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NEW CRA ELECTROCHEMICAL ROAD SHOW



To address the matter of steel reinforcement corrosion in concrete (said to be the single largest cause of deterioration of the UK's infrastructure) and to explain the various remedial options available, the CRA has just produced an entirely new Road Show presentation entitled 'Electrochemical rehabilitation of steel reinforced concrete structures'.

The environment provided by good quality concrete, in which steel reinforcement exists, is said to be 'passive', whereby a highly

dense and protective oxide film forms on the steel's surface. The concrete pore solution is highly alkaline owing to the presence of hydroxides produced during hydration reactions. Any small breaks in this protective oxide film are constantly repaired by the hydroxyl ions. Furthermore, the cover concrete acts as a physical barrier to aggressive agents.

If, however, the alkalinity of the surrounding concrete is reduced, such as by neutralisation with atmospheric carbon dioxide or by depassivating ions such as chlorides, corrosion of the reinforcement can occur.

The two primary reasons are carbonation (which leads to the loss of concrete alkalinity) and chloride attack primarily from de-icing agents or seawater (which break down the protective oxide film of the steel reinforcement). The presence of moisture and oxygen can cause expansive corrosion up to eight times greater than the original steel product. These expansive forces are sufficient to cause concrete cracking, delamination and eventually spalling.

The new CPD-certificated audio visual Road Show is specifically designed for specifiers, contractors and owners of structures/buildings containing concrete components, who need a brief explanation of the materials available, the methods of installation and the critical aspects to be taken into account when looking at specific projects.

The programme, about 45 minutes in duration, covers design considerations and outlines possible electrochemical remedial solutions, such as realkalisation, chloride extraction, cathodic protection/prevention and sacrificial systems, as well as recent developments.

Presentation, normally undertaken by specialist CRA contractor and CRA product manufacturer members to deal with practical as well as technical questions, is free-of-charge to professional organisations, at their offices, at a mutually convenient date and time (normally lunch periods), provided a minimum of four delegates are able to attend.

CRA ROAD SHOW PRESENTATION SUITE UPDATED

In addition to the launch of the new electrochemical Road Show, the CRA has also updated its other two popular CPD-certificated Road Show presentation

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BS EN 1504 CLARIFIED

By: Peter Robery, Technical Director, Halcrow Group Ltd

The EN 1504 series of European standards provides for the first time a comprehensive set of performance requirements for concrete protection and repair products. It represents an opportunity to further improve concrete repair practice through the guidance on scheme design and site QA. It came fully into force in the UK on 1 January 2009, when all conflicting UK national standards (e.g. parts of BS 6319) were withdrawn.

The EN1504 series of standards presents challenges to the concrete protection and repair industry, requiring it to adapt to the new standards and invest in CE-mark certification. Some questions about scope and application of the standards have arisen, which I will explore below:

1. Some UK manufacturers and multinationals completed the CE-marking of their products before the withdrawal date of 31 December 2008, but others have decided not to CE-mark at all – who is right?
2. Clients, architects and designers will increasingly specify works using CE-marked products, particularly those operating under public procurement rules, with the assurance that CE-marking means products are certified



as having key minimum performance characteristics – but is it mandatory?

3. There is also some debate about the scope of BS EN1504, particularly in the field of car park deck waterproofing – should EN1504-2 (surface protection systems) apply to car park deck membranes?

Questions (1) and (2) are inter-related. If no CE-marking had begun, clients and specifiers could not use EN1504. The marketplace is consequently divided between those manufacturers who have and those who have not adopted CE-marking. Similarly, clients, architects and designers are divided between

those who know about and use EN1504 and those who do not.

The Construction Products Directive (CPD) favours the use of CEN standards and so EN1504 will be increasingly seen as best practice. Also, it is supported by other industry guidance such as publications from the Concrete Society, TR69 being the most recent and relevant, which provide more detail on the interpretation and use of EN1504. However, currently the UK interpretation of the CPD is that it is mandatory to have products capable of being CE-marked, but CE-marking itself is optional and so public

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NEW CRA ELECTROCHEMICAL ROAD SHOW

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programmes. The series now deals with three quite different remedies for ailing concrete, with each presentation taking about one hour to complete.

