



AUSTRALASIAN CORROSION ASSOCIATION INC

NSW BRANCH

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Electrochemical Protection of Steel in Concrete

ACA NSW will be holding a Seminar on Corrosion in Concrete on 29th July 2010. The theme is a comparison of modern electrochemical methods of preventing corrosion of reinforcing steel in concrete. The seminar will look at two well-established methods and one relatively new one.

Speakers and topics include:-

Jim Galanos, Corrosion Control Engineering & Alan Bird, Marine & Civil Maintenance ***Impressed-Current Cathodic Protection – A Tale of Two Bridges***

Frank Collins, Monash University
Ian Godson, Ian Godson & Associates ***Corrosion Inhibitors – Past, Present & Future
Advances in Cathodic Protection of Concrete – “CP No Wires Attached”***

When: Thursday, 29th July 2010; 4.00 - 6.30 pm

Where: North Sydney Leagues Club
12 Abbott Street, Cammeray (Off-street parking available)

Format: 4.00 - 4.30pm Registration (Tea & Coffee served)
4.30 - 6.20pm Formal presentations + Question Time
6.20 - 7.30pm Light Food and Bar

Cost: \$40 members, \$55 non-members

RSVP: **Advance bookings are requested**



Return this section to the AUSTRALASIAN CORROSION ASSOCIATION
c/- PO Box 153 North Strathfield NSW 2137, or FAX to (02) 9736 3287

Name: Phone:

Company:

PLEASE ENCLOSE CHEQUE WITH APPLICATION, OR PAY AT DOOR

****R.S.V.P. 26 July, 2010****



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PAPER 1 - Impressed-Current Cathodic Protection – A Tale of Two Bridges

An increasing number of urban bridges are affected by chloride-induced corrosion of their reinforcing steel. Traditional patch repair of the damaged areas of concrete is recognised to be a short-term solution because it does not prevent further damage. Cathodic protection is now widely used to extend the life of such structures by arresting the corrosion in all areas that are at risk, in conjunction with repairing whatever has already been damaged. This presentation looks at two similar bridges in the Illawarra, and compares the different designs and construction methods required for each.

PAPER 2 - Corrosion Inhibitors – Past, Present and Future

A corrosion inhibitor is an admixture that will either extend the time to corrosion initiation, or significantly reduce the corrosion rate of embedded steel in concrete containing corrosives such as chlorides. A brief history of the development of corrosion inhibitors will be covered, followed by a description of the types, compositions, and mechanisms of anodic, cathodic, and green inhibitors, and oxygen scavengers. Corrosion inhibitors can affect plastic and hardened concrete properties and therefore their effects on concrete properties should be understood to overcome potential problems. Future developments in corrosion inhibitors will also be covered in this paper.

PAPER 3 - Advances in Cathodic Protection of Concrete- “CP With No Wires Attached”

This paper will introduce the recent developments of Hybrid CP systems for concrete corrosion control. These systems, developed in the UK around 6 years ago, (Glass, Davidson) are now becoming widely used in Europe and are now available in Australia. The system utilizes zinc alloy internal anodes installed at regular spacing in 30mm diameter drilled holes. The system is initially installed with an impressed current source (12 Volt battery or small transformer/rectifier), passing a large current to passivate the steel through “Pit Realkalization” with the impressed current removed after a certain charge is reached (usually 1 to 2 weeks.) The T/R and temporary cables are then removed and the system is then connected in “galvanic mode” with the zinc alloy producing a small current maintaining the protection for a 30 year plus life. The effectiveness and capability of this type of CP will be compared to traditional impressed current systems.



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JIM GALANOS

Jim Galanos has an Engineering degree from UNSW and has over 15 year experience in the cathodic protection industry. Jim is also an ACA accredited Corrosion Technologist. Jim is engineering manager at Corrosion Control Engineering, working on various projects throughout Australia. Jim is actively involved in a wide range of projects including the design, installation, commissioning and testing of projects associated with concrete steel reinforcement, wharves, jetties , pipelines, under and above ground storage tanks.

ALAN BIRD

Alan Bird is a Director of Marine and Civil Maintenance Pty Ltd, a contracting company which specializes in the life extension of large concrete structures such as wharves and bridges. Alan is a Civil Engineer with a background in heavy civil construction in the UK and New Zealand. Since 1987, he has specialized in the remedial engineering market and his company has been responsible for a wide variety of repair and cathodic protection projects on bridges and wharves in many states of Australia. Alan is a Past President of the NSW Branch of the ACA.

Dr. FRANK COLLINS

Dr Frank Collins is currently Head of the Structures Group within the Department of Civil Engineering, Monash University. He first became passionate about concrete repair in 1985 with a Masters Thesis entitled "Repair of Structural Concrete", and went on to join Taywood Engineering in a variety of roles, including the 1988 refurbishment of the Sydney Opera House Roof Shells and setting up a Bridge Testing and Assessment Unit within the Ministry of Transport, Vietnam in 1995. After a brief sojourn at Monash University to undertake his PhD during 1997-99, Frank conceived and managed the Advanced Materials Group while a Director of AECOM Ltd (formerly Maunsell P/L). Since 2007 he has been based at Monash University, balancing teaching with research towards sustainability of aging infrastructure, lifetime durability modelling, utilisation of wastes as building materials and nano-materials.

IAN GODSON

Ian is a civil engineer with over 20 years experience in the field of structural and electrochemical repair techniques. He was the founding Managing and Technical Director of Remedial Engineering PL (now Savcor) and formed Ian Godson & Associates PL as a consultant in the concrete repair field in 2004, working throughout the country on investigation, design and supervision of electrochemical and conventional concrete repair projects. He is a current committee member of ACA(Vic) and a Life Member of ACRA.