

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 the CRA and its Members on recent concrete repair developments, new advances and other initiatives occurring in the industry.

To obtain further information on any of the stories, click the email links below.

ASSOCIATIONS TO FORM STRUCTURAL CONCRETE ALLIANCE

The **Concrete Repair Association (CRA)**, **Corrosion Prevention Association (CPA)** and **Sprayed Concrete Association (SCA)** are to form an Alliance aimed at providing a single co-ordinated voice for the structural concrete refurbishment and repair industry.

The new Alliance will bring together over 70 companies drawn from contractors, manufacturers, distributors, consultants, test houses and equipment suppliers. It will offer a single point of contact for major clients and a definitive source of information and advice for all involved in the repair, refurbishment and management of concrete infrastructure and the protection from corrosion of a wide range of structures.

Although all three Associations will continue to operate, providing detailed advice and comment within their individual speciality areas, the Alliance will reduce duplication in many areas including the development of publications and technical guidance documents.



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VISIT THE CRA AT THE UK CONCRETE SHOW

The **Concrete Repair Association** will once again be joining forces with the **Corrosion Prevention Association** and the **Sprayed Concrete Association** at the UK Concrete Show, being held on 27-28 February at the NEC in Birmingham.

Exhibiting together on stand A56, as the Structural Concrete Alliance, representatives of each Association will be offering advice to visitors on the repair, refurbishment and management of concrete infrastructure.

In addition, each of the Alliance member associations will be providing a CPD presentation in Seminar Theatre 3 on Thursday 28 February. The CPD presentations will provide an introduction to each Association's particular area of expertise. They will include the CRA's newly updated *Route to Successful Concrete Repair*; the CPA's *Understanding the Corrosion Process and Cathodic Protection*; and the SCA's *Introduction to Sprayed Concrete*.

For further information on the UK Concrete Show visit: www.concreteshow.co.uk



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MARRIOTT CHOOSES GUNITE REFURBISHMENT

In 2009, **Gunite (Eastern) Ltd** was contracted by the Marriott Hotel to refurbish its underground car park. Gunite carried out extensive concrete repairs and cathodic protection to the car park soffits and applied Triflex waterproof coatings to the car park deck.

Following the successful completion of works in 2009, Gunite negotiated the next phase of works and was appointed as Main Contractor to carry out an extensive external refurbishment of the hotel between October 2011 and April 2012. Prior to starting the latest works, Gunite undertook a make-safe abseil survey and hammer testing to establish the full extent of repairs.

The scope of works included water-jetting; hammer testing; extensive concrete repairs; application of epoxy primer and render coat to eliminate the glazed tiled finish; mastic to all movement joints and window surrounds; and the application of three coats of Remmers Silicone Paint LA. Access to the works was gained using powered cradles.

Working alongside Remmers, Gunite was able to offer the client a range of tailored remedial solutions, including: a fixed-price lump-sum quotation for all works, including concrete repairs; a unique coating system to overlay glazed mosaic tiles; and a 20-year insurance-backed guarantee on all concrete repairs and coatings.

Additionally, as part of its on-going maintenance programme, Gunite will be carrying out periodic routine cleaning to the car park deck.

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SIKA REPAIRS CLYDEBANK FLYOVER

West Dunbartonshire Council has specified a concrete repair system from **Sika** to refurbish the Mountblow flyover in Clydebank, which was suffering from corrosion due to years of carbonation and chloride attack.

MacKenzie Construction carried out over 500m² of concrete repairs across the structure of the bridge which included the soffit, columns, deck and abutment walls. As the bridge was a key part of Clydebank's road infrastructure, the project was considerably undertaken so it could remain open for the duration of works.

The concrete repairs were conducted using cementitious polymer modified Sika Monotop 610/615. First a layer of Sika Monotop 610 was applied. This inhibits corrosion and improves the lifespan of steel reinforcements. It also acts as a bonding bridge for Sika Monotop 615 high build repair and re-profiling mortar.

The entire reinforced concrete sections of the bridge were then covered by a spray-applied coat of Sika Ferrogard 903. This innovative liquid inhibits corrosion, delaying its start and slowing its rate thus extending the maintenance and service life cycles for reinforced concrete by 15 years.

Easily and economically applied to surfaces, Sika Ferrogard 903 offers a simple way to protect reinforced structures. Since it does not have an adverse effect on concrete, it is frequently specified on valuable structures and heritage projects.