The second presentation, entitled 'Structural strengthening with fibre reinforced polymers', provides an overview of structural strengthening using fibre reinforced polymers (FRP) composite materials.

The third programme, entitled 'The route to a successful concrete repair', which has been in place for a number years now, has recently been updated in line with BS EN 1504.

For more information on all three CRA Road Show presentations, interested organisations should contact Laurie Perkis on 023 8073 8953, or by email at: initialcontacts@btinternet.com

BS EN 1504 CLARIFIED

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procurers still have the flexibility not to use CE-marked products at this time – this is likely to change in the future.

For now, use of CE-marked products in the UK marketplace is only "best practice" for public procurers and private procurers alike, as it is not mandatory. This is not the case in some other European countries, where EN1504 has been fully implemented, so failure to CE-mark may potentially impact on UK exports. Worse than that, the CPD is being replaced by the Construction Products Regulations (CPR) that are expected to make the use of CE-marked products in construction mandatory throughout Europe.

There are things that come with EN1504 other than just the CE-marking. These are equally important as the performance test certification process and should not be overlooked.

- 1) Repair concept, design and installation:
 - Part 9 of EN1504 sets out a detailed repair strategy, based on the latest technical opinion from across Europe, with extensive guidance given in the Informative Annex A.
 - Part 10 of EN1504 gives detailed guidance on site application and quality control and its informative Annex A gives background information drawn up by experienced concrete repair practitioners.
- 2) Quality Scheme:
 - A key requirement of EN1504 is that products and systems are manufactured to an approved quality certification scheme and with a defined sampling regime.
 - "Harmlessness" testing is required, including verification of safety in a fire and environmental compatibility.
- 3) Performance & Identity:
 - Formulations have to achieve minimum performance requirements, set by experts from across Europe, covering different classifications of test:
 - Absolute performance, such as strength, adhesion, permeability, etc.
 - Maintaining performance over time, including after periods of low humidity drying, cyclic temperature changes and freeze-thaw cycles with salt exposure.
 - The standard allows individual products and complete multi-layer system to be assessed, meaning that repair system performance can be assessed and CE-marked for the first time.
 - Formulations have to be identifiable (identity testing), requiring key product "finger-prints" to be registered so that in the event of a dispute, for example where a product is suspected to be contaminated, the test can be used to confirm the product is not from a rogue batch.
- 4) Consistency of approach:
 - For the first time, European concrete repair manufacturers, designers and contractors have agreed on single methods of testing to assess the performance and identity of repair products and systems.
 - DIN, AFNOR and other national standards bodies have been going through the same process as BSI, withdrawing standards that conflict with the new ENs and adopting these best practice versions as their own.

So, currently it is correct to say that manufacturers can choose not to CE-mark products for the UK market. However, by not doing so they are potentially leaving themselves open to being excluded from specifications that require CE-marking and the forthcoming CPR is likely to mandate their use in any case. Halcrow, for example, follows the EN1504 principles for all concrete protection and repair works. The Highways Agency has been finalising their specification requirements based on EN1504 and its agents (such as MAC operators A-One+) use EN1504 as the basis for their designs.

Question (3) was recently brought into focus by comments from the Liquid Roofing and Waterproofing Association (LRWA – formerly ELWA). The scope of EN1504 Part 2 includes performance requirements for products and systems

for concrete protection that cover a wide range of applications. These include anti-carbonation paints, hydrophobic treatments to prevent moisture and chloride ion ingress and crack-bridging systems that could be used on car park deck surfaces.

The external envelope of car parks near the coast is particularly prone to chloride ingress, with saline water collecting on the roof slab. Chloride salts also collect on slabs and ramps, carried in by the wheels of cars, with water runoff from cars carrying salt-contaminated water into all parts of the car park. Prevention of chloride ion penetration into the concrete is a primary consideration in car park durability design.

A ductile and resilient liquid-applied membrane system usually comprises at least three layers: primer, waterproof layer, and wearing surface incorporating non-slip aggregate. While some guidance is given in BS EN1504-2, the standard was not specifically intended for car park deck membrane systems. For example, non-structural crack widths in concrete due to shrinkage may be over 1mm, far exceeding the typical crack bridging test range of EN1504-2 of 0.3mm. A blanket specification requiring deck membrane systems to comply with the minimum performance requirements of EN1504-2 may therefore be inappropriate and higher or modified specifications may be needed.

Specific guidance on the selection of appropriate generic types of coatings and their application is contained in the LRWA Code of Practice and from FeRFA.

SUMMARY

EN 1504 sets the future direction for the concrete repair industry. It aims to reach asset owners and specifiers, as well as suppliers and contractors. For the first time in Europe a standard now exists that addresses all stages of the repair process, from initial awareness of a problem, to the handover of a properly designed and executed repair of the building to a satisfied client. While not yet mandatory, EN1504 is certainly best available practice in concrete repair.

Nothing ever stands still. A process of revision and amendment of the EN1504 series is now underway in CEN. Changes to the standard, particularly any increase in the testing requirements for CE-marking, may pose a more significant threat to the UK concrete repair industry than the launch of EN1504 itself. The UK needs to declare its stance on EN1504 and will need powerful representation at CEN to ensure EN1504 is not changed beyond recognition, particularly if the new CPR will mandate its use.

Note from Ed.

Peter Robery has represented the UK's BSI on the EN1504 Committee for the past 20 years and intends, I understand, to continue to represent the UK's interests. He does, however, urgently need help from manufacturers and practitioners to form a mirror group to review the changes to EN 1504 that will filter their way through. If you are interested in serving on BSI's mirror group or attending CEN meetings, please contact him at: roberypc@halcrow.com.

Improving the Construction Industry

By: The National Specialist Contractors' Council (NSCC)

Construction in the UK accounts for almost 10% of gross domestic product, employs three million people and generates £2.84 in economic activity for every £1 invested in the sector. Creating an efficient and vibrant industry, in which all members of the supply chain can flourish, is therefore vital to the long-term success of the UK economy.



The National Specialist Contractors' Council (NSCC) brings together the common aims of specialist trade organisations within the construction industry and is the authoritative voice of Specialist Contractors in the UK. The Concrete Repair Association recently became a member.

By focusing on key business issues NSCC provides support to its Specialist Contractors ensuring they are uniquely placed to deliver quality, best value and integrated solutions to their clients.

The Fair Payment Campaign has the objective of achieving proper and timely payment through the supply chain to improve cashflow generally. Fair payment benefits everyone involved in the construction process. It allows clients and designers to achieve their visions, contractors are able to deliver projects to budget and programme, whilst specialist contractors and material manufacturers are able to develop innovative and cost effective solutions.

Likewise, reducing the cost, bureaucracy and waste associated with pre-qualification is essential if the industry is to operate more efficiently and realise integrated and streamlined project solutions. The Builder's Profile, working in partnership with NSCC and the Safety Schemes in Procurement (SSIP) Forum, offer practical ways to exchange pre-qualification information and of assessing competence, thus increasing everyone's efficiency.

The future of the industry is also extremely dependent upon employers investing in the training and qualification of its workforce. The construction sector directly employs a diverse range of people with the ability to improve the built environment around us. The introduction of new qualifications, including apprenticeships for the specialist sector, is being driven by NSCC working closely with ConstructionSkills.

In addition, the focus on the low carbon agenda is beginning to impact on every aspect of the construction process, including the materials sourced, the building processes used on site and the end product. The industry has a central role to play in meeting the UK's carbon emission targets by improving the energy efficiency of the buildings in which we live and work. NSCC is therefore committed to helping the industry to reduce carbon emissions by providing guidance and sharing best practice which will allow its members to invest in their future.



