

This news bulletin is brought to your desktop by the UK Concrete Repair Association (CRA).

It provides brief and easy-to-digest updates, supplied by CRA members on recent concrete repair developments, new advances and other initiatives occurring in the industry.

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TACKLING THE PRIMARY CAUSE OF CONCRETE DETERIORATION

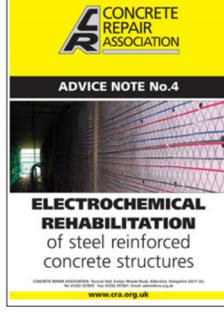
The environment provided by good quality concrete in which steel reinforcement exists, is said to be passive, i.e. a highly dense and protective oxide film forms on the steel's surface and acts as a physical barrier to aggressive agents. If, however, atmospheric 'nasty's are able to reach the steel, corrosion can occur.

Corrosion of steel reinforcement in concrete is the single biggest cause of deterioration of our infrastructure. The two primary reasons; carbonation, (which leads to the loss of concrete alkalinity) and chloride attack (primarily from de-icing agents or seawater) break down the protective oxide film of the steel reinforcement. The presence of moisture and oxygen causes expansive corrosion (which can be up to eight times greater than the original steel) and is sufficient to cause concrete cracking, delamination and eventually spalling.

Fortunately, a number of remedial options are detailed in a new 8-page document, entitled Electrochemical Rehabilitation of Steel Reinforced Structures - Advice Note No. 4, recently published by the CRA. The publication describes the problem in detail, as well as the various electrochemically based methods of remediation and where these are applicable. It also gives advice on designing against deterioration and provides information on new developments.

The document also points out that electrochemical processes require specialist skills and stresses that they should only be carried out by a qualified contractor, experienced in the design and application of the techniques. Copies can be obtained free of charge.

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CHALLENGING BRIDGE RENOVATION PROJECT

One of the most demanding and challenging impressed current cathodic protection (ICCP) projects ever undertaken by CRA member **Concrete Repairs Ltd (CRL)**, is nearing completion on Bideford Longbridge.

Bideford Longbridge is a Grade One listed, 24-span medieval masonry arch bridge, spanning 190m over the tidal estuary of the River Torridge. During its lifetime the bridge has been widened a number of times to accommodate the changing nature and density of traffic flows. The last widening was completed in 1928 when reinforced concrete cantilever sections were added to each side of the masonry arches.

Following a structural assessment in 2006, Devon County Council identified twenty-one weakened cantilevers and the onset of corroding steel reinforcement, caused as a result of high chloride levels and lack of concrete cover. The £2m project has been particularly testing due to the combination of ICCP anode systems, comprising of mixed metal oxide coated titanium mesh and discrete mixed metal oxide coated titanium tubular anodes, to ensure a uniform current distribution. Partial demolition and reconstruction of reinforced concrete elements is also being carried out and a new under-bridge lighting system is being installed.

Nick Bott, Devon County Council's Chief Bridge Engineer commented that a high level of liaison throughout the design, consultation and procurement process, was required to successfully deliver this highly complex project and to ensure minimum disruption to the public.

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ISO 14001 AHEAD OF SCHEDULE

CRA member, **Replas Ltd**, has successfully achieved accreditation to ISO 14001 ahead of schedule.

ISO 14001 is the internationally accepted specification for environmental management that helps an organisation minimise how its operations affect the environment.

Headed by Managing Director Pete Mear, the team at Replas set themselves a target to achieve this important certification by autumn 2009.

The company began by conducting a review of all areas of its business, from its head offices administration through to the delivery of its services and products on its site across the country, to ensure that all company activities have a minimal impact on, or risk to, the environment. The review process enabled Replas to develop monitoring systems and to improve upon a number of areas that touch on the environment, such as energy efficiency, resource conservation and waste management.

Every member of staff supported the initiative, which proved so successful that it was completed in just four months – three months ahead of schedule!

Pete Mear commented "I am proud of the team here at Replas for pulling together and showing a real commitment to the cause. I believe that the need for carbon emission reductions and for sustainable business practice is something that must be central to core offering of any credible 21st century concrete repair business".

SEND AN E-MAIL: sales@replas.co.uk **LINK TO WEBSITE:** www.replas.co.uk



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CEMPHAS COMPLETES WATERPROOFING OF OLYMPIC PROPORTIONS

In preparation for the 2012 London Olympic Games, the swimming pool at the Grade II listed Crystal Palace National Sports Centre has been extended to meet the Olympic standard of 50 meters.

CRA member **Cemplas Waterproofing & Concrete Repairs Ltd** was appointed to carry out this part of the complex's major £67 million regeneration.

Cemplas initially undertook the waterproofing of the main and diving pool, using the Sika 1 Waterproofing System. All movement and construction joints at the junctions of the walls and floor were made watertight using the Sikadur Combiflex system. In addition, resin was injected into extensive cracking to the soffit of the tunnels beneath each pool.

To deal with water ingress in the plant rooms and vast ventilation tunnels, 2,500m² of Sika's Cavity Drainage System was installed over the walls and floors, before a screed (incorporating a drainage channel) was laid over the membrane. A sump was created and pumps installed to run any discharge into the plant room.

Finally, extensive concrete repairs were carried out to the listed diving board structure using the Sika Concrete Repair System and Corrosion Inhibitor, prior to the application of a specialist protective and decorative coating, particular suited to this type of environment.

SEND AN E-MAIL: info@cemplas.co.uk **LINK TO WEBSITE:** www.cemplas.co.uk



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SYMPATHETIC RESTORATION

CRA member, **Gunite (Eastern) Limited**, has just completed the £1.6m external restoration of Devonshire House, a beautiful Grade II listed building in the heart of London's west end.

With more than 50-metres of frontage onto Piccadilly and two entrances to Green Park tube station the project offered plenty of challenges to test the contractor.

Years of dirt and grime were carefully lifted from the Portland stone facades using superheated water under pressure.

Repairs were carried out using Remmers restoration mortar, colour matched to the existing stone.

Cracks within the stonework suggested a need for cathodic protection to the steel frame. But after further investigation an alternative scheme was adopted, with Gunite injecting a Remmers grout into the columns to encapsulate and protect the steelwork. All works were carried out from electrically operated cradles.

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SIKA ADDS GALVASHIELD TO ITS INVENTORY

CRA member **Sika Ltd**, has recently added Galvashield® XP embedded galvanic anode, the well established, cost-effective rebar corrosion protection system, to its UK portfolio of specialist construction materials.

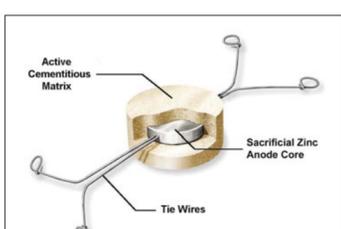
The anode can be installed quickly and easily to provide localised protection to areas most at risk from corrosion. Its key element is the sacrificial zinc core. This corrodes preferentially to the surrounding steel rebar as it is a 'weaker' metal, which leads to a significant reduction in the deterioration of the steel.

Galvashield® XP has a 10 to 20 year service life, dependent upon a number of conditions, including the quality of the concrete and the density of the reinforcing steel and humidity.

Galvashield® XP is particularly ideal for concrete patch repairs. Thus, together with the company's BS EN1504 approved products for restoring failed concrete, preventing water intrusion and repairing expansion cracks, the collaboration means that Sika can now provide a full concrete renovation package.

Mark Shaw, Technical Manager of Sika Ltd commented, "The addition of the Galvashield to the range gives more scope when it comes to managing corrosion control in chloride contaminated areas. Sika now has answers to almost all concrete deterioration problems."

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JORDANGATE MSCP REFURBISHMENT

A recent appraisal of Jordangate MSCP, for the 1980s built Cheshire County Council owned facility in Macclesfield, revealed the need for structural refurbishment.

The survey identified chloride penetration within the concrete and recommended repair, with cathodic protection to control corrosion of the structural steel, concrete repairs, deck waterproofing and other associated works.

The subsequent report, however, advised that as the effects of chloride penetration had not yet fully materialised, the use of cathodic protection was not considered to be essential at this stage. A regular monitoring regime was thus instigated.

CRA member **BSF Construction Chemicals** supplied EMACO® Nanocrete and Febset 45 to carry out numerous patch repairs to the concrete deck prior to covering. The structure's block and beam construction demanded a solution that could remedy cracking along the joints. BASF developed a purpose-designed Conideck strip system to be covered with a top coat. In areas that needed to be especially durable, such as ramps and turning circles, quartz was applied rather than sand.

Specialist contractor Concrete Repairs Ltd carried out the work, which was completed in two phases between 2007 and 2008.

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REINFORCEMENT CORROSION ARRESTED ON CAR PARK

Works are well underway on the £700,000 refurbishment of Swan Walk Car Park in Horsham, with CRA member **Matrix Solutions Ltd** acting as Principal Contractor, on behalf of Horsham District Council.

Previous structural surveys and investigations had highlighted that the in situ reinforced car park was suffering from high levels of chloride contamination (particularly to ramps and decks) and widespread concrete spalling to soffits. The problem was exacerbated by low concrete cover and the lack of deck coatings above accelerating the on-set of corrosion.

Deck and soffit repairs are being undertaken using the Weber range of products with added protection and longevity by the use of strategically placed anodes.

SEND AN E-MAIL: info@matrix.uk.com **LINK TO WEBSITE:** www.matrix.uk.com



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STRAIGHTENING THE BEZIER

CRA member **Structural Renovations Ltd** has recently completed the installation of carbon fibre Bezier between the floors of the unique Bezier Building, located at the junction of Old Street and City Road, in London.

The use of composites, resin bonded to the top floor cantilevered structural slabs, was introduced to facilitate additional loading requirements and to limit the amount of permanent steelwork propping required to the floors below.

Due to the thin lightweight section of the Sika CarboDur plates, the finishes to the penthouse balcony areas were not compromised and materials could be easily carried by operatives from the ground to the top of the structure.

The work was carried out with little or no disruption to other trades, and the programme, due to the speed of installation this system offers compared with alternative strengthening options.

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RENOCON SECURES CONTRACT FOR 150 RESIDENTIAL BLOCKS

East London based CRA member, **Renocon Ltd**, has successfully secured 150 residential blocks, balcony waterproofing and roofing work, under several partnering schemes across the London Boroughs, on 150-plus residential blocks.

Mike Threadgold of Renocon said "It is great news to secure this amount of work for the first quarter of 2010 and it is extremely encouraging that clients are still looking for value engineering and quality workmanship, even in a time of recession".

Renocon's ethos is to offer clients quality and satisfaction on each and every project. It claims that such values have proven to be of paramount importance in winning work in the current climate. The company also reports that, based on this level of service, it is experiencing higher than average tender enquiries and is currently negotiating further contracts for next year.

SEND AN E-MAIL: sales@renoconltd.co.uk **LINK TO WEBSITE:** www.renoconltd.co.uk

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