Sika's concrete repair system has ensured simply applied, economical and longstanding preservation of the flyover. And, like all Sika concrete repair products, the system is certified to BS EN 1504.

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FOSROC OFFERS BALCONY SOLUTION

Built in the 1960s, the 2/3-storey residential blocks of flats at Harwood Grove had been the subject of many previous low quality repairs that had failed.

A survey carried out by Pennycook Collins, established that there was severe deterioration of the balcony slabs, particularly around the balustrade fixing, where there were signs of corrosion and spalling of concrete.

Fosroc designed a complete long-term solution for the flats, involving both concrete repair and waterproofing protection.

All existing coatings were removed by grit-blasting, before taking up a thin cracked screed and removing a dangerously rusty balustrade. Repairs were then carried out by Sealability using two high performance Fosroc repair mortars: Renderoc HB45, fibre reinforced reinstatement mortar and Renderoc LA55, free flowing low alkali micro concrete, with Renderoc ST 05 as a fairing coat.

Fosroc's Nitoproof 800 System, a flexible, skid-resistant, decorative liquid waterproofing system, particularly suitable for exposed concrete elements such as balconies, was then used for protection.

To allow for rapid progression over the fresh repairs Nitoflor DPM solvent-free, liquid damp-proof membrane was applied prior to the laying of Nitoproof 800. The system was terminated on the up stands and at the underside drip to create a meaningful waterproof detail. To complete the repair, Dekguard S anti-carbonation protective coating was applied to the underside of the balcony.

A new balustrade will be fixed through the Nitoproof 800, but with a steel plate that compresses when tightened on to a waterproof gasket to prevent water penetration and any future corrosion.

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MATRIX HEALS LEICESTER ROYAL INFIRMARY

The multi-storey staff car park at Leicester Royal Infirmary had fallen into a critically bad state. Years of exposure to the elements and to de-icing salts had caused widespread delamination on the top deck, leaving large sections of the steel reinforcement completely exposed.

Continual water ingress had also led to substantial salt leaching on lower levels, where large stalactites had formed across the soffits on the majority of parking decks.

Although rebuild was considered, the costs were prohibitive. **Matrix Solutions** secured a refurbishment contract by recommending alternative, cost effective repair techniques as part of a value engineering exercise.

The original specification involved significant patch repairs to the top decks using pre-bagged mortars. Matrix recommended an alternative solution – a pumped, polymer modified, fibre reinforced screed which, although requiring specialist equipment, proved to be more cost effective.

The modified screed also provides a strong bond to the existing substrate which will prevent cracking and future delamination. Patch repairs will also be carried out to all defective soffits, columns and walls using Sika repair mortars.

A migrating corrosion inhibitor (MCI) will be used on the lower decks to protect the embedded steel reinforcement against chloride-induced corrosion.

Further value engineering will see a specialist fast cure waterproof deck coating system installed to all eight decks, ensuring the parking facility can remain largely operational throughout, causing minimum disruption. Work is currently underway and due to be completed in Autumn 2013.

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STRUCTURAL RENOVATIONS PERFORM AT THE BARBICAN

Structural Renovations Ltd has been employed by the Corporation of London to carry out surveys at the Barbican Estate in the City of London.

The Barbican Estate was built in the 1960s and 1970s and is one of London's principle examples of Brutalist Architecture. The Estate is Grade II listed as a whole.

Because of the height of the three 42-storey residential tower blocks and age of the Estate generally, the Corporation embarked on a plan to survey these three structures and carry out necessary concrete repairs.

Structural Renovations Ltd has been carrying out surveys to the tower blocks by abseil techniques and to other properties on the Estate, over the last two years. The company will also survey properties on its earlier built neighbour, the Golden Lane Estate.

A range of make safe repairs have already been carried out on many of the properties using polymer modified repair mortars.

Following sampling of the existing concrete and laboratory analysis, trials are being undertaken to establish mix designs that will enable the repairs to be completed. The mix designs need to replicate the many types of exposed concrete finish that are found on the Estate, to satisfy the requirements of its Grade II listing.

It is intended that once these designs are complete they can be used as a standard for the whole estate.

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BRISTOL FASHION FOR MAKERS

Makers Construction Ltd has provided a repair solution for College House, a five-storey building in central Bristol, which offers commercial office space above a ground floor of retail units.

Typical of many 60s/70s buildings the structure had some precast panelled elevations, as well as some storey-height precast mullions to the back and front. The mullions were of a reconstituted bath stone finish on concrete. Typically these units involved a concrete core, cast on to the facing stone mix and with handling reinforcement within them.

The mullions had previously been repaired, although the standard of repair was not good and further spalling both at the repair and at other sites was occurring.

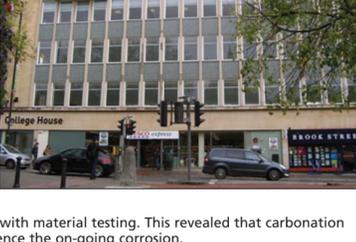
Makers conducted a health and safety abseil survey to remove loose material, together with material lifting. This revealed that carbonation had occurred to the elements and indeed had reached the steel reinforcing in places, hence the on-going corrosion.

The solution was to carry out traditional concrete repairs to the mullions using a concrete repair system produced by Sika Ltd. A surface-applied corrosion inhibitor was then applied to negate the corrosion issue in un-repaired areas. This was followed by the application of an anti-carbonation coating over the elements, in order to give protection and uniformity of colour.

The specification was designed to give long term protection to the concrete elements of this structure.

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VOLKERLASER SHORTLISTED FOR CN SPECIALIST AWARD

Contractor **VolkerLaser** has been shortlisted in the Concrete Specialist of the Year category of the Construction News Specialist Awards 2013. The company, which specialises in structural strengthening, repairs and waterproofing in the civil engineering and building sectors, now goes through to the face-to-face judging stage.

Mike Weaver, managing director at VolkerLaser, said: "Everything we do focuses on being technically advanced, especially in the maintenance, strengthening or repair of concrete. We protect our clients' infrastructure; providing integrated, safe, cost effective and high quality work."

"We have never aspired to be the biggest specialist in the business, simply well respected and trusted through transparent relationships with our clients. This award, as recognition of the hard work put in by all our team, would be a fitting end to a fantastic year."

The judges will not only be looking for examples of great projects, but business acumen, a clear strategy and commitment to health and safety, staff and training in order to judge the business as a whole.

Winners will be announced at an Awards evening on 26th March 2013.

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CRL ON CN SPECIALIST AWARDS SHORTLIST

Concrete Repairs Ltd has been shortlisted by Construction News for a Health & Safety Award for its work on silica dust control.

The CRL Safety Department has conducted personal dosimetry studies to quantify employees' likely daily exposures to silica dust when drilling and breaking concrete.

The personal dosimetry equipment consists of a small pump connected by a tube to a filter which is worn close to the nose and mouth. The filter collects both inhalable and respirable particles which are sent to a lab for analysis.

The studies will be ongoing. The information collated will be used to create a database of tasks and likely exposures and to monitor the effectiveness of controls to ensure that employees' exposures remain within safe limits.

CRL is also liaising with a researcher from the HSE to discuss industry best practice and to assist in the review of the HSE's Silica Essentials guidance sheets that can be found on: www.hse.gov.uk/pubns/guidance/cnseries.htm

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FREYSSINET TAKES THE HIGH ROAD

In early 2010, **Freyssinet Makers**, the northern structural repair division of Freyssinet Ltd, was appointed by Balfour Beatty Civil Engineering to assist with the refurbishment works on the north and south approach viaducts of the Forth Road Bridge in Scotland.

The work included the replacement of all the mechanical bearings that support the bridge deck and enable it to move, as required by changes in temperature. The contract also required an extensive overview of the concrete pier condition in conjunction with repair works and the installation of an impressed current cathodic protection system (ICCP).

Some 40 permanent Freyssinet bearings were specially designed and manufactured in Freyssinet's factory in Telford. There were two types of bearing to be installed – fixed rocker and sliding guided, each weighing a massive 2,500kg. These replaced the existing mechanical rocker and pin roller bearings, which were badly worn and corroded.

In addition, the contract included the design and supply of 35 temporary support bearings and use of over 100 hydraulic jacks to meet the requirements of the temporary support and restraint works. High-tensile Freyssisar was also supplied and stressed to assemble and fix the longitudinal restraint frames onto the structure.

The ICCP system uses three anode systems: titanium mesh and 14kcm² titanium ribbon anode anodes. In addition, galvanic ICCP devices were installed into repairs outside the impressed current zones. Over 18km of titanium metal anode strip was installed into the concrete faces of the pier head cross beams and legs to form part of the CP system. The works were successfully completed in September 2012.

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