For further information, contact NSCC
T: 0844 249 5351
E: enquiries@nsc.org.uk
W: www.nsc.org.uk

REFERENCES

- 1) BS EN 1504 Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity:
 - a) - Part 1: General scope and definitions
 - b) - Part 2: Surface protection systems for concretes
 - c) - Part 3: Structural and non structural repair
 - d) - Part 4: Structural bonding
 - e) - Part 5: Concrete injection
 - f) - Part 6: Anchoring of reinforcing steel bar
 - g) - Part 7: Reinforcement corrosion protection
 - h) - Part 8: Quality control and evaluation of conformity
 - i) - Part 9: General principles for the use of products and systems
 - j) - Part 10: Site application of products and systems and quality control of the works
- 2) BS 6319 Testing of resin and polymer/cement compositions for use in construction
- 3) Concrete Society Technical Report 36, "Cathodic protection of reinforced concrete" (under revision).
- 4) Concrete Society Technical Report 44, "The relevance of cracking in concrete to corrosion of reinforcement".
- 5) Concrete Society Technical Report 48, "Radar testing of concrete structures".
- 6) Concrete Society Technical Report 50, "Guide to surface treatments for protection and enhancement of concrete".
- 7) Concrete Society Technical Report TR57 "Strengthening Concrete Structures with Fibre Composite Materials: acceptance, inspection and monitoring".
- 8) Concrete Society Technical Report 60, "Electrochemical tests for reinforcement corrosion", Publ. The Concrete Society
- 9) Concrete Society Technical Report 68, "Assessment, design and repair of fire damaged concrete structures".
- 10) Concrete Society Technical Report 69, "Repair of concrete structures with reference to BS EN 1504".

HEALTH & SAFETY - a matter for everyone



By: Phillip Crosbie, Eversheds LLP, Solicitors

In its latest Annual Report, the Olympic Delivery Authority again outlined its commitment to health and safety. The construction project associated with delivering the Olympic Games in 2012 is massive and, so far, has involved a workforce of over 9,000 working one million hours. The demands of ensuring construction health and safety are great, but such demands apply across the entire construction industry regardless of scale, as demonstrated in recent cases.

In the past few months alone, there have been a variety of construction-related cases heard before the Courts, in which health and safety failings have been identified.

In August, a company was fined £8,000 (plus costs) after pleading guilty to breaching the Work at Height Regulations 2005. The prosecution followed a fall involving a worker who was carrying out routine maintenance. The worker climbed a mobile tower scaffold and lost his balance, falling to the ground. The scaffold in place lacked a necessary guardrail, which had been removed by the company to allow better access for maintenance.

Earlier in August, another company in Scotland was fined £96,000 after pleading guilty to section 2 of the Health and Safety at Work etc Act 1974. The prosecution was brought after an employee was crushed to death by a mechanical digger that was not properly secured. The deceased was not familiar with the task and received no instructions from his employer, meaning he created his own method for raising the digger, which failed. The company was also served with a Prohibition Notice relating to working underneath vehicles, which was complied with.

In July this year, two brothers were fined a total of £13,000 (plus costs) after a worker was left with a crushed skull and permanent brain damage after falling through a roof. Each brother pleaded guilty and accepted a number of offences, including failing to hire trained workers and failing to take measures to prevent falls occurring.

Whilst the above fines may appear to be relatively small to some of the larger construction firms, there is guidance to suggest that a fatal incident could result in a heavy financial penalty in the future. The Sentencing Council has issued guidelines as to the size of fine where there has been a death; with fines seldom less than £500,000 for a company found guilty of corporate manslaughter and fines from £100,000 for those guilty of health and safety breaches. These figures are likely to represent the minimum amounts.

It should also be remembered that it is not just the financial penalty that can impact on a company, but the criminal record that also follows, particularly when companies are involved in tendering for work and are required to disclose previous convictions.

The requirement to properly select, instruct and supervise the work of contractors has long been established. However, in our experience many companies still do not appreciate the risk of hiring contractors when it is not done properly.

Whilst enforcement notices have always been an important tool for the Health & Safety Executive (HSE), it is essential that companies respond to them in the appropriate way. Companies too often view such notices as an alternative to prosecution and willingly accept and comply with the directions given. The service of an enforcement notice does not bar a future prosecution. In addition, compliance with a notice may be used in evidence in a future prosecution to demonstrate that there were deficiencies that needed correcting in the company. A careful and considered response is required to any type of enforcement.

There has been a renewed focus on prosecuting companies for technical breaches, particularly in the area of fire safety. And there does not have to be an incident for a prosecution to be brought. One example being the recent fine of £210,000 (plus costs) handed out to the Co-Operative Group following a number of fire safety breaches being found in a store in Southampton.

The health and safety duties imposed on those working in construction are extremely broad. However, the potential risks associated with work in the industry, arguably warrants the attention that the enforcement authority gives. There can be no doubt that the remainder of the year will see further prosecutions and learning points for the industry.

Proper respect needed

Allen's observations

At the time of writing this article there is a fair bit of doom and gloom about in the construction market.

The social housing sector, which has provided many with a reasonable living over the past ten years, has undergone a seismic shift. As a result, specialist contractors who have been working for the supposed 'market leaders' in the industry are casting nervous eyes over their overdue payments ledger, wondering whether settlement of these outstanding accounts will happen any time soon.

By the same token, the price will probably have been so ground down at tender stage that even when payment arrives many will consider the money better invested on a long priced outsider at Kempton Park. Actually, there are a couple of so called, market leaders, whose collapsing share price alone would argue that a punt on a backstreet game of 'find the lady' would have proven a better investment.

If you talk to the old hands in the concrete repair sector, they will inevitably bring into the conversation the term 'smoke and mirrors'. The topic will then progress to discussion about the 'good old days' when rates were high and margins decent; a situation they would say that to some degree was brought about by the fact that the wider construction industry was not really aware of how the business of concrete repair was carried out. The assumption is that the concrete repair sector partially grew on the back of ignorance and was, if you extrapolate the view, somewhat of a scam on the construction industry.

This viewpoint is, I feel, not only disrespectful to our colleagues past and present, but also just plain wrong.

The fact that multi storey car parks no longer collapse, bridges don't crack and the front of high rise blocks do not shear away, is not down to smoke and mirrors.



It is down to a specialist industry that has grown and developed on the back of good practice and sound technical principles.

How our industry promotes itself and the perception generated has a major impact on how we are valued. At times like this the industry needs a common voice; one that will fight our corner and promote the standards that we have spent so long attaining.

I would not for one moment suggest we put a gloss on what we do, primarily because there is no need. If we are perceived as skilled professionals, we can argue that we should be paid as such. If we portray ourselves as dodgy cowboys making a living out of ignorance, then we will rightly be held in low esteem and paid accordingly.

To be honest that's why, above all else, whatever you trim as part of a cost cutting exercise that you will most certainly be carrying out in the near future, you should not countenance specifying companies outside of the CRA for concrete repair work.

When considering where to trim, don't forget to consider the value as well as cost and don't be lured by the smoke and mirrors argument from people who don't hold what we do in proper respect.

THE DESIGN AND INSTALLATION OF REPLACEMENT BRIDGE BEARINGS - A ONE DAY CONFERENCE

The UK bridge stock constructed in the 1960s/70s requires continual maintenance and recent inspections have identified a growing demand for the maintenance and replacement of bridge bearings. The subject is presenting some significant challenges to bridge engineers in respect of accessing the bearings, precision jacking and the safe replacement of the bearing units.

To increase understanding of the complexities of such work and how problems can be overcome, Aston University, other industry partners and CRA member Concrete Repairs Ltd (CRL) have organised a one day conference on the subject. It is scheduled to take place on Thursday 14th October, 2010, at Aston University. John Drewett of CRL will chair the conference, which includes speakers from consultants, contractors, and manufacturers.

This is a unique opportunity to learn more about the replacement of bridge bearings, a subject that will become a necessity for many bridge structures over the next decade. For more information telephone: 0121 250 3818, or e-mail: enquiries@astoncpdcentre.co.uk

INDUSTRY Developments

NEW CRL 'BUILDING REFURBISHMENT' BROCHURE

Specialist building refurbishment contractor, CRL, has been providing professional contracting services throughout the UK since 1954. The company has a turnover of £30m, operates from five regional offices and is one of the largest independent specialist main contractors in the UK. CRL provides a comprehensive external envelope refurbishment service and the majority of the work is undertaken and managed by its directly employed, skilled workforce, ensuring a high level of quality and control.

CRL Surveys provides a comprehensive inspection service to identify problems with the external fabric of a building and in tandem with the company's Facades and Roofing divisions, is able to fully refurbish any building, improving both its thermal efficiency and its overall appearance.

CRL has recently published a new 'Building Refurbishment' brochure. To obtain a copy, e-mail: jdrewett@concrete-repairs.co.uk



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One of the finest pieces of post-war college development in Cambridge is undergoing a major programme of repair and refurbishment by CRA contractor member, **Gunite (Eastern) Ltd.**

The Cripps building at St John's College, Cambridge, which was given a Grade II* listing last year, occupies an awkward site between two Grade I listed buildings. The zig-zag plan reinforced concrete building provides student accommodation based around eight separate staircases.

Gunite undertook concrete cleaning and restoration trials in spring 2008, using a cleaning system that employs super-heated water under pressure. Sample defects were broken out and reinstated using Remmers Betofix RM repair material to within 15mm of the concrete surface. The final layer of the repair was formed from a pre-matched mortar, mixed with a carefully selected range of crushed aggregate in the correct ratio, to replicate the texture and appearance of the surrounding concrete. In December 2009, Gunite commenced the main contract works.

The requirement for en-suite bathrooms risked compromising the building's structural integrity. Carbon fibre plate bonding was therefore proposed for strengthening around the new service holes. Together with a specialist engineering practice, Gunite designed a scheme and installed carbon fibre plates using Sikadur 30 adhesive to bond them to the concrete.

The refurbishment programme has ensured that the Cripps building and the optimism of the 1960's, which it epitomises, remains a prime example of how ancient and modern can happily co-exist.

GUNITE (EASTERN) LTD: 07739 000569

CEMPLAS RECOMMENDATIONS PROVE A WINNER!



Constructed in the 1930s, the rear walkway balconies to Croydon's Victoria House had become extremely dilapidated and in urgent need of remedial repairs.

The initial refurbishment recommendations were to completely remove the existing balcony up-stands, construct entirely new ones in shuttered and poured concrete with entirely new steel reinforcement and to re-asphalt.

Such major works, however, were beyond the client's budget and the specialist contracting services of CRA member **Cemplas Waterproofing and Concrete Repairs Ltd** were called upon. Following a site survey and recommendations, Cemplas was appointed principle contractor.

Grit blasting was employed to remove existing coatings. Damaged reinforcement was treated and repaired and the extensive repairs to the concrete soffits and walls were undertaken. Concrete repairs were completed using Ronacrete's High Build HB40 Acrylic polymer repair mortar and to provide increased protective cover to the steel reinforcement. Ronacrete's Cover Plus 150 was also applied to extend the life of all the concrete surfaces.

Finally, Ronacrete's Zolpacryl Anti-carbonation coating was applied to protect the concrete from water ingress and to create an effective barrier against carbon dioxide, possible future steel corrosion and subsequent spalling.

Rather than remove the asphalt on the balcony walkways, following localised repairs the surfaces were treated with liquid applied elastomeric waterproofing membrane, include a non-slip quartz aggregate finish.

To the delight of the client, costs were considerably less than the original proposals, the work was completed in a far shorter contract period and with minimal disruption to the building's occupants.

CEMPLAS WATERPROOFING & CONCRETE REPAIRS LTD: 020 8654 3149

HISTORIC TURNTABLE BACK ON LINE WITH HELP FROM TECROC



A Victorian railway turntable has been restored to its former glory with the help of technical advice and three specialist products from CRA manufacturer member **Tecroc Products Ltd** (part of Parex Ltd).

Peak Rail has fully restored the turntable at Rowsley South Station, near Matlock, with the help of a team of volunteers, including members of the Peak Railways Association, many of whom are construction industry professionals.

During the project they used cartridge-applied polyester-based TecGrip CAS high strength resin anchor material for fixing the starter bars to areas requiring new concrete.

TECROC's E33 epoxy grout was used to provide support for the main central pivot of the turntable and to grout each of the base plates supporting the ring rail, which runs around the circumference of the turntable well. This provides the support for the turntable unit to rotate, powered by vacuum from the locomotive, or via hand winding.

Finally, TECROC Dry Pack C, a general purpose packing mortar was used to fix the blue pavers in the bottom of the turntable well in order to prevent weed growth in the future.

The newly-refurbished turntable was re-introduced to service after a gap of more than 40 years at a ceremony performed by Coventry-born pop industry mogul and steam buff, Pete Waterman.

TECROC PRODUCTS LTD: 01827 711755

EXTENSIVE TOWER BLOCK RENOVATIONS



In 2008, CRA member **Concrete Repairs Ltd (CRL)**, who specialise in the external refurbishment of residential property throughout the UK, successfully tendered to Bristol City Council for the £2.2m renovation of four 14-storey tower blocks at Barton Hill.

When complete in the autumn of 2010, all four blocks on this extensive project will exhibit an entirely new external envelope.

Twelve weeks are needed to erect scaffolding around each block and another three to four months is spent on upgrading the entire surface area. Work includes the window heads and reveals receiving a full two coat treatment, with extra mesh being laid into the base coat. Once cured, additional mechanical ties are drilled into the original substrate to ensure everything is securely anchored.

At ground level the treatment changes. The failing mid-nineties applied External Wall Insulation (EWI) system is being cut back and substituted with brick slips. Rather than attempting to return the brick slips around the window reveals, the specification switches to include a polyester powder coated aluminium extrusion which butts up to the frame.

Also, to ensure the future performance of the building envelope, the tower blocks are being re-roofed using a liquid applied membrane applied over the original roofing systems to provide a seamless waterproof covering.

Commenting on the project's progress, Paul Jermey, Senior Surveyor for Bristol City Council's Neighbourhood and Housing department said, "CRL is proving to be a very competent company and the project is moving along really well. We have had absolutely no issues during the contract".

CONCRETE REPAIRS LTD: 020 8288 4848

CARING REPAIRS



Built in the 1930's the Allington Sluice lock gate, adjacent to the Museum of Kent Life, is the last on the Medway before it becomes tidal.

The sluice lock gate has been undergoing a major refurbishment programme including

WEBER EXHIBITS AT 'BEST 2010'



Weber, manufacturer of external renders, external wall insulation, construction mortars, tile fixing and flooring systems, will be exhibiting at 'Best 2010' (NEC, Birmingham, 18-20 October), the new built environment exhibition where innovative products and technologies provide practical solutions to real problems.

Among specialist, high performance products and systems, the CRA member (who can be found on stand, B30, Hall 5), will be featuring its weber.therm External Wall Insulation (EWI) systems. The systems meet best practice, minimise costs in onsite application and reduce environmental impact by contributing to the control of carbon emissions from buildings.

The systems are a combination of insulation and meshcloth reinforced, polymer modified render, which are fixed to the exterior walls of buildings, dramatically improving thermal performance and exterior aesthetics. They are suitable for both new build and renovation, including non-traditional, hard to treat solid wall homes. Available in a range of finishes including striking acrylics and render effect brick appearance, these systems can meet the Code for Sustainable Homes, BREEAM and Part L building regulations and are fully supported by technical expertise and product guarantees.

Weber will also be advising on its range of technical mortars and its concrete repair products which have just achieved full BS EN1504 approval.

WEBER: 08703 330070

ANYONE FOR A SWIM?



The 1930s-built art deco Uxbridge Lido has been restored to its former glory as a result of a team effort by CRA manufacturer member **Ronacrete Ltd** and specialist contractor, **Cemplas Waterproofing & Concrete Repairs Ltd**.

The lido, an elongated 12-sided star-shaped pool with two fountains at either end, had been closed in 1998 since when it had fallen into disrepair and become swathed in graffiti.

Its refurbishment, overseen by English Heritage, involved the restoration of the Lido's grade II-listed open air swimming pool and other distinctive features such as the grandstands, cascades and entrance, which had survived almost unchanged since the leisure facility opened.

A major part of the refurbishment works was to the Lido North Block. The entire surface was grit blasted to remove old coatings, before cracked sections in the brickwork were chased out and a Helibar system installed to restore the original structural integrity. Following the structural repairs, all elevations were given a new surface finish with Ronacrete's BBA Certificated Ronafix modified polymer render. The render was subsequently coated with Ronacrete's Joltex elastomeric protective/decorative coating.

A key objective of the brief was to keep the building exactly as it was, with all measurements accurately matching the existing. To achieve this, Cemplas used laser levels to ensure the Ronafix render installation was totally precise.

The refurbishment of the Lido brings an important part of history back to life. It is possible that the British Olympic team may use the facility in preparation for London 2012, with many famous athletes having already pledged their support to train future up and coming champions.

RONACRETE LTD: 01279 638700

new gates, lifting gear and gantry, a new fish pass, a disabled access ramps and repairs to the concrete structure.

In order to achieve repairs that matched the existing weathered concrete, CRA member - **Structural Renovations Ltd**, carried out site batched samples using a range of cements and aggregates that could be applied over the traditional polymer modified mortar structural repairs. On completion of successful trials the main works were let to Structural Renovations in 3 separate phases.

Although the sluice gate is not listed, the Environment Agency has a very keen interest in the structure ensuring that the repairs were carried out in a sympathetic manner.

STRUCTURAL RENOVATIONS LTD: 01753 825511

AMMUNITION DUMP REPAIRED



The old ammunition station at Harpur Hill, Buxton, has a significant history. But having been built in an old quarry in the 1940s and recently used as a mushroom farm, the concrete structure was exhibiting its age.

The three-storey reinforced concrete structure consists of four curved interconnecting tunnels, each 3.3m wide x 4.3m high, with flat slab bridging the walls. As would be expected, the 170mm thick slab has a heavily reinforced soffit, with around 80mm cover to the steel reinforcing.

Due to cast-in chloride content (in excess of 1%) during the original construction, the concrete soffit was suffering extensive spalling (see pic), causing a significant health and safety issue for its current owner - haulage Company Norbert Dentressangle.

CRA specialist contractor member, **Makers Construction Ltd**, was engaged to carry out traditional concrete repairs utilising sprayed concrete. Fosroc polymer modified repair mortars were selected for the process.

The works demanded extensive air extraction and tenting in order to prevent dust and smells from travelling throughout the facility, which now stores fine bottled water and even finer, private wine collections; a far cry from its previous usage!

The project represents an interesting usage of modern concrete repair techniques in enhancing the life of historical structures.

MAKERS CONSTRUCTION LTD: 0845 899 4444

BALBY FLYOVER AS GOOD AS NEW WITH SIKA



When the steel reinforcement of the concrete Balby Flyover began to suffer from corrosion, due to carbonation and chloride attack, Doncaster Council required a reliable renovation method that would not only provide long term protection, but would also enable the bridge to remain open during repair operation.

The council specified a concrete repair system, from CRA member **Sika Ltd**, comprising a combination of high performance mortars, anti-corrosion agents and sealants.

Repairs to the soffit, columns, deck and abutment walls, were undertaken by ROK Concrete Repairs, whilst the bridge remained open for the duration of works.

Smaller repairs were undertaken using cementitious polymer-modified Sika Monotop 610/615. 610 inhibits corrosion, improving the lifespan of steel reinforcement and acts as a bonding bridge for 615 high build repair and re-profiling mortar. More extensive repairs were treated with spray applied Sikacem 133 Gunite, a cement based material containing silica fume and various water reducing agents.

All reinforced concrete was spray applied with Sika Ferrograd 903, an innovative coating that inhibits, delays the start of and slows the rate of corrosion, thus extending the maintenance and service life cycles of reinforced concrete. Finally, a coat of Sikagard 680S Clearglaze was applied to resist weathering, alkalis and ageing.

SIKA LTD: 0800 112 3863

CURRENT CRA MEMBERS

Contractors: Telephone:

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