the application of cathodic protection to steel in buried or submerged concrete and the criteria of protection for steel in buried or submerged concrete are both significantly different to those applicable to cathodic protection of steel in atmospherically exposed concrete, these foundations or lower elevations are not addressed in this European Standard.

There are other electrochemical treatments intended to provide corrosion control for steel in concrete. These techniques include re-alkalisation and chloride extraction and are not incorporated into this European Standard. At the time of preparation of this European Standard CEN/TC 219/WG2 were in the process of collecting data on electrochemical re-alkalisation and chloride extraction to prepare European Standards on these techniques at an appropriate time.

Cathodic protection of steel in concrete is a technique that has been demonstrated to be successful in appropriate applications in providing cost effective long term corrosion control for steel in concrete. It is a technique that requires specific design calculations and definition of installation procedures in order to be successfully implemented. This European Standard does not represent a design code for cathodic protection of steel in concrete but represents a performance standard for which it is anticipated, in order to comply with the standard, a detailed design and specification for materials, installation, commissioning and operation will be prepared.

1 Scope

This European Standard specifies performance requirements for cathodic protection of steel in atmospherically exposed concrete, in both new and existing structures. It covers the atmospherically exposed parts of building and civil engineering structures, including normal reinforcement and prestressed reinforcement embedded in the concrete. It is applicable to uncoated steel reinforcement and to organic coated steel reinforcement.

This European Standard does not apply to buried or submerged elements of the buildings or structures.

NOTE Annex A gives guidance on the principles of cathodic protection and its application to steel in concrete.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ENV 1504-9: Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 9: General principles for the use of products and systems

EN 60742: Isolating transformers and safety isolating transformers - Requirements

ISO 8044: Corrosion of metals and alloys - Vocabulary

This is a free page sample. Access the full version online.

IEC 60502: Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV

IEC 60529: Degrees of protection provided by enclosures (IP Code)

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in ISO 8044 and ENV 1504-9 and the following apply.

3.1
zone
a defined part of a cathodic protection system

> NOTE Anode systems may be divided into zones to supply current to a fully continuous reinforcement matrix. Alternatively a single anode zone may supply current to separate, electrically isolated, zones within the reinforcement system. Finally zones may comprise an individual anode zone for each reinforcement zone.

As the current provision to each of the zones in each of these alternatives can be separately controlled and measured all are generically called as “cathodic protection zones” and specifically as “anode zones” or “cathode zones”.

4 General

4.1 Quality management systems

The design, the installation, the energising, the commissioning, the long-term operation and the documentation of all of the elements of cathodic protection systems for steel in atmospherically exposed concrete shall be fully documented.

> NOTE EN ISO 9001 constitutes a suitable Quality Management Systems Standard which may be utilised.

Each element of the work shall be undertaken in accordance with a fully documented quality plan.

Each stage of the design shall be checked and the checking shall be documented.

Each stage of the installation, energising, commissioning and operation shall be the subject of appropriate visual, mechanical and/or electrical testing and all testing shall be documented.

All test instrumentation shall have valid calibration certificates traceable to national or European Standards of calibration.

The documentation shall constitute part of the permanent records for the works.

4.2 Personnel

Each aspect of the cathodic protection system design, installation, testing of the installation, energising, commissioning and long-term operational control shall be under the supervision of personnel with appropriate qualification, training, expertise and experience in the particular element of the work for which he is responsible.

> NOTE Cathodic protection of steel in concrete is a specialist multidiscipline activity. Expertise is required in the fields of electrochemistry, concrete technology, civil and/or structural engineering and cathodic protection engineering.

SAI GLOBAL

This is a free preview. Purchase the entire publication at the link below:

Product Page

Looking for additional Standards? Visit Intertek Inform Infostore

Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation