

# Cracking Matters

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ISSUE NO. 5

# BEST VALUE

*What exactly is it and what impact will it have on specification?*

'Best Value' is yet another 'buzz phrase' being tossed around the construction industry recently and in order to throw light on this new initiative, it was 'Cracking Matters' intention to carry an article on the subject in this issue. Specifically, we wanted to determine what impact, if any, it may have on conventional specification procedures.

Apparently, however, the topic is still so fresh that organisations needing to consider the scheme are still deep in the throws of assessing its implications and, just as importantly, how it can be delivered.

At present it would appear that 'Best Value' is a challenge contrived by Central Government for Local Authorities to prove that they are soundly managed, provide the services that the public expects, to a quality they demand and at a price that they are prepared to pay.

This is a tall job indeed and it is not

surprising that more time is being required to consider the possible ramifications. Apparently, in order to deliver this 'Best Value', each Authority is required to review, in a methodical and rigorous manner, all of the services it provides. Reviews need to take into account the four C's of:

## CHALLENGING

Each Authority must look at what it is doing, review why it supplies the service, consider if any other organisation is better placed to provide the service and whether there are any better methods of provision.

## CONSULTING

The Authority will have to ensure that its consultation techniques are suited to both the type of consultation and the audience. It must listen to responses and before

starting, needs to consider how the information gathered and the results of consultation, can be used to influence final decision-making.

*Delivering 'Best Value' is a tall job indeed and it is not surprising that more time is being required to consider the possible ramifications*



*Will best value ensure all procedures are carried out correctly ?*

## COMPARING

Comparison with other similar service providers will need to be taken into account and specific targets (such as aiming to be in the top 25% of UK Local Authorities) should be set up.

Each Authority will need to compare its performance with other Authorities of a similar size and rural nature; compare its services with other public or private sector organisations, determine if any lessons can be learned and any improved methods adopted.

## COMPETING

In order to ensure its services are cost-effective, each Authority will have to review its policy on competition and show that the services provided are value for money and competitive.

One organisation commented to 'Cracking Matters' that it has been operating 'Best Value' for years, only it described it as 'Common Sense'. We hope to expand on the topic in a future issue, meanwhile, if any reader wishes to comment, please contact the Editor.



## CRA MEMBERS' OPERATIVES CSCS BY JUNE

In addition to wholeheartedly endorsing the Construction Skills Certification Scheme (CSCS), members of the **Concrete Repair Association** anticipate that all their concrete repair operatives will be CSCS registered by June 2000.

The Association believes that structured training is a fundamental requirement in ensuring continually improving standards of workmanship in the industry.

The principal aims of the scheme are to maintain a record of operatives who achieve a recognised level of competence, raise standards of health and safety awareness and promote the use of skilled operatives. Qualified operatives will carry an accreditation card that will include a

photograph of the individual and show the level to which he has been trained.

CRA members have agreed competencies and a new classification for 'concrete repair operatives', which mirrors the requirements for NVQ Level 2. Grandfather rights for entry into the scheme are still currently available, but the only route in future will be through formal NVQ training.

The CRA was specifically formed to provide the construction industry with access to companies able to provide competent, long-term and value for money solutions to concrete problems. Full CRA specialist contractor and material manufacturer members are required to operate to the highest standards of quality,

safety and reliability.

In addition to the training initiative, members must also be Q.A. accredited to BS EN ISO 9001 or 9002, comply with the CRA Code of Practice, possess an established track record, financial status and business integrity.

The CRA Members Directory, available free of charge, can be obtained from: the Concrete Repair Association, Association House, 235 Ash Road, Aldershot, Hants GU12 4DD. Tel: 01252 321302. Fax: 01252 333901. Email: john.fairley@associationhouse.org.uk

THE JOURNAL OF THE  
CONCRETE REPAIR ASSOCIATION



# CRAonline

Construction industry research indicates that property owners, consultants, engineers, surveyors and contractors etc., consider that one of the most important functions of Associations and Professional Bodies is to keep them fully informed of developments.

For the CRA such findings are not new. Indeed, it is one of the major reasons behind the production and issue of the publication you are reading right now, ensuring that you are aware of improvements in standards, training initiatives, directory and documentation updates and other 'happenings'. 'Cracking Matters', is one way in which the CRA can keep you in touch with what's going on in the concrete repair sector and long may it continue. It is not, however, the only method.

The fastest developing medium, as we all know, is the Internet. More and more people are accessing on line information and thousands of new pages are being added daily. The CRA does not intend to be slow off the mark in the Internet stakes either.

In case you are not already aware of the Association's web site, we suggest you add it to your 'favourites' right now.

The address is:

[www.concreterepair.org.uk](http://www.concreterepair.org.uk)

Currently the CRA web site contains details of all CRA members; information about the Association; its technical advisory services; publications produced; its Code of Practice; training schemes for its members' operatives and its latest press statements.

In addition, in line with the recent decision to make its 'Standard Method of Measurement for Concrete Repair' document available free of charge (reported elsewhere in this edition) the



Association also intends to develop the site in the near future to facilitate direct downloading for use as required. Other Association publications, including 'The Route to a successful concrete repair', will also be able to be accessed in the same manner.

New material will be added regularly and the CRA is looking into ways of making the site more interactive. Your views on how the site could be improved to make life easier would be welcomed.

# Insufficient preparation eq

By: David Bowen Bravery,  
Director, Mitchell, McFarlane & Partners Limited

It is true to say that most competent contractors, engineers and clients are fully aware of the importance of adopting top quality standards of preparation prior to the insertion of repair mortars or the application of protective coatings. Without such care and attention to preparation the efficacy and durability of the repairs will surely be jeopardised.

Yet it is not uncommon in today's world of budgetary constraints to find that this critically important aspect of the repair

process is being compromised in the effort to save money.

Upon investigation, it is sometimes found that a perfectly good preparation specification has been dramatically reduced due to the repair quantities being grossly underestimated. In circumstances where preparation standards are neglected it is fair to say that in all probability the use of top quality (and relatively expensive) repair and coating materials will prove to be a waste of good money.

*It is sometimes found that a perfectly good preparation specification has been dramatically reduced due to the repair quantities being grossly underestimated*

# NEWS from C

Use the enclosed Fax-Back

## BRIDGE STRENGTHENING WITH CARBON FIBRE COMPOSITES

Many sectors of the construction industry are now adopting the convenient and cost effective method of carbon fibre composites for structural strengthening. Reinforced concrete beams, columns, decks/floors, access openings, masonry walls of highway bridges, multi storey car parks, commercial premises and industrial buildings are all benefiting from this proven technique.

The picture shows the installation of Sika CarboDur carbon fibre plate bonding (CFPB) by specialist contractor YOLDINGS Ltd., to strengthen and increase the load bearing qualities of a bridge structure and enable it cater for heavy commercial vehicles and comply with European Directories. Works were completed to the satisfaction of the project's Structural Engineers with minimal inconvenience to road users.

For further information contact Bob Berry: 01323 442288. Fax: 01323 441188  
Email: sales@yoldings.com or visit Web Site: www.yoldings.com

ENQUIRY NO: 501



## Interesting variations in CONCRETE REPAIR PRODUCT SALES

The latest set of CRA state of trade findings, relating to the U.K. concrete repair market for the six months - July to December 1999, show that during the period there was a significant shift in volume sales from hand-placed and flowable repair mortars to sprayed mortars.

The figures, produced on a six-monthly basis, are compiled from returns provided by the Association's product manufacturer members who, between them, account for the vast majority of materials used to carry out concrete repair work in the U.K.

In comparison with the second six months of 1998, volume sales of sprayed mortars increased by more than 60%. The figure was the highest recorded in any six-monthly period since 1994, the first year that the Association began compiling such information. During the same period, however, volume sales of hand-placed mortars were down by 48% and flowable repair mortars down by 42%

Reductions in volume sales were also experienced in other materials categories; fairing coats down by 34% and anti-carbonation coatings down by 15%.

Similar results were recorded for the year as a whole with sprayed mortars bucking the declining trends in the other product categories. However, due to more buoyant volume sales in the first half, the reductions over the year for the other product categories were much less than the second six-month period.

The returns also indicated that 75% of CRA manufacturer members anticipate a growth in sales volume of approximately 10% over the coming twelve-months, whilst almost the same number expect prices to remain the same.

Other market data gathered by the Association indicates that the contract value for UK concrete repair work amounts to approximately £160m per annum.

## HIGHWAYS AGENCY FIRST

The first carbon fibre strengthening project for the Highways Agency has just been completed at Barnes Bridge, Manchester, using the SBD En-Force system. Over 5,500 metres of carbon fibre plate was bonded to the bridge soffit with the system's Epoxy Plus Structural Adhesive. In addition, the bridge deck was strengthened with approximately 180 linear metres of traditional 8mm thick steel plates, bonded with the same adhesive. Shear capacity was enhanced with approximately 3,500 high yield stainless steel bars fixed with SBD's rapid setting adhesive Certite Putty and finally grouted with a non-shrink grout. The En-Force system avoided adding a large amount of extra dead load to the structure and provided an economical solution for flexural strengthening to the bridge deck soffit. In addition, its ease of application and high strength-to-weight ratio halved installation time compared to traditional methods of strengthening.

Further information from 01525 718877.

ENQUIRY NO: 502



## MAGNIFICENT ARCHED CANOPY RECEIVES THE FULL TREATMENT

Concrete repair work on the magnificent St. Michael's porch, a copper covered reinforced concrete arched canopy at the front entrance of Coventry Cathedral, has recently been completed by LLEWELLYN STONECARE LTD. In addition to the provision of safe public access, protection of the stain-glassed façade on this 40-year old structure was a critical aspect of the works, which were successfully completed in time for the Christmas celebrations. As an added precaution from further corrosion, the concrete was treated with a vapour phase corrosion inhibitor, which will protect the structure well into the Millennium.

For further information contact Brian Gardiner on 01908 679222.

ENQUIRY NO: 503



## EDRICH HOUSE REFURBISHED

Following the transfer of Edrich House, from Lambeth Council to Hyde Housing Association, outline plans were drawn up for the repair and refurbishment of the 1960s block. After initial competitive tender PITCHMASTIC PLC negotiated a design and build contract with Hyde Housing to the value of £3.35 million. It was completed in March 2000. The contract involved the complete design, refurbishment and re-development of the property and incorporated repairs to the block's structure, renewal of its windows and roof. Internally, all asbestos was removed, new kitchens and bathrooms were installed, significant M&E works were carried out and existing lifts were refurbished. A remodelling exercise was also undertaken at ground level. In addition, security has been enhanced with the installation of CCTV and video entry system. Externally, new landscaping, car parks and play areas have been constructed.

Further information is available from: 0114 270 0100

ENQUIRY NO: 504



# quals inadequate durability

*The first in a regular series of feature articles, written by consultants, covering the various stages of concrete repair work. This piece deals with the importance of preparation. Future articles will cover investigation & diagnosis, concrete reinstatement and protection.*

In all cases, rust from corroding reinforcement should be removed to expose white steel. Where chlorides are present in the concrete particular care must be taken and all pitting in the steel surfaces should also be cleaned out. Usually grit blasting with a hand held mini-pot is perfectly adequate and is therefore the most economic way to proceed. On occupied housing blocks, with reasonable precautions being taken, the dust generated is quite containable. Once cleaned the bars should be primed immediately (or the full repair undertaken) so as to prevent "flash rusting" of the cleaned metal surfaces.

Prior to applying protective anticarbonation coatings to general concrete surfaces, the removal of old paint is essential - unless it can be proved that the old coatings are both firmly adhered to the concrete and that they are fully compatible with the new treatments. Even then, in our experience, unremoved old coatings can lead to future problems since it is not a simple matter to ensure that all areas of old paint are firmly adhered. Meaningful Warranties are unlikely to be forthcoming unless old coatings are completely removed.

Surface contaminants on exposed concrete surfaces generally comprise a mixture of



*There is no substitute for good preparation.*

grime and dirt, lichen, algae, oil, grease, efflorescence, joint sealant residue, graffiti and the like. All are detrimental to the long-term performance of new coatings. Their removal is essential and is usually carried out by high pressure water jetting and/or grit-blasting (wet or dry) -

sometimes incorporating a vacuum retrieval system.

In this latter context careful consideration needs to be given to the intended

methodology. More than one system of cleaning may well be necessary. In some situations, for example on occupied housing blocks, dry grit blasting may be unacceptable to the client and occupants. In such circumstances wet grit blasting is often carried out with careful and strict control of spent water and grit. In extreme circumstances, in very sensitive areas, vacuum retrieval may be deemed necessary, albeit slower than the other systems and certainly more expensive.

Physical "defects" on exposed concrete surfaces include blowholes, honeycombing and cracking. All will cause the formation of discontinuities in the coatings if not attended to. They must, therefore, also all be prepared and repaired prior to the application of protective coatings. Careful use of proprietary scrape and fairing coats are best used in most circumstances. Even exposed aggregate finishes can be significantly enhanced by a scrape coat to fill crevices and round-off edges. It is

important to remember that anticarbonation coatings described as "crack bridging" are not generally capable of being painted over unrepaired cracks without "necking" and consequent loss of section over the crack. Such "necking" almost inevitably leads to failure at a later date.

The importance of specifying and ensuring a uniform even textured finish and the infilling of surface imperfections on general concrete surfaces prior to overcoating cannot be

emphasised too strongly. The removal of old coatings and the like is, in most circumstances, of equal importance. Clearly, the repairs would almost certainly not have been necessary if they were doing their job in the first place!

The adage must surely be; if you cannot afford to carry out proper preparation do not waste good money in carrying out the repair and applying expensive anticarbonation coatings at all. If you proceed, you will surely be doing it all over again in a few years time.

### **The Author**

*David Bowen Bravery is a Chartered Engineer, a Fellow of the Institute of Structural Engineers and a Director of Mitchell, McFarlane & Partners Limited. He has been actively involved in the diagnosis and repair of reinforced concrete structures for the past 20 years.*

**Meaningful Warranties are unlikely to be forthcoming unless old coatings are completely removed.**

## CRA Members

*to obtain more information*

### CARBON FIBRE THE PREFERRED OPTION

Specialist contractor **CONCRETE REPAIRS LTD** has recently completed the installation of eleven custom-designed 170mm wide, 20mm thick and 5 metre long unstressed ultra high modulus carbon fibre reinforced polymer plates (CFRP) to strengthen seven cast iron beams at Bow Road Bridge in east London. The structure, originally built in 1850, comprises a mixture of brick jack arches and steel plates supported by cast iron beams. To complete the job, CRL managed a 24-hour shift pattern and the entire contract was successfully completed



with 2 hours to spare and within budget. Docklands Railway Management Ltd. approved the CFRP system as the most cost-effective, practicable and least disruptive strengthening option due to the high tensile capacity and lightweight nature of the plating, together with its ease of application to the existing substrate.

Further details can be obtained from 020 8288 4848.  
Email: [jdrewwett@concrete-repairs.co.uk](mailto:jdrewwett@concrete-repairs.co.uk)  
[www.concrete-repairs.co.uk](http://www.concrete-repairs.co.uk)

ENQUIRY NO: 505

### FREYSSINET OFFERS WIDE RANGE OF STRUCTURAL REPAIR TECHNIQUES

Specialist contractor **FREYSSINET LTD** provides a comprehensive range of repair and maintenance techniques including:

- \* Concrete repairs using a wide range of techniques utilising both resin and cementitious products
- \* Strengthening of structures using pre-stressing, plate bonding, of carbon fibre loading techniques
- \* Bearing and joint replacement
- \* Structural jacking and propping
- \* Monitoring, repair, maintenance, demolition of pre-stressed structures
- \* Cathodic protection, chloride removal and protective coatings
- \* Replacement of failed concrete carriageway joints using a patented slab connector system
- \* Silane treatment
- \* Hydro-demolition
- \* Lifting and relocating structures

For further information re services provided and contracts recently completed, contact Phillip Deller on 01952 211511.



ENQUIRY NO: 506

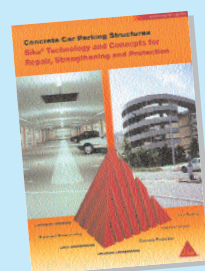


**CONSTRUCTION**

### SIKA IN CAR PARKS

Sika is a world leader in proven, high performance construction chemicals. Our integrated portfolio for MSCP's includes the following:

- ▲ DECK WATERPROOFING
- ▲ CONCRETE REPAIR & PROTECTION
- ▲ CORROSION INHIBITORS
- ▲ STRUCTURAL STRENGTHENING
- ▲ STEELWORK COATINGS
- ▲ JOINT SEALANTS



We offer a free and comprehensive technical support service. Please contact Jimi Fadayomi on 01707 394444 for assistance.

ENQUIRY NO: 507

### ICE MAKERS !

**Makers UK Ltd.**, one of the UK's largest specialist main contractors, has completed a £23,000 concrete repair project on the remote island of Signy, part of South Orkney, in the Antarctic Circle! The project involved reinstatement of the inside and outside bund walls of the British Antarctic Survey Research Station's fuel tank building. Whilst the work was fairly straightforward for Makers, the logistics of firstly getting to site, secondly ensuring a 'weather window' for the work and thirdly, making sure the correct equipment was to hand was a major problem.

After travelling, via the Falkland Islands, two Makers repair operatives completed the project between January and March - the Antarctic's brief summer. For their return journey, they had to wait for the supply ship, which visits only twice a year.

More details concerning Makers 'global' services are available from: 01487 832288



ENQUIRY NO: 508

### BAA TEST & ENDORSE INSTARMAC MATERIALS



Following year long trials, both Ultracrete PDQ concrete repair mortar and Ultracrete Instant Road Repair (grades IR3 and IR10), manufactured by Tamworth based **INSTARMAC GROUP plc**, have been endorsed by BAA plc for emergency pot hole repairs and concrete patch repairs on airfield stands and manoeuvring areas at Heathrow. Ultracrete PDQ is specifically formulated for large section concrete repairs where rapid strength gain is essential. The fibre reinforced, high strength, shrinkage compensated cementitious mortar sets in 50 minutes. It is able to accept foot traffic after two hours, heavier traffic in just four

hours and generates a compressive strength after full cure of 50N/mm<sup>2</sup>. Ultracrete PDQ is also employed extensively on car parks, bridge decks, loading bays and factory floors, etc. HAUC Approved Ultracrete IRR is specifically designed to reinstate small openings in either asphalt or concrete.

Further information can be obtained from: 01827 872244

ENQUIRY NO: 509

# CRA taking the 'route' of CD Rom and video

The continuous deterioration of concrete structures and a seemingly endless demand for knowledge of repair procedures has prompted the CRA to produce its seminar presentation, entitled 'The route to a successful concrete repair', in both CD ROM and video versions.

The programme, which clarifies the essential procedures necessary to conclude a successful concrete repair project, is currently nearing completion. It will follow a similar format to the well-established existing personalised presentation.

'The route to a successful concrete repair' is based upon the Association's publication of the same name. It was specifically designed to enhance awareness and understanding of this specialist activity among construction professionals, to highlight the various aspects to be taken into account when faced with the repair of reinforced concrete and to provide guidelines as to the best approach to be adopted.

Whilst it includes details regarding types of repair product, alternative repair

techniques, the causes of concrete deterioration and methods of carrying out concrete repairs, these are not the primary focus of the programme. It concentrates more on aspects of overall project control such as: safety of the structure and environmental hazards; assessment of damage, deterioration and diagnosis of its cause; definition of the clients objectives; design of the repair work and choice of methods and materials; preparation of contract documents, specification and Bill of Quantities; contractor selection and evaluation and supervision of the work.

The transfer of the programme into the new formats does not signal the end of personalised presentations made available to professional groups and organisations. The CRA is prepared to present the programme at no charge, provided 20 or more delegates are able to attend the event.

In order to answer delegate's questions from a both a practical and technical viewpoint, each presentation is given by a CRA specialist contractor and a CRA product manufacturer member. In the opinion of the CRA the programme is suitable for CPD.

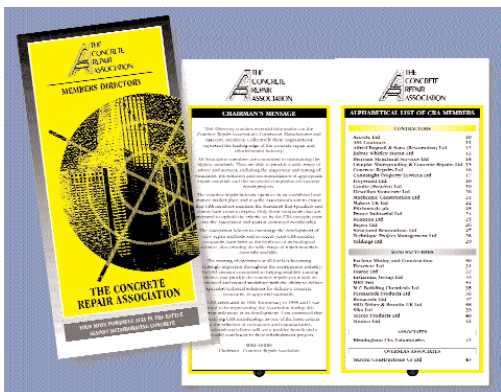


Those wishing to obtain copies in either the new CD Rom or video format (or in organising a personalised presentation) should pre-register their interest with the Secretary at  
CRA, Association House, 235 Ash Road, Aldershot, Hants GU12 4DD.  
Tel: (01252) 321302. Fax: (01252) 333901.  
Email: john.fairley@associationhouse.org.uk

## NEW MEMBERS INCLUDED IN CRA DIRECTORY UPDATE

The Concrete Repair Association has just published the latest edition of its comprehensive Members Directory, which is designed to be of direct practical use to engineers, specifiers and clients.

The handy, 52 page, one-third A/4 pocket sized booklet, includes details of all the UK's established specialist concrete repair contractors and product manufacturers in colour coded sections.



The latest edition includes information on five new Contractor members and one new Manufacturing member. Existing members' pages have also been updated. Each member's page entry carries detailed information on the company. It provides main office address and regional office details, contact names, a description of the company's specialist concrete repair and associated activities (or in the case of

manufacturers - its products), areas of operation and third party accreditations.

To be of assistance when compiling tender lists for concrete repair work, each contractor's entry also includes information on contract values catered for, the company's largest contract to date, its approximate annual turnover in concrete repair related business and total company turnover.

The Directory also includes details of the technical advisory assistance available from the Association, the NVQ related training scheme set up for member's operatives, the CRA Code of Practice, publications, a bibliography of related literature and names and addresses of associated organisations.

High performance concrete repair work calls for specialist application capabilities and specialist materials. General contractors and untrained personnel are simply not up to the task. This Directory will therefore prove invaluable to those involved with concrete repair projects.

Copies are available free of charge from: The Secretary, Concrete Repair Association, Association House, 235 Ash Road, Aldershot, Hants GU12 4DD. Tel: (01252) 321302. Fax: (01252) 333901. Email: john.fairley@associationhouse.org.uk

## 'Method of measurement' free of charge from CRA

As most construction professionals will know, attempting to pre-determine the depth and area of deteriorated or damaged concrete before breaking out is complete, is not a precise science. This in turn makes it difficult to accurately quantify the volume of work and time needed to complete the project.

Given this scenario, Bills of Quantities can therefore only be regarded as approximate, with the accuracy of the quantities depending upon the degree of initial survey, sampling and other test data available prior to the contract documents being produced.

It is only following thorough assessment of the extent of structural deterioration and accurate diagnosis of its causes that a true quantification of concrete repair work is possible, but this continues to be a notoriously difficult area of construction measurement.

It was exactly for this reason that the CRA originally produced its now well established 'Standard Method of Measurement for Concrete Repair'. The detailed 44-page document was specifically devised to provide a uniform basis for measuring concrete repair and

for fully itemising all aspects of the work involved, but has traditionally carried a £15.00 price tag.

In the interests of assisting the origination of clearer Bills of Quantities for concrete repair work, however, the Association has recently decided to make copies available to professionals FREE OF CHARGE.

The publication deals with the measurement of surface cleaning; surveying; concrete repairs; crack repairs; pore/blow hole fillers; levelling mortars/fairing coats; coatings and resin injection. It also itemises time-related elements such as provision of access and site facilities and includes a useful specimen Bill of Quantities.

To obtain your copy, simply complete and return the enclosed Fax-Back form.

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Tel: (01252)321302 Fax: (01252) 333901  
Email:john.fairley@associationhouse.org.uk  
Website: www.concreterepair.org.uk